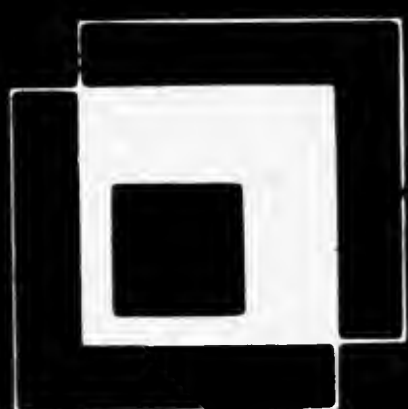


**U. S.  
OFFICIAL GAZETTE  
UNITED STATES  
PATENT OFFICE  
VOL. 913  
AUGUST  
1973**

**MICRO PHOTO DIVISION**



**BELL & HOWELL**

**S<sub>W</sub>**

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# PATENT OFFICE NOTICES

## Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before August 31, 1973.

Brown, Richard A., 4548 Moorpark Ave., San Jose, Calif. 95129  
 Elliott, Robert M., 30 W. Vassar Ave., Denver, Colo. 80223  
 Garrett, James R., 417 Quaint Acres Drive, Silver Spring, Md. 20904  
 Kaufman, Milton, 211 Jefferson Davis Hwy., #618N, Arlington, Va. 22202  
 Kohlmann, Henry G., 125 Santa Dominga Ave., San Bruno, Calif. 94066  
 Mazel, Alex, 5120 4th St. NE., Washington, D.C. 20011  
 Miller, John H., 6674 W. Roxbury Place, Littleton, Colo. 80120  
 Quick, Louis J., 1560 Parkland Ave., San Jose, Calif. 95117  
 Steinberg, Jacob H., 2631 East West Hwy., Chevy Chase, Md. 20015  
 Stittelman, Joseph, 2301 S. Jefferson Davis Hwy., #423, Arlington, Va. 22202  
 Sutton, Michael O., 31770 Southview, Birmingham, Mich. 48009

LUTRELLE F. PARKER,  
 Chairman, Committee on Enrollment.

## TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

### Chapter 1—Patent Office, Department of Commerce

#### PART 2—RULES OF PRACTICE IN TRADEMARK CASES

##### Lawful Use for Supplemental Register and Size of Facsimiles

The Patent Office is revising §§ 2.47 and 2.57 of the trademark rules of practice. Section 2.47 is being revised to set forth that the year's use which is the basis for registration on the Supplemental Register must be lawful use. Existing § 2.47 states that the year's use for the Supplemental Register must be "continuous use," whereas section 23 of the Trademark Act of 1946 specifies that such use must be "lawful use." The purpose of this revision is to conform the wording of § 2.47 to the wording of the statute. This revision does not effect any change in practice, as in applying the rule the term "continuous use" has been treated as having the same meaning as the term "lawful use" in the statute.

Section 2.57 is being revised to set forth that facsimile specimens are not to exceed 8½ inches wide and 13 inches long. Existing § 2.57 states that facsimiles shall be not larger than specified for the drawing. That statement is now incorrect due to a recent amendment of the drawing length to 11 inches. The purpose of this revision is to correct the wording of § 2.57, and to conform the wording of rule 2.57 to the wording of § 2.56 (Specimens) which has already been amended to specify that specimens are not to exceed 8½ inches wide and 13 inches long.

Since these revisions impose no burden on any person, notice and public procedures thereon are deemed unnecessary.

Therefore, pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123), and section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6, as amended October 5, 1971, 85 Stat. 364), Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is hereby revised as follows:

1. Section 2.47 is revised to read as follows:

#### § 2.47 Supplemental register.

In an application to register on the Supplemental Register, the application shall so indicate and shall specify that the mark has been in lawful use in commerce, Specifying the

nature of such commerce, by the applicant for the preceding year, if the application is based on such use. When an applicant requests registration without a full year's use of the mark, in accordance with the last paragraph of section 23 of the act, the showing required must be separate from the application.

(Sec. 23, 60 Stat. 435; 15 U.S.C. 1091)

2. Section 2.57 is revised to read as follows:

#### § 2.57 Facsimiles.

When, due to the mode of applying or affixing the trade mark to the goods, or to the manner of using the mark on the goods, or to the nature of the mark, specimens as above stated cannot be furnished, five copies of a suitable photograph or other acceptable reproduction, not to exceed 8½ inches wide and 13 inches long, and clearly and legibly showing the mark and all matter used in connection therewith, shall be furnished.

Effective date. These revisions shall become effective on July 16, 1973.

Dated: July 5, 1973.

RENE D. TEGTMEYER,  
 Acting Commissioner of Patents

Approved:  
 BETSY ANCKER JOHNSON,  
 Assistant Secretary for  
 Science and Technology.

[FR Doc. 73-14453; Filed 7-13-73; 8:45 am]

Published in 38 F.R. 18876; July 16, 1973

## Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,040,679, R. S. Warantz, TUBULAR CENTER SILL FOR COVERED HOPPER AND LIKE CARS, filed Feb. 5, 1973, D.C., E.D. Pa. (Philadelphia), Doc. 73-257, *Welded Tube Company of America v. Frehauf Corporation*.

3,082,292, R. W. Gore, MULTICONDUCTOR WIRING STRIP; 3,540,956, Arnold and Gore, PRECISE CONDUCTOR CABLES, filed Feb. 13, 1973, D.C., N.D. Ohio (Cleveland), Doc. C-73-163, *W. L. Gore & Associates, Inc. v. A.P. Inc.*

3,123,116, A. W. Hughes, EMULSIFIER; 3,221,788, same; 3,318,353, same, filed Feb. 5, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c314, *Alvin W. Hughes and A. W. Hughes Company, v. Hobam, Incorporated*.

3,147,882, A. R. Waters, STACKING AND NESTING CONTAINER, filed Jan. 31, 1973, D.C., E.D. Wis. (Milwaukee), Doc. 73-C-47, *Alfred R. Waters v. G. B. Lewis & Co.*

3,206,688, M. J. Di Toro, APPARATUS FOR CORRECTING DISTORTION IN WAVE SIGNAL TRANSLATING CHANNELS, filed Feb. 5, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c315, *General Signal Corp. v. Bell Telephone Lab.*

3,209,080, Guttner, Starke, and Sapara, ELECTRICAL HEARING AID, filed Feb. 2, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c296, *Siemens Aktiengesellschaft v. Sonotone Corporation*.

3,221,707, L. B. Pearson, AUTOMATIC LIVESTOCK HEAD GATE, filed Apr. 18, 1972, D.C. Kans. (Wichita), Doc. W-4840, *Laurence B. Pearson v. Donald R. Richardson and Top Hands Products, Inc.* Stipulation for dismissal and order of dismissal, filed Feb. 12, 1973.

3,221,788. (See 3,123,116.)

3,318,353. (See 3,123,116.)

3,408,572, F. C. Marino, CONTROLLED AMPLITUDE FREQUENCY SHIFT SIGNAL GENERATOR, filed Sept. 12, 1969, D.C.N.J. (Newark), Doc. 1076-69, *Digitronics Corporation v. Marketing Systems, Inc.* Stipulation and order of dismissal of action, Dec. 26, 1972.

AUGUST 7, 1973

U. S. PATENT OFFICE

3

3,411,198, Berman, Thakkar, Schroeder and Kunsag, EXPLOSIVE EXPANSION OF TUBES INTO TUBE SHEETS; 3,562,887, Schroeder, Smith and Berman, EXPLOSIVE EXPANSION OF LINER SLEEVES, filed Feb. 6, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-247-HP, *Foster Wheeler Corporation v. Whittaker Corporation et al.*

3,450,212, A. G. Sylvester, MULTIPLE TOOTH SUB SOIL PLOW, filed Feb. 8, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72-86 C, *Cline Industries, Inc. v. James Harrison, doing business as Harrison Manufacturing Co.* Stipulation of dismissal with prejudice under Rule 41(a). Approved (Judge Luther Bohanon), Jan. 10, 1973.

3,469,557, D. L. Wollard, CHANNEL STERN POWER BOAT; 3,515,087, R. B. Stuart, PLANING BOAT, filed May 19, 1972, D.C., S.D. Fla. (Miami), Doc. 71-5-C-WM, *Penn Yan Boats, Inc. v. Sea Lark Boats, Inc.; Don's Marine Center, Inc. and Donald L. Wollard*, No. 3,469,557, valid as to claims 18, 19 and 20; defendant lawful owner. Plaintiff, Penn Yan Boats, Inc. has infringed, June 6, 1972.

3,508,091, R. J. Kavanaugh, DOUBLE CLAW TOOTH STEATOR SYNCHRONOUS AND STEPPING MOTOR WITH INDICATOR, filed May 22, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1274, *North American Philips Corp. v. Molon Motor & Oil Corp.* On motion of plaintiff order complaint dismissed pursuant to Rule 41(a), Aug. 2, 1972.

3,513,668, M. Mintz, TUBULAR KNIT FABRIC, filed Apr. 24, 1972, D.C. (District of Columbia), Doc. 791-72, *Ripple Twist Mills, Inc. v. Industrial Knitting Corporation*, Same, filed July 10, 1972, D.C., E.D. Pa. (Philadelphia), Doc. 72-1337, *Ripple Twist Mills Inc. v. Industrial Knitting Corp.*

3,515,087. (See 3,469,557.)

3,538,848, W. P. Barbour, LATCH MEANS FOR A TRAVELING ROLLER PLATEN ON A SWINGABLE CARRIAGE; D. 217,398, same, IMPRINTER, filed Feb. 1, 1973, D.C. Del.

(Wilmington), Doc. 4572, *Control Data Corporation v. Farrington Business Machines Corporation*.

3,540,956. (See 3,082,292.)

3,551,581, D. J. Goodman, WATER COOLED ELECTRIC CABLE, filed Sept. 28, 1971, D.C., E.D. Mich. (Detroit), Doc. 37167, *Sargent Industries of Michigan, Inc. v. Nu-Core, Inc.* Final consent judgment for permanent injunction signed by the Hon. Ralph M. Freeman, Aug. 30, 1972.

3,562,887. (See 3,411,198.)

3,563,088, L. R. Sperberg, NON-DESTRUCTIVE METHOD OF DETERMINING TIRE LIFE, filed Oct. 5, 1972, D.C., N.D. Ohio (Cleveland), Doc. C-72-1067, *Laurence R. Sperberg v. Firestone Tire & Rubber Co. et al.*

3,570,790, Christoffel and Phillips, METHOD OF MAKING A KITE AND KITE STRUCTURE, filed July 6, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c1650, *Hi-Flier Manufacturing Co. v. Gayla Industries, Inc.*

3,625,512, Latham and Brefka, EXTRUDED RACKET HAVING TWO SEAMLESS HOLLOW TUBES FORMED WITH AN INTERCONNECTING WEB, filed Nov. 1, 1972, D.C. Mass. (Boston), Doc. C.A. 72-3344-T, *Paul Sullivan Sports, Inc. v. A. G. Spalding & Bros., Inc. and Questor Corporation*.

3,662,182, R. Sarkisian, POSTER DISPLAY DEVICE, filed Nov. 13, 1972, D.C., M.D. Pa. (Scranton), Doc. 72-572, *Robert Sarkisian v. Thomas Display Holders, Inc.*

3,684,084, J. C. Kanzelberger, CONTAINER, filed Sept. 20, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2334, *Contemporary, Inc. v. Ronald T. Jedlinski, doing business as Roman's Religious Goods and Roman's Art & Goods*.

3,698,475, E. G. Beck, Jr., FLAT SHEET OF METAL HAVING AN ELONGATED MEMBER SECURED THERETO, filed Nov. 3, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2783, *Airtex Corp. v. Lumbermens Mutual Casualty Co.*

D. 217,398. (See 3,538,848.)

## Certificates of Correction for the Week of July 31, 1973

P.P. 3,310	3,670,209	3,693,861	3,703,837	3,710,379	3,714,297	3,717,783	3,721,004
D. 225,994	3,670,769	3,693,961	3,703,950	3,710,439	3,714,479	3,717,853	3,721,155
3,352,131	3,672,260	3,694,395	3,704,152	3,710,715	3,714,537	3,718,005	3,721,246
3,458,719	3,672,766	3,694,472	3,704,391	3,710,962	3,714,545	3,718,023	3,721,301
3,543,486	3,673,138	3,694,686	3,704,798	3,710,980	3,714,637	3,718,066	3,721,474
3,553,537	3,674,680	3,694,709	3,704,959	3,710,982	3,714,804	3,718,101	3,721,601
3,581,706	3,674,768	3,695,247	3,705,030	3,711,186	3,714,826	3,718,238	3,721,629
3,593,535	3,676,076	3,695,835	3,705,187	3,711,231	3,714,878	3,718,268	3,721,701
3,594,424	3,677,813	3,695,911	3,705,242	3,711,257	3,714,885	3,718,332	3,721,754
3,598,601	3,681,040	3,696,038	3,705,297	3,711,382	3,714,890	3,718,407	3,721,847
3,603,495	3,681,041	3,696,170	3,705,597	3,711,390	3,714,954	3,718,452	3,721,904
3,609,393	3,681,368	3,696,176	3,705,948	3,711,412	3,715,036	3,718,479	3,721,961
3,624,101	3,681,432	3,696,385	3,706,241	3,711,522	3,715,165	3,718,500	3,721,964
3,625,062	3,682,649	3,696,928	3,706,465	3,711,526	3,715,221	3,718,615	3,722,163
3,628,721	3,682,650	3,696,975	3,706,554	3,711,536	3,715,390	3,718,615	3,722,178
3,631,033	3,682,926	3,697,392	3,706,672	3,711,587	3,715,530	3,718,637	3,722,647
3,631,479	3,683,008	3,697,699	3,706,893	3,711,589	3,715,576	3,718,686	3,722,713
3,632,814	3,683,015	3,698,041	3,707,050	3,711,594	3,715,602	3,718,701	3,722,787
3,637,582	3,683,028	3,698,371	3,707,071	3,711,642	3,715,612	3,718,738	3,722,936
3,637,767	3,683,038	3,698,629	3,707,191	3,711,852	3,715,676	3,718,743	3,722,959
3,639,200	3,683,088	3,699,139	3,707,388	3,712,084	3,715,923	3,719,160	3,722,994
3,639,852	3,684,429	3,699,207	3,707,537	3,712,101	3,715,980	3,719,169	3,723,029
3,639,867	3,684,760	3,699,550	3,707,583	3,712,165	3,716,031	3,719,194	3,723,083
3,643,441	3,685,249	3,699,897	3,707,636	3,712,462	3,716,047	3,719,413	3,723,168
3,647,806	3,686,183	3,700,569	3,707,774	3,712,476	3,716,053	3,719,526	3,723,185
3,648,117	3,686,236	3,700,658	3,708,221	3,712,543	3,716,062	3,719,566	3,723,188
3,650,945	3,686,246	3,700,659	3,708,304	3,712,943	3,716,107	3,719,618	3,723,197
3,652,604	3,686,312	3,700,666	3,708,364	3,713,001	3,716,208	3,719,810	3,723,217
3,654,442	3,686,356	3,700,724	3,708,423	3,713,005	3,716,307	3,720,048	3,723,263
3,656,321	3,686,518	3,700,779	3,708,499	3,713,042	3,716,328	3,720,068	3,723,304
3,657,223	3,686,750	3,701,113	3,708,504	3,713,213	3,716,373	3,720,114	3,723,330
3,657,539	3,687,189	3,701,142	3,708,522	3,713,347	3,716,522	3,720,152	3,723,359
3,658,785	3,687,967	3,701,161	3,708,575	3,713,348	3,716,572	3,720,285	3,723,497
3,658,918	3,688,657	3,701,405	3,708,828	3,713,352	3,716,580	3,720,285	3,723,501
3,659,650	3,688,811	3,701,666	3,709,035	3,713,386	3,716,639	3,720,435	3,723,567
3,660,979	3,689,164	3,701,783	3,709,476	3,713,579	3,716,731	3,720,507	3,723,969
3,661,483	3,689,284	3,701,915	3,709,477	3,713,852	3,716,771	3,720,536	3,724,118
3,662,073	3,689,619	3,701,945	3,709,557	3,713,853	3,716,773	3,720,609	3,724,653
3,663,250	3,689,974	3,702,364	3,709,639	3,713,863	3,716,864	3,720,614	3,724,790
3,663,468	3,690,303	3,702,460	3,709,706	3,713,968	3,717,355	3,720,625	3,725,182
3,663,584	3,690,832	3,702,471	3,709,799	3,714,054	3,717,358	3,720,643	
3,663,759	3,692,840	3,702,747	3,709,805	3,714,095	3,717,434	3,720,654	
3,665,796	3,692,859	3,702,749	3,709,894	3,714,127	3,717,436	3,720,671	
3,666,474	3,692,986	3,702,766	3,709,969	3,714,132	3,717,515	3,720,682	
3,669,503	3,693,064	3,702,997	3,710,039	3,714,141	3,717,544	3,720,705	
3,669,961	3,693,338	3,703,058	3,710,270	3,714,165	3,717,610	3,720,754	
3,669,965	3,693,485	3,703,134	3,710,376	3,714,245	3,717,612	3,720,841	
						3,720,912	

## National Technical Information Service

## GOVERNMENT-OWNED INVENTIONS

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The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

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DOUGLAS J. CAMPION,  
Patent Program Coordinator,  
National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION  
Assistant General Counsel for Patents,  
Washington, D.C. 20545

Patent 3,678,512. Telemetering System. Filed Oct. 21, 1970. Patented July 18, 1972. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR  
Branch of Patents, 18th and C Streets NW.,  
Washington, D.C. 20240

Patent application 350,444. Determination of Sulfate Using Ferric Ion-Selective Electrode. Filed Apr. 12, 1973. PC \$3/MF \$1.45.  
Patent application 345,932. Production of Methane From Refuse and Sewage Sludge. Filed Mar. 29, 1973. PC \$3/MF \$1.45.

[FR Doc. 73-14510; Filed 7-17-73; 8:45 am]

## Certificates of Correction for the Week of August 7, 1973

Re. 27,543	3,666,844	3,686,339	3,695,364	3,706,678	3,712,063	3,716,260	3,721,853
Re. 27,563	3,668,192	3,686,361	3,696,092	3,707,194	3,712,064	3,716,506	3,721,888
D. 223,875	3,668,423	3,686,872	3,696,167	3,707,196	3,712,207	3,716,703	3,721,969
D. 226,137	3,668,997	3,687,008	3,696,346	3,707,424	3,712,457	3,716,817	3,722,051
D. 226,445	3,669,000	3,687,720	3,696,943	3,707,475	3,712,592	3,716,858	3,722,161
3,380,974	3,670,179	3,687,725	3,697,318	3,707,679	3,712,649	3,716,887	3,722,369
3,411,383	3,671,144	3,687,897	3,697,502	3,707,901	3,712,697	3,717,048	3,722,563
3,491,190	3,671,575	3,687,952	3,697,529	3,707,962	3,712,795	3,717,086	3,722,758
3,537,823	3,673,151	3,687,994	3,698,249	3,707,990	3,712,843	3,717,080	3,722,886
3,549,607	3,673,981	3,687,998	3,698,843	3,708,219	3,712,879	3,717,307	3,723,257
3,561,985	3,674,767	3,688,063	3,699,082	3,708,377	3,713,288	3,717,562	3,723,406
3,563,773	3,675,077	3,688,590	3,699,102	3,708,458	3,713,314	3,717,587	3,723,430
3,567,699	3,676,384	3,688,798	3,699,156	3,708,497	3,713,497	3,717,650	3,723,551
3,579,599	3,678,123	3,688,958	3,700,104	3,708,517	3,713,593	3,717,786	3,723,729
3,587,801	3,678,677	3,689,697	3,700,826	3,708,641	3,713,809	3,717,828	3,723,751
3,592,808	3,678,752	3,689,700	3,700,974	3,708,644	3,713,883	3,717,848	3,723,838
3,595,630	3,678,975	3,689,726	3,701,337	3,708,749	3,714,030	3,718,543	3,723,959
3,602,591	3,679,248	3,689,750	3,701,408	3,709,133	3,714,178	3,718,596	3,724,285
3,604,456	3,679,427	3,689,752	3,702,085	3,709,273	3,714,184	3,718,696	3,724,442
3,609,162	3,680,160	3,689,938	3,702,322	3,709,485	3,714,243	3,718,723	3,724,576
3,615,432	3,681,361	3,690,090	3,702,978	3,709,814	3,714,454	3,719,271	3,724,618
3,616,254	3,681,369	3,690,227	3,703,137	3,709,891	3,714,455	3,719,989	3,724,886
3,618,259	3,682,935	3,690,289	3,703,534	3,709,945	3,714,510	3,720,031	3,725,271
3,619,359	3,682,997	3,690,454	3,704,231	3,710,135	3,714,518	3,720,233	3,725,292
3,624,123	3,683,016	3,690,563	3,704,245	3,710,238	3,714,558	3,720,300	3,725,369
3,625,728	3,683,179	3,691,159	3,704,280	3,710,312	3,714,579	3,720,601	3,725,792
3,632,582	3,683,659	3,691,273	3,704,596	3,711,028	3,714,610	3,720,610	3,725,797
3,636,428	3,684,656	3,692,526	3,704,935	3,711,115	3,714,617	3,720,686	3,725,983
3,636,520	3,684,872	3,692,532	3,705,003	3,711,254	3,714,778	3,720,696	3,726,086
3,640,112	3,685,033	3,692,634	3,705,037	3,711,342	3,714,868	3,721,000	3,726,638
3,641,551	3,685,093	3,692,882	3,705,409	3,711,408	3,715,228	3,721,060	3,727,003
3,651,082	3,685,129	3,693,062	3,705,445	3,711,573	3,715,477	3,721,062	3,727,003
3,655,398	3,685,224	3,693,339	3,705,544	3,711,580	3,715,486	3,721,220	3,729,653
3,655,581	3,685,258	3,693,491	3,705,649	3,711,582	3,715,542	3,721,347	
3,655,737	3,685,420	3,693,867	3,705,758	3,711,691	3,715,582	3,721,470	
3,656,296	3,685,499	3,694,454	3,705,794	3,711,720	3,715,633	3,721,509	
3,663,213	3,685,546	3,694,768	3,705,913	3,711,743	3,715,764	3,721,548	
3,665,074	3,685,580	3,695,019	3,706,037	3,711,748	3,715,867	3,721,574	
3,665,598	3,686,173	3,695,052	3,706,592	3,711,908	3,716,059	3,721,582	
3,666,775	3,686,325	3,695,178	3,706,634	3,711,971	3,716,451		



# PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner  
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JULY 21, 1973

## PATENT EXAMINING GROUPS

Actual  
Filing Date  
of Oldest  
New Case  
Awaiting  
Action

### CHEMICAL EXAMINING GROUPS

GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director..... 5-30-72  
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro  
Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and  
Igniting Devices.  
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director..... 8-01-72  
Heterocyclics; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids;  
Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.  
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director..... 7-03-72  
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins  
With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding;  
Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.  
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director... 5-24-72  
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical  
Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.  
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director... 3-06-72  
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas;  
Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation;  
Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Pro-  
cesses.

### ELECTRICAL EXAMINING GROUPS

INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director..... 12-13-72  
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches;  
Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.  
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director..... 11-02-72  
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-  
Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.  
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director..... 10-02-72  
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and  
Related Arts.  
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director... 2-23-72  
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical  
Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.  
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director..... 11-13-72  
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Net-  
works; Optics; Radiant Energy; Measuring.  
DESIGNS, GROUP 290—R. L. CAMPBELL, Director..... 11-17-71  
Industrial Arts; Household, Personal and Fine Arts.

### MECHANICAL EXAMINING GROUPS

HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director..... 10-02-72  
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling;  
Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics;  
Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.  
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director..... 7-03-72  
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire  
Working; Metal Fusion—Bonding; Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and  
Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.  
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director..... 10-16-72  
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating;  
Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery;  
Information Dissemination.  
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director..... 9-15-72  
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and  
Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gear-  
ing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.  
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director..... 8-14-72  
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators;  
Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations;  
Coating; Textiles; Apparel and Shoes; Sewing Machines.

Expiration of patents: The patents within the range of numbers indicated below expire during August 1973, except those which may have  
expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public  
Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of  
35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for  
the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,757,378 to 2,761,141, inclusive  
Plant Patents..... Numbers 1,505 to 1,508, inclusive

# REISSUES

AUGUST 7, 1973

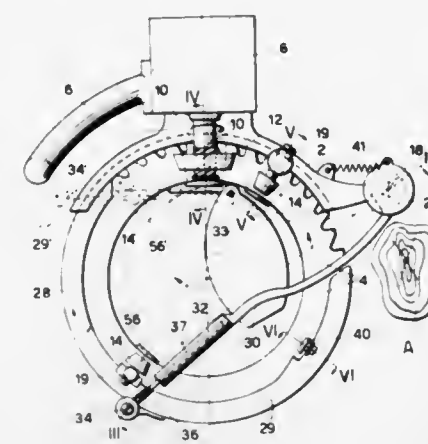
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter  
printed in italics indicates additions made by reissue.

## 27,716 ANNULAR SAW WITH CIRCULAR SAFETY GUARD

Ermanno Santilli, Via Virgilio Ramperti 19, Rome, Italy  
Original No. 3,438,410, dated Apr. 15, 1969, Ser. No.  
567,620, July 25, 1966. Application for reissue Mar.  
23, 1971, Ser. No. 127,158

Int. Cl. B27b 5/14, 5/30  
U.S. Cl. 30—389

25 Claims

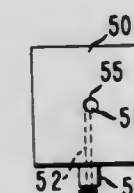


A circular safety guard for an annular saw, said saw  
being driven by conical rollers about an imaginary axis.  
A portion of the tooth periphery of the saw blade is  
permanently concealed within the saw casing, and nearly  
all of the rest of the periphery is at first concealed within  
the guard, a portion of said guard being slidably retract-  
able within the casing to expose the blade teeth as the  
workpiece advances towards the center of the saw, so as  
to expose just enough of the tooth periphery to accom-  
plish the desired cutting.

27,717  
FLUID JET PROCESS FOR TWISTING YARN  
Alvin Leonard Breen, West Chester, Pa., and Martin  
Victor Sussman, Istanbul, Turkey, by E. I. du Pont de  
Nemours and Company, Wilmington, Del., assignee  
Original No. 3,279,164, dated Oct. 18, 1966, Ser. No.  
810,671, May 4, 1959. Application for reissue Aug.  
19, 1971, Ser. No. 114,899

Int. Cl. D02g 1/02, 1/16  
U.S. Cl. 57—157 TS

17 Claims



1: A process for twisting a filamentary strand which  
comprises continuously directing a jet of compressible  
fluid at at least 1/2 sonic velocity against the periphery of

successive substantially straight portions of the filamen-  
tary strand constrained so that the strand, under the  
action of the fluid jet, moves in a rotary twisting motion,  
twisting the strand at a rate equivalent to at least 200,000  
turns per minute.

## 27,718 PROCESS FOR PREPARING UNSATURATED NITRILES

Kurt Sennewald and Wilhelm Vogt, Knapsack, near Co-  
logne, Joachim Kandler, Bruhl, near Cologne, Rolf  
Sommerfeld, Stetten, Remstal, and Günter Sorbe,  
Bruhl, near Cologne, Germany, by Knapsack-Griesheim  
Aktiengesellschaft, Knapsack, near Cologne, Germany,  
assignee

Original No. 3,226,422, dated Dec. 28, 1965, Ser. No.  
361,931, Apr. 15, 1964, which is a continuation-in-part  
of abandoned application Ser. No. 155,309, Nov. 28,  
1961. Application for reissue Aug. 1, 1972, Ser. No.  
276,968

Claims priority, application Germany, Dec. 7, 1960,  
K 42,344

Int. Cl. C07c 121/02

U.S. Cl. 260—465.3

5 Claims

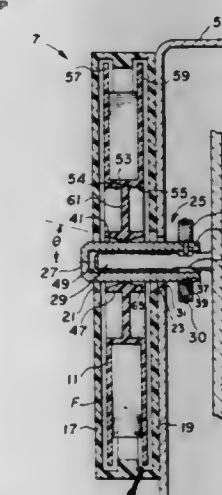
A process for preparing unsaturated nitriles by reacting  
olefins with oxygen and ammonia in the presence of a  
catalyst consisting of  $Fe_2O_3$ ,  $Bi_2O_3$ ,  $MoO_3$  and  $P_2O_5$ , with  
an atomic proportion of the oxide forming elements of  
 $Fe_{1.0}Bi_{1.0}Mo_{1.3}P_{0.16}$ .

## 27,719 REEL FOR CARTRIDGE-LOADING MOTION PICTURE PROJECTORS

Edward S. McKee, Rochester, N.Y., assignor to  
Eastman Kodak Company, Rochester, N.Y.  
Original No. 3,486,710, dated Dec. 30, 1969, Ser. No.  
731,463, May 23, 1968. Application for reissue Feb. 8,  
1971, Ser. No. 113,526

Int. Cl. B65h 75/14  
U.S. Cl. 242—71.8

3 Claims



A reel adapted to be contained in a cartridge and to be  
mounted on a spindle of a motion picture projector com-  
prises a hub having a bore tapered inwardly from the  
ends of the hub towards its center, such that the reel  
can orient itself within the cartridge obliquely with re-  
spect to the projector spindle.



27,720

## SIGNAL STORAGE DEVICE

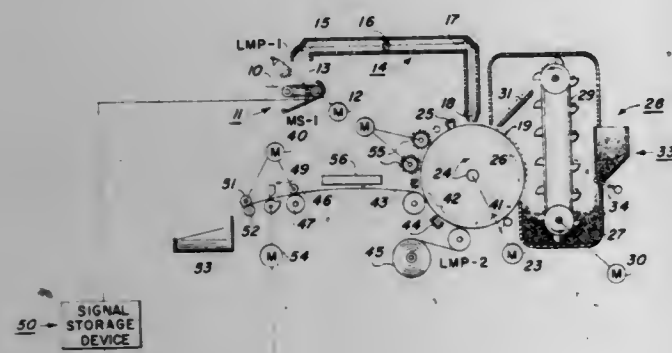
Richard C. Hansen, Rochester, and Andrew P. Yesul, Jr., Penfield, N.Y., by The Xerox Corporation, Stamford, Conn., assignee

Original No. 3,416,861, dated Dec. 17, 1968, Ser. No. 566,333, July 19, 1966. Application for reissue Mar. 27, 1972, Ser. No. 238,701

Int. Cl. G03g 15/00

U.S. Cl. 355-13

8 Claims



This invention relates to a device for the mechanical storage of electrical signals adapted for time delayed switching of utilization apparatus. More specifically, the invention relates to a signal storage device for controlling the operation of a web cutter in a document recording apparatus to effect web cutting in spaced relation to recordings thereon from stored signals generated previously by the original documents of which the recordings were formed.

27,721

## METHOD AND APPARATUS FOR TREATING WASTE-CONTAINING LIQUOR

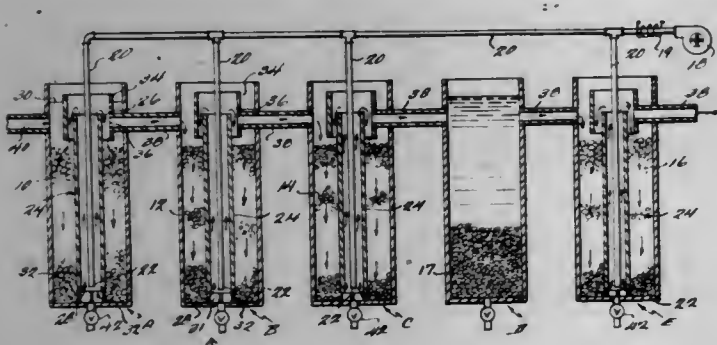
John W. Klock, Tempe, Ariz., assignor to Research Corporation, New York, N.Y.

Original No. 3,563,888, dated Feb. 16, 1971, Ser. No. 754,341, Aug. 21, 1968. Application for reissue July 23, 1971, Ser. No. 165,755

Int. Cl. C02c 1/04

U.S. Cl. 210-14

18 Claims



Waste-containing liquor is biochemically treated by continuously recirculating it through a sand-gravel filter media which is submerged in the liquor while continuously withdrawing a small portion of said liquor. A pressurized column of oxygen-containing fluid entrains and lifts the liquid waste through an unobstructed tube and recirculates it downwardly through the filter media. During the lifting process oxygen from the fluid permeates

the waste in order to ensure active aerobic metabolism. The treated effluent is directed to a storage area, or preferably it is conveyed to another tank for further treatment.

27,722

## CROSSLINKING OF UNSATURATED POLYESTERS WITH N-3-OXOHYDROCARBON-SUBSTITUTED ACRYLAMIDES

Thomas C. Jennings, Willowick, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Original No. 3,616,370, dated Oct. 26, 1971, Ser. No. 5,105, Jan. 22, 1970, which is a continuation-in-part of abandoned applications Ser. No. 801,794, Feb. 24, 1969, and Ser. No. 877,041, Nov. 14, 1969. Application for reissue Jan. 24, 1972, Ser. No. 220,500

Int. Cl. C08f 21/00, 21/02

U.S. Cl. 204-159.15

24 Claims

N-3-oxohydrocarbon-substituted acrylamides, especially diacetone acrylamide, are used as cross-linking monomers for unsaturated polyesters, either alone or in combination with known cross-linking monomers such as styrene and diallyl phthalate. The curable compositions thus formed may be used in the preparation of nonblocking "prepregs" which, upon stacking and molding, form laminates with excellent properties. They are also suitable for forming physically or chemically thickened premixes. In the chemically thickened ones, which employ a metal salt or hydroxide as a reactive thickener, an acidic reagent (usually a polymerizable acid such as methacrylic acid) may be used to accelerate B-stage resin formation.

27,723

## RADIATION SENSITIVE POSITION ENCODER USING CODED DISCS

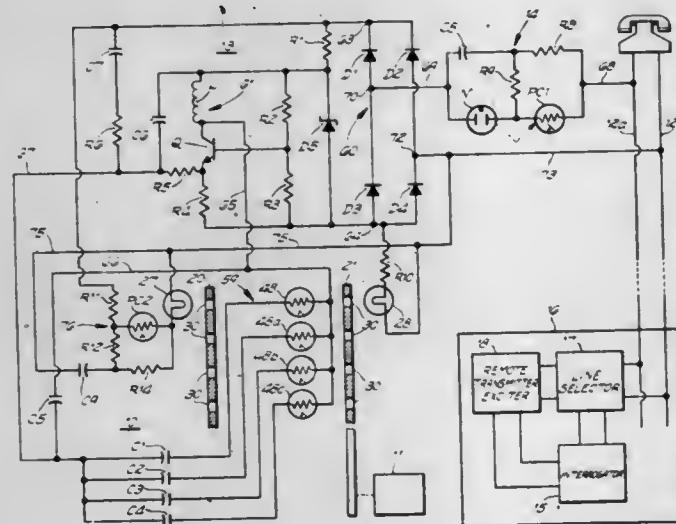
Victor E. Stewart, Jr., South Milwaukee, Wis., assignor to McGraw-Edison Company, Milwaukee, Wis.

Original No. 3,491,244, dated Jan. 20, 1970, Ser. No. 691,020, Dec. 15, 1967. Application for reissue June 17, 1971, Ser. No. 154,231

Int. Cl. G01n 21/30; H01j 39/12

U.S. Cl. 250-219 DD

13 Claims



A position encoder for use in an automatic remote meter reading system and including a pair of coded discs disposed in a parallel relation and each having an array of position coding elements. A plurality of photocells are disposed between the discs and are arranged to be selectively energized from their opposite sides by individual illuminating means associated with each disc. The presence or absence of illumination on each photocell

27,725

## SELF-GRIPPING FASTENING DEVICE

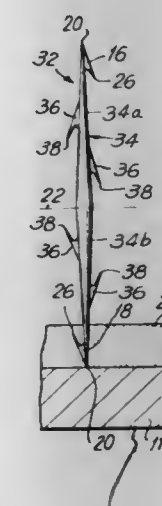
George C. Brumlik, 154 Upper Mountain Ave., Montclair, N.J. 07042

Original No. 3,494,006, dated Feb. 10, 1970, Ser. No. 697,527, Jan. 12, 1968. Application for reissue Feb. 8, 1972, Ser. No. 224,630

Int. Cl. A44b 9/00, 19/00

U.S. Cl. 24-204

6 Claims



A self-gripping fastening device for connecting together a pair of articles, only one of which is required to be provided with the device. The device comprises a plurality of barbed fastening elements, each being secured at one end to one surface of one of the articles to be gripped. When the fastening device is pressed against the opposing surface of the other article to be gripped, the free ends of the fastening elements penetrate and lodge in the other article to thereby effect adhesion between the pair of articles.

27,726  
WITHDRAWN

27,724

## POWER DRILL PIPE AND DRILL COLLAR SPIDER

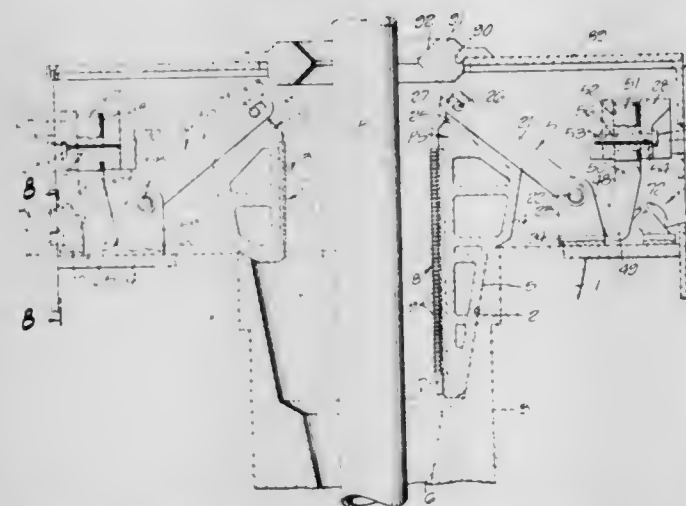
Noal E. Johnson, Humble, Tex., assignor to Byron Jackson Inc., Long Beach, Calif.

Original No. 3,571,865, dated Mar. 23, 1971, Ser. No. 863,777, Oct. 6, 1969. Application for reissue June 20, 1972, Ser. No. 264,697

Int. Cl. E21b 3/04

U.S. Cl. 24-263 DG

14 Claims



Power drill pipe and drill collar spider apparatus in which drill pipe slip elements and drill collar slip elements are selectively connectable to an actuator ring, the actuator ring being movable between positions at which either the drill pipe slip elements or the drill collar slip elements are disposed in the slip bowl or are retracted from the slip bowl, while the other of the slip elements are latched in retracted positions.

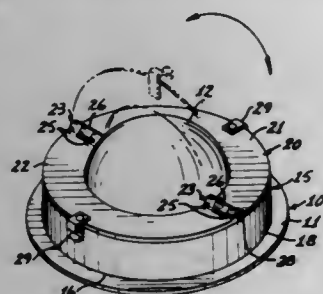


# PATENTS

GRANTED AUGUST 7, 1973

## GENERAL AND MECHANICAL

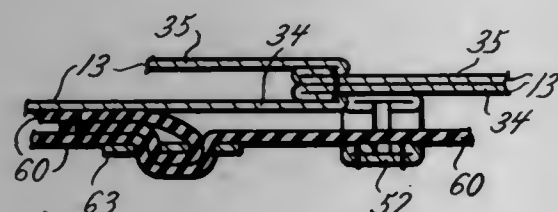
**3,750,192**  
**HAT-MOUNTED CONTAINER FOR ACCESSORIES**  
John I. Beresic, 2900 W. Lincoln, Phoenix, Ariz.  
Filed Aug. 6, 1971, Ser. No. 169,763  
Int. Cl. A42b 1/20; A42c 5/00  
U.S. Cl. 2—185 R



A hat-mounted container for small accessories usable in sports and specialized types of work wherein the container fits around the crown of the hat.

11 Claims

**3,750,193**  
**PANTS**  
Ann V. Cooke, St. Louis, Mo., assignor to The Grove Company, St. Louis, Mo.  
Filed Sept. 29, 1971, Ser. No. 184,793  
Int. Cl. A41d 1/06  
U.S. Cl. 2—237



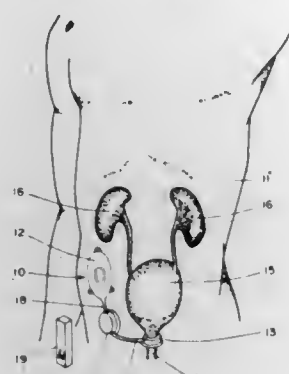
A pant garment primarily for women having a top section positioned around the hips between the waist and place of maximum hip measurement, the top section having a tunnel across the back extending from one side of the pant to the other, a plurality of belt loops spaced across its front, and openings at its sides to the tunnel. A belt holds the top section around the hips and is threaded through the belt loops and tunnel. The top section is tapered and the belt elastic to conform to the curvature of the hips and the lower back of the body.

**3,750,194**  
**APPARATUS AND METHOD FOR REVERSIBLY CLOSING A NATURAL OR IMPLANTED BODY PASSAGE**  
George D. Summers, Bethesda, Md., assignor to Fairchild Industries, Inc., Germantown, Md.  
Filed Mar. 16, 1971, Ser. No. 124,718  
Int. Cl. A61f 1/00, 1/24; A61b 17/00  
U.S. Cl. 3—1

9 Claims

An apparatus and method for reversibly closing a natural or implanted body passage which utilize an implantable fluid reservoir and a distensible member that is adapted to be connected to the natural or implanted body passage. An implanta-

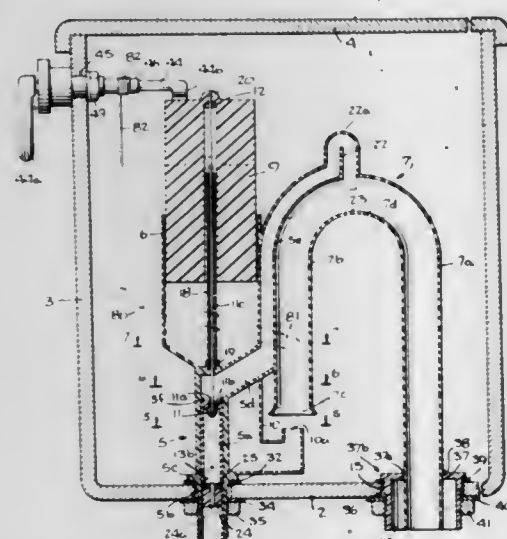
ble pump is connected to the fluid reservoir and the distensible member for pumping fluid from the reservoir to the disten-



sible member to distend the distensible member and cause the reversible closing of the natural or implanted body passage.

**3,750,195**  
**FLUSHING DEVICE**  
Vernon D. Roosa, 184 Wood Pond Rd., West Hartford, Conn.  
Division of Ser. No. 53,170, July 8, 1970, Pat. No. 3,644,940.  
This application Nov. 11, 1971, Ser. No. 197,812  
Int. Cl. E03d 1/04, 1/06  
U.S. Cl. 4—45

5 Claims



A flushing device for toilets having a float directly connected to the movable part of an inlet valve to form a unitary moving element. A siphon empties the flush tank and becomes inactive until a full tank is flushed again. When the float, which is slidably mounted in a chamber, is forced down for flushing, it forces water from the float chamber into the siphon either alone or with water from the inlet valve, to start a siphoning action to empty the flush tank. At the same time the float opens the inlet valve to supply additional water to start the siphon and to keep the valve open until the flush tank is refilled at which time the float has been raised to its normal position. Provisions are made for preventing a reverse flow from the tank into the inlet pipe during failure of the water supply and for filling the toilet bowl to the desired level at the end of the flushing operation. Provision is also made for conserving water by flushing a predetermined quantity of water for solids and considerably less water for liquids and by providing means for regulating the amount of water to be flushed by the flushing unit.

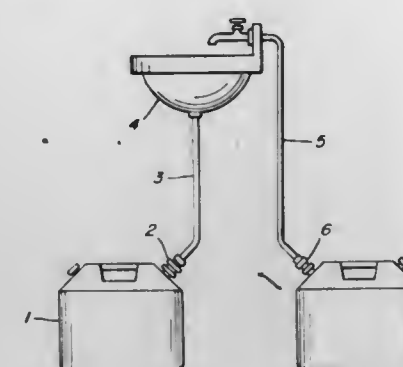
AUGUST 7, 1973

GENERAL AND MECHANICAL

11

**3,750,196**  
**WASTE WATER HOLDER SYSTEM**  
Donald William Halferty, Munster, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.  
Filed Dec. 23, 1971, Ser. No. 211,437  
Int. Cl. A47k 1/04  
U.S. Cl. 4—166

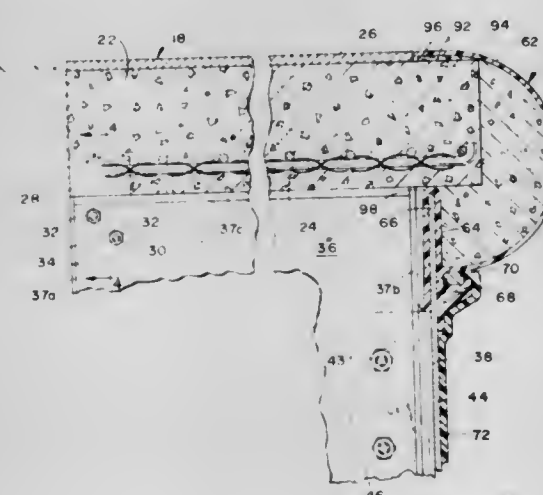
9 Claims



The invention concerns a portable waste water disposal system which has a plastic container as a reservoir for the waste water. A liquid and vapor tight seal to the source of waste water is provided for the container. The system may be used in campers or other recreational vehicles.

**3,750,197**  
**SWIMMING POOL AND DECK**  
Donald H. Weir, and Donald H. Witte, both of York, Pa., assignors to Fox Pools, Inc., York, Pa.  
Filed Apr. 6, 1971, Ser. No. 131,638  
Int. Cl. E04b 3/16, 3/18  
U.S. Cl. 4—172.19

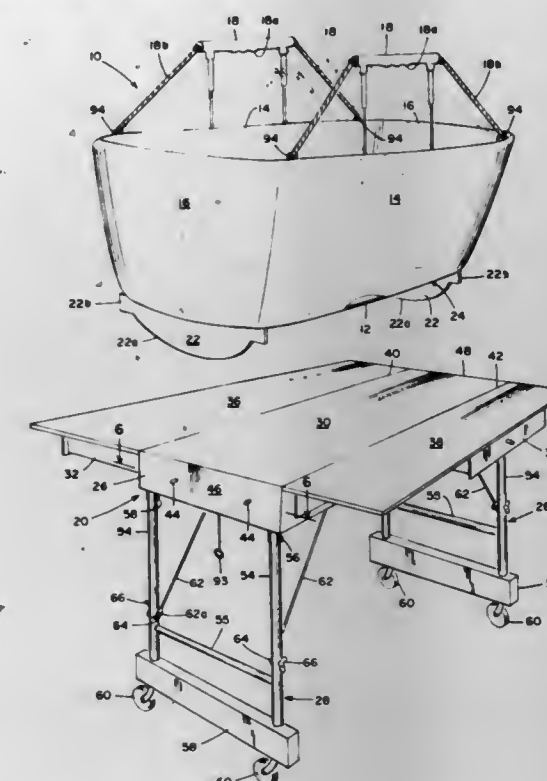
24 Claims



A swimming pool comprising a sidewall formed from connected sheets extending substantially vertically, a continuous deck extending around the pool and comprising a series of modular panels connected together at the ends thereof to provide rigidity and integrated with said side wall by coping means which connect the edges of said deck panels nearest the pool to the upper edges of said sidewall panels to provide an articulated rigid structure composed of components which can be fabricated in a factory, packaged and shipped to an installation site for erection. Several different types of copings are used respectively for side portions of the pool which are straight and side portions of a free form, i.e., curved, nature. Simple perpendicular supporting members support the deck panels vertically and the sidewalls horizontally.

**3,750,198**  
**CRIB AND TABLE COMBINATION**  
Samuel E. Brown, 201 N. Sparks, Belton, Tex.  
Filed June 15, 1972, Ser. No. 263,283  
Int. Cl. A47c 27/08, 13/38  
U.S. Cl. 5—2 R

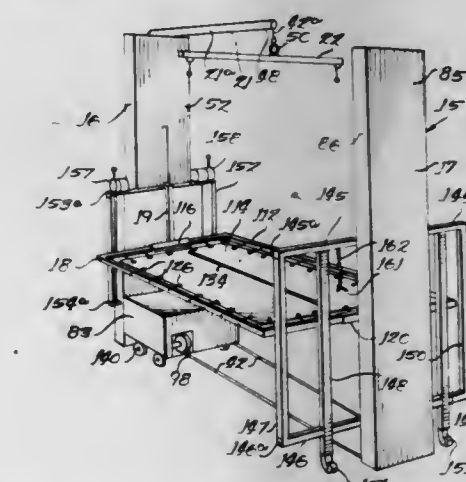
9 Claims



A baby crib and infant table combination is provided whereby the crib is adapted to seat upon the table top and is releasably attached to the table by retractable locking lugs. In one embodiment of the invention, the table carries foldout table top extension sections and folding legs which are pivotable from a first locked downward position to a second locked folded position wherein they are substantially parallel to the table top. Handle assemblies are provided to lift and suspend the crib and the table when attached thereto.

**3,750,199**  
**INVALID LIFT APPARATUS**  
Joseph W. Spivey, Lake Wales, Fla., assignor to Mercy-Lift, Inc., Lake Wales, Fla.  
Filed July 16, 1971, Ser. No. 163,165  
Int. Cl. A61g 7/10, 1/02  
U.S. Cl. 5—63

5 Claims



An invalid lift apparatus for raising an invalid or hospital patient from bed. The apparatus includes a generally horizontally extending rectangular frame which may be raised and lowered by head and foot scopes which are supported by head and foot frames. Each of the scopes includes a vertically extending tubular support which is telescopically mounted on a



tubular member within the frame and which supports one end of the rectangular frame. A pair of stationary pulleys are rotatably mounted within each of the head and foot frames, and a movable pulley is rotatably mounted below the stationary pulleys for movement with the tubular member. A cable is reaved over the three pulleys of each frame and connected to a winch, and the movable pulleys can be raised or lowered by winding or unwinding the cable on the winch. A sheet is secured to the rectangular frame for supporting the patient, and the sheet may be provided with an elongated central opening to permit the sheet to be passed around the patient. A boom is mounted on the head frame for lifting the patient to a sitting position or completely out of bed, and the cable extends through the boom and is connected to a lift bar. The lift bar can be raised or lowered by the winch by securing the head and foot scopes against movement.

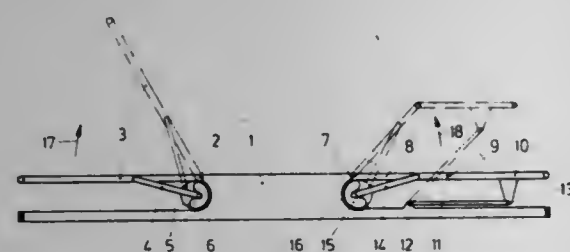
### 3,750,200 BED SETTING DRIVE WITH LOW-PRESSURE HYDRAULIC SYSTEM

Georg Hirmann, Zurich, Switzerland, assignor to Veenendaal & Co. Industriestrasse, Affolten a.A., Switzerland  
Filed Apr. 18, 1972, Ser. No. 245,081  
Claims priority, application Switzerland, Apr. 19, 1971, 5415/71

Int. Cl. A61g 7/10; A47c 3/32

U.S. Cl. 5-66

9 Claims



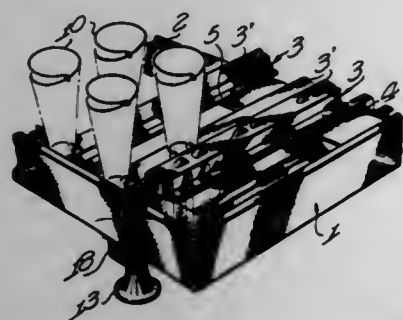
e.g. device for hydraulically setting the position of a bed which includes a large diameter inflatable hose to which is connected a source of low-pressure water, e.g., from the main water supply. Inflation of the hose serves to move an element in contact with the hose surface and this element controls the position of the bed.

### 3,750,201 BOTTOM BED STRUCTURE

Nobuo Usami, 6-5-3 Ikegami, Ohtaku, Tokyo, Japan  
Filed Sept. 8, 1971, Ser. No. 178,733  
Claims priority, application Japan, Sept. 8, 1970, 45/89714; May 25, 1971, 46/41993; Aug. 5, 1971, 46/70006  
Int. Cl. A47c 23/04

U.S. Cl. 5-263

3 Claims



A bottom bed structure includes a rectangular bottom bed frame having supported thereon a plurality of coil springs and a plurality of beam members having pressed out portions forming protruding resilient lip portions. A pair of oppositely positioned lip portions receives the lowest spring coil turn and fixedly secures the coil turn in the spacing formed between the lower surfaces of a pair of oppositely positioned protruding

resilient lip portions and the upper surface of the beam member. The resilient lip portions make frictional contact with the lowest spring coil turn.

### 3,750,202 SLEEPING BAG

Pauli Assar Antero Merikallio, Iso-Robertinkatu 49-31 A 7, Helsinki 12, Finland

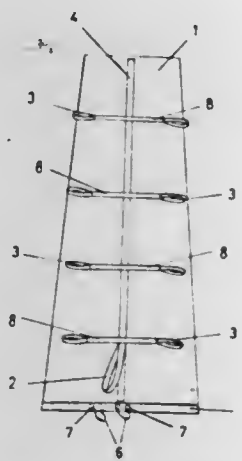
Claims priority, application Finland, Nov. 5, 1969, 3199/69

Filed Oct. 6, 1970, Ser. No. 78,528

Int. Cl. A47g 9/00

U.S. Cl. 5-343

1 Claim



A sleeping bag is made of a fabric consisting of a thin and flexible material impermeable to water, at least one side of the fabric being metallically shiny. The bag can be closed by a draw-band provided at its opening. A strong strip of webbing is attached centrally to an outer surface of the bag and extends in its longitudinal direction. Spaced transverse bands are attached to the strip and to the fabric. Their ends are provided with loops, so that two rows of loops are formed. The loops may be used for carrying the bag.

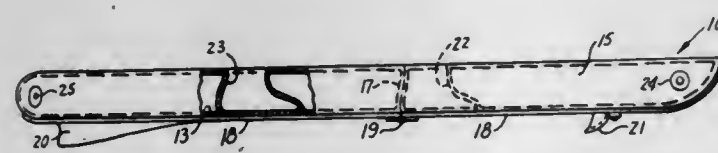
### 3,750,203 INFLATABLE WATER SKI

Alberto P. Ceccato, 6217 Belva Way, North Highlands, Calif.  
Filed Nov. 11, 1971, Ser. No. 197,653

Int. Cl. A63c 15/04

U.S. Cl. 9-310 D

1 Claim



A two-compartment inflatable water ski having a hinged rigid keel secured thereto. The ski has a pair of open top foot receiving compartments for supporting the user and has a depending fin to assist in the steering of the ski. A depending cup at the forward end of the ski assists in using the ski for walking on the water. A pair of ski poles having inflated inverted cup-shaped members on the lower ends are used for steadying the user when using the skis for walking on the water. The two compartments are formed by either a transverse partition or a longitudinal partition with each compartment having a separate inflating valve.

### 3,750,204 BINARY ADJUSTMENT FOR WATER SKIS

William R. Walter, 3247 Geddes Dr., San Diego, Calif.

Filed Oct. 4, 1971, Ser. No. 186,148

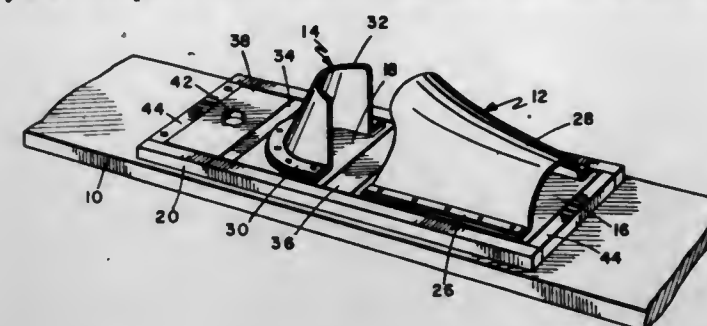
Int. Cl. A63c 15/06

U.S. Cl. 9-310 AA

5 Claims

A water ski binding featuring simplified adjustability of at least the counter element for the heel forwardly and rear-

wardly within a chase defined by a pair of parallel spaced rails which laterally retain a base slide or sole platform portion of the counter element, the same being held in adjusted position by a set of spacer blocks interchangeably inserted in the chase



forwardly and/or rearwardly of the sole platform. The spacer blocks are sufficiently flexible to permit removal and replacement and are dimensioned according to a binary progression. The vamp element of the binding can also be similarly adjusted, if desired.

### 3,750,205 LIFE PRESERVER

Georg Pfeifer, Waldweg 63, Thune, Germany

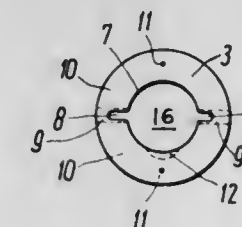
Filed Aug. 23, 1971, Ser. No. 173,814

Claims priority, application Germany, Feb. 24, 1971, P 21 08 666.8

Int. Cl. B63c 9/08

U.S. Cl. 9-345

4 Claims



A buoyancy device, especially for persons learning to swim in the form of a buoyant ring adapted to be placed over the head of the person and engage the chin and nape of the neck. The ring is either inflatable or of a material lighter than water, and has an inner slit to enable the person to put his hand in it.

### 3,750,206 METHODS AND MACHINES FOR ASSEMBLING WASHER MEMBERS WITH ROTARY FASTENER MEMBERS

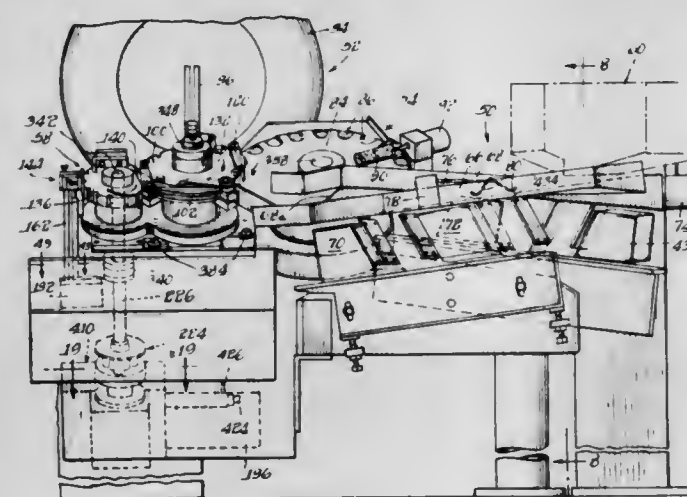
Henry Pomernacki, Northbrook, Ill., assignor to Illinois Tool Work, Inc., Chicago, Ill.

Filed Nov. 12, 1970, Ser. No. 88,942

Int. Cl. B23p 19/08

U.S. Cl. 10-155 A

23 Claims



The present invention relates generally to improvements in methods and machines for assembling washer members with

rotary fastener members. The machine embodiment of the invention disclosed herein includes means for cascading an indiscriminately arranged supply of washer members to a rotary disc for feeding properly oriented washer members along a circular path to an assembly station. Rotary fastener members such as screw blanks are directed from an indiscriminately arranged supply thereof along a different path to said assembly station. The fastener members and washer members are telescopically associated, and directed to means, such as thread rolling dies, for swaging the rotary fastener member to secure the telescopically associated fastener members and washer members against axial separation.

### 3,750,207 CONTAINER-LAST FOR THE CLEANING OF FOOTWEAR

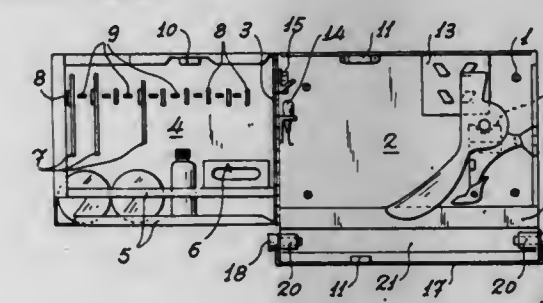
Felipe Urioste Hermida, Pirineos, 21-Madrid-20, Spain  
Filed Mar. 8, 1972, Ser. No. 232,784

Claims priority, application Spain, Mar. 12, 1971, 166905

Int. Cl. A43d 3/00

U.S. Cl. 12-128 H

9 Claims



The present invention relates to a combined container and last specially designed to facilitate the cleaning of footwear. The container consists of a special metal cupboard which is fixed directly to the wall and which is fitted with two front covers; one exterior cover which can rotate on a lower horizontal shaft and which on being opened and situated in its horizontal limiting position is converted into a tray for the collection of dust, and another interior cover which is vertically hinged on one side, and which can move through 180°, thus enabling the user to see its inner face to which there is attached a series of special supports to hang the corresponding applicator and cleaning brushes. On the back wall there is a hanger to hold an articulated last in a position of rest which enables the container to be closed, and an anchor-piece on which the said last is arranged in a position for use, that is to say perpendicular to the bottom of the container.

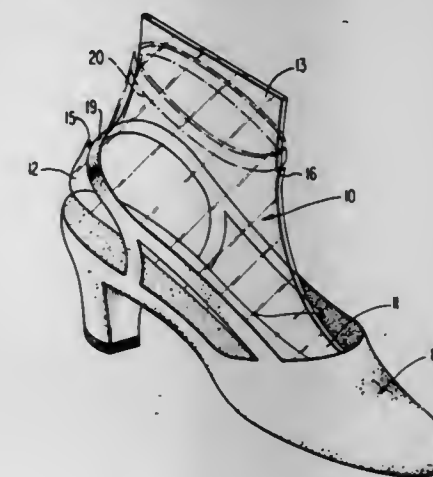
### 3,750,208 DISPLAY FORM FOR FOOTWEAR

William P. Wyatt, 1711 Sturbridge Pl., Crofton, Md.  
Filed Sept. 1, 1971, Ser. No. 176,913

Int. Cl. A43d 5/00

U.S. Cl. 12-115.8

9 Claims



A one-piece resilient sheet material display form is insertable into shoes of various sizes and will remain erect under ten-



sion without the necessity for fastening or anchoring attachments. The flexible straps and lacings of footwear are supported on the form in a practical manner and the form may bear advertising indicia. The form is preferably transparent and formed of plastic. A second embodiment is formed of wire for similar purposes.

3,750,209

**METHOD OF FORMING A SHOE LINING**

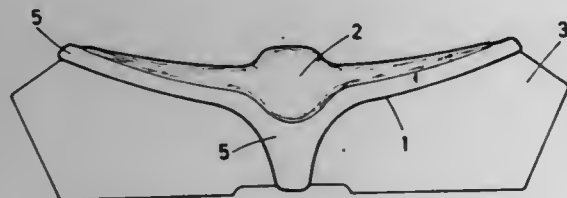
Adolf Dassler, 8522 Herzogenaurach, am Bahnhof, Germany

Filed Mar. 6, 1972, Ser. No. 231,960

Int. Cl. A43d; A43b 19/00

U.S. Cl. 12-146 C

10 Claims



The invention relates to a method of forming a shoe lining. The aim of the invention is to produce a shoe lining which can be connected to the upper and accurately brought into line with the regions of the foot which are to be protected more simply and cheaply than has been possible heretofore. This aim is accomplished by forming a shoe lining comprising providing a web of material including a first layer of weldable foam material and a second dense layer of weldable material overlying the first area, effecting a pressing and heating treatment over a substantial area of the first layer to fuse the foam and make this area dense, while leaving a portion of the first layer untouched to form a cushion.

3,750,210

**APPARATUS FOR THE CONSTRUCTION OF BRIDGES**

John Marles Herbert Barnard, Milford-on-Sea; Derek Ian Knight, and Eric Longbottom, both of Bournemouth, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

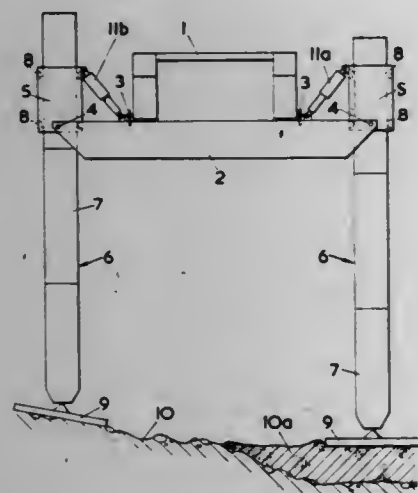
Filed Aug. 4, 1971, Ser. No. 168,965

Claims priority, application Great Britain, Aug. 13, 1970, 39,047/70

Int. Cl. E01d 1/00

U.S. Cl. 14-1

7 Claims



Apparatus for the construction of bridges incorporating piers pivoted to a transverse structure which may be an integral part of a bridge span or a cross-beam on which a span is supported. The piers can pivot in a plane transverse to the bridge and are normally maintained at a predetermined angle to the transverse structure by hydraulic articulators connected

to piers and transverse structure across the angle therebetween. The articulators incorporate a valve actuable when the articulators are subjected to a predetermined load to permit a change of length of the articulator and a consequent variation of the angle between piers and transverse structure and thus to relieve excessive stresses on the bridge structure.

3,750,211

**BEET-CLEANING AND CONVEYING APPARATUS**

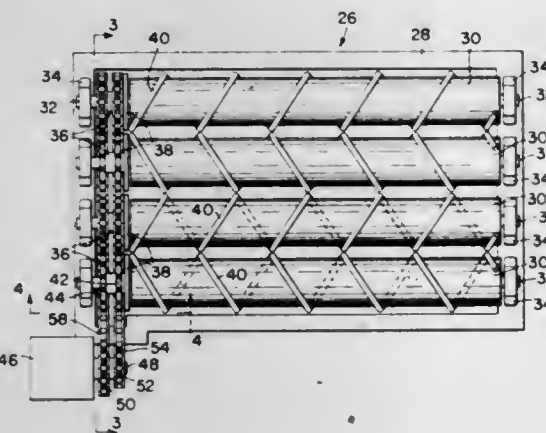
Richard David Zaun, and Howard Fred Clausen, both of Des Moines, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Aug. 16, 1971, Ser. No. 172,126

Int. Cl. A23n 13/00, 15/06; B65g 33/06

U.S. Cl. 15-3.11

12 Claims



A plurality of rollers are mounted on a frame in parallel relation to form troughs therebetween and the adjacent rollers are driven in opposite directions. A helical flighting is mounted on each of the rollers for rotation thereon and is driven in the same direction as its associated roller but at a slightly less angular velocity. The rotating rollers provide a scrubbing action on beets deposited thereon to remove dirt and other foreign substances from the beets and the helical flightings move the beets axially of the rollers to deposit the beets over one end of the rollers. By having the helical flighting rotate at a slightly less angular velocity than their associated rollers, they provide a cleaning action on the rollers to prevent any mud buildup on the rollers.

3,750,212

**VEHICLE WASHING INSTALLATION**

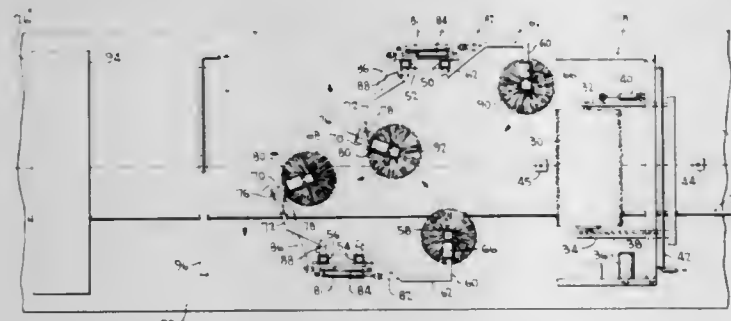
Robert P. Bernardi, and Donald A. Bernardi, both of Harrisburg, Pa., assignors to Bernardi Brothers, Inc., Harrisburg, Pa.

Filed July 14, 1970, Ser. No. 54,750

Int. Cl. B60s 3/06

U.S. Cl. 15-21 D

7 Claims



A vehicle washing installation including a pair of longitudinally staggered rear brushes and a pair of longitudinally staggered front brushes which are operative to wash the rear end and sides and the front end and sides of a vehicle, respectively, with each rear brush being responsive to the position of one of the front brushes such that the rear brushes contact the vehicle along the front doors thereof to avoid interference with antennas.

3,750,213

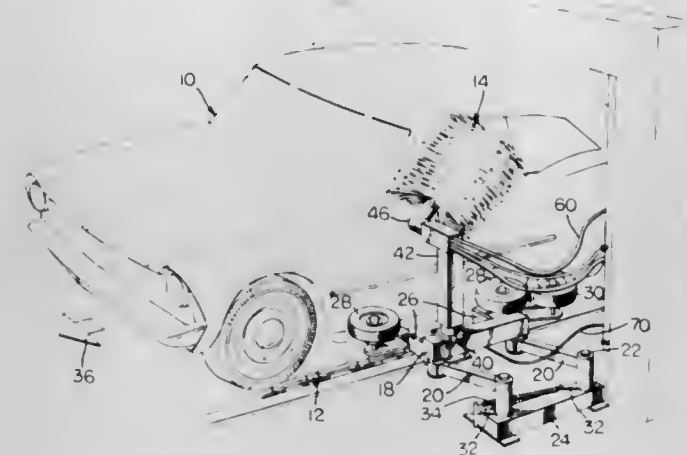
**SIDE WINDOW BRUSH ARRANGEMENT FOR CAR WASHING INSTALLATIONS**

Niels S. Hansen, Fort Wayne, Ind., assignor to Foundation and Bridge Corp., Fort Wayne, Ind.

Filed Aug. 13, 1971, Ser. No. 176,359

Int. Cl. B60s 3/06

U.S. Cl. 15-21 D



The invention discloses a brush arrangement for washing the side windows of vehicles passing through a car washing installation. Each side window brush is mounted on a bracket arrangement for adjustment toward and away from the path of the vehicle and vertically with reference to the vehicle and also so as to be inclinable to the vehicle. The brush is mounted on a carriage which is actuated by the vehicle moving through the installation to move the brush laterally of the vehicle path to position the brush in operative relation with the windows to be washed thereby. The brush is driven in rotation and is supplied internally with a washing medium. The carriage supporting the brush can also include a manifold for supplying washing medium to the lower body and wheels of the vehicle as it passes by the carriage.

3,750,214

**BOTTLECLEANER**

Hildegard Callendo, and Patricia Puglia, both of 30-29 69th St., Woodside, N.Y.

Filed Aug. 30, 1971, Ser. No. 175,960

Int. Cl. A46b 7/02

U.S. Cl. 15-26

5 Claims



A brush for cleaning the inside of a narrow bottle, the brush in one form of the invention consisting of a tube with outwardly sideward extending brush bristles along one end thereof, the other end of the tube being enlarged to form a handle, and a rod inserted through the tube, one end of the rod having end-wise extending brush bristles and the other end having a hand controllable knob for pushing or pulling the rod

so to selectively expose or retract the rod end bristles into the tube; the device in another form of the invention being screw fitted in a bottle cap so that the unit can rotate when it is moved longitudinally relative to the bottle.

3,750,215

**SWEEPING APPARATUS**

Johannes Liebscher, Nassau/Lahn, Germany, assignor to Leifheit International Gunter Leifheit KG, Nassau/Lahn, Germany

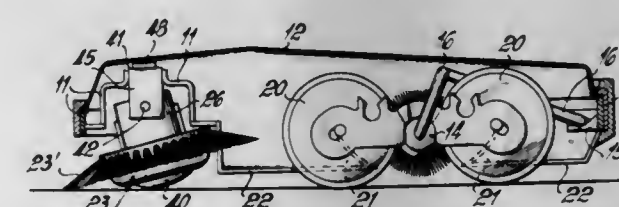
Filed July 10, 1972, Ser. No. 270,488

Claims priority, application Germany, July 10, 1971, P 21 34 493.4

Int. Cl. A47i 11/33; A47r 11/14

U.S. Cl. 15-42

14 Claims



A housing has at least one compartment into which a rotatable brush deposits sweepings. The housing is mounted on wheels for movement in two mutually opposite directions and has at least one additional brush which is rotatable about an upright axis, being so mounted that the axis can tilt from vertical in dependence upon the direction in which the housing moves.

3,750,216

**FOAM PRODUCING AND APPLYING DEVICE**

Gunter Leifheit, Nassau/Lahn, Germany, assignor to Leifheit International Gunter Leifheit KG, Nassau/Lahn, Germany

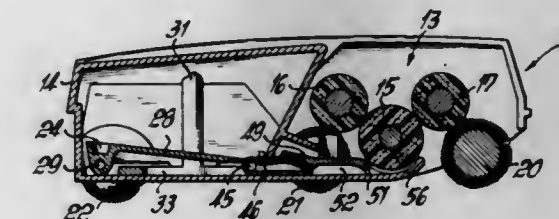
Filed Sept. 10, 1971, Ser. No. 179,295

Claims priority, application Germany, Sept. 12, 1970, P 20 45 175.6

Int. Cl. A47i 11/34

U.S. Cl. 15-50 C

11 Claims



A housing is to be moved over a surface to which foam is to be applied; a reservoir means for a foamable substance is in the housing and a trough-shaped distributor is arranged to receive foamable substance from the reservoir. A foaming arrangement is provided including at least one foaming element mounted for rotary movement and extending in part into the distributor to pick up foamable substance therein and for subsequently converting it into foam.

3,750,217

**APPARATUS FOR TREATING FLOOR AND OTHER SURFACES**

Johannes Liebscher, Nassau/Lahn, Germany, assignor to Firma Leifheit International Gunter Leifheit K.G., am Eimelturm, Germany

Filed Nov. 26, 1971, Ser. No. 202,518

Claims priority, application Germany, Aug. 24, 1971, P 21 42 243.5

Int. Cl. A47i 11/03

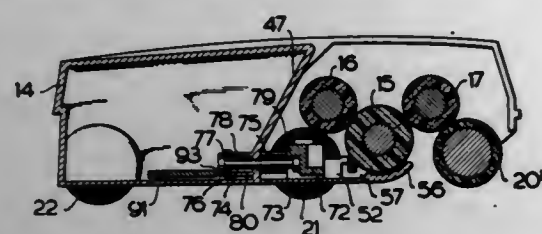
U.S. Cl. 15-50 C

12 Claims

A housing is movable over a surface to be treated and has a roller or the like which moves relative to the housing during



such displacement. A reservoir for treating liquid is connected with a foam-plastic roller on which liquid received from the reservoir is converted into foam by squeezing alternate increments of the roller and releasing them. A valve is mounted in the passage connecting the reservoir and the roller and is dis-



placeable between a normally closed and an open position with biasing spring biasing it to its normally closed position. An operative connection exists between the valve and the supporting roller of the housing so that when the housing and the supporting roller move, the valve moves from closed to its open position.

3,750,218

## COMBINATION OF A YACHT MOP AND SCRUBBING PAD

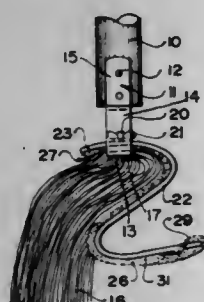
Bruno Rosocha, 124 Vryenhoek Crescent, Winnipeg, Manitoba, Canada

Filed June 21, 1971, Ser. No. 155,204

Int. Cl. A471 13/12

U.S. Cl. 15—118

1 Claim



An arcuately curved S-shaped plate is clamped to the cross bar of a yacht mop and has a synthetic fiber pad extending from the clamp around the lower curved portion to be engaged through a slot in the plate so that it is clamped between the plate and the body of the pad. It can be used for scrubbing action on areas which cannot be cleaned by the yacht mop alone.

3,750,219

## PORTABLE GOLF BALL CLEANING DEVICE

John R. MacConnell, 29 Lyellwood Pky., Rochester, N.Y.

Filed Jan. 28, 1972, Ser. No. 221,616

Int. Cl. A63b 57/00

U.S. Cl. 15—118

10 Claims



An improved portable golf ball cleaning device is described. The device comprises a canister, a cover and a cleansing

material situated within the canister. When the cover is seated in place, the cover and canister are designed to provide a liquid and vapor tight seal thereby preventing loss of cleaning liquid from within the canister. The device is designed to conveniently fit within the pocket of the user.

3,750,220

## MOP HEAD FOR A WRINGER TYPE MOP HOLDER

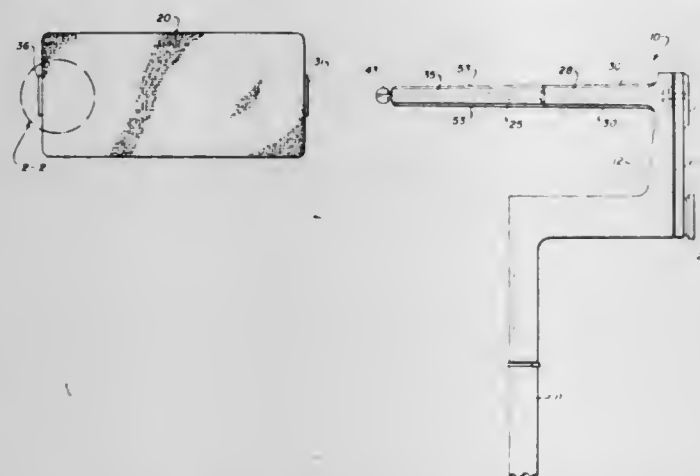
Samuel Joseph Popeil, and James Harold Kupka, both of Chicago, Ill., assignors to Popeil Brothers, Inc., Chicago, Ill.

Filed Feb. 26, 1971, Ser. No. 119,161

Int. Cl. A471 13/142

U.S. Cl. 15—228

16 Claims



A mop head which is adapted to be removably secured to a cantilever wringer mop in which a sponge block is encased in a cloth. The cloth is tucked in to co-acting spool and ring assemblies at both ends of the long axis of the block which secure the loose ends of the fabric interiorly of the block. Co-acting collars and teeth are placed respectively on the rings and spools to secure the cloth in place. In the method of manufacture the larger interior bored spool is first assembled with its co-acting ring. Thereafter the cloth sleeve is slipped over the sponge block, the sponge block having first been compressed across its weak axis, at least at the long corner edges, to provide room to loose-fittingly be received within the tubular fabric. Then a mandrel is passed through the already affixed spool and ring and extends upwardly to engage the lower portion of the ring at the opposite end. Thereafter the fabric is tucked within the ring thus engaged by the mandrel, and the last spool jam-fittingly pressed in place to thus securely lock the fabric interiorly of the ring and complete the construction of the mop head.

3,750,221

## SONIC BEATER NOZZLE

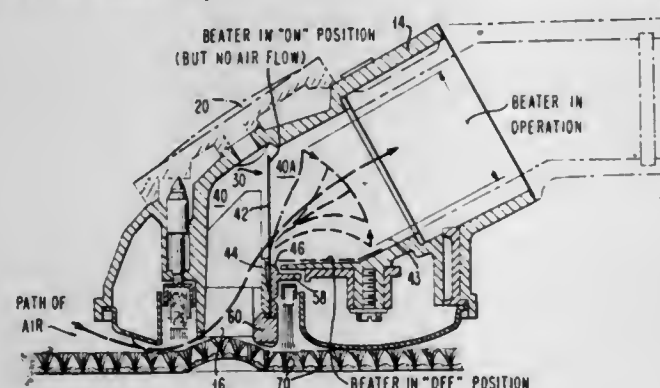
Carl E. Meyerhoefer, Little Neck, N.Y., assignor to The General Signal Corporation, New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,064

Int. Cl. A471 9/06, 11/40

U.S. Cl. 15—404

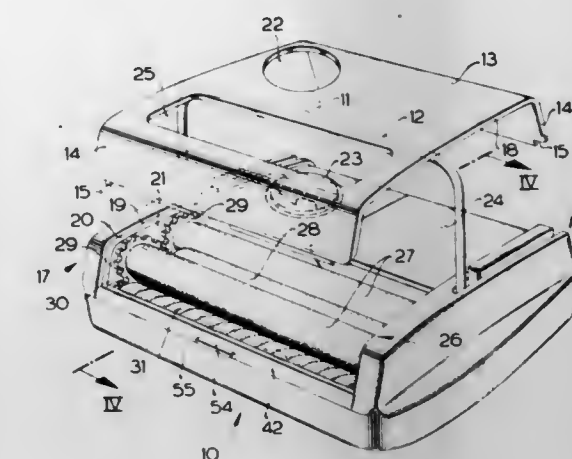
7 Claims



A vacuum cleaner suction nozzle which features a sonic beater, that is, a beating mechanism that relies on the pulsa-

tions in air flow produced by a vibratory member for directly achieving the requisite cleaning action. The beating mechanism dispenses with the use of a vibrating or agitating device in direct physical contact with the carpet surface. The vibrating member of the beating mechanism is located near the discharge end of the suction nozzle such that it does not interfere with the removal of bulky objects as these are encountered in the cleaning operation. Moreover, the vibrating member, because of its whip-like movement, produces such marked changes in air pressure and air velocity that efficient cleaning of a carpet and the like is promoted. A disabling mechanism is also provided such that the vibrating member may be placed in a position where it will be unaffected by the air flow.

the frame so that the latter can roll on these rollers over a surface to be treated with the foam, and the brush rollers turn



3,750,222

## VACUUM CLEANER STRUCTURE

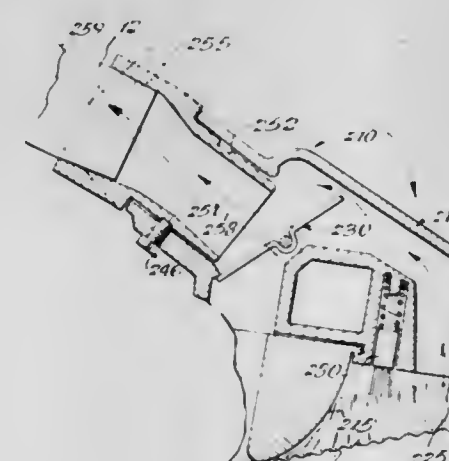
Robert E. Johnson, St. Paul, Minn., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 28, 1971, Ser. No. 184,526

Int. Cl. A471 9/06

U.S. Cl. 15—416

12 Claims



A vacuum cleaner structure for use with a canister-type vacuum cleaner having a tubular wand provided at one end with a nozzle. The nozzle is provided with a pair of suction inlets including a lowermost inlet and an upper inlet. Means are provided for controlling the air flow through the inlets so that air may be drawn selectively through either of the inlets. In one form, the structure includes a yoke connector adapted to vary the disposition of the upper inlet relative to the lower inlet for adjusting the nozzle for different height rug pile. The nozzle further is arranged to carry a brush adjacent the upper inlet for brushing the upper end of the rug pile during the vacuuming operation.

3,750,223

## CLEANING APPARATUS

Gunter Leifheit, Nassau/Lahn, Germany, assignor to Leifheit International Gunter Leifheit KG, Nassau/Lahn, Germany

Filed Jan. 18, 1972, Ser. No. 218,809

Claims priority, application Germany, Jan. 19, 1971, P 21 02 325.6

Int. Cl. A471 11/03

U.S. Cl. 15—50 C

19 Claims

A frame of a cleaning apparatus accommodates a unit which comprises a reservoir for a foamable liquid and a distributor trough unitary with the reservoir and adapted to receive foamable liquid therefrom. Mounting portions are provided for removably mounting the unit in the frame. A foaming unit is provided which converts the liquid received in the distributor trough into foam. Brush rollers are provided on

when the frame moves over the surface and transmit motion to the foaming unit which causes the same to foam the liquid in the distributor trough.

3,750,224

## TEXTILE BRUSH

Kurt R. Krusche, Frankfurt, Germany, assignor to Allstar Verbrauchsqueter GmbH & Co., KG, Frankfurt, Germany

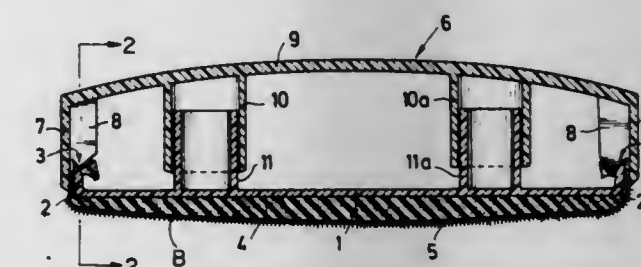
Filed Sept. 27, 1971, Ser. No. 183,943

Claims priority, application Germany, Jan. 10, 1973, G 70 39 751.2

Int. Cl. A46b 3/08, 9/02

U.S. Cl. 15—171

7 Claims



A textile brush comprising a base plate having a surface supporting a shallow flexible brush insert, the base plate having an elevated rim extending away from the said surface, the rim being formed with upstanding teeth over which a marginal region of the brush insert is folded, a cover part being provided which has ribs projecting from the inside of its side walls, and the ribs being staggered relative to the said teeth, the ribs engaging in the gaps between the teeth and serving to press the folded over marginal region of the brush insert against the said rim, the side walls of the cover part being telescoped over the rim and serving to press the brush insert from the outside against the said rim.

3,750,225

## STREET SWEEPING BRUSH

William Gould, and Charna Gould, both of 93 Sagamore Rd., Millburn, N.J.

Filed Dec. 4, 1970, Ser. No. 95,200

Int. Cl. A46b 7/10

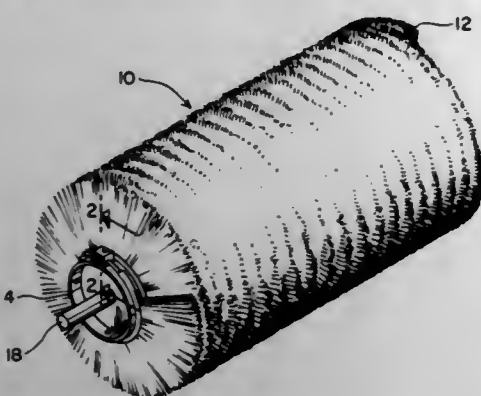
U.S. Cl. 15—182

17 Claims

A rotary helical brush for sweeping or cleaning has a cylindrical core with a continuous fabricated helical coil bristle section encircling the core, and a device attached to an edge



of the core and coupled to an end of the bristle section for preventing rotation of the bristle section in one direction during



ing operation while permitting rotation in the opposite direction. The device includes a pivoted arm which engages the bristle section or an extension thereof.

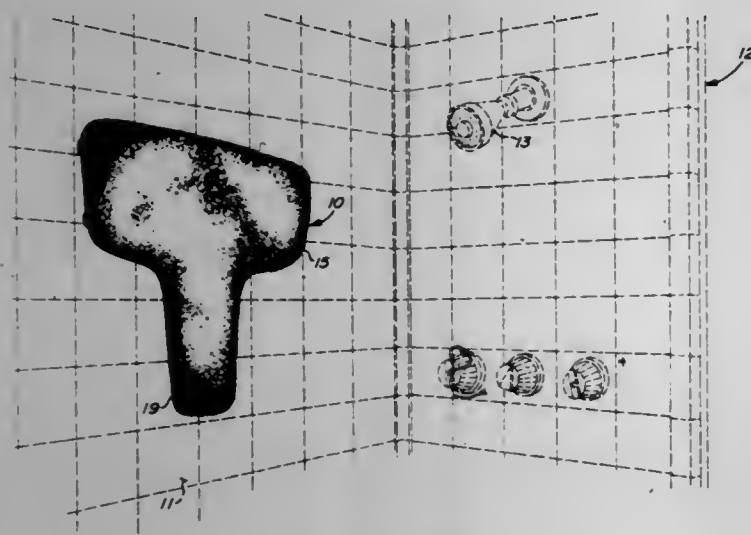
3,750,226

### REPOSITIONABLE T-SHAPED BACK CLEANING DEVICE

Robert W. Morgan, 5601 E. Naun Valley Dr., Scottsdale, Ariz.  
Filed Nov. 4, 1971, Ser. No. 195,575  
Int. Cl. A47k 7/02

U.S. Cl. 15-187

4 Claims



A T-shaped cleaning and massaging device adapted for mounting on the walls of a shower stall for cleaning and massaging a particular part of the user's back and quickly repositionable for cleaning and massaging another part of his back.

3,750,227

### WINDSHIELD WIPER CLIP ASSEMBLIES

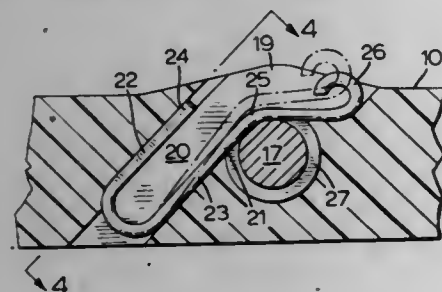
George Hayhurst, 4180 Willowdown Rd., Oakville, Ontario, and Eric Moran, 2173 Mount Forest Dr., Burlington, Ontario, both of Canada

Filed Oct. 26, 1971, Ser. No. 192,428

Int. Cl. B60s 1/40

U.S. Cl. 15-250.32

7 Claims



A windshield wiper clip assembly especially suited for side arm windshield wipers employs a U-shaped wire retaining

member accommodated in a slot in the wiper body, one arm of the retaining member being corrugated and provided with a transverse pointed end to retain it in the slot, while the other end is curved to engage a retaining slot in a wiper arm pivot pin inserted in a bore in the wiper body.

3,750,228

### OSCILLATING DOCTOR-BLADE MECHANISM

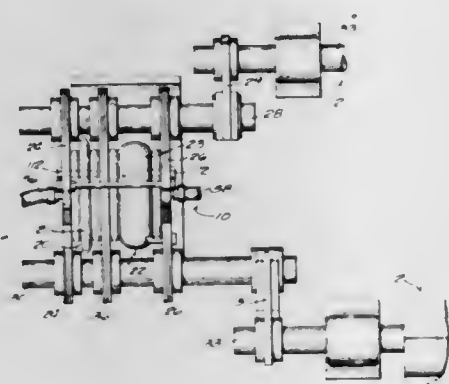
Herbert D. Wake, Green Bay, Wis., assignor to Essco, Inc., Green Bay, Wis.

Continuation-in-part of Ser. No. 779,566, Nov. 27, 1968. This application June 18, 1970, Ser. No. 47,275

Int. Cl. D21g 3/00

U.S. Cl. 15-256.53

9 Claims



Disclosed herein is a fluid actuated device for oscillating a doctor blade specially adapted for paper mills, said device having a pair of inflatable members each having one side secured to a fixed plate and the other side secured to a movable plate supported between the fixed plates, the motion of the movable plate being transmitted to the doctor blade to be oscillated. Control is effected by a variable exhaust line restriction and a solenoid valve actuated by a remote pulse forming timer capable of actuating many such devices without modification.

3,750,229

### APPARATUS FOR CLEANING CURED SPONGE RUBBER EXTRUSION

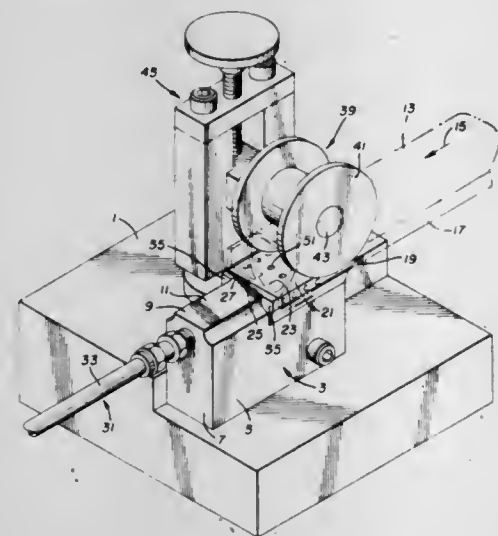
Paul L. Rossomme, Logansport, Ind., assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Mar. 29, 1971, Ser. No. 129,024

Int. Cl. A47l 5/38

U.S. Cl. 15-304

8 Claims



This invention concerns a method and apparatus for cleaning cured sponge rubber extrusions of varying cross sections and geometry especially having undercuts therein while not

upsetting the normal shrink characteristics of the extrusion. The method is practiced by opening the undercut under near frictionless conditions and passing the exposed surface thereof over a low friction, air lubricated surface so that the lubricating air film impinges the surface to remove the adhered particles.

3,750,230

### SOOT BLOWER

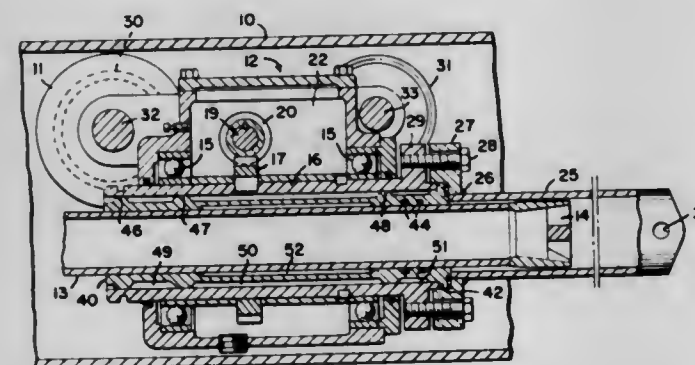
James N. Reed, Fairview, Pa., assignor to Copes-Vulcan, Incorporated, Lake City, Pa.

Filed Apr. 7, 1972, Ser. No. 242,080

Int. Cl. A47l 5/38

U.S. Cl. 15-317

6 Claims



A soot blower of the type having a lance tube carried by a traveling carriage and a feed tube for supplying hot steam to the lance tube in which an insulating liner is provided between the feed tube and the carriage and a piston ring seal is provided between the liner and the feed tube at the front end of the carriage.

3,750,231

### POULTRY PROCESSING IMPROVEMENT

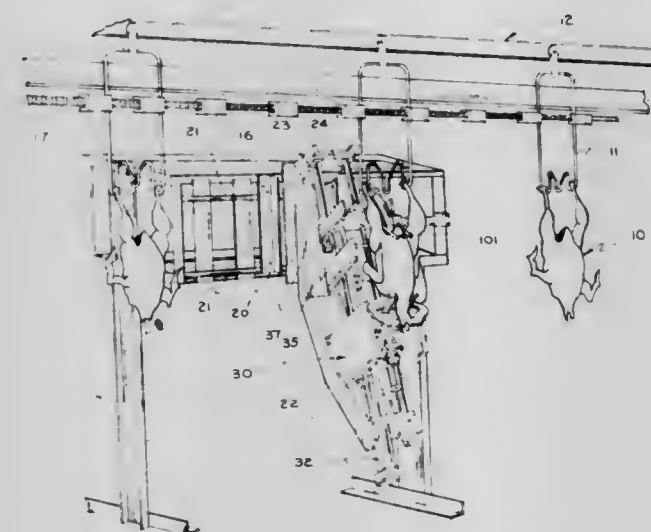
Thomas R. Schreuder, South Holland, Ill., assignor to Swift & Company, Chicago, Ill.

Filed Oct. 12, 1971, Ser. No. 188,304

Int. Cl. A22b 3/08

U.S. Cl. 17-11

12 Claims



A method and apparatus for automatically cutting the neck and clearing the body cavity of a partially eviscerated poultry carcass wherein the positions of the stern and neck of the carcass are detected and engaged against displacement and thereafter the neck is cut and a vacuum nozzle is reciprocated within the body cavity.

3,750,232

### MOLDING APPARATUS

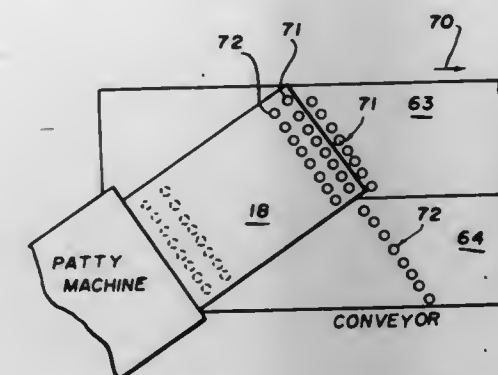
Harry H. Holly, Olympia Fields, Ill., assignor to Hollymatic Corporation, Olympia Fields, Ill.

Filed Feb. 25, 1972, Ser. No. 229,407

Int. Cl. A22c 7/00

U.S. Cl. 17-32

7 Claims



A molding apparatus particularly for forming articles of moldable food material such as patties from ground meat, fish and the like in which a mold device having a plurality of mold openings for forming a plurality of the articles is moved between charging and discharging stations for these openings and there is provided at the discharging station one or a plurality of separate transporting means such as one or more endless conveyors for conveying the articles to one or a plurality of separate destinations. One specific example of this is to have two sets of mold openings each for shaping patties and a pair of endless conveyors on which articles from the openings are deposited with one conveyor transporting the patties to one destination such as a fast freezer while the other conveyor transports its patties to a separate destination such as a cooker-canner. The width of coverage of the patties on the conveyor or conveyors is determined by the angular arrangement of the mold relative to the conveyor or conveyors.

3,750,233

### SHRIMP SEPARATING METHODS

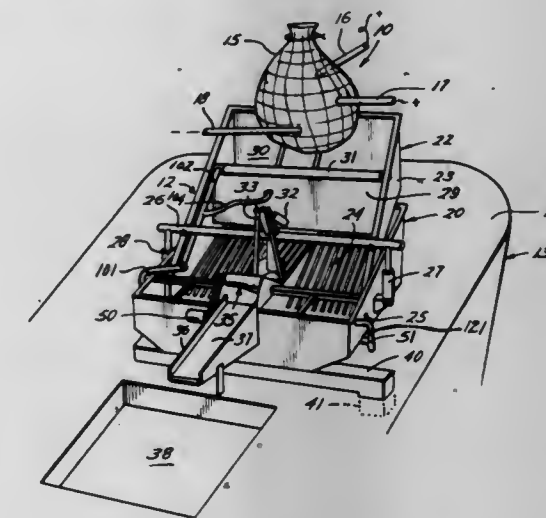
Jack R. Lovett, 1900 Irving St., Orange, Tex.

Filed June 19, 1969, Ser. No. 834,652

Int. Cl. A22c 29/00

U.S. Cl. 17-45

7 Claims



After a net load of shrimp and fish is pulled aboard a shrimp boat the intermingled shrimp and fish are subjected to an electric shock for purposes of electrocuting same. The catch is then dumped into a flotation tank forming part of a sorting machine located on the shrimp boat. The lower portion of the flotation tank is filled with water and the shocked shrimp sink to the bottom of the tank, while the shocked fish float to the surface of the water therein. In sinking to the bottom, the shrimp fall through an inclined screening tray and onto a con-



veyor which removes them from the tank. After the shrimp have had time to settle to the bottom, the lower portion of the screening tray is elevated for purposes of dumping the larger fish onto a conveyor which carries them to a fish meal machine. A continuous flow of water is supplied to the tank and this serves to flow the smaller fish out of an outlet at the rear of the tank, from whence they are dumped back into the sea or into the fish meal machine.

3,750,234

**CRAB PICKING MACHINE**

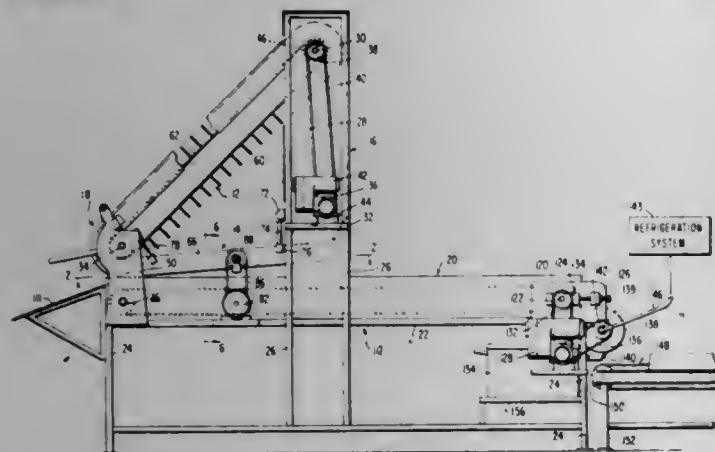
Nellie Hunt Rodgers; William P. Hunt, and Richard T. Westrom, all of Hampton, Va., assignors to Sea Savory, Inc., Cambridge, Md.

Filed Apr. 22, 1971, Ser. No. 136,427

Int. Cl. A22c 29/00

U.S. Cl. 17-71

21 Claims



An endless, cleated conveyor belt inclined upwardly elevates cooked crabs for free fall at the discharge end of the belt onto the rear of a perforated shaker screen. The direct fall impact breaks up the crabs allowing small meat particles and waste to fall through the shaker screen onto a second endless conveyor belt for sorting. The larger crab particles are recirculated to the elevator conveyor belt for multiple cycle, free fall impact onto the perforated shaker screen.

3,750,235

**TEXTILE PROCESSING EQUIPMENT**

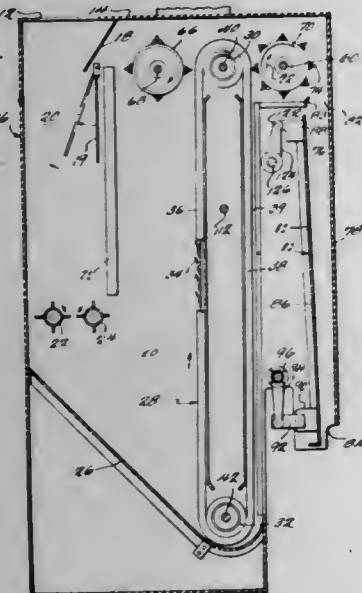
Cecil S. Wise, Dallas, N.C., assignor to Fiber Controls Corporation, Gastonia, N.C.

Continuation of Ser. No. 745,066, June 13, 1968, abandoned, which is a continuation-in-part of Ser. No. 608,904, Jan. 12, 1967, abandoned. This application Aug. 4, 1971, Ser. No. 169,120

Int. Cl. D01g 15/40, 23/04

U.S. Cl. 19-105

27 Claims



An improved web former for feeding a fiber web of uniform density and thickness to subsequent processing equipment.

Also disclosed is the combination of the web former with various types of subsequent textile processing equipment, and a method of operating the web former alone, as well as in conjunction with the subsequent processing equipment. A feature in the construction and operation of the web former resides in the realization that a fiber web of improved density and thickness uniformity is obtainable if the air within the shaft in the former is removed or pressed out through perforations in one of the sides of the shaft while the shaker plate, which forms one side of the shaft, is oscillating.

3,750,236

**METHOD AND APPARATUS (DISCONTINUOUS IMPERFORATE PORTIONS ON BACKING MEANS OF OPEN SANDWICH)**

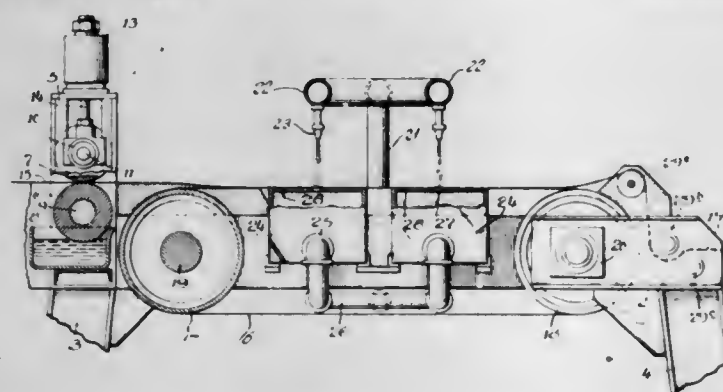
Frank Kalwaites, Gladstone, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 22,313, March 24, 1970, abandoned. This application Feb. 10, 1972, Ser. No. 225,263

Int. Cl. D04h 11/00

U.S. Cl. 19-161 P

3 Claims



A method and apparatus for producing, from a layer of fibrous material such as a fibrous web, nonwoven fabrics that contain apertures or holes, or other areas of low fiber density, and have a plurality of patterns that alternate and extend throughout the fabric. One form of the method includes the steps of supporting the starting web upon a backing means that is foraminous except for a discontinuous pattern of imperforate portions and has protuberances and troughs alternating across its foraminous portions, then directing fluid rearranging forces substantially uniformly and continuously across the surface of the web, causing some of the fluid streams to strike the imperforate portions of the backing means, to deflect the same, all of the fluid streams ultimately passing through the foraminous portions of the backing means. Each discontinuous imperforate portion extends along the surface of the backing means in each direction a distance at least about twice the horizontal distance between the bottoms of a pair of immediately adjacent troughs. Each pair of immediately adjacent discontinuous imperforate portions spans between them at least one protuberance and a trough on each side of the protuberance. The imperforate portions of the backing means may rise above the foraminous portions. The resulting fabric consists of fibers that have been rearranged to provide a first pattern of holes or other areas of low fiber density corresponding to the imperforate portions of the backing means, and a second pattern corresponding to protuberances on the foraminous portions of the backing means.

3,750,237

**METHOD FOR PRODUCING NONWOVEN FABRICS HAVING A PLURALITY OF PATTERNS**

Frank Kalwaites, Gladstone, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 22,304, March 24, 1970, abandoned. This application Feb. 10, 1972, Ser. No. 225,266

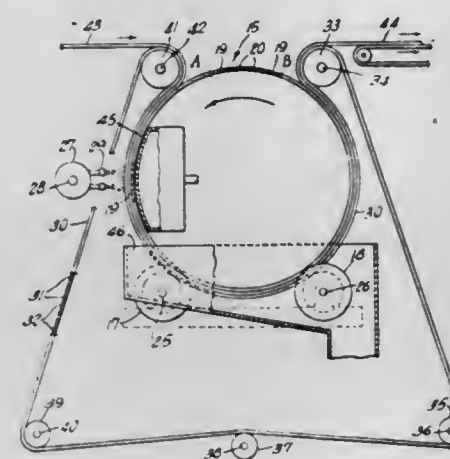
Int. Cl. D04h 11/00

U.S. Cl. 19-161 P

2 Claims

A method for producing, from a layer of fibrous material such as a fibrous web, nonwoven fabrics that have a plurality

of patterns of groups of fiber segments that alternate and extend throughout the fabric. One form of the method includes the steps of positioning the starting web between an apertured forming means and a backing means that has continuous raised imperforate portions that lie between and interconnect discontinuous foraminous portions, then directing fluid rearranging forces through the apertures of the forming means against the fibers of the starting web, causing some of the fluid streams to strike the continuous raised imperforate portions of the backing means and all of the fluid streams ultimately to pass through the foraminous portions of the backing means. Each of the discontinuous foraminous portions has an area at



least about three times, and for improved results four or more times, the area of an aperture of the apertured forming means. The imperforate portions of the backing means are one to two times as wide at their narrowest parts as a forming aperture at its narrowest part. Fiber segments are moved and positioned to form a first pattern of mats of randomly oriented fiber segments arranged in accordance with the pattern of the discontinuous foraminous portions of the backing means, and a second pattern of yarn-like bundles of fiber segments that corresponds to the configuration of the continuous imperforate portions of the backing means and interconnects the portions of the fabric in the first pattern.

3,750,238

**PLASTIC SPRING LOCK**

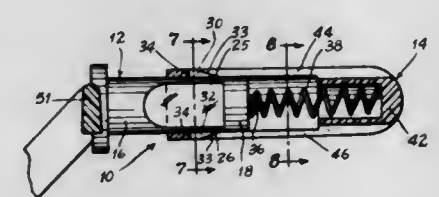
Robert G. Tanner, St. Charles, Mo., assignor to Arundale Manufacturers, Inc., St. Louis, Mo.

Filed Dec. 28, 1971, Ser. No. 212,968

Int. Cl. A44b 21/00; A47g 29/02

U.S. Cl. 24-1.81

8 Claims



This invention relates to a spring lock and particularly to one made entirely of plastic with the exception of the spring itself wherein there is included a stud member having means at one end to provide a seat for the spring and tapered protrusions on its side. A plastic thimble-type sleeve fits over the stud and has elongated slots in which the protrusions slide and means at its closed end for providing a seat for the spring. The stud has recesses which allow distortion of the open end of the sleeve as it is forced over the tapered protrusion for assembling the lock. The spring is mounted between the closed end of the sleeve and the stud to bias the sleeve away from the stud.

3,750,239

**SEAL FOR CLOSING ENDS OF STRIPS OR RIBBONS**

Rudolf Styner, Frauenkappelen, Switzerland, assignor to Strapex AG, Aargau, Switzerland

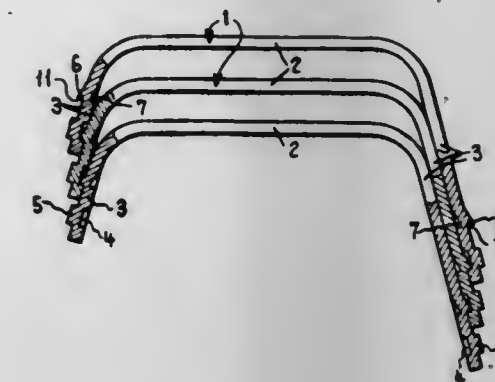
Filed Dec. 9, 1971, Ser. No. 206,267

Claims priority, application Switzerland, Dec. 10, 1970, 18306/70

Int. Cl. B63d 63/06

U.S. Cl. 24-23 W

5 Claims



A clamp for securing together the end portions of a ribbon or strip, usually metal, bound around containers such as crates, packing cases and the like, comprises a strip, bar or plate, usually metal, of U-shaped configuration having a flat bight portion and angularly disposed arms enabling the stacking of the clamps by straddling-nesting relationship to each other for shipment and storage. The arms of the clamps are provided with latch means for releasably securing the clamps in stacked relation and the latch means comprises projections or protrusions on the outer sides of the arms for nesting in recesses or openings in the inner sides of the arms of adjacent clamps within which they are nested.

3,750,240

**SNAP FOR FISHING TACKLE**

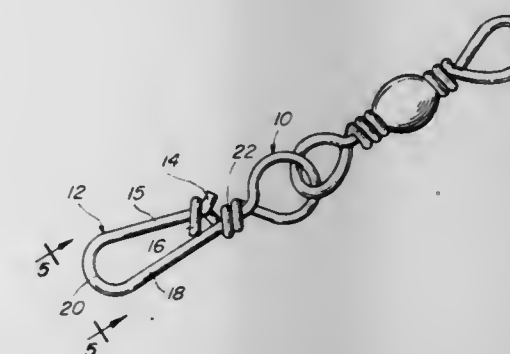
Leslie R. Fridrich, 1531 S. 60th Ct., Cicero, Ill.

Filed Jan. 5, 1972, Ser. No. 215,496

Int. Cl. A44b 13/02

U.S. Cl. 24-237

1 Claim



A snap formed from a single piece of resilient wire wherein one end is bent to form an eye and then double looped over the main shank and terminating in a catch, the terminal end being bent in a direction forwardly, sidewardly and downwardly of the double loops. The other end of the wire is bent back upon the shank to form an elongated spring loop and terminating in an upstanding hook arranged to cooperatively removably engage the catch. The loop is positioned above and along the shank. The snap normally is secured to a fish hook or lure and is designed for fast opening and closing.



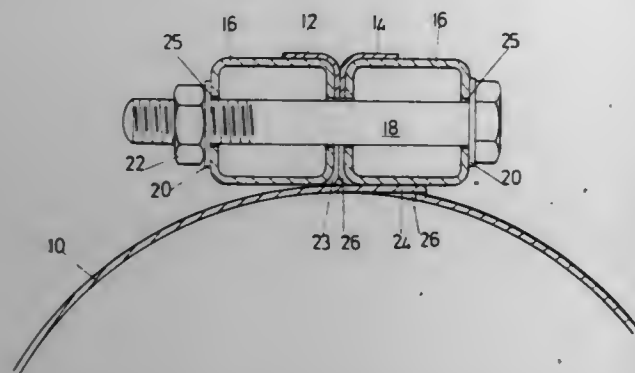
### 3,750,241 PIPE CLAMPS

Hendrik Johannes Boothe, 6 Judith St., Thabazimbi, Transvaal, Republic of South Africa

Filed Oct. 29, 1971, Ser. No. 193,844  
Int. Cl. B65d 63/02

U.S. Cl. 24-279

2 Claims



The invention relates to a metal clamp for circular tubing composed of a band formed exactly to the final diameter required. At the ends of the formed loop the band is formed to provide flanges and at one end a tongue that penetrates a slot in the opposed flange. The flanges are drawn together by means of a bolt passing through box sections buttressing each flange.

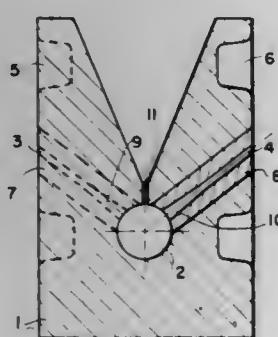
### 3,750,242 YARN COMPACTING APPARATUS

Neil E. Lloyd; Archibald A. Owen, both of Rock Hill, S.C., and David C. Brenner, Shelby, N.C., assignors to Celanese Corporation, New York, N.Y.

Filed June 30, 1971, Ser. No. 158,326  
Int. Cl. D02g 1/16

U.S. Cl. 28-1.4

10 Claims



A fluid yarn processing jet having a yarn processing passage at least one conduit for supplying fluid thereto, the conduit being flared at the point of juncture with the passage.

### 3,750,243 LOW LOSS ELECTRICAL CONDUCTIVE COATING AND BONDING MATERIALS INCLUDING MAGNETIC PARTICLES FOR MIXING

Winslow W. Prentice, Waterford, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

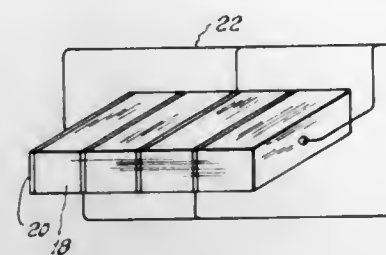
Filed Dec. 16, 1968, Ser. No. 783,976  
Int. Cl. B01j 17/00

U.S. Cl. 29-25.35

1 Claim

A conductive coating and bonding material for single element electrostrictive transducers and for those formed as a mosaic stack, or non-linear seriatim assembly of electrostrictive segments and including a matrix of known types of room temperature curing epoxy resin having uniformly dispersed

therethrough, copper and silver flakes and nickel powder, the nickel powder being present for magnetic mixing. The term



electrostrictive is used to the generic sense to encompass ceramic materials and piezoelectric natural or grown crystals.

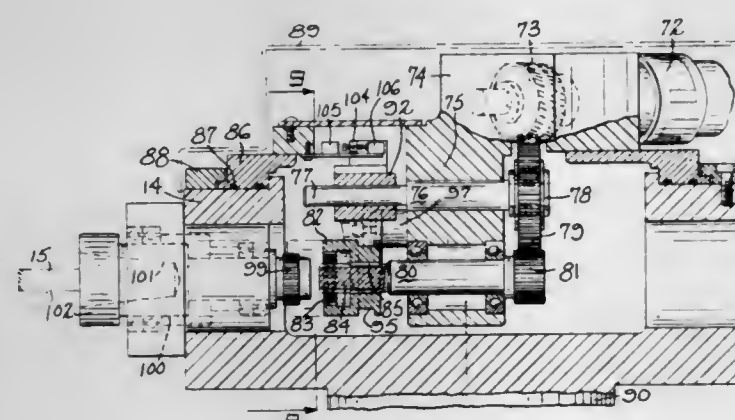
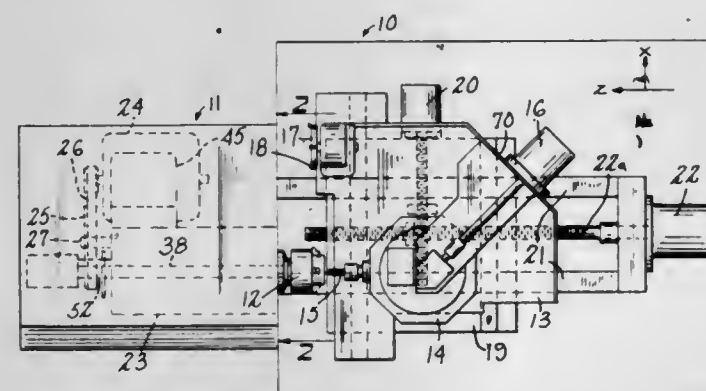
### 3,750,244 TURRET LATHE

William R. Smith, Springfield, Vt., assignor to Textron, Inc., Providence, R.I.

Filed Mar. 17, 1971, Ser. No. 125,162  
Int. Cl. B23b 3/18

U.S. Cl. 29-27 R

8 Claims



This disclosure relates to a turret lathe having full production capabilities. A turret carrying a plurality of drivable end working tools is selectively indexable and a single drive means is arranged to be coupled to and uncoupled from each drivable tool when indexed to an operative position. The spindle is arranged to be driven at turning speeds for operation with turning tools, and also at feed speeds in conjunction with the end working tools so that irregular contours, slots, indentations, etc. may be machined in the end face and also the peripheries of a workpiece. The end working tools may also perform drilling, boring and tapping operations on the workpiece as it is indexed to position.

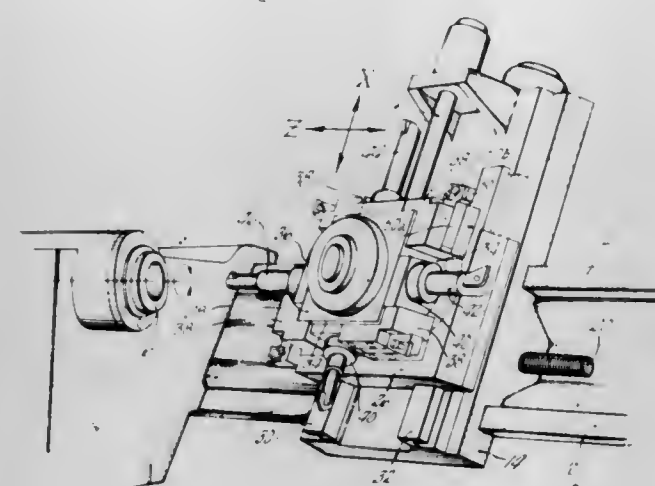
### 3,750,245 TURRET LATHE

Edwin K. Kennedy, West Hartford, and Richard I. Latzko, Glastonbury, both of Conn., assignors to Pratt & Whitney, Inc., West Hartford, Conn.

Filed Sept. 21, 1971, Ser. No. 182,388  
Int. Cl. B23b 3/18

U.S. Cl. 29-39

3 Claims



A lathe has a square turret with two tools orthogonally arranged on each turret face such that one tool is mounted in perpendicular relationship to the turret face, and the other tool is mounted in parallel relationship to the turret face. The turret is rotatable to four index positions and is movable along two axes. The tools, which are mounted perpendicular to the respective turret faces, are adapted to perform boring operations on a workpiece, and the tools, which are mounted in parallel relationship to the respective turret faces are adapted for turning and/or facing operations. When utilizing the four index positions of the turret, eight tool positions are possible.

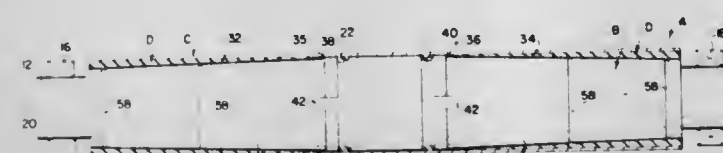
### 3,750,246 COMPOSITE ROLL

David W. Pessen, Haifa, Israel, assignor to Gulf & Western Systems Company, New York, N.Y.

Filed Sept. 13, 1971, Ser. No. 179,963  
Int. Cl. B21b 31/08

U.S. Cl. 29-130

17 Claims



A composite roll for controlled deflection in calendaring operations or the like to achieve an even nip includes an inner core member and a sleeve member received over the core member. At the central portion of the roll, both the core member and the sleeve are substantially cylindrical and tightly fitting together. On opposite sides of the central portion of the roll, either the outer peripheral surface of the core member, or the inner peripheral surface of the sleeve member, diverges from the other peripheral surface to form a space which varies in cross-sectional area proceeding from the central portion toward the opposite end portions of the roll. These annular spaces are filled with elastomeric material to achieve a substantially uniform spring rate along the entire length of the composite roll. The tightly fitting peripheral surfaces at the central portion of the roll maintain concentricity of the outer shell and prevent it from taking on a permanent eccentricity with respect to the core member.

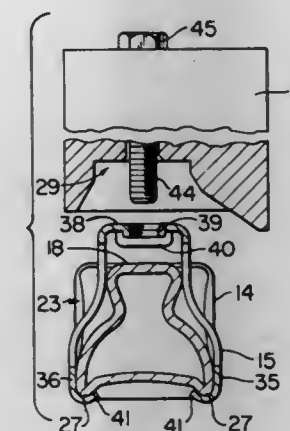
### 3,750,247 METHOD OF MOUNTING A CONTROL DEVICE TO A FUEL SUPPLY MANIFOLD

Roy C. Demi, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 817,001, April 17, 1969, Pat. No. 3,602,480. This application Nov. 18, 1970, Ser. No. 90,821  
Int. Cl. B21d 53/00

U.S. Cl. 29-157 R

10 Claims



A fuel supply manifold having side wall means provided with an opening means therethrough and a control device sealingly disposed against the side wall means of the manifold around the opening means and having an inlet means disposed in fluid communication with the opening means, the control device being sealingly secured to the manifold solely by a bracket means that is detachably interconnected to the manifold about the side wall means thereof and to the control device in such a manner to secure the control device to the manifold in sealed relation solely by the interconnection of the bracket means with the control device and the manifold.

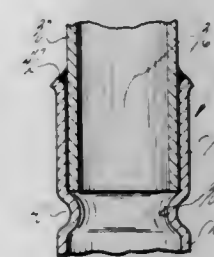
### 3,750,248 METHOD FOR MAKING EVAPORATOR OR CONDENSER CONSTRUCTION

Herbert R. Morris, Morrisville, Pa., assignor to Emhart Corporation, Bloomfield, Conn.

Continuation of Ser. No. 737,080, June 14, 1968, abandoned. This application Aug. 12, 1971, Ser. No. 171,297  
Int. Cl. B21d 53/00

U.S. Cl. 29-157.3 R

9 Claims



The method of making a refrigeration evaporator or condenser construction wherein the ends of preferably aluminum tubes which have been extended through heat exchange plates or fins in a refrigeration evaporator or condenser construction are joined with U-bend connectors, said method comprising forming radial internal beads near the ends of the tubes to be connected to provide stops for the ends of the U-bend connectors which are of lesser diameter, flaring the very end portions of the tubes to be connected, laying a thermo-fluid welding material around the connector end portions within the flared ends of the tubes to be connected, and applying heat to flow the said material prior to chilling.

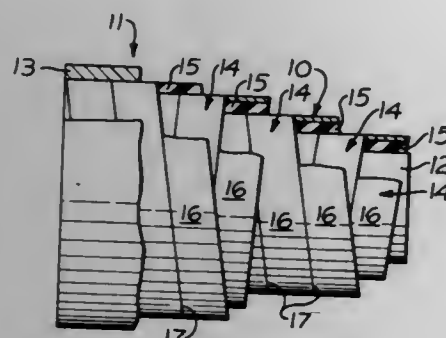


3,750,249

**METHOD OF MANUFACTURE OF HELICALLY WOUND LAMINATED BEARINGS**

William D. Brandon, and Jack A. Dras, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.  
Division of Ser. No. 77,819, Oct. 5, 1970, Pat. No. 3,690,639.  
This application May 8, 1972, Ser. No. 251,423  
Int. Cl. B21d 53/10; B23p 11/00  
U.S. Cl. 29—149.5 NM

7 Claims



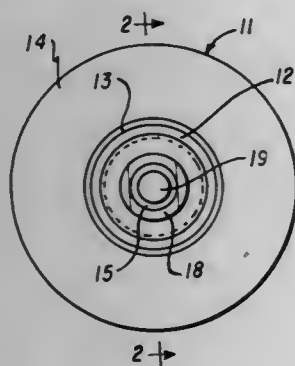
An improved cylindrical bearing material of a laminated construction can be made by employing a plurality of alternating cylindrical shells of elastomer and metal laminated together in which each metal shell is formed by helically winding a band of the metal in an edge-wise, abutting relationship to form a cylindrical metal shell or sleeve. The resulting bearing material, composed of a plurality of alternating concentric elastomeric and metallic shells can be confined between a cylindrical core and an outer cylindrical retaining ring to form a bearing assembly in which the bearing material may be placed under a radial pre-load, if desired, to decrease its radial deflection when it is placed under radial loads. In the preferred embodiment of the invention, the adjacent metal shells are wound in opposite directions to stabilize the bearing material under torsional loading.

3,750,250

**PRINTER'S ROLLER AND METHOD OF MAKING SAME**

James K. Brown, Arlington Hgts., Ill., assignor to Samuel Bingham Company, Franklin Park, Ill.  
Filed Aug. 31, 1972, Ser. No. 285,227  
Int. Cl. B23p 11/00; B21b 1/14  
U.S. Cl. 29—148.4 D

10 Claims



Lightweight printer's roller having sleeve of either rubber extruded onto long aluminium tube or elastomer, such as urethane, cast onto tube, cut to desired length, broached at ends to form keyways for receiving keys on journals injection molded of suitable plastic, with journals secured in tube by press fit or with adhesive, and thereafter trued, and outer surface of roller finished by grinding and end trimming.

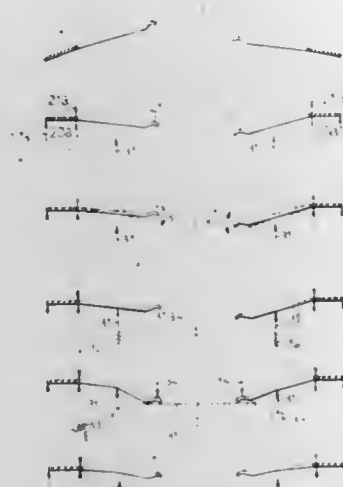
3,750,251

**METHOD AND APPARATUS FOR SETTING A DIAPHRAGM SPRING**

Algernon Walter Pugh, and Charles Alan Morewood, both of Sheffield, England, assignors to GKN Transmissions Limited, Warwick, England  
Filed June 20, 1972, Ser. No. 264,620  
Claims priority, application Great Britain, May 21, 1971, 29,801/71  
U.S. Cl. 29—173

Int. Cl. B23q 17/00

15 Claims



A method of bringing the inner ends of the fingers of a clutch diaphragm spring into coplanar relation comprising the steps of elastically straining the spring in an outer annular zone to convert it from domed or frusto-conical form into more flattened form, and while it is in this condition bending the inner ends of the fingers to an amount which exceeds the elastic limit of the spring material, the bending taking place about fulcrum elements, the spring pressed into contact with respective fingers and then locked. An apparatus for carrying out the method includes an angularly spaced series of clamping devices for clamping a diaphragm spring within a dished clutch cover member to deform this elastically between the cover member and a pressure plate in an outer zone of the spring, and an axially movable deforming element engaging the inner ends of the fingers while these are supported by spring loaded fulcrum elements locked by roller and wedge mechanisms in the positions in which they first contact the fingers.

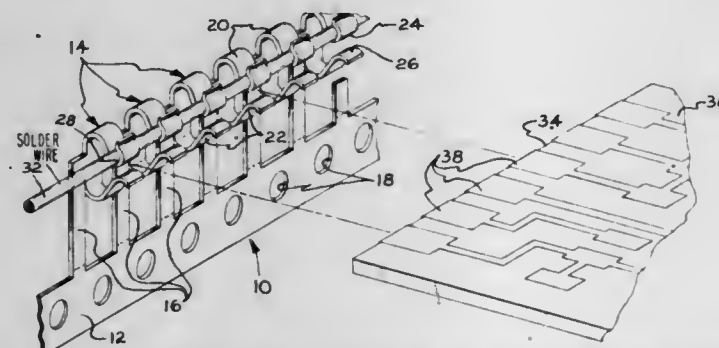
3,750,252

**SOLDER TERMINAL STRIP**

Dirk Landmen, Mechanicsburg, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Filed May 1, 1972, Ser. No. 249,305  
Int. Cl. H01b 5/14

U.S. Cl. 29—191.6

8 Claims



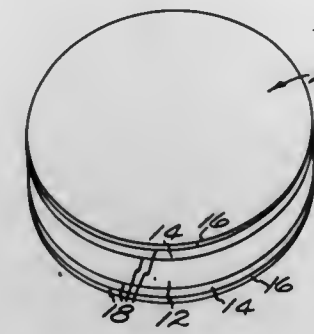
A terminal strip having a number of closely spaced solder terminals with a continuous solder wire extending along the strip and secured to each terminal. The terminals are brought into physical engagement with spaced contacts and heated to melt the solder wire. The solder melts and coalesces on the individual contacts to form independent soldered connections.

3,750,253

**COINAGE MATERIAL**

Edwin A. Miller, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.  
Filed Oct. 29, 1971, Ser. No. 193,852  
Int. Cl. B32b 15/00  
U.S. Cl. 29—196.3

6 Claims



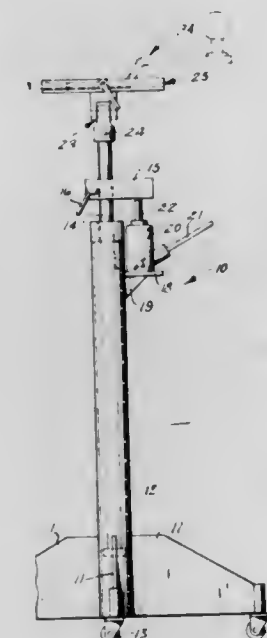
A low-cost material for making coins is shown to comprise a core layer of low carbon steel, a relatively thin layer of nickel silver metallurgically bonded to each side of the core layer, and a relatively very thin layer of nickel metallurgically bonded to the outer surface of each of the layers of nickel silver. These materials cooperate to provide a composite coinage material having desirable coinage properties including pleasing surface color, good ring, excellent mintability, good corrosion-resistance and low-cost. The layers of relatively low-cost nickel silver, being of comparable color to nickel, permit use of very thin outer layers of the more expensive nickel without risk of exposing the steel core material on the minted surfaces of coins after coinage wear. In addition, the nickel silver galvanically protects the edge of the steel core layer to reduce the occurrence of rust staining at the edges of the coins.

3,750,254

**TRAILER HITCH INSTALLATION APPARATUS**

Larry Lee Krajcik, 8921 W. Rohr Ave., Milwaukee, Wis.  
Filed May 3, 1971, Ser. No. 139,621  
Int. Cl. B23p 19/00  
U.S. Cl. 29—200 P

3 Claims



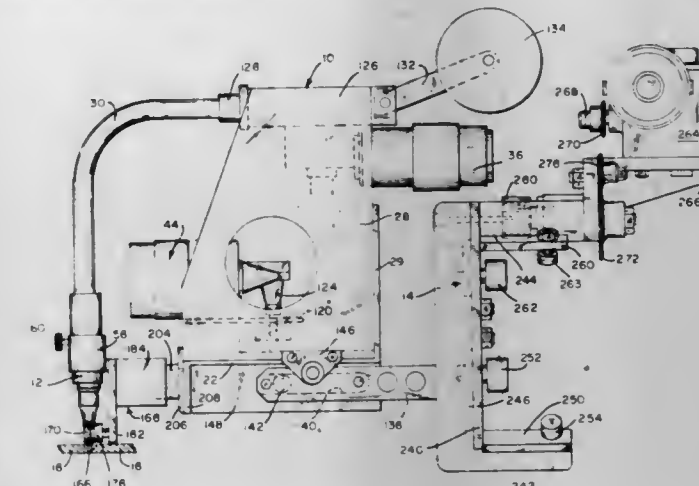
A device for installing trailer hitches. This device includes a telescoping sleeve combination mounted on legs with casters and the upper extremity includes a table with an adjustable bar, the table being elevated by hydraulic jack means.

3,750,255

**MEANS FOR CLAMPING PIPE SECTIONS**

Richard Carl Stanley, Tulsa, Okla., assignor to Midwestern Specialties, Ltd., Tulsa, Okla.  
Division of Ser. No. 778,416, Nov. 25, 1968, Pat. No. 3,681,560. This application Aug. 2, 1971, Ser. No. 168,187  
Int. Cl. B23p 19/00  
U.S. Cl. 29—200 B

7 Claims



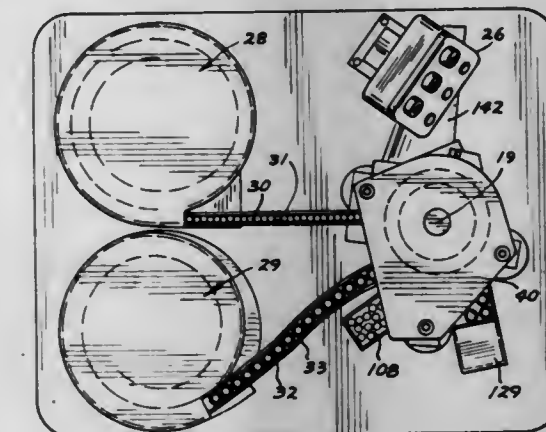
An internal clamping apparatus simultaneously engages the inner periphery of adjacent pipe ends in such a manner as to apply radially outward pressure thereto for reforming the ends into substantially identical circular configurations, regardless of any existing deformation in the pipe. The two reformed pipe ends are securely retained in an abutting position by the clamping means during an entire girth welding operation or the like at the pipe joint. Subsequent to the welding of the pipe joint, the internal clamping apparatus may be moved longitudinally along the pipe line to the position of the next pipe joint to be welded, and the entire operation may be repeated.

3,750,256

**CONTINUOUS MOTION TWO PART ASSEMBLY MACHINE**

James W. Elmer, Osseo, Minn., assignor to Inventors Engineering Inc., Minneapolis, Minn.  
Filed Nov. 29, 1971, Ser. No. 202,969  
Int. Cl. B23p 19/04  
U.S. Cl. 29—208 B

19 Claims



A continuous motion two part assembly machine comprising a rotatable turntable adapted to pick up parts to be assembled at provided locations at the periphery and which turntable carries the parts in a continuous motion. Plunger actuators are mounted for movement with said turntable, and can be operated by a stationary cam to first determine the presence and proper configuration of a first of said parts, rejecting a first of said parts not of proper configuration, removing a second of said parts carried thereby in the absence of the corresponding first part, assembling properly configured first parts with second parts, counting the assemblies made, and



subsequently removing the assembled parts from the unit. In addition, if a second part is missing, the first parts are sorted from the assembled parts after removal from the turntable. The unit comprises a continuous motion pick up, inspection, assembly and removal of parts utilizing cam operated working elements or plungers.

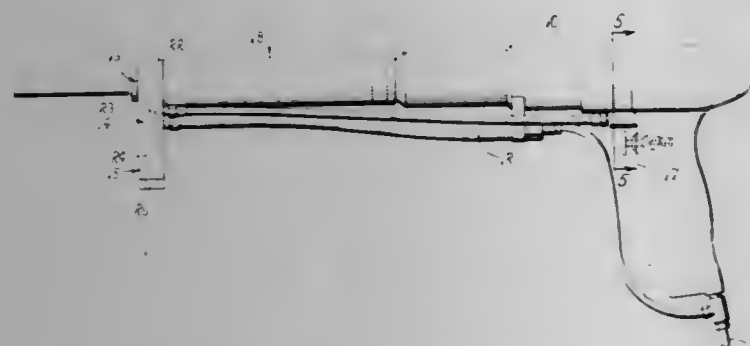
### 3,750,257 SYSTEMATIZED APPARATUS FOR DRIVING FASTENERS

Imre Berecz, Yorba Linda, Calif., assignor to Kaynar Mfg. Co., Inc., Fullerton, Calif.

Filed Dec. 30, 1971, Ser. No. 214,262  
Int. Cl. B23p 19/00, 19/04

U.S. Cl. 29—212 R

14 Claims



This construction relates to systematized apparatus for driving fasteners used in assembly of fabricated structures. The system includes a power-operated portable tool for automatically delivering individual threaded female fasteners for attachment to a cooperating bolt and sequentially rotating the fastener to form a bolted connection. The construction provides a supply of fasteners, a feeding mechanism to deliver individual fasteners to a driving station, and an automatically controlled power tool for drivably rotating the fastener. The construction has particular utility in driving fasteners having external wrenching surfaces of a diametral dimension less than that of the base of the fastener.

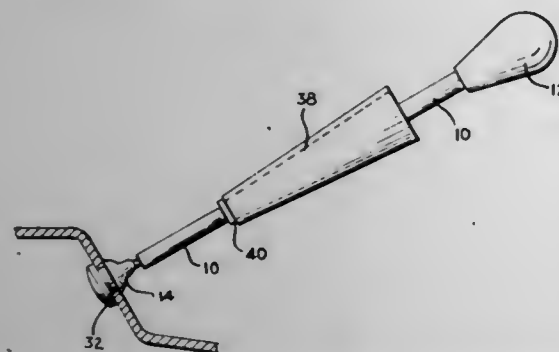
### 3,750,258 INSERTION TOOL FOR TIRE VALVE STEMS

John J. Sampo, 14001 Brenan Way, Santa Ana, Calif.

Filed Sept. 16, 1971, Ser. No. 181,151  
Int. Cl. B23p 19/04

U.S. Cl. 29—221.5

9 Claims



A tool for the insertion of valve stems in the wheel rims for tubeless tires is disclosed. The tool avoids the common practice of removing the tire from the rim for replacement or insertion of the valve stem. The tool is entirely hand powered and operated and comprises a push rod slidably mounted in a body sleeve which has a tapered interval wall with a very slight included angle, less than 10°, so that the rod can be pushed with a minimum of force to compress the bulbous end of the stem until it is discharged into the hole of the rim. The discharge face of the sleeve has a tip that inserts into the hole with an outside shoulder that bears against the rim as the rod is pushed through the sleeve to steady the sleeve and hold it in place.

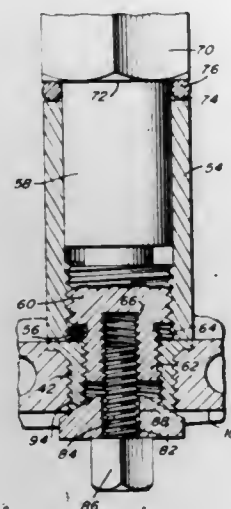
### 3,750,259 METHOD AND APPARATUS FOR REPAIRING THREADS OF A THROUGH BORE BY INSTALLING A THREADED SLEEVE

Thomas L. Timmons, 380 E. Benwood St., Covina, Calif.

Filed Dec. 14, 1970, Ser. No. 97,845  
Int. Cl. B23p 7/00

U.S. Cl. 29—401

4 Claims



An assemblage of components for use in renewing damaged threads of a bore and including (1) a reamer tool including a first inserted smooth cylindrical pilot end portion for reaming a bore with damaged threads to a smooth cylindrical over-size bore and including a tail portion for forming a counterbore at the outer end of the over-size bore, (2) a right hand threaded tap for forming right-hand threads in the over-size bore and including a smooth cylindrical head end pilot portion snugly receivable within the over-size bore, (3) a right-hand threaded shank including a diametrically enlarged head and a jam-type nut threadedly engaged therewith with left-hand threads and threadedly engageable in an inside and outside right hand threaded sleeve-type insert for installation within the threaded over-size bore, (4) an inside and outside right hand threaded sleeve insert and (5) a threaded nut-type flaring tool including a through compression bolt threadedly engageable in a blind bore formed in the first inserted end of the sleeve insert installation shank for flaring the first inserted end of the sleeve insert in the corresponding end of the threaded over-size bore. The reamer is of course initially utilized to enlarge a threaded bore having damaged threads after which the tap is utilized to form right-hand threads in the enlarged bore. The sleeve insert installation tool is thereafter utilized to turn the externally threaded sleeve insert into tight seated engagement within the threaded enlarged bore and the flaring tool with its companion compression bolt is thereafter utilized to flare the inner end of the sleeve insert within the threaded enlarged bore so as to prevent loosening of the insert within the threaded enlarged bore and removal of the insert from the threaded enlarged bore.

### 3,750,260 PROCESS FOR THE MAKING OF SLIDE FASTENERS, MEANS FOR CARRYING OUT THIS PROCESS AND FASTENER CHAIN MADE BY SAID PROCESS

Horst Jakob, Choisy-le-Roi, France, assignor to Societe Financiere Francaise de Licences et Brevets, Choisy-le-Roi, France

Filed Dec. 3, 1971, Ser. No. 204,593

Claims priority, application France, Dec. 8, 1970, 7044071  
Int. Cl. B23p 11/00, 19/04; B21f 45/18

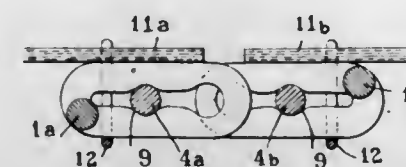
U.S. Cl. 29—408

6 Claims

The invention provides a process, for the manufacture of a continuous chain of two rows of linking components for the making of slide fasteners out of two rows each consisting of a thread shaped into a spiral, inside the whorls of which a longitudinal cord or strand is positioned, the improvement that

the said cord or strand is placed in an intermediate position in the width of each row by assembling the two corresponding rows while causing the linking components of each row to penetrate more deeply between the whorls of the other, in order to push back the length-ways inside cord or strand in the

and further advancing said shaft until the lodged projectile is pushed out of the muzzle of the barrel. The forward tip of the shaft includes a concave rubber disc for frictionally engaging the rear end of the projectile, whereby the shaft rotates with the advancing projectile.



latter row, whereafter these two rows are fixed on to two supporting tapes by means of lines of stitching, the stitches of said lines being inserted inside the free spaces between the cord or strand inside each row and the portions connecting the successive whorls thereof.

### 3,750,261 MEANS FOR MODIFYING SUCKER ROD

Jesse H. Iglehart, and Hilary H. Iglehart, both of Odessa, Tex., assignors to Rodco, Inc., Odessa, Tex.

Filed Aug. 9, 1971, Ser. No. 170,110

Int. Cl. B23p 19/02

U.S. Cl. 29—427

8 Claims



Method and apparatus for removing a scraper apparatus from the outer peripheral wall surface of a sucker rod comprising pulling the rod through a die wherein the die has an inner surface which circumferentially and slidably surrounds a marginal exterior length of the rod so as to enable part of the die to abuttingly engage the scraper apparatus in a manner which strips the scraper free from the rod.

### 3,750,262 METHOD AND APPARATUS FOR EXTRACTING LODGED PROJECTILES

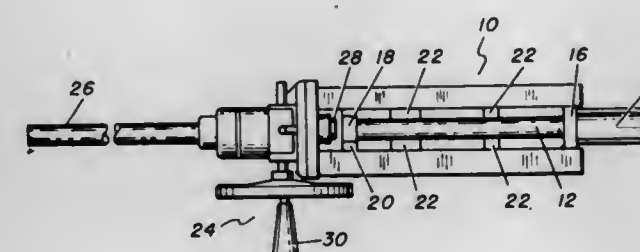
Willis H. Taylor, III, Clifton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 26, 1971, Ser. No. 192,100

Int. Cl. B23p 19/02

U.S. Cl. 29—427

7 Claims



A method for removing lodged projectiles wherein said method comprises the steps of: removing a barrel containing lodged projectile from a weapons system having a detachable launch barrel; placing the removed barrel in an elongated cradle having one opening in each of two end walls; aligning the longitudinal axis of the barrel with the center of said two openings; positioning the shaft of a torque-to-thrust jack in axial alignment with said openings, said one of openings surrounding the breech end of the barrel; advancing said shaft until its forward end makes contact with the lodged projectile;

### 3,750,263 METHOD FOR PRODUCING AN ASSEMBLY BY FRICTION WELDING

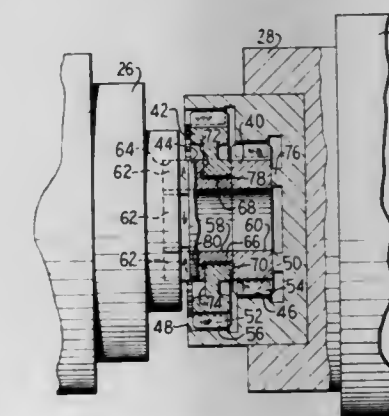
Ronald L. Satzler, Metamora, and Marion R. Calton, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 1, 1971, Ser. No. 148,780

Int. Cl. B23k 27/00

U.S. Cl. 29—470.3

5 Claims



Cluster gear assemblies are produced by a method and apparatus which join a plurality of pre-machined gears by a common joining member. The plurality of gears are held in relative nonrotative relationship by special holding means which further establish precise angular and axial alignment between the gears and axial alignment between the joining member and the gears. Joining of the various members to produce the assembly is accomplished by friction welding.

### 3,750,264 METHOD OF MANUFACTURING ROD, WIRE OR TUBE SHAPED PRODUCTS OF COMPOUND MATERIAL BY MEANS OF HYDROSTATIC EXTRUSION

Jan Nilsson, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vastera, Sweden

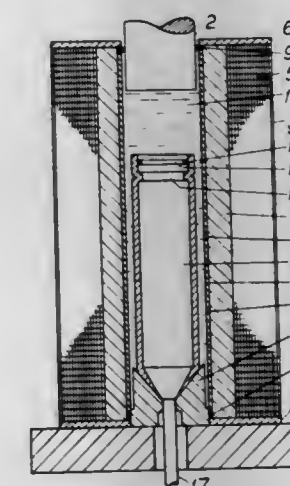
Filed Feb. 10, 1972, Ser. No. 225,077

Claims priority, application Sweden, Mar. 10, 1971, 3048/71

Int. Cl. B21c 23/22

U.S. Cl. 29—474.3

3 Claims

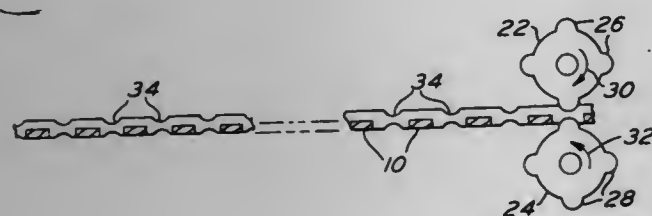


For manufacturing rod, wire or tube-shaped products of compound material, a billet which is composed of a core and a casing, of different materials, selected from aluminum and



cooper and their alloys, is hydrostatically extruded through a die. Either the core or the casing or both at their facing surfaces have an amount of oxides thereon which is substantially less than the amount required to form a continuous layer of molecular thickness when the billet is extruded with a selected extrusion ratio.

**3,750,265**  
**METHOD OF PREFORMING SOLDER TO A PLURALITY OF TERMINALS**  
Robert H. Cushman, Bethayres, Pa., assignor to Jade Corporation, Huntingdon Valley, Pa.  
Filed Apr. 5, 1972, Ser. No. 241,156  
Int. Cl. B23k 31/02  
U.S. Cl. 29—471.3 13 Claims



A method of preforming solder and soldering a plurality of leads to a plurality of terminals by using a single heating step. A solder strip is applied transversely to the axis of a plurality of terminals. The solder is pressed or rolled in place and shaped to be thinner in cross section in the area between the terminals.

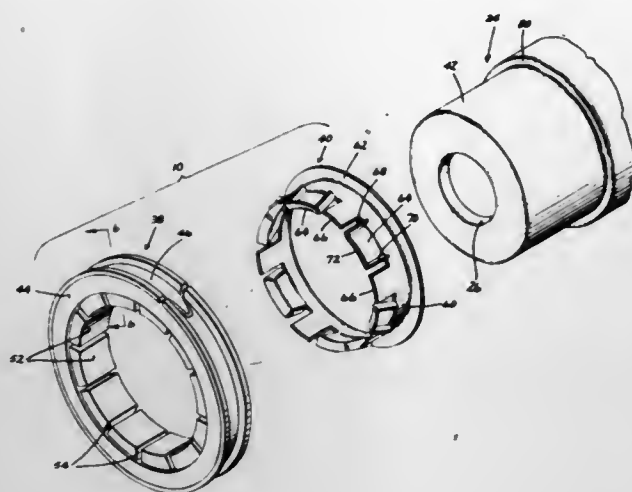
**3,750,266**  
**FLOW CONTROL OF FILLER ALLOY**  
Tsutomu Hikido, Sunnyvale, and Craig R. Moyer, Palo Alto, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.  
Continuation of Ser. No. 881,913, Dec. 3, 1969, abandoned.  
This application Aug. 25, 1972, Ser. No. 283,695  
Int. Cl. B23k 31/02

U.S. Cl. 29—490 1 Claim  
A method for controlling the flow of filler alloy used in the brazing of metals such as stainless steel. The method consists of applying on the surface of the metal a layer of metal which acts as a barrier to the filler alloy, thereby confining the alloy to the desired area to be brazed and thus preventing its flow over undesired areas of the surface of the metal. The flow control metal may, for example, be applied to the surface by scribing, plating or vapor-deposition depending on the type of flow control metal utilized.

**3,750,267**  
**METHOD FOR PRODUCING A RESILIENT MOUNTING ARRANGEMENT FOR ROTATING MACHINES**  
Charles W. Otto, Dekalb, Ill., assignor to General Electric Company, Fort Wayne, Ind.  
Division of Ser. No. 869,147, Oct. 24, 1969, Pat. No. 3,685,773. This application Dec. 20, 1971, Ser. No. 209,566  
Int. Cl. B21d 39/00; B23p 11/02

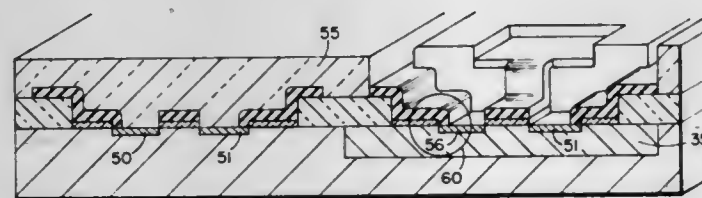
U.S. Cl. 29—507 8 Claims  
A method of producing a resilient mount attached to an end structure of a rotating machine, such as a dynamoelectric machine, in which in one form the resilient mount includes an annulus of resilient material and a rigid member formed with a plurality of angularly spaced apart flanged sections disposed about an axis. Initially the spaced apart flanged sections are disposed in the bore of the annulus and have free ends normally inclined toward the axis. These free ends are then forced outwardly, away from the axis of the rigid member, into inter-fitting engagement with the inner region of the annulus as the

rigid member is being pressed into firm frictional engagement with the end structure. In the assembled structure there is provided restrained relative movement between the components;



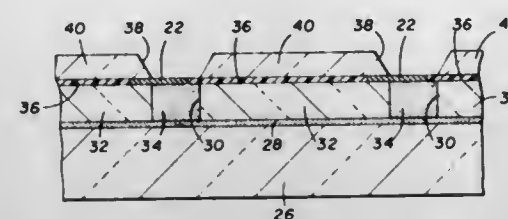
the annulus, the rigid member, and the structure on which the other two parts are attached, by a method which is relatively simple and inexpensive to practice.

**3,750,268**  
**POLY-SILICON ELECTRODES FOR C-IGFETS**  
Raymond C. Wang, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.  
Filed Sept. 10, 1971, Ser. No. 179,398  
Int. Cl. H01L 1/14; B01j  
U.S. Cl. 29—571 8 Claims



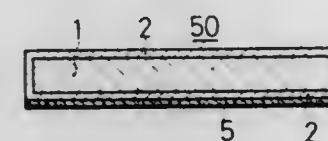
Poly-silicon electrodes are provided for use with source and drain regions of insulated gate field-effect transistors as well as a method for contacting silicon gate devices utilizing poly-silicon electrodes and a single etching step. The single etching step obviates the use of an additional masking operation for forming preohmic holes in the vicinity of the source and drain regions for the device. The provision of preohmic holes at the source and drain regions necessitates large area source and drain regions so as to permit clearance for the metallization through preohmic holes. These large areas decrease packing density. The subject method however permits high density packing of the silicon gate devices because small area source and drain regions and small area electrodes can be used. Because of the use of poly-silicon electrodes, the process allows the probing of the chip at intermediate stages in device fabrication. This allows the elimination of those chips which have not satisfied design limitations at an intermediate step in the fabrication process. In the process the source and drain regions and the electrodes are doped simultaneously in a diffusion step. In this diffusion process part of the source and drain regions are diffused through that portion of the poly-silicon contact extending over the source or drain region. In this manner ohmic contact is made between the electrodes and the underlying source or drain regions.

**3,750,269**  
**METHOD OF MOUNTING ELECTRONIC DEVICES**  
Richard B. Small, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.  
Filed July 6, 1970, Ser. No. 52,320  
Int. Cl. B01j 17/00  
U.S. Cl. 29—580 8 Claims



In a method of mounting electronic devices, a gold lead is connected to each contact pad of each wafer in a semiconductor slice. In a parallel step, a body of wafer receiving material is secured to a support and is thereafter separated into wafer receiving members. Then, a layer of epoxy resin is applied to the slice, and the slice is secured to the wafer receiving members with each wafer mounted on a wafer receiving member and with the gold leads positioned between the wafers and the wafer receiving members. After the mounting step, the wafers comprising the slice are separated and the wafer receiving members are disengaged from the support. The resulting wafer-wafer receiving member subassemblies are subsequently fabricated into thermal printheads by mounting the wafer receiving members on heat sinks and connecting electrical conductors to the gold leads.

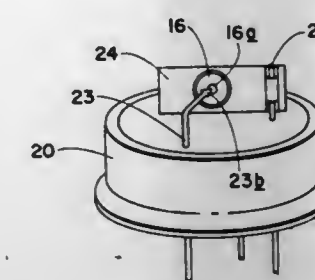
**3,750,270**  
**SEMICONDUCTOR STRAIN SENSITIVE ELEMENT OF PREDETERMINED TEMPERATURE COEFFICIENT OF RESISTANCE AND METHOD OF MAKING SAME**  
Katsuyuki Ishii, Nagoya, Japan, assignor to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya-shi, Japan  
Filed Aug. 4, 1970, Ser. No. 60,830  
Claims priority, application Japan, Aug. 7, 1969, 44/62575  
Int. Cl. B01j 17/00  
U.S. Cl. 29—580 2 Claims



A semiconductor strain sensitive element made by doping impurities into a semiconductor crystal wafer, or strip, to form plural regions of the same conductive type, but different temperature coefficients of resistance, and varying the proportionate volumes of said regions by polishing, or etching, to obtain an element having a predetermined temperature coefficient of resistance.

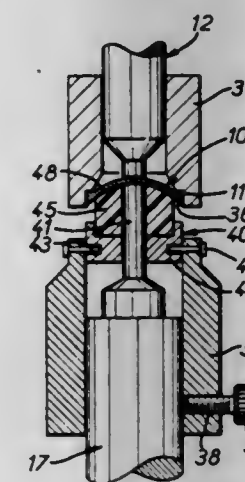
**3,750,271**  
**TRANSISTOR STRUCTURE AND METHOD OF MANUFACTURE**  
Jean M. Dupuis, Kanata, Ontario, Canada, assignor to Microsystems International Limited, Montreal, Quebec, Canada  
Filed Jan. 31, 1972, Ser. No. 222,174  
Claims priority, application Canada, Jan. 28, 1972, 133,394  
Int. Cl. B01j 17/00  
U.S. Cl. 29—587 4 Claims  
This invention relates to an improved transistor structure, particularly a "12-type" germanium alloy transistor. The in-

vention also relates to a method of manufacturing such a transistor, wherein the semiconductor device is free to move



during attachment thereto of the connecting leads, thereby eliminating stress upon the device.

**3,750,272**  
**MACHINING CONTACT LENSES OF FLEXIBLE MATERIAL**  
Gerard Gomond, Paris 17e, France, assignor to Essilor International (Compagnie Generale D'Optique), Joinville le Pont, France  
Filed Jan. 18, 1971, Ser. No. 107,068  
Claims priority, application France, Jan. 22, 1970, 7002216  
Int. Cl. B23p 13/04  
U.S. Cl. 29—558 9 Claims



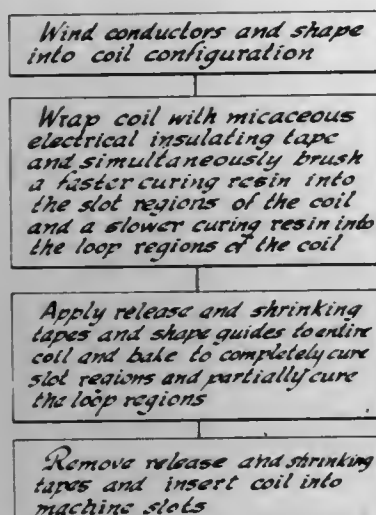
A method for machining contact lenses of flexible material such as silicone. The lens is centered on two rotary spindles of which one is a driving spindle and is clamped therebetween. An annular supporting member having a surface with the same curvature as the face of the lens maintains the shape of the flexible lens during rotation of the lens until it is hardened by the spraying of a jet of cooling fluid which may be liquid nitrogen or liquid air. The spraying of the lens continues while the diameter is reduced, if such reduction is necessary. The supporting member is then removed and the peripheral edge of the lens is machined.

**3,750,273**  
**METHOD OF MAKING FLEXIBLE LOOP, HARD SLOT COILS FOR DYNAMOELECTRIC MACHINE WINDINGS**  
Norman Anthony Beddows, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.  
Filed Nov. 18, 1971, Ser. No. 199,845  
Int. Cl. H02k 15/00

U.S. Cl. 29—596 5 Claims  
A flexible loop, hard slot coil is described wherein the pre-formed coil is wrapped over the entire coil length with a single micaceous insulating tape. The resin system applied between tape layers wrapped about the slot regions of the coil, however, contains a greater weight percentage of cross-linking catalyst than is contained in the resin system applied atop the loop regions of the coil to produce a differential cure rate for the different sections of the coil, i.e., the resin system in the



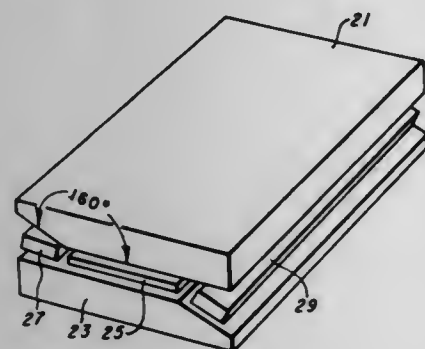
slot sections of the coil becomes fully cured during subsequent baking of the coil while the resin system in the loop portions of the coil remains partially cured to retain flexibility therein. Flexible loop, hard slot coils also can be fabricated by varying the weight percentage of epoxide resins forming a resin blend



to produce a more rapid cure rate in the slot portions of the coil relative to the loop portions of the coil. The resultant flexible loop, hard slot coil not only facilitates winding of dynamoelectric machines by permitting "raising of the jump" in a cold state but also eliminates the need for a high degree of precision in the drop angle of the coil loops.

### 3,750,274 METHOD OF MAKING GLASS BONDED RECORDING HEADS

John Bealle, and John H. Cash, Jr., both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.  
Filed May 28, 1971, Ser. No. 148,038  
Int. Cl. G11b 5/42; H01f 7/06  
U.S. Cl. 29—603 8 Claims



Disclosed is a method of fabricating recording heads, or transducers, for an electromagnetic recording device, and the resulting product. In a preferred embodiment, a pair of selectively geometric ferrite slabs, e.g., having a beveled edge, are selectively positioned and spaced apart by a sheet of nonmagnetic metallic foil of a desired gap thickness. Low melting temperature glass is inserted in each of two grooves formed by the beveled edges at opposite edges of the ferrite slabs. The structure is placed in a furnace and the glass is melted to fill the grooves, thus bonding the slabs together. The structure is then severed into a plurality of recording heads of the desired size and shape.

### 3,750,275 MANUFACTURE OF ELECTRICAL COILS

Albert Ernest Kay, and Arthur Wellesley Stewart Clark, both of London, England, assignors to Aluminium Foils Limited, London, England  
Filed Aug. 23, 1971, Ser. No. 174,203  
Claims priority, application Great Britain, Aug. 28, 1970, 41,513/70

U.S. Cl. 29—605 2 Claims  
Int. Cl. H01f 7/06  
A lacquer insulated metal foil coil has continuous interturn and end face insulation the latter being produced from lacquer exuded from between the turns in a heating step.

### 3,750,276 MAGNETIC REED CONTACT UNIT PRODUCING APPARATUS

William Dennis Bishop, Beeston, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland  
Filed Apr. 5, 1971, Ser. No. 131,194  
Claims priority, application Great Britain, June 26, 1970, 31,049/70

U.S. Cl. 29—622 5 Claims  
Int. Cl. H01h 11/00



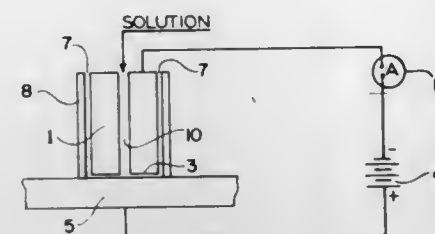
Apparatus for, and methods of, producing magnetic reed contact units wherein a first contact member which is releasably held at one end thereof by support means, magnetically supports a second contact member at the other end thereof such that the ends of the contact members are overlapping and the longitudinal axes thereof are in alignment, the alignment being maintained during subsequent stages of the production method by a magnetic field established in or in the vicinity of the second contact member, wherein a double open-ended enclosure member is passed over the contact members, the means for establishing the aligning magnetic field being de-energised and removed to facilitate this operation, and wherein the aligned contact members are sealed within the enclosure member such that end portions thereof are overlapping and separated from each other by a desired amount.

### 3,750,277 METHOD OF MAKING LEAD FRAMES FOR SEMICONDUCTOR DEVICES

Marvin B. Happ, Hingham, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.  
Filed Oct. 23, 1970, Ser. No. 83,578  
Int. Cl. H01b 13/00

U.S. Cl. 29—624 9 Claims  
A method of producing lead frames for semiconductor devices in which a sheet of conductive material is initially

removed by chemical or electrochemical milling to produce a substantially stress-free reduced thickness portion therein. A

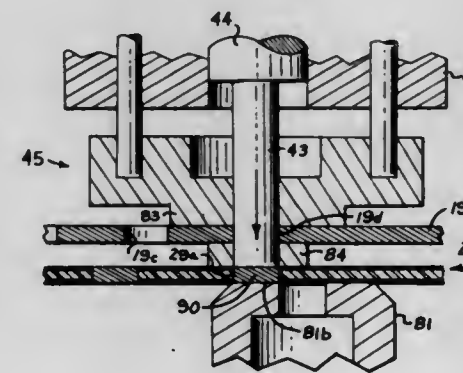


lead frame is then stamped from the sheet having lead fingers with substantially stress-free ends which are formed from the thinner material of the reduced thickness portion.

### 3,750,278 PRINTED CIRCUIT BOARD WITH THROUGH CONNECTION AND METHOD AND MACHINE FOR MAKING THE THROUGH CONNECTION

Donald J. Baker, Williamsville, N.Y.; Stanley J. Gartner, Emporium, Pa., and Robert S. Oberg, Kenmore, N.Y., assignors to Sylvania Electric Products, Inc., Buffalo, N.Y.  
Division of Ser. No. 813,514, April 4, 1969, abandoned. This application July 17, 1970, Ser. No. 62,772  
Int. Cl. H05k 3/00

U.S. Cl. 29—628 4 Claims

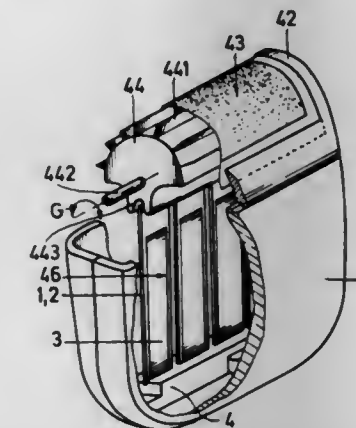


A printed circuit board having a through connected between conductors on opposite sides of the board which is provided by a conductive element press-fitted in a hole extending through the conductors and insulating material of the circuit board and peened at both ends. The conductive element is inserted into the printed circuit board by punching a hole in the board at a predetermined receiving position, positioning conductive stock material between the retracted punch and the hole, positioning an anvil to enclose the hole on the side of the board opposite that facing the punch, and actuating the punch to remove the conductive element from the stock material, press the element into the hole and peen the element in one stroke. A machine for inserting the conductive element into the printed circuit board comprises a mechanism for holding and indexing the printed circuit board, a punch, a reel supported on one side of the punch and upon which a strip of the conductive stock material is wound, a punch head including a stripper and die assembly in registry with the punch and within which conductive strip material supplied by the reel is slidably retained, a mechanism for indexing the strip material, a female die in registry with the punch on the side of the circuit board opposite that facing the punch and adapted to be laterally shifted so as to function as an anvil with respect to said punch, and a cammed disk having three cam surfaces for actuating said punch, punch head and shiftable die through appropriate followers and linkages.

### 3,750,279 DRY SHAVER CONSTRUCTION

Christian Cobarg, Steinbach; Erich Fenner, Gauting; Max Guntersdorfer, Munich; Walter Heywang, Neuheferloh; Franz Otto, Munich; Rudolf Schofer, Ebersberg, and Helmut Thomann, Munich, all of Germany, assignors to Braun AG, Frankfurt (Main), Germany  
Filed Sept. 9, 1971, Ser. No. 179,066  
Claims priority, application Germany, Sept. 11, 1970, P 20 45 152.9

U.S. Cl. 30—43.9 20 Claims  
Int. Cl. B26b 19/12, 19/02

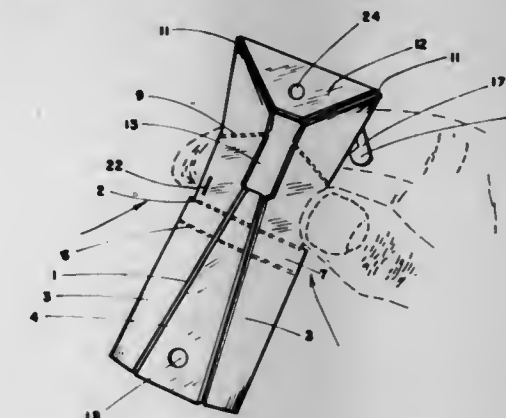


A dry shaver has an oscillatable shear unit and a drive connected with the unit for oscillating it, the drive being composed of at least one body having a plurality of bi-laminar oscillatory elements of ferro-electric ceramic material which are electrically and mechanically connected in parallel.

### 3,750,280 MULTIPLE PURPOSE FOLDABLE PLASTIC HANDLE FOR RAZORS OR THE LIKE

Christian LePaliscot, and Juan Quintero Venegas, both of Carrera 16 No. 39A-99, Bogota, Colombia  
Filed May 1, 1972, Ser. No. 249,228  
Int. Cl. B26b 21/00

U.S. Cl. 30—85 3 Claims



A foldable plastic handle for razors or like articles is provided with a supporting head for bearing a shaving blade assembly, a brush, depilating device or similar articles of a toilet set. The handle according to the invention is comprised of a plastic blank provided with channels so patterned on both faces thereof as to define a number of flat sections which are foldably hinged to each other through the hinge joint formed by foldable channel bottom webs, the folding operation of the flat sections of the plastic blank being carried out to build up a locked handle assembly comprising the handle shank properly together with the bearing head ready for its intended use; from the condition of assembled handle it can be dismantled into the blank extended position, and then, the so opened out blank can be folded to a closed form in which the device has a smaller size having a rectangular box shape suitable to be easily handled as personal effects.

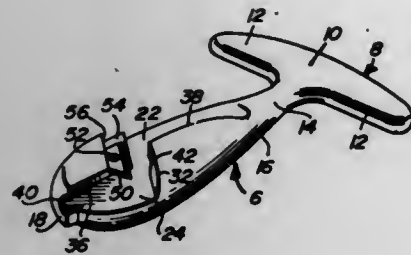


### 3,750,281 WIRE STRIPPING TOOL

William F. Belling, Rte. 3, Box 156, La Crosse, Wis.  
Filed Dec. 20, 1971, Ser. No. 209,889  
Int. Cl. H02g 1/12

U.S. Cl. 30—90.8

5 Claims



A readily attachable and detachable handtool for use in the telephone industry. It enables a user to cleave and strip off the usual web attached support wire of a plastic-covered cable. An elongated body or head has a surface provided at a rearward end with a T-shaped handle. Appropriately grooved abutments and oriented recesses define a guideway for the readily insertable and removable support wire. An appropriately mounted cleaving blade has a reversible cutting edge bridging the guideway and which comes into play as the tool is manually pulled along the web-attached support wire.

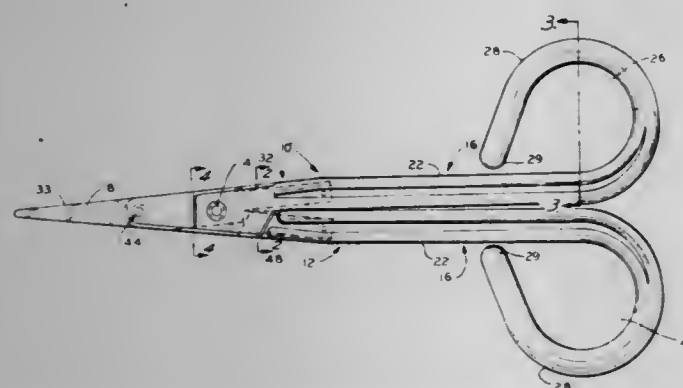
### 3,750,282 SCISSORS

Douglas G. Eaton, Lakewood; Wade L. Wacker, Ashland, and Theodore C. Appleman, Mansfield, all of Ohio, assignors to Web Products Inc., Ashland, Ohio

Continuation-in-part of Ser. No. 77,814, Oct. 5, 1970, abandoned. This application Oct. 4, 1972, Ser. No. 294,932  
Int. Cl. B26b 13/02, 13/28

U.S. Cl. 30—254

4 Claims



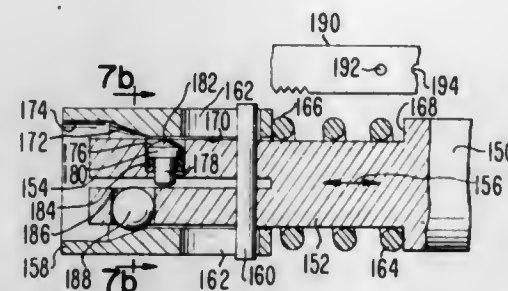
The specification and drawings disclose scissors which are particularly suited for use as disposable surgical scissors. The embodiment shown comprises a pair of pivotally interconnected handle and blade units with each handle and blade unit including an elongated molded plastic handle section having first and second end portions with a finger receiving loop at the first end portion and a blade member molded in the second end portion. The blade member is formed from a relatively thin strip of metal and has a cutting blade section and a somewhat narrower shank end. The shank end extends longitudinally into the handle section, whereas the cutting blade section extends outwardly from the handle section. Preferably, the shank end is substantially completely molded within the handle. Additionally, the second end portion of the handle preferably extends outwardly along one lateral face of the cutting blade section and means are provided for connecting the outermost end of the second end portion to the blade.

### 3,750,283 BLADE ATTACHMENT MEANS FOR SABER SAW ASSEMBLY

Simon J. Hoffman, P.O. Box 748, Saratoga, Calif.  
Filed Nov. 9, 1970, Ser. No. 97,425  
Int. Cl. B27b 19/08

U.S. Cl. 30—338

10 Claims



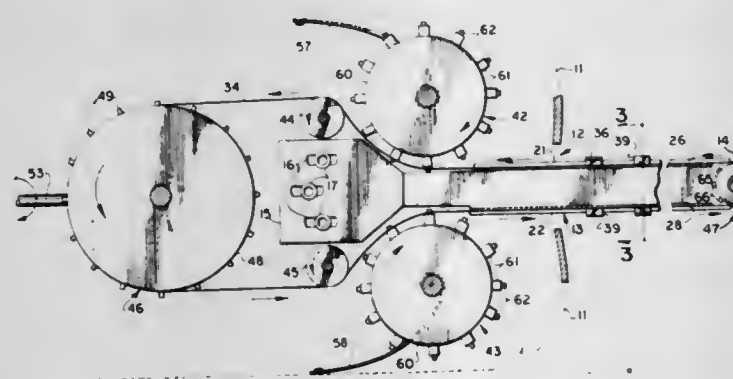
Means for attaching a saber saw blade to the reciprocating portion of a saber saw assembly, wherein the blade can be releasably secured to the reciprocating portion which has means biased in a manner to hold the blade in such position. A number of embodiments of the attachment means provide for quick coupling and release of a saber saw blade to the assembly. In one group of embodiments, a blade holding means utilizes a torsion spring and in a second group of embodiments, the attachment means utilizes a compression spring. The support for the attachment means can be provided with any one of a number of improved abutments for engaging a workpiece. The support can be provided with means for moving the blade in a direction away from the kerf in a workpiece.

### 3,750,284 PORTABLE POWER SAW APPARATUS

Walter D. Swift, 617 E. Lee St., Thomaston, Ga.  
Filed Jan. 3, 1972, Ser. No. 214,818  
Int. Cl. B27b 13/10, 33/06

U.S. Cl. 30—380

10 Claims



A saw generally of the keyhole or saber saw variety. The saw blade comprises an endless band driven in one direction and having a number of cutting members which are spaced apart from the plane of the band. The saw band travels along a channel, and the cutting members extend outside the channel for cutting exposure to a work piece. The saw can be connected with a conventional portable drill for motive power, or alternatively can be provided with a self-contained motor.

### 3,750,285 GUARDED RAZOR EDGE APPARATUS

Gunnar P. Michelson, 505 Sea Ranch Dr., Santa Barbara, Calif.

Filed July 6, 1970, Ser. No. 52,527  
Int. Cl. B26b 21/54

U.S. Cl. 30—346.58

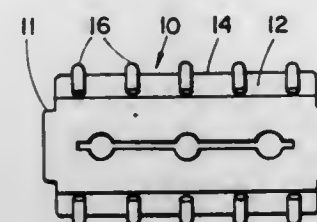
14 Claims

A razor blade has a guarded cutting edge comprising a multiplicity of relatively short and thin guard members bent into

relatively V-shaped form and permanently secured in substantially equidistantly spaced relation to the blade edge.

A method for applying the guard members to the blade edge uses guard members having a hardness which is less than that

the wall of a dental plate in which the same is to be imbedded or contained and a valve structure retained within the sleeve



of the blade edge. The guard members are bent over the blade edge using the relatively greater hardness of the blade edge to slightly deform the guard members and thereby clamp them to the blade edge.

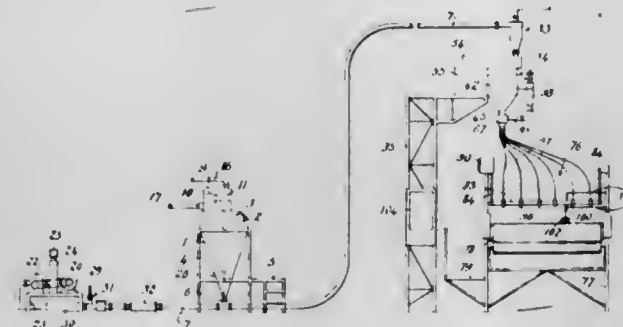
### 3,750,286 APPARATUS FOR SUPPLYING SALT TO CURD IN CHEESE MANUFACTURE

Edmund Kerran Whelan, Hawera, New Zealand, assignor to The National Dairy Association of New Zealand Limited, Wellington, New Zealand

Filed Jan. 6, 1972, Ser. No. 215,780  
Int. Cl. A01j 25/00

U.S. Cl. 31—46

8 Claims



The apparatus comprises an endless conveyor having an upper run on one end of which milled and unsalted curd can be placed so that the curd will be carried as a layer to the other end of the run for discharge. A salting mechanism, including an elevated salt distributing hopper, is adapted to feed salt to a salt distributing boom lying over the upper run of the conveyor, the salt being conveyed by salt feed tubes extending from the salt distributing hopper to the boom. A sensing device is positioned to move upwardly and downwardly with rise and fall in the level of the layer of curd on the upper run of the moving conveyor and the rate of flow of salt from the storage hopper through the feed tubes to the distributing boom is controlled in response to the upward and downward movements of the sensing device.

### 3,750,287 VALVE DEVICE FOR DENTAL PROSTHESIS

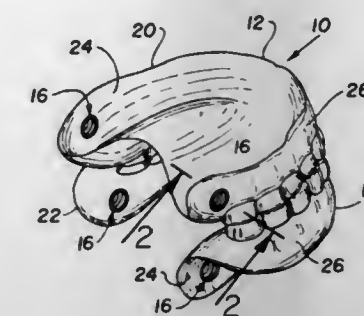
Jerome E. Bloom, 171 Atlantic Ave., Hempstead, N.Y.  
Filed Aug. 25, 1972, Ser. No. 283,844

Int. Cl. A61c 13/24

U.S. Cl. 32—3

5 Claims

A valving device for use with dental prosthesis in which the device includes a sleeve of a length in excess of the width of



for subsequent removal and substitution thereof by a new valve structure.

### 3,750,288 ORTHODONTIC ARCH WIRE BRACKET ASSEMBLY

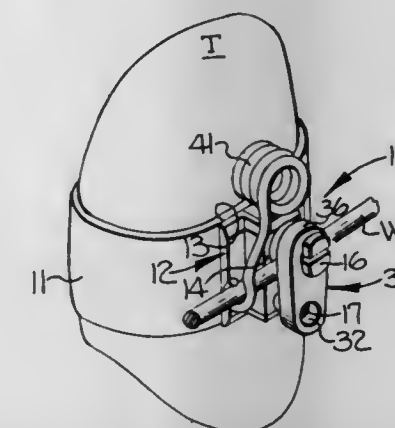
Fay H. Culbreth, 2300 Red Fox Trl., Charlotte, N.C.

Filed May 9, 1972, Ser. No. 251,786

Int. Cl. A61c 7/00

U.S. Cl. 32—14 A

9 Claims



An orthodontic arch wire bracket assembly for attachment to a tooth band for receiving an elongate arch wire and being characterized by a two-piece assembly which is easy to assemble and disassemble and eliminates the use of conventional tie wires, pins and by-pass clamps. The bracket assembly includes a body member for attachment to a tooth band and having first and second post members extending from the front surface of the body member and protruding outwardly therefrom and being spaced apart to form an orthodontic arch wire bracket receiving channel therebetween. The bracket assembly further includes a retaining member having means at each end thereof for receiving the first and second post members for assembly thereon in such a position that the retaining member spans the channel for holding the arch wires therein. The assembly further includes means for positioning the retaining members on the post members so as to maintain the retaining member outwardly from the body member for maintaining the channel to accommodate the arch wire and means for maintaining the retaining member on the post members.

### 3,750,289 CENTRIC RELATING DEVICE

Niles F. Guichet, 320 Olympia Pl., Anaheim, Calif.

Filed July 26, 1971, Ser. No. 166,187

Int. Cl. A61c 11/00

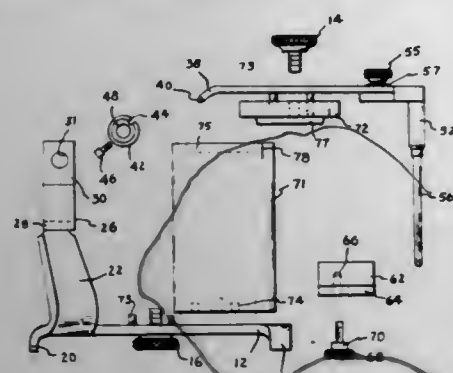
U.S. Cl. 32—32

10 Claims

A device is described which can be used to orient, precisely, dental casts in centric occlusion. The device comprises upper and lower frames that have dental cast support means and that are hinged together in a joint along the condylar axis. The joint permits only pivotable movement of the members in a medial plane. One of the frames, preferably the lower, has



centering pivot pins with tapered ends that seat in mating recesses in the joint component of the other frame. A centric inspection or gauge block is provided together with index members that can be secured to the frames to permit inspection of the device. An alternative and preferred centric inspection



tion means comprises a pair of blocks, one of which bears at least one index mark and the other of which supports a magnification lens opposite the mark with a calibrated field to observe any inaccuracies in the centric relation of the frames. The device is used to mount the dental casts to their support rings while using check bite means to orient the casts.

3,750,290

## CLOTH LAYING MACHINE

Roland Stengle, Stuttgart-Munster, Germany, assignor to Krauss U. Reichert, Spezialmaschinenfabrik, Fellbach, Germany

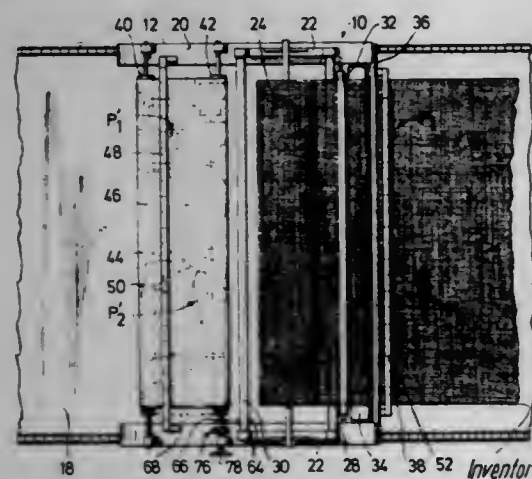
Filed June 16, 1971, Ser. No. 153,672

Claims priority, application Germany, June 20, 1970, P 20 30 559.3

Int. Cl. A41h 1/00

U.S. Cl. 33-1 R

9 Claims



Apparatus for determining whether an imperfection in fabric will lie within or without a pattern to be cut out from the fabric while the fabric is being laid out on a cutting table by means of a carriage for a supply of the fabric to be laid out which also carries a replica of the pattern to be cut and means to move the replica to correspond with the laying out of the fabric and indicia means to correlate the positions of imperfections in the cloth with the replica of the pattern to be cut.

3,750,291

## PANTY HOSE MEASURING MEANS

Caley A. Foreman, Grenada, Miss., assignor to U. S. Industries, Inc., New York, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,101

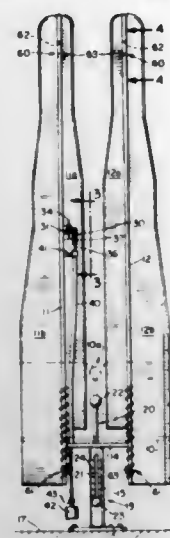
Int. Cl. A41h 1/00

U.S. Cl. 33-2 A

3 Claims

Panty hose measuring means having a pair of leg forms marked with length scales for measuring and inspecting the

various parts of the garment, pressure responsive sensing means actuated by the garment being tested for uniformly fix-



ing the proper position of the garments on the leg forms for measuring, and stride or crotch measuring means for determining the crotch position of the garment.

3,750,292

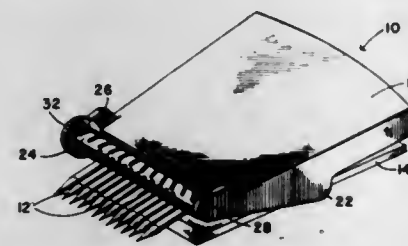
## MARKING DEVICE

Fred R. E. Dodge, 630 Larchmont Dr., Daly City, Calif.

Filed Jan. 11, 1971, Ser. No. 105,209

Int. Cl. B43I 13/00

7 Claims



A marking device to facilitate applying guidelines, texturing or script writing and the like to a working surface such as drafting paper, architectural plans, or any graphic media. Means are provided to hold a plurality of marking elements in equally spaced-apart relationship with means to selectively adjust the spacing between the extending ends of the elements.

3,750,293

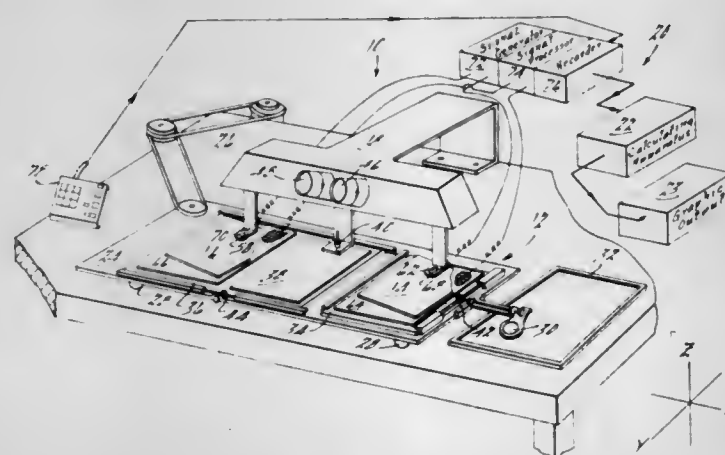
STEREOPLOTTING METHOD AND APPARATUS  
Robert B. Forrest, Union Lake, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 10, 1971, Ser. No. 122,844

Int. Cl. B43I 13/16

U.S. Cl. 33-20 D

40 Claims



A method and apparatus for obtaining three-dimensional positional or coordinate information for a scene from two

stereo images of that scene. An operator views a stereoscopic image of a scene which need not be in exact proportion to that scene, but can be distorted or warped. The operator traces along and records image positions of all conjugate points or lines of interest in the overlap area of the stereo images. Calculations convert these recorded image positions to the three-dimensional coordinates the actual points had in the image scene.

3,750,294

## FLOATING THICKNESS MONITOR

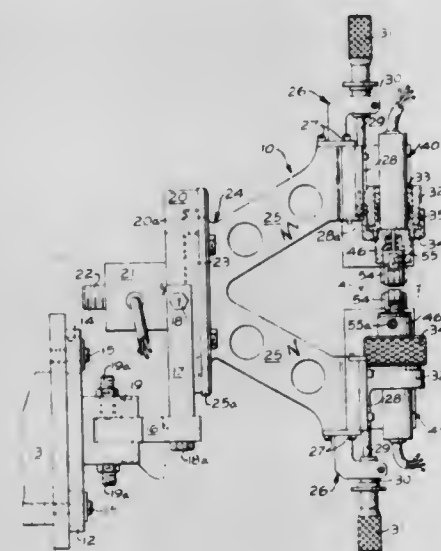
William H. Belke, Peoria; Weldon L. Phelps, Dunlap; William E. Streight, East Peoria, and Robert W. Untz, Hanna City, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 18, 1971, Ser. No. 154,386

Int. Cl. G01b 7/06

U.S. Cl. 33-147 L

1 Claim



An apparatus for measuring the thickness of travelling sheet materials employs a pair of linear displaceable transducers which are disposed in aligned opposition so their respective sensors contact the opposite side of the sheet material, with the sensors mounted so they can "float" with the material to compensate for vibration or movement while maintaining a separation equal to its thickness. Each transducer output is the analog of the displacement of its sensor from a zero position and these analogs can be combined to produce a difference output which is directly proportional to the instantaneous material thickness between the two sensors. The output signal can operate a visual display or recorder indicating the thickness dimension of the sheet material at all times.

3,750,295

## MEASURING MACHINE

Edwin Nordmann, and Gerhard Erler, both of Dresden, Germany, assignors to Veb Werkzeugmaschinenkombinat "Fritz Heckert" Karl-Marx-Stadt, Karl-Marx-Stadt, Germany

Filed July 22, 1971, Ser. No. 165,148

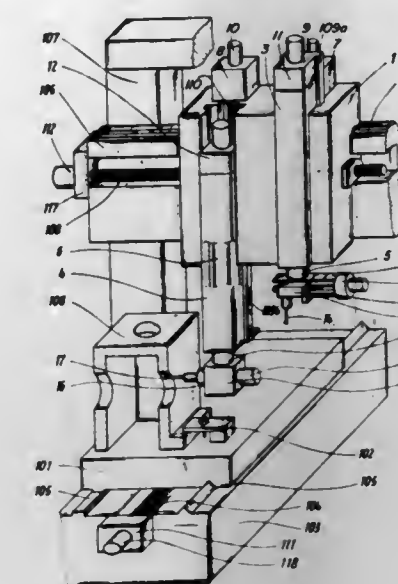
Int. Cl. G01b 7/00

U.S. Cl. 33-174 L

23 Claims

A measuring machine has two independently driven spindles mounted on two independently driven slides on an inde-

pendently driven carriage, and a feeler device is mounted on each spindle and has a feeler for sensing a body to be mea-



sured, the feelers being connected by an electric measuring circuit with means for recording distances measured along the body.

3,750,296

## PRECISION MEASURING DEVICE HAVING TWO SCALES

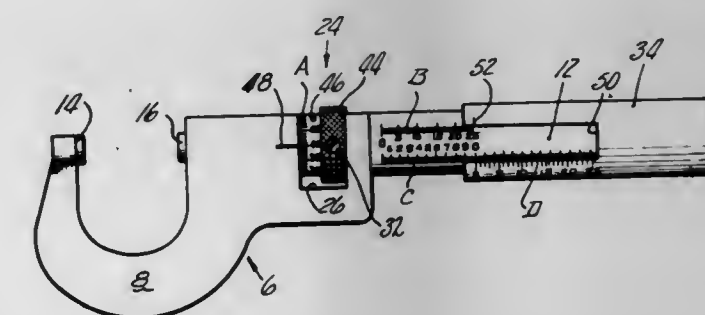
George F. Kindl, Newington, and Olean E. Michaud, Bristol, both of Conn., assignors to Pratt & Whitney Inc., West Hartford, Conn.

Filed Sept. 9, 1971, Ser. No. 178,897

Int. Cl. G01b 3/18

U.S. Cl. 33-166

3 Claims



A micrometer has a frame, including a hub portion, with a threaded spindle mounted for longitudinal movement. The spindle is longitudinally displaced by a rotatable drive member mounted in the frame in threaded engagement with the spindle. A thimble is secured to the spindle for longitudinal movement over the hub portion of the frame. First and second scales, graduated in a first unit of measurement, are respectively imprinted on the drive member and the hub portion; and the third scale and a vernier scale, graduated in a second unit of measurement, are respectively imprinted on the hub portion and the thimble. The micrometer permits dual readout of physical dimensions.

3,750,297

## ULTRA-ACCURATE GAUGING APPARATUS

Francis M. Linley, Jr., Banks Rd., Easton, Conn.

Filed Apr. 5, 1971, Ser. No. 130,991

Int. Cl. G01b 5/02, 5/16

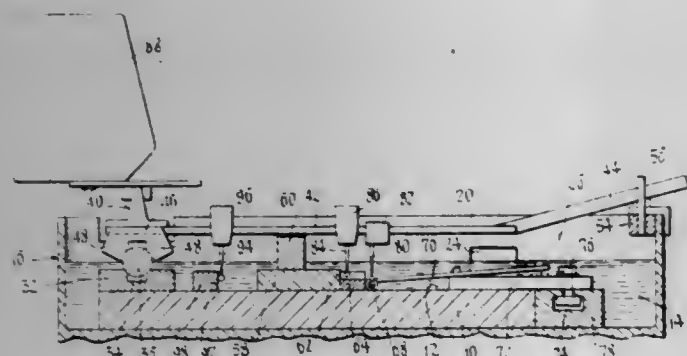
U.S. Cl. 33-174 L

10 Claims

An ultra-accurate apparatus for gauging the accuracy of workpieces such as screw threads and the like. The workpiece and an accurate gauging standard or template are disposed on



a base alongside each other, and are contacted respectively by pilot and sensing probes mounted on a single carriage which has a substantially friction-free fluid bearing arranged to provide for translational movement of the carriage horizontally along the workpiece and the gauging standard, and also for pivotal movement in vertical parallel planes. The carriage also carries an indicator and an electronic movement-amplifying means which connects the sensing probe to the indicator whereby minute changes in the position of the probe are evidenced in a magnified manner by the indicator. The friction-free fluid bearing comprises a bar or slide which is continuously rotated. In one embodiment the bar is at least partially immersed in a liquid such as kerosene, in which it slowly



turns. In another embodiment the bar is in air, and is either turned more rapidly or engaged with larger bearing surfaces, or both. Bearings of the carriage rest on the slide bar. Due to the provision of the specific type friction-free bearing of the invention and the carrying of the indicator (which is self contained) by the carriage, there are no trailing wires, flexible air tubes or any other connections whatsoever between the carriage and the base or other parts of the apparatus. Since the only contact between the carriage and the base is through the substantially friction-free liquid or fluid bearing, no adverse influences are brought to bear on the carriage, which might impair the readings of the indicator. In consequence, gauging to tolerances of less than ten millionths of an inch is consistently possible.

### 3,750,298 GAS GAUGES

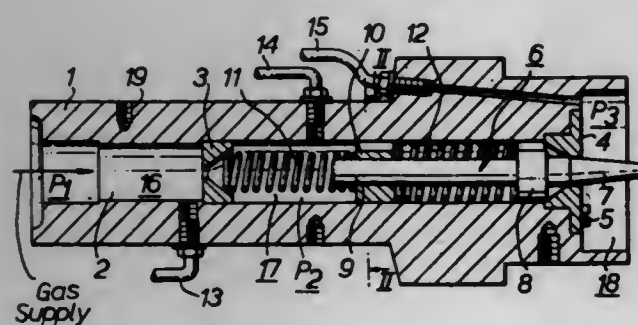
Edward Bruce Turner, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England  
Filed Oct. 21, 1970, Ser. No. 82,681

Claims priority, application Great Britain, Oct. 24, 1969, 52,358/69

Int. Cl. G01b 3/22, 13/02

U.S. Cl. 33—172 R

4 Claims



A gas gauge for measuring strain of a specimen comprising a conduit for constraining a flow of gas and first and second gas flow restricting orifice members located in the conduit. The second member being located on the downstream side of the first member and a tapered throttling needle adapted to contact the specimen is arranged such that axial movement of the needle regulates the flow of gas through the orifice in the second member. The gas pressures upstream of said first

member and downstream of the second member are measured and changes in the pressure in the region of the conduit between the first and second members are also to provide an indication measured of the strain of the specimen.

### 3,750,299

TRACK APPARATUS WITH LASER BEAM REFERENCE  
Franz Plasser, and Josef Theurer, both of Johannesgasse, 1010 Vienna, Austria

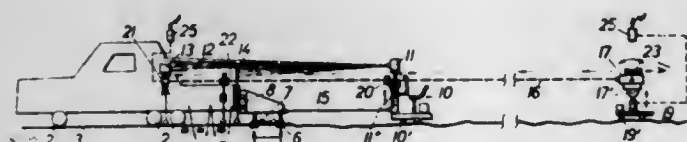
Division of Ser. No. 3,762, Jan. 19, 1970, Pat. No. 3,706,284.

This application Aug. 30, 1971, Ser. No. 176,129

Claims priority, application Austria, Jan. 22, 1969, 646/69  
Int. Cl. E01b 35/08, 35/10

U.S. Cl. 33—287

14 Claims



A laser beam reference or datum in a track surfer, liner or surveying apparatus is intercepted by a mask or sensor which is held in a measurably fixed relationship to the grade rail. This sensor is connected with the track lining or leveling tool, or a track position recorder or signaling instrument, and control signals from the sensor in response to laser beam impingement thereon operate the respective tool or recording or signaling instrument.

### 3,750,300

NORTH-SEEKING GYRO PENDULUM

Hans Tumback, Überlingen/Bodensee, Germany, assignor to Bodenseewerk Geratetechnik GmbH, Überlingen/Bodensee, Germany

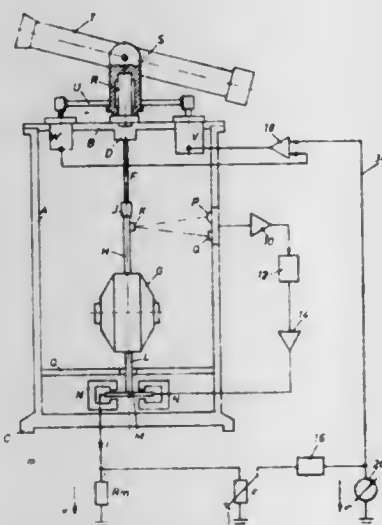
Filed Feb. 24, 1971, Ser. No. 118,538

Claims priority, application Germany, Feb. 25, 1970, P 20 08 702.9

Int. Cl. G01c 19/38

U.S. Cl. 33—324

7 Claims



A gyro rotor case is suspended from a frame by a tape. Below the gyro case is a torque motor connected to the frame and gyro case. A pickoff produces an electrical signal which is a measure of the azimuthal deviation of the gyro case from the torsionally unstressed position of the tape and is used to control the torque motor. The current at the torque motor is used to produce an electrical signal which controls a servomotor through a servoamplifier. The servomotor adjusts an instrument for indicating north by rotational movement. The extent of the rotational movement produces an electrical signal which is fed back to the servomotor through the servo-amplifier.

### 3,750,301

SPIRIT LEVEL WITH CLAMPING ACTION

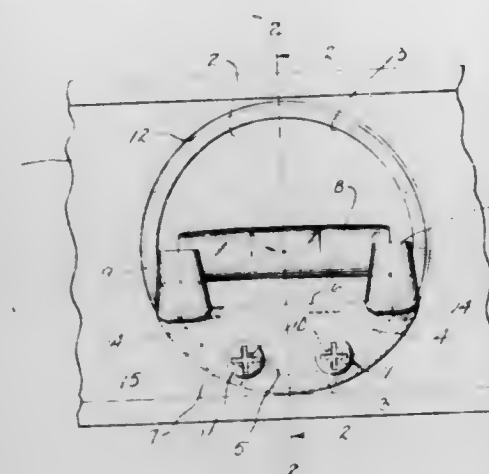
George A. Johnson, Mequon, Wis., assignor to Johnson Products Company, Inc., Milwaukee, Wis.

Filed Feb. 18, 1971, Ser. No. 116,383

Int. Cl. G01c 9/28

U.S. Cl. 33—379

1 Claim



A spirit level frame is provided with an annular opening. A vial holder includes a pair of spaced clamp members which slip over the frame opening edge and are clamped to the frame, as by tightening screws. To assist the clamp in holding the members together, cooperating ridge and groove means are provided. In addition, projections on the holder and the surfaces of the screws are on an arc of a circle having the same radius as the opening edge for assisting in proper positioning of the holder.

### 3,750,302

JET DEVICE

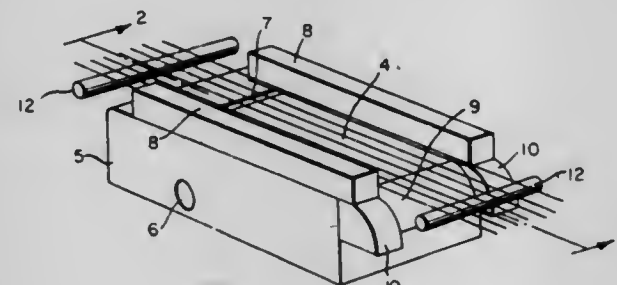
Drexel Kermit Smith, Hendersonville, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 23, 1971, Ser. No. 136,866

Int. Cl. F26b 13/00

U.S. Cl. 34—154

8 Claims



An apparatus for heat treating a plurality of filaments arranged in a ribbon-like array that includes a base having a planar surface, a pair of upstanding walls attached to the base between which the filaments pass for treatment and a transverse slot through the planar surface in communication with a source of heated pressurized fluid, improves uniformity and efficiency of heat transfer to the filaments. A particular relationship between the slot, the planar surface of the base and the walls enables the fluid stream issuing from the slot to first pass upwardly through the filaments then turn downwardly and attach to the planar surface at a point downstream of the slot where it flows parallel to the filament array to provide an extended heating zone.

### 3,750,303

STEAM TUNNELS FOR TREATING LOGS AND METHOD OF TREATMENT

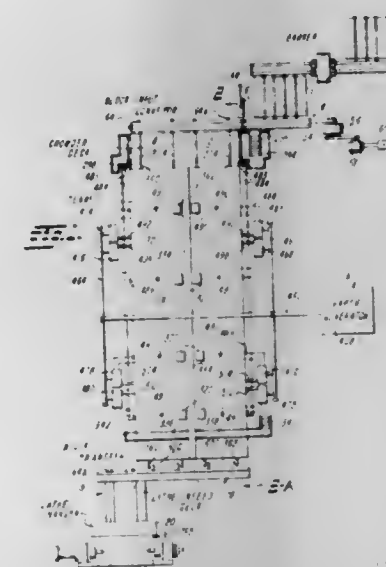
Thomas W. Gates, Wesley R. Gates and Vayne R. Davis, all of Gainesville, Fla., assignors to Thomas E. Gates & Sons, Inc., Gainesville, Fla.

Filed July 9, 1971, Ser. No. 161,256

Int. Cl. F26b 3/00

U.S. Cl. 34—9.5

44 Claims



Apparatus and method for uniformly heating and saturating logs or wood "blocks" in one or more tunnels to condition the same to be peeled into veneer. The tunnel has a conveyor for moving blocks therethrough in a single layer, and has steam nozzles above and below the path of travel of the blocks for subjecting the blocks to highly saturated steam while they are in the tunnel. The tunnel is divided into four zones, each having its own independent automatic control system for providing a prescribed heating and saturating treatment. The speed of the conveyor and the heating cycle are co-ordinated with the demand of the cutting lathe for continuous operation. An in-feed conveyor, including a "kicker" device, supplies blocks to a crowder conveyor, which crowds the blocks against each other ahead of the entrance to the tunnel. A transfer conveyor at the tunnel exit receives the treated blocks from a "stop and loader" device, which transfers the blocks from the tunnel conveyor to the transfer conveyor. Another "kicker" device kicks the block off the transfer conveyor onto a lathe in-feed deck to supply a lathe charger. Control means, which may be either manual or automatic, regulates the discharge of blocks from the tunnel and delivery thereof to the charger in-feed deck. Under automatic control, the lathe charger, in positioning a block in the lathe, operates a limit switch that effects the discharge of a block from the tunnel.

### 3,750,304

SEMI-RECIRCULATORY SYSTEM FOR A CLOTHES DRYER

Jaffer T. Ghadiali, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 24, 1971, Ser. No. 183,434

Int. Cl. F26b 21/00

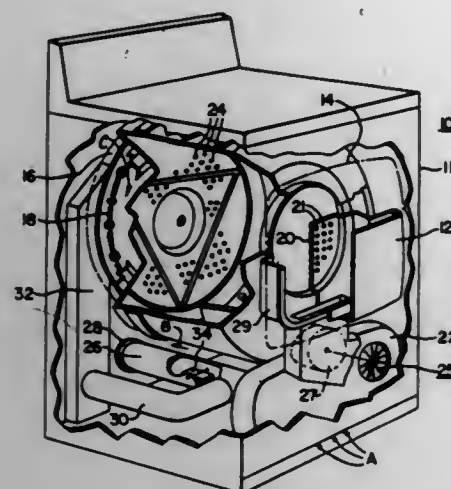
U.S. Cl. 34—54

7 Claims

The invention provides a clothes dryer having a diverter means in the exhaust duct so as to provide a recirculation of the exhaust air back through the wet clothes during the early



stages of the drying cycle. After the temperature of the exhaust air has reached a certain upper temperature, the

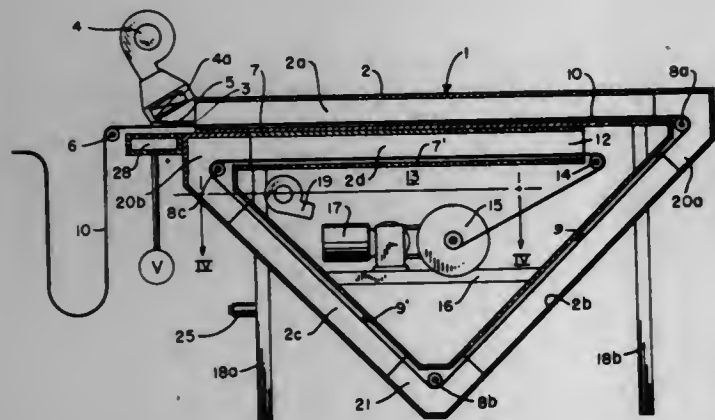


diverter means moves to a non-interfering position permitting the exhaust of air through the exhaust duct of the dryer.

### 3,750,305 WEB DRYER

Alois Loser, R.D. No. 1, Box 29, Medford, N.J.  
Filed Oct. 26, 1971, Ser. No. 192,155  
Int. Cl. F26b 13/10  
U.S. Cl. 34-56

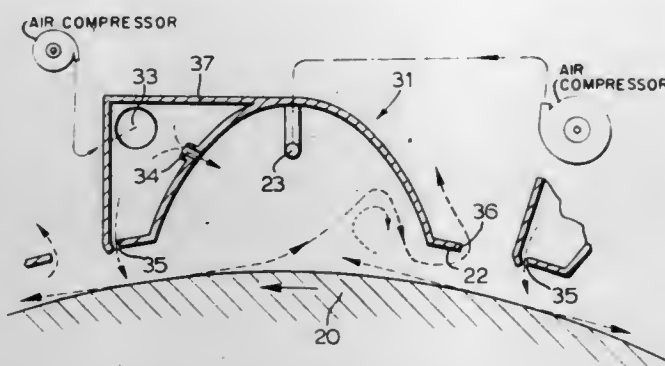
5 Claims



A dryer for webs having freshly applied printed designs and coatings is disclosed. The dryer has an involute conduit formed of a plurality of runs disposed angularly with respect one to the others. The web is drawn through the conduit and exits from the conduit into a central cavity in which is disposed a receiving element for receiving the then dry web. Heated air is introduced into the conduit for drying the web and carrying off the volatile constituents of the material applied to the web. When the receiving element is a take-up reel, a leader greater in length than the conduit is used to draw the leading edge of the web through the dryer. A photocell sensor determines the presence of a portion of the web to be dried and causes the take-up reel to be driven to draw the web through the dryer.

**3,750,306  
SONIC DRYING OF WEBS ON ROLLS**  
Stephen Anthony Rodwin, Montreal, and Gilbert Descary, Lachine, both of Quebec, Canada, assignors to Dominion Engineering Works, Limited, Quebec, Canada  
Filed Nov. 3, 1970, Ser. No. 86,571  
Claims priority, application Canada, Nov. 7, 1969, 66921  
Int. Cl. F26b 19/00  
U.S. Cl. 34-69

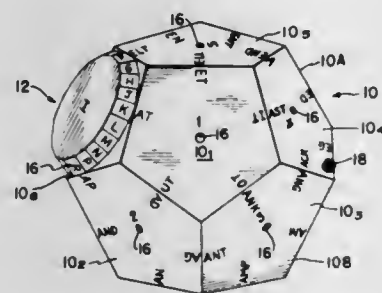
20 Claims



Sonic drying as applied to conventional dryer rolls involves the provision of stem jet whistles spaced along trough-like reflectors, preferably of elliptic cross-section profile, with provision of low pressure secondary air to sweep displaced moisture clear of the travelling web.

**3,750,307  
EDUCATIONAL DEVICE**  
Morton Phillips, 67-70 Yellowstone Blvd., Forest Hills, N.Y., and Robert Klenosky, 75-68 181st Street, Flushing, N.Y.  
Filed June 12, 1972, Ser. No. 262,070  
Int. Cl. G09b 17/00, 1/36  
U.S. Cl. 35-35 J

3 Claims



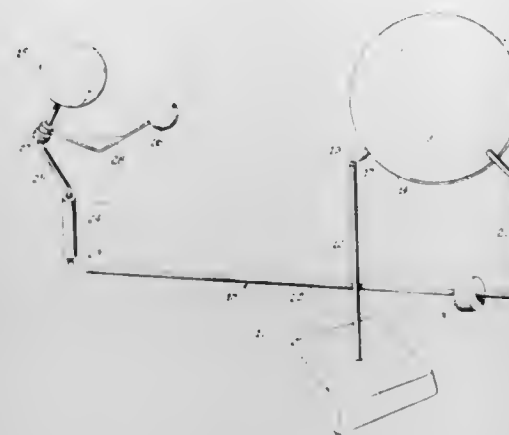
An educational device comprises a polyhedron with each surface of the polyhedron containing printed family sounds extending transversely from the edges of the surface. A wheel, which may be mounted for rotation with respect to any of the surfaces, includes a rim bearing letters which cooperate sequentially with the family sounds extending from the edges of adjacent surfaces when the wheel is turned.

**3,750,308  
EDUCATIONAL DEMONSTRATION MODEL**  
Donald E. Nelson, 4105 Schlitzinger Rd., Columbus, Ohio  
Filed Feb. 12, 1971, Ser. No. 114,949  
Int. Cl. G09b 27/02  
U.S. Cl. 35-45

1 Claim

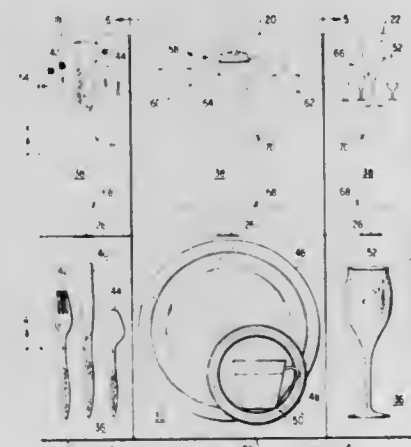
An educational demonstration model for demonstrating the principles of balance, and of the center of gravity, and the principles of the movement of the sun, the revolution of the earth around the sun, and the revolution of the moon around the earth. The device comprises a base with a substantially vertical member secured to and extending upwardly from the base, and with a spherical member balanced on the top of the vertical member and simulating the sun, and with members simulating the earth and the moon connected to the sun and mounted on rods so that they will revolve jointly around the

sun and so that the moon will revolve around the earth. The large sphere is balanced on a point, and the smaller spheres representing the earth and the moon are connected to the sun by a rod so that they are offset from the center of the balance a



**3,750,309  
DISPLAY BOOK**  
Henry M. Tovar, Cheshire, Conn., assignor to Wallace Silver-smiths, Inc., Wallingford, Conn.  
Filed Feb. 16, 1972, Ser. No. 226,890  
Int. Cl. B42d 1/00  
U.S. Cl. 35-53

3 Claims



A display book for table settings of preselected patterns of silverware, china, and crystal is presented. The book includes a cover, at least one fly-leaf, and a binding containing three separate sets of independently paged leaves, said leaves adapted to have indicia and illustrations printed on the surfaces thereof, the front surface of each leaf in each of said sets bearing a different illustration of representative pieces of a preselected silverware, china, or sterling pattern on a simulated table background, the reverse surface of each leaf in each section bearing informative information and illustrations of additional representative pieces of the corresponding pattern shown on front surface of the adjacent leaf so that when said book is opened a table setting of silverware, china, and crystal in preselected patterns is displayed for primary emphasis while the reverse surfaces of the adjacent leaf sections display identifying information and illustrations of other representative constituents of said patterns for secondary emphasis in a unitary display.

**3,750,310  
BOOT, ESPECIALLY SKI BOOT**  
Siegfried Messner, Linsinger Strasse 25, 3000 Hannover; Lothar Depmeyer, Auf der Hocht 30, 3011 Garbsen; Lothar Barth, Eichsfelder Strasse 56, 3000 Hannover-Herrenhausen, all of Germany, and Josef Graup, Klingenweg, 8260 Stein-a-Rhein, Switzerland  
Filed Apr. 3, 1972, Ser. No. 240,383  
Claims priority, application Germany, Apr. 1, 1971, P 21 15 907.9; Apr. 10, 1971, P 21 17 469.6; Apr. 21, 1971, P 21 19 234.7; Sept. 8, 1971, P 21 44 825.9; Sept. 8, 1971, P 21 44 826.0  
Int. Cl. A43b  
U.S. Cl. 36-2.5 AL

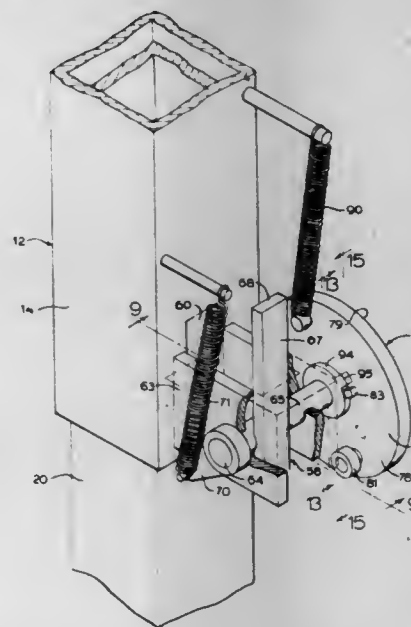
9 Claims



A boot, especially ski boot, which comprises a hard-elastic outer shoe with a first step-in opening, and a relatively thick-walled soft-elastic inner shoe arranged within said outer shoe and consisting primarily of cellular polyurethane on the basis of polyester and having a spreadable second step-in opening extending up to the leg area of the inner shoe. Deformable chamber means are provided between the two shoes and are adapted to be filled with a viscous fluid while valve means are associated with the chamber means for selectively closing the same or feeding fluid into or withdrawing fluid from the chamber means.

**3,750,311  
GRAVITY OPERATED MECHANICAL GRAB**  
Adolph Anderson, 238 S. 39th Ave., West Richland, Wash.  
Continuation-in-part of Ser. No. 39,432, May 21, 1970, abandoned. This application Oct. 12, 1971, Ser. No. 187,996  
Int. Cl. B66c 3/02  
U.S. Cl. 37-188

3 Claims



A mechanical grab is described that has two telescopic members, with one attached to a single hoist line and the other



having jaw elements mounted thereon. Linkage interconnects the one member with the jaw elements to automatically open and close the jaw elements as the two telescopic members move in relation to each other when the mechanical grab is lowered and raised from the ground. The mechanical grab has a provision for preventing the jaw elements from closing every other time the mechanical grab is lowered to the ground to prevent the jaws from closing on a just released load and for maintaining the jaws open until the mechanical grab is again lowered to the ground.

3,750,312

## LEG-STABILIZED EMBROIDERY HOOP

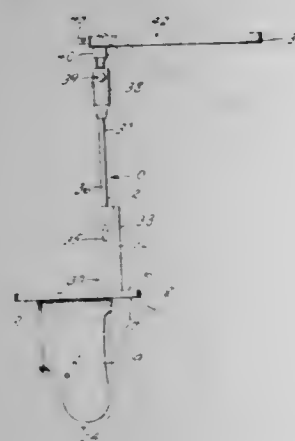
Joyce L. Bucher, Rt. 2 Box 145, Boonton, N.J.

Filed June 30, 1972, Ser. No. 268,179

Int. Cl. D05c 1/04; A47b 23/00; A41b 31/00

U.S. Cl. 38—102.2

3 Claims



An improved embroidery hoop structure of a type having inner and outer hoops adapted to be placed in concentric relation to clamp a piece of textile work therebetween. The inner hoop is interconnected to one end of a pivotally mounted link supported on a vertically disposed shaft, the lower end of the shaft in turn being supported from an upper surface of a horizontally disposed table. Extending from a lower surface of the table is a vertically oriented stabilizing member or fin adapted to be clamped between the knees of seated user as the lower surface of the table rests upon the lap.

3,750,313

## APPOINTMENT BOARD

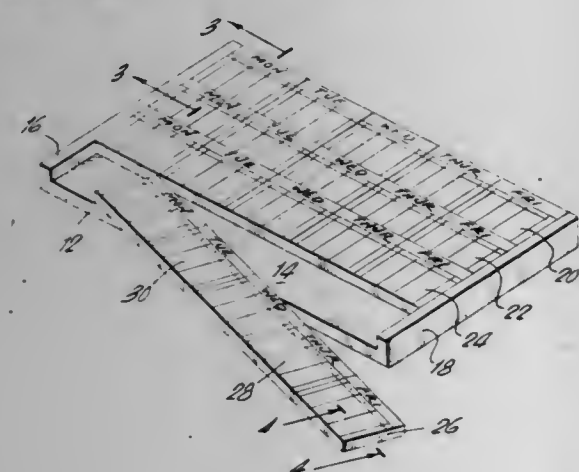
Peter J. Notaro, 490 McDermott Rd., Rockville Centre, N.Y.

Filed May 26, 1971, Ser. No. 146,897

Int. Cl. G09f 1/10

U.S. Cl. 40—63

2 Claims



An appointment board for use as a register of appointments or the like comprising a U-shaped frame for carrying a plurality of bars. Detachably secured to the bars are schedule sheets on which appointments or other data can be recorded.

3,750,314

## SIGN HOLDER AND ASSEMBLY

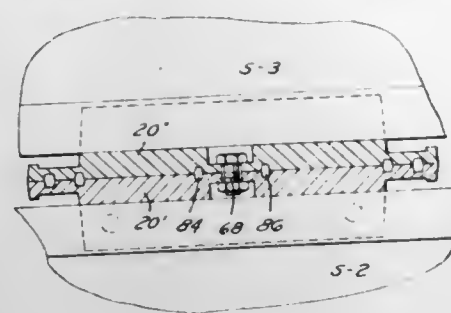
John C. Crawford, 15485 Nehls, East Detroit, Mich.

Filed May 12, 1971, Ser. No. 142,664

Int. Cl. G09f 7/20

U.S. Cl. 40—125 H

1 Claim



A sign holder and sign assembly is disclosed which includes an elongated member having along one side outwardly opening sign receiving and retaining channel means and along the opposite side provided with a mounting surface for abutting either a support on which the sign is to be mounted or a corresponding surface of an identical holder whereby a pair of signs may be secured together in end-to-end relation, and in which there are a pair of strap engaging surfaces disposed beyond opposite ends of the channel means whereby the holder may be strapped to a support, and in which a fastener receiving aperture extends through the holder intermediate opposite ends for securing the holder either to a support or to an identical holder. The construction of the holder permits a series of signs to be mounted one above the other and disposed in relatively rotated positions such that the signs may be read from different angles of approach.

3,750,315

## FILM RECORD CARD SYSTEM

Thomas P. Anderson, Hubbard Woods, Ill., assignor to Micro-seal Corporation, Skokie, Ill.

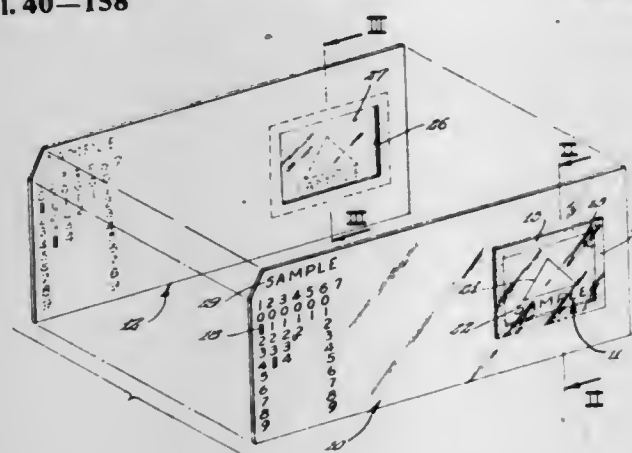
Division of Ser. No. 866,306, Oct. 14, 1969, Pat. No.

3,604,779. This application June 1, 1971, Ser. No. 148,422

Int. Cl. G09f 1/10

U.S. Cl. 40—158

9 Claims



An information storage system comprises a diazo reproducible film record card and a receptor or copying card treated with diazo compounds and carrying a strip of blank film also treated with diazo compounds. The reproducible film record card may be of the type adapted to be processed at high speeds by automatic tabulating or sorting machines and may comprise a sheet form card composed of transparentized paper stock having at least one cutout or aperture formed therein for receiving a strip of film containing a micro-image and means for retaining the film within the cutout. The transparentized paper stock has an actinic transmission percentage enabling simultaneous diazo reproduction of both data printed on the card and the micro-image contained on the film. The

receptor or copying card may include a card capable of being machine processed in automatic sorting machines and has an aperture or cutout located coincidentally with the cutout of the reproducible card and mounts a film having a side or face surface thereof coated with diazo compounds and exposed.

3,750,316

## DEVICE FOR SECRETLY OBSERVING VISUAL INTELLIGENCE

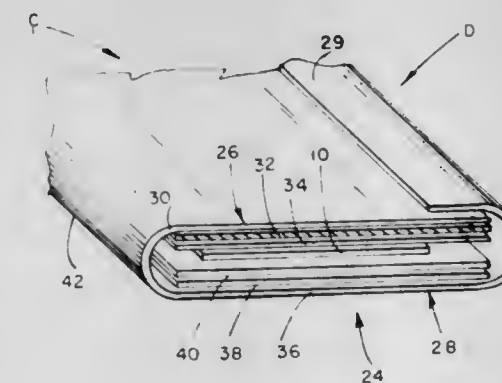
Harold N. Braunhut, c/o Honey Toy Industries, Inc., 200 Fifth Ave., New York, N.Y.

Filed Nov. 1, 1971, Ser. No. 194,422

Int. Cl. G09f 19/14

U.S. Cl. 40—137

7 Claims



A device for secretly observing visual intelligence. The device comprises a louvered arrangement of transparent and opaque zones extending in alternate succession, the opaque zones acting to permit observation from one direction along one surface of the louvered arrangement, through the transparent zones, of visual intelligence positioned along an opposite surface of the louvered arrangement, yet prevent observation of said visual intelligence from a counter-direction along said one surface.

3,750,317

## COMPOUND TEAR LABEL

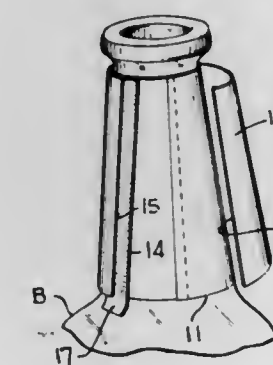
Anthony J. Morgan, P.O. Box 388, Elmira, N.Y.

Filed Sept. 17, 1971, Ser. No. 181,331

Int. Cl. G09f 3/10

U.S. Cl. 40—310

2 Claims



A compound label comprising an outer label having a tear tab disposed about an inner label secured in place about the neck of a bottle, for example, the outer label being removable from the bottle neck to expose the inner label when it is desired to reorder another bottle of the same expended contents.

3,750,318

## RIFLESCOPE MOUNT

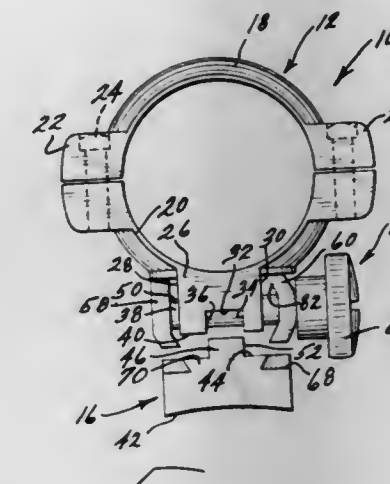
Donald J. Burris, Aurora, Colo., assignor to Outdoor Sports Industries, Inc., Denver, Colo.

Filed Nov. 8, 1971, Ser. No. 196,533

Int. Cl. F41c 27/00; F41g 1/38

U.S. Cl. 42—1 S

13 Claims



A ring-type dovetail mount for attaching a riflescope to the barrel or receiver of a rifle that includes a base, a split ring that sits atop the base and a clamp subassembly that detachably fastens the two together in assembled relation is disclosed. The base has parallel undercut grooves alongside thereof that produce a dovetail-shaped rail topped by a longitudinally extending recoil rib having a transverse notch therethrough. The split ring is longitudinally grooved to fit down over the recoil rib. The clamp subassembly includes a screw, the shank of which does not rotate but extends across the groove in the split ring and seats within the notch in the recoil rib. The head of this screw defines the fixed shoe of a clamp that engages the undercut groove on one side of the dovetail rail while a movable shoe is drawn against the other by a nut.

3,750,319

## FIRING PIN STOP FOR A FIREARM

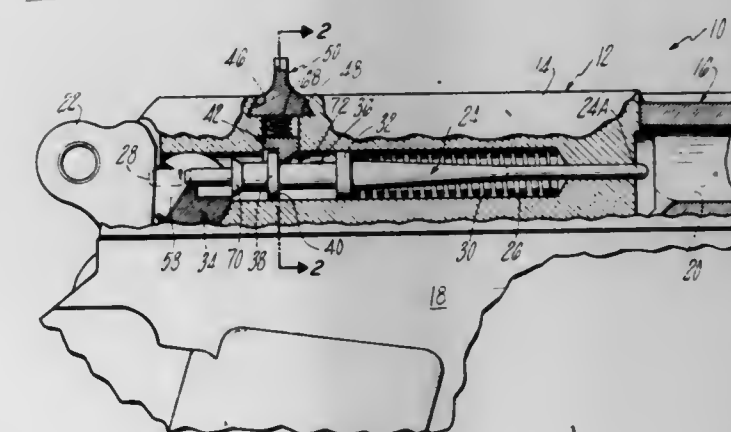
Robert E. Roy, East Haven, Conn., assignor to Colt Industries Operating Corp., Hartford, Conn.

Filed Oct. 28, 1971, Ser. No. 193,502

Int. Cl. F41c 17/04

U.S. Cl. 42—70 F

6 Claims



A stop mounted in a frame member and engageable with a firing pin preventing its overtravel, the stop being spring biased toward a normally operative position and releasable for disassembly.



3,750,320

## DEVICE FOR AUTOMATICALLY HOOKING A FISH

Napoleone Benedetti, Via Ghilotti 5, Piacenza, Italy

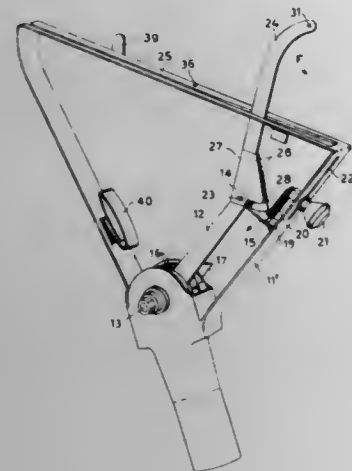
Filed Apr. 13, 1971, Ser. No. 133,585

Claims priority, application Italy, Apr. 15, 1970, 23341 A/70

Int. Cl. A01k 97/00

U.S. Cl. 43-15

7 Claims



A device for automatically hooking a fish comprising a ground-supported frame with a spring-biased rod pivotally secured at one end to the frame between a rest position and a cocked position. An arm is pivoted to the free end of the rod and a fishing line with a hook thereon is secured to the free end of the arm. The rod and arm are latched in the cocked position and are released from the latch means by a pull on the line, the spring biasing the rod to the rest position to set the hook in the fish's mouth.

3,750,321

## ARTIFICIAL LURE FOR FISHING

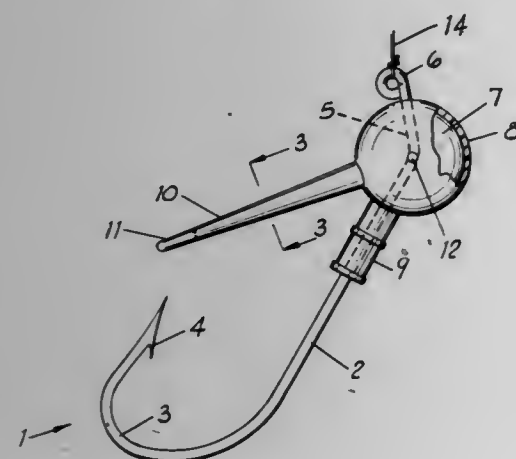
Bingham A. McClellan, Traverse City, Mich., assignor to McClellan Industries, Inc., Traverse City, Mich.

Filed Apr. 17, 1972, Ser. No. 244,742

Int. Cl. A01k 85/00

U.S. Cl. 43-42.1

1 Claim



A fish hook with a curve and barb at one end of its shank has an angle bend near the other end of the shank in the plane of the curve and with a line attaching eye at its end of the same side of the curve and barb. A sphere-like body of molded vinyl plastic is formed integrally around the bend in the shank and extends to adjacent the eye. An arm of the same material as the body and molded integrally therewith extends radially of the body to a point spaced laterally outwardly and forwardly of the point of the barb. The arm tapers rearwardly and is springable past the point of the barb. A forked end on the arm has branches that longitudinally overlap the point of the barb.

3,750,322

## FISHING FLY WITH SNAGPROOF HOOK

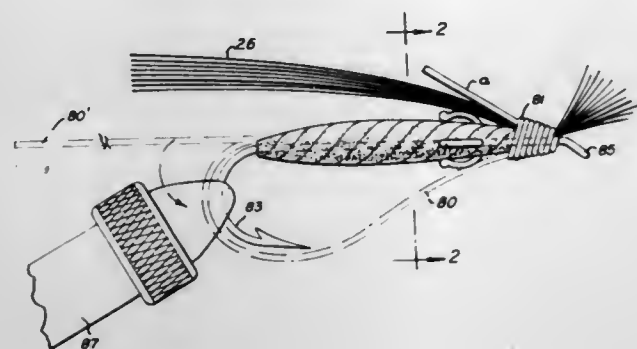
Allen L. Putnam, 311 Santa Barbara Ave., Fullerton, Calif.

Continuation of Ser. No. 24,443, March 16, 1970, abandoned, which is a division of Ser. No. 704,657, Feb. 12, 1968, Pat. No. 3,500,574. This application May 22, 1972, Ser. No. 255,903

Int. Cl. A01k 83/00, 85/08

U.S. Cl. 43-42.25

1 Claim



A fishing fly comprising a hook having a shank, an eye and a bent shank portion ending in a barbed point, a fly body and head formed on the shank between the eye and the barbed point and an attaching means for a leader mounted between the head and the body forming a loop about the outer periphery of the bent shank portion to form a "Brush-Off" feature preventing snagging or fouling in weeds, etc.

3,750,323

## FISHING JIG

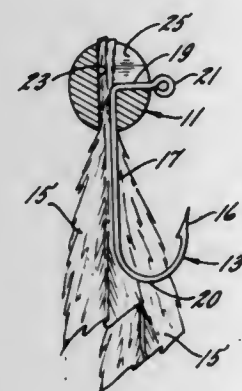
Dan N. Weis, c/o D.N. Weis Enterprises, 3530 Westgate Pky., Rockford, Ill.

Filed June 21, 1971, Ser. No. 154,854

Int. Cl. A01k 85/02

U.S. Cl. 43-42.28

3 Claims



A fishing jig includes a hook upon the upper end of which is mounted a generally spherical lead head surrounding the shank and clamping an upper end portion of a lure body to the shank so that the lower end portion of the lure body conceals the hook. A central hole extending completely through the lead head cooperates with a pie-shaped radial slot which opens through the side of the lead head and into the upper end of the hole to form a passage having internal dimensions sufficient to permit the lead to be passed over the lower end of the hook and be placed upon the upper end of the hook. The upper end portion of the lure body is threaded through the hole alongside the shank of the hook, and the walls of the hole and slot are pinched together to clamp the lead head around the hook and lure body to prevent the resulting jig from coming apart when fishing.

3,750,324

## LINE FLOAT HAVING LINE CLAMPING MEANS ACTUABLE BY A PULL ON THE LINE

Arend Verheij, Vinkenbrinckstraat 217, Rotterdam, Netherlands

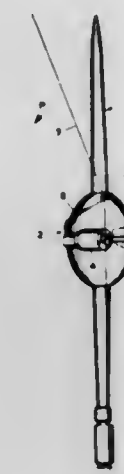
Filed Jan. 19, 1971, Ser. No. 107,634

Claims priority, application Netherlands, Jan. 29, 1970, 7001283

Int. Cl. A01k 93/00

U.S. Cl. 43-44.88

5 Claims



A float for a fishing line including a line guiding and clamping means thereon. The said means comprises a U-shaped member having one leg rotatable and rectilinearly movable in a bushing fixed on the float with an eyelet on the end of the said leg disposed adjacent one end of the bushing. The other leg of the member is also provided with an eyelet disposed coaxially with the first eyelet, the pair of eyelets guiding the fishing line. A spring biases the member toward the opposite end of the bushing, whereby when the member is rotated by a pull on the line, the spring will move the first eyelet against the end of the bushing to clamp the float on the line.

3,750,325

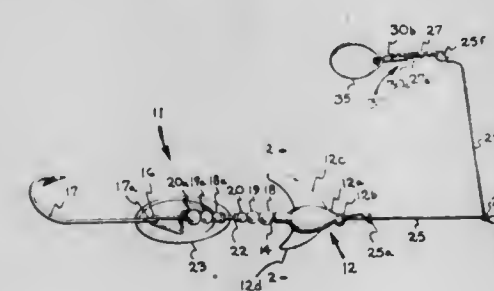
## FISHING LURE

James M. Feltman, 2054 Loxley Rd., Toledo, Ohio

Filed Dec. 7, 1971, Ser. No. 205,637

Int. Cl. A01k 85/00

U.S. Cl. 43-42.14



A fishing lure comprising, a serial connection, a relatively stiff axial lead shaft having a keel-weighted principal body member and an upper fin, a spinner blade and a trailing hook, all connected together as to preclude any substantial relative rotation as between the lead shaft body and trailing hook. The lure includes in a preferred embodiment a spinner carried by a wire strut extending vertically up from said principal stiff shaft, said strut carrying a freely spinnable blade, all constructed and arranged with the upper spinner spoon situated generally vertically above the principal body member.

3,750,326

## BAIT BOX FOR RATS AND MICE

Henri Hauptmann, Schiltigheim, France, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

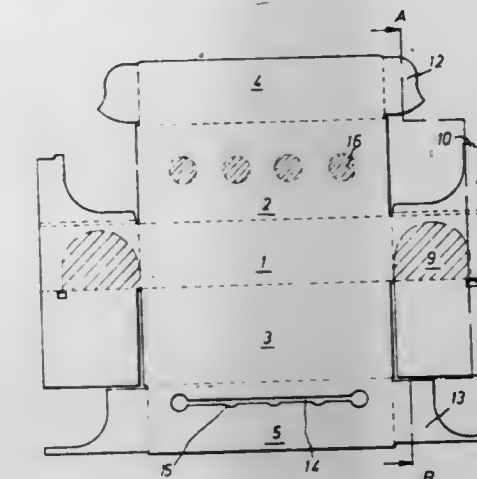
Filed Oct. 22, 1970, Ser. No. 82,886

Claims priority, application Germany, Apr. 22, 1970, P 20 19 334.4

Int. Cl. A01m 1/20, 25/00

U.S. Cl. 43-131

8 Claims



A bait box and a one piece blank which can be set up to form the box. The blank includes side wall sections, upper and lower base wall sections, and end wall sections. Openings are formed in the end wall sections and serve as entrances and exits for the rodents. One side wall includes two side wall sections, one overlying the other and the innermost of the two sections is provided with holes for anchorage of the poison bait, while the outermost of the two sections covers the bait where it projects outwardly from the anchoring holes.

3,750,327

## FLY CATCHING ATTACHMENT FOR VACUUM CLEANER

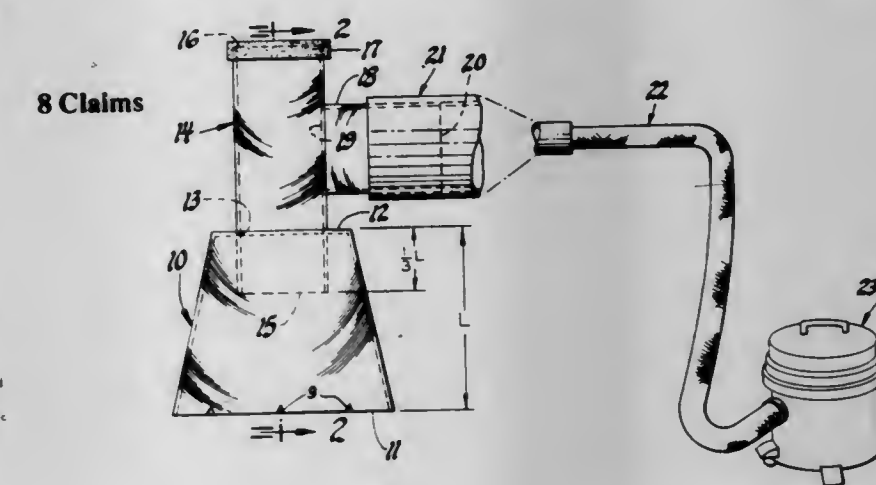
Neil H. Thybault, Highland, Mich., assignor to Chris Nicholas, Clarkston, Mich.

Filed Mar. 13, 1972, Ser. No. 233,916

Int. Cl. A01m 1/06

U.S. Cl. 43-139

5 Claims



A fly and other insect catching attachment for use with a vacuum cleaner, and which includes a funnel shaped body which is open at the front end thereof and closed at the rear end thereof. A suction conduit is extended through the rear end wall of the funnel shaped body for a distance inward of one-third of the length of the funnel shaped body. The suction conduit is provided with at least one outlet on which is operatively attached a tubular handle that is connected to a vacuum cleaner to produce an intake of air through the front open end of said funnel shaped body to draw insects into said funnel shaped body and thence through said suction conduit and handle and into said vacuum cleaner.



3,750,328

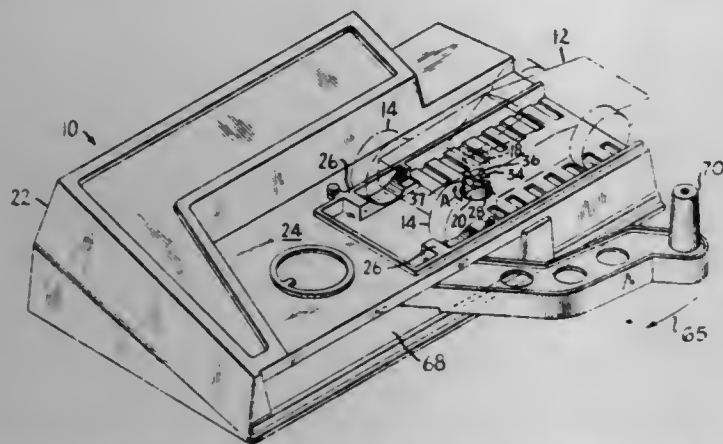
**WINDING MECHANISM HAVING PLATFORM FOR SUPPORTING SPRING MOTOR DRIVEN VEHICLE**  
Edwin A. Nielsen, Oceanside, and Benjamin Stopek, West Hempstead, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

Continuation-in-part of Ser. No. 126,817, March 22, 1971.  
This application Mar. 30, 1972, Ser. No. 239,606

Int. Cl. A63h 33/00, 17/26

U.S. Cl. 46-1 K

18 Claims



A wind-up mechanism for a spring-driven toy vehicle includes a housing having a vehicle support platform and a drive clutch rotatably mounted therein for releasably engaging and winding a spring-driven toy vehicle positioned on the platform. The rotatable clutch is driven in a predetermined direction to wind-up the spring driven toy through a first gear rotatably mounted in the housing coaxially of the clutch and operatively connected thereto for transmitting rotational movement to the clutch. A gear segment rotatably mounted in the housing and operatively connected to the first gear is pivotally connected to a winding handle and held in a relatively fixed position with respect to the handle segment by a tension spring which is operatively connected therebetween. The tension spring means permits the handle to pivot with respect to the gear segment when rotation of the clutch in the predetermined winding direction is resisted with a predetermined force by the spring driven toy so that rotation of the gear segment by the handle is stopped to prevent overwinding of the toy vehicle.

3,750,329

**WHEELED TOY WITH SOUNDING RASP AND ROTATING HEAD MEMBER**

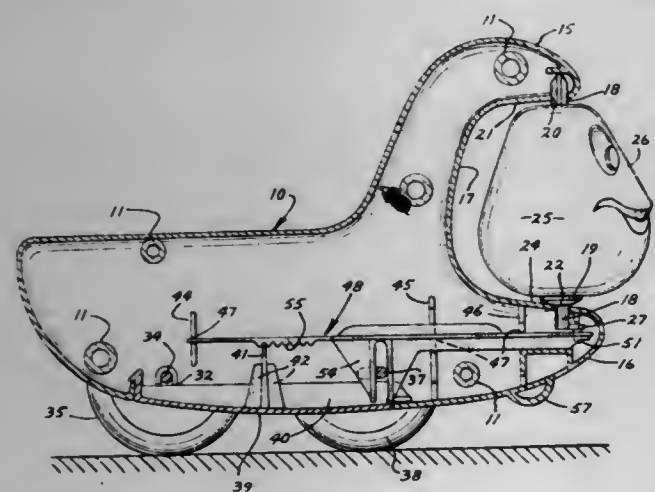
Theodore H. Zbikowski, Plymouth, and Ronald R. Pauly, Mound, both of Minn., assignors to Tonka Corporation, Minneapolis, Minn.

Filed Apr. 21, 1972, Ser. No. 246,336

Int. Cl. A63h 5/00

U.S. Cl. 46-107

1 Claim



A push-pull wheeled toy having a body mounted on rotary axles carrying ground wheels and with one of the axles having

an offset portion, a head journaled on a vertical axis on the front portion of the body, a sound mechanism disposed within the body, and a link within the body connected to said axle offset portion to be moved thereby and connected to the head and sound mechanism to operate the same.

3,750,330

**MANIPULATIVE TOY**

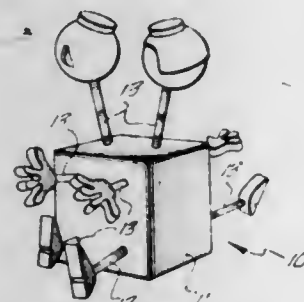
Jay Smith, III, Pacific Palisades; Gerald W. Schmidt, Woodland Hills, and Lawrence Temple Jones, Pacific Palisades, all of Calif., assignors to California R & D Center, Pacific Palisades, Calif.

Filed Aug. 5, 1971, Ser. No. 169,407

Int. Cl. A63h 1/100

U.S. Cl. 46-119

9 Claims



A manipulative toy is disclosed in which a plurality of flexible coil springs are slidably received within a body. The extremities of each spring extend out of the body and have enlarged objects connected thereto. In the preferred embodiment, the springs are oriented to simulate the limbs and necks of two characters extending out of the main body member. The extremity of each limb or neck has a respective simulated head, hand or foot connected to it. Each spring can be manually moved to slide in and out of the body member. Of particular interest to children is the fact that as one extremity is moved in one direction with respect to the body member, the other extremity of the spring automatically moves in the opposite direction. Moreover, since each spring functions as a flexible cable, the rotary movement of an object on one extremity can be transmitted to the object on the other end of the spring.

3,750,331

**MOVABLE BARRIER FOR USE AT THE ENTRANCE TO A PARKING SITE OR THE LIKE**

Georges Renaux, Fontenay-sous-Bois, France, assignor to Societe anonyme des Etablissements Trougaunat, Voujours, France

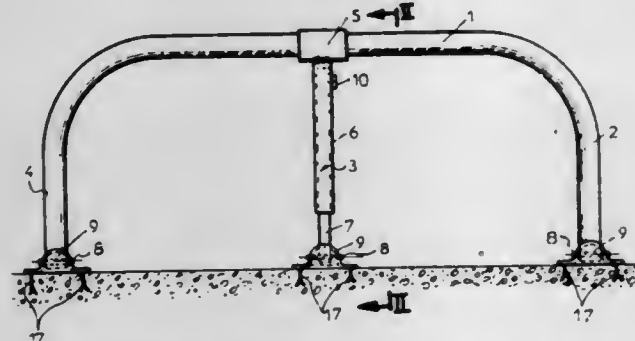
Filed Dec. 29, 1971, Ser. No. 213,634

Claims priority, application France, Dec. 31, 1970, 7047555

Int. Cl. E01f 13/00

U.S. Cl. 49-35

4 Claims



A device forming a movable barrier, for use in particular at the entrance of a parking place, wherein the improvement consists in that said barrier is hinged substantially at ground level in such a way that it can be lowered into an open horizontal position to allow free passage to vehicles over said barrier and can be lifted into and locked in a substantially vertical position to close the access to the parking place.

3,750,332

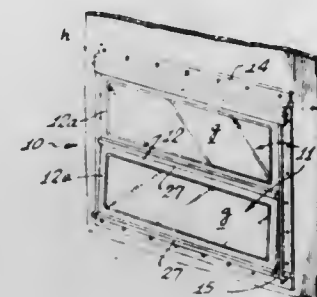
**CLOSURE MECHANISM FOR LOUVER WINDOWS**  
Richard E. Dulebohn, Boise, Idaho, and Leonard W. Gordon, Palos Verdes Peninsula, Calif., assignors to Elixir Industries, Los Angeles, Calif.

Filed May 5, 1970, Ser. No. 34,725

Int. Cl. E05f 17/00; E06b 7/08

U.S. Cl. 49-74

4 Claims



A closure mechanism for louver windows utilizing a reciprocating closure actuation bar and a plurality of elongated springs interconnecting it with the several individually pivoted sections of the window, the springs contributing elastic yieldability between the bar and the window sections by lateral bending, such that the springs for the section or sections which reach closed position first, thereafter undergo lateral bending as subsequent window sections complete their closure movements, and thus do not hang up the actuating mechanism and prevent it from closing the remainder of the sections. The springs are in the nature of elongated resilient elements, such as a wire, capable of yielding readily by lateral bending. In preferred forms of the invention, the resilient element is formed with an initial bend, or angle, to reduce its stiffness and thus improve its proneness to undergo the desired lateral bending action.

3,750,334

**SLIDING SWINGING DOOR SUSPENSION**

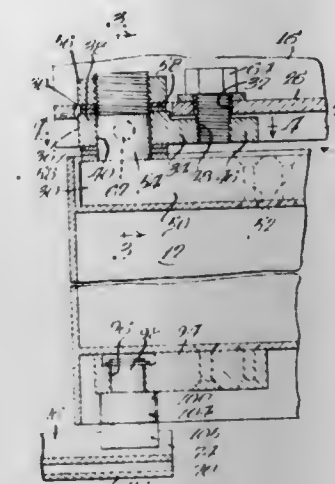
Loren E. Slaybaugh, Arlington Heights, Ill., assignor to Republic Industries, Inc., Chicago, Ill.

Filed July 19, 1971, Ser. No. 163,945

Int. Cl. E05d 15/22

U.S. Cl. 49-177

3 Claims



A hinging arrangement for a sliding, swinging door to accommodate the swinging movement thereof including provision to compensate for door sag.

3,750,335

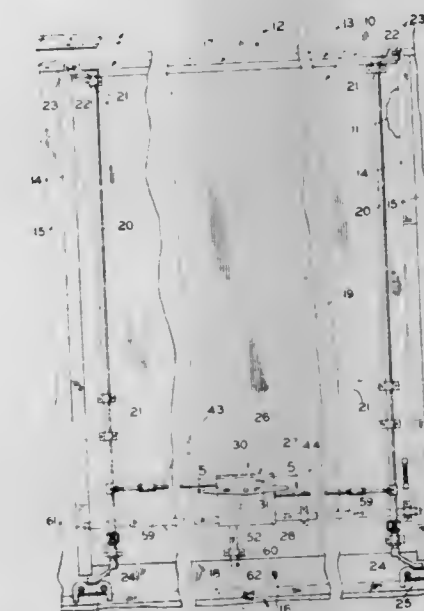
**OPERATING MECHANISM FOR PLUG TYPE DOOR**  
Ronald W. Marsh, Michigan City, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed May 5, 1972, Ser. No. 250,713

Int. Cl. E05d 15/10

U.S. Cl. 49-220

7 Claims



A plug type door having one or more vertically extending shafts and crank mechanisms connected thereto for moving the door laterally from a door opening and a plurality of locking bolts movable into locked engagement with a door frame for securing the door in said door opening includes a pair of cams which are actuated by a camming element disposed between said cams and selectively engageable with said cams for sequentially moving the locking bolts into open and closed positions and for rotating said shafts to effectuate lateral movement of said door.

3,750,333

**INSULATED PRIME DOOR**

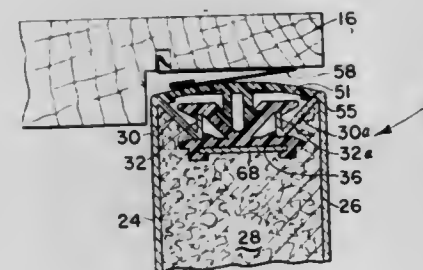
William R. Vance, Agincourt, Ontario, Canada, assignor to Rusco Industries, Inc., Los Angeles, Calif.

Filed Feb. 28, 1972, Ser. No. 229,975

Int. Cl. E06b 3/16

U.S. Cl. 49-501

9 Claims



A metal faced door with a foam filled core. An extruded plastic casing member extends around the entire periphery of the door to join the metal facing panels. Direct contact between the inner and outer panels is avoided. The plastic extrusion also carries screw retaining plates usually around the entire periphery of the door.



3,750,336

## AWNING WINDOW ASSEMBLY

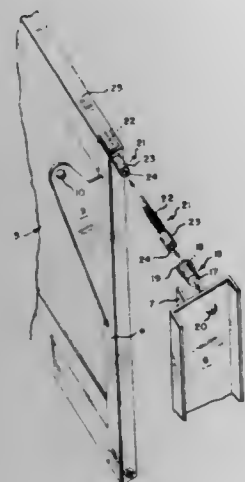
Philip C. Johnson, South Bend, Ind., assignor to Wells Aluminum Corporation, North Liberty, Ind.

Filed Dec. 29, 1971, Ser. No. 213,550

Int. Cl. E06b 3/40

U.S. Cl. 49—371

3 Claims



An awning window assembly features a weather-tight window vent pivot support for the side member of the window frame and a pivot mount for connecting the tilting bracket to the tilt bar after the window vent and the tilt bar have been installed in the window assembly.

3,750,337

## SLIDING DOOR CORNER CONNECTOR

Robert Brydolf, Pasadena, and Kenneth K. Kellems, Costa Mesa, both of Calif., assignors to Acme General Corporation, Monrovia, Calif.

Filed Apr. 5, 1972, Ser. No. 241,273

Int. Cl. F16b 7/22, 9/00

U.S. Cl. 49—411

24 Claims



This symmetrical corner connector is particularly useful for sliding door hardware and fastens on without screws or other connectors. Such a door has a panel having a G-shaped stile along each side and a U-shaped rail at the top and bottom, all of which engage the edges of the panel to form the structure of the door. The connector has a central channel for receiving a door suspension member and, on each side thereof, has a wing for engaging the back wall of the stile. An ear on each side of the connector near one end fits over the end of the stile to engage the interior thereof. A tang on each side near the opposite end of the connector fits through a slot in the stile and engages it in opposition to both the ear and wing. In addition, the tang has a spring clip for engaging the interior of the stile for preventing withdrawal of the tang. A hook extends over the top of the rail and through a slot to engage the front face of the panel.

3,750,338

## OPENING WITH SLIDING LEAF AND ESPECIALLY A GLAZED OPENING

Maurice Lissarrague, Velizy, France, assignor to Boussois Souchon Neuvesel, Paris, France

Continuation of Ser. No. 43,761, June 5, 1970. This

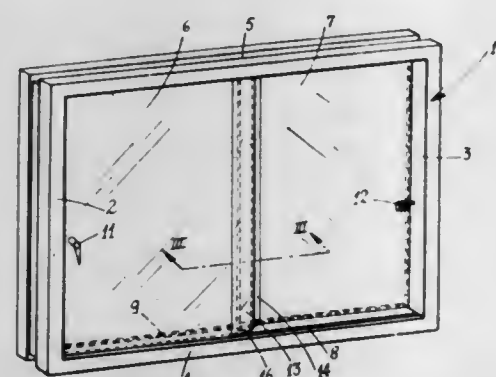
application Jan. 10, 1972, Ser. No. 216,848

Claims priority, application France, June 20, 1969, 6920712

Int. Cl. E05d 15/06

U.S. Cl. 49—413

8 Claims



An opening of the type comprising at least one sliding leaf, in particular a panel of transparent or translucent material such as window-glass, plate-glass, or plastic material.

The sliding leaf has at least one flange which is oriented at an oblique angle with respect to the plane of the leaf in the closed position. The flange is applied against a bearing surface of the opening which is oriented accordingly, said bearing surface being formed along the length of the flange and over at least part of the width of said flange.

The flange which is thus attached to the leaf has a contributory role in ensuring leak-tightness of the closure.

3,750,339

## PIPE CLEANING APPARATUS

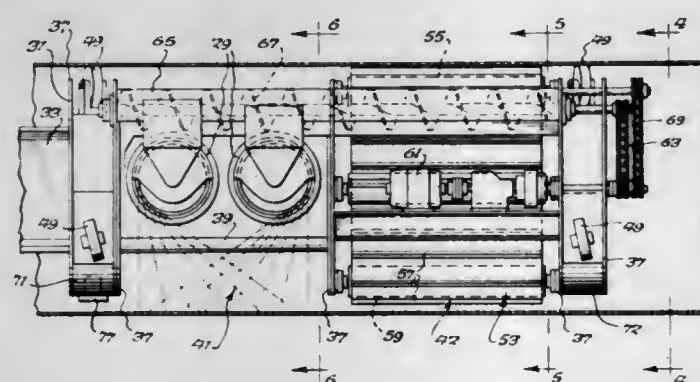
Charles E. Barnes, Williamsport, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,720

Int. Cl. B24c 3/16, 3/32

U.S. Cl. 51—9

12 Claims



In an apparatus for cleaning the interior of a pipe or like tubular object, a working unit which moves longitudinally through the pipe has a throwing wheel for discharging abrasive particles against the interior surface of the pipe. As the working unit moves through the pipe, the spent abrasive is collected and returned to the throwing wheel for reuse.

3,750,340

## AGITATOR ASSEMBLY FOR SAND TANK

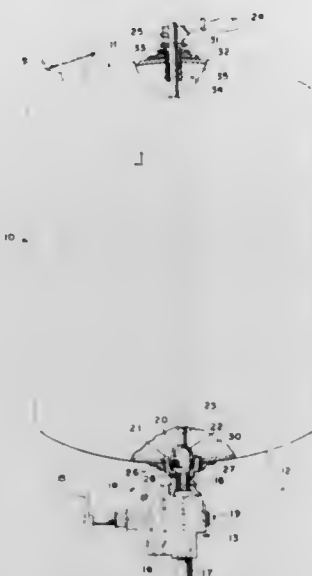
Robert Andersen, deceased, late of 1014 Fox Chase Rd., Rockledge, Pa. (Miriam Andersen, executrix)

Filed Sept. 2, 1971, Ser. No. 177,261

Int. Cl. B24c 7/00

U.S. Cl. 51—12

5 Claims



A device to remedy the clogging of sand in the tank of sand blasting equipment. An outlet funnel having an inner cup-like configuration is mounted in a discharge opening at the bottom of the sand tank. It delivers to a flow control device wherein air picks up sand and feeds it to a delivery hose. A cylindrical ring element, secured to the arms of a yoke, nests in the cup-like funnel. The yoke merges above the ring into a central vertical stem, which rises through the body of sand in the storage vessel, and passes through a pressure-tight gland in the top of the tank. A handle on the projecting end of the stem permits free rotation in place, and limited up-and-down movement against resilient packing in the gland, so that the yoke, on agitation, will free clogged sand blocking the outlet.

3,750,341

## APPARATUS FOR SELECTIVELY REMOVING MATERIAL FROM AN ARTICLE

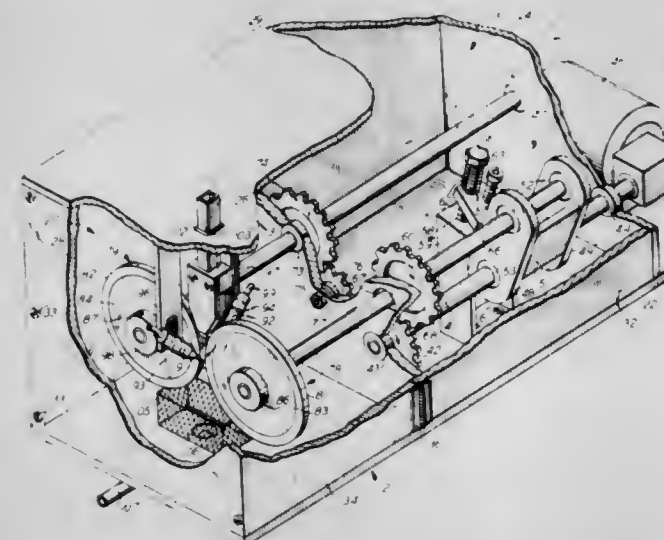
Arthur James Matthews, Jr., High Point, and Raymond Otis Terry, Jr., Winston-Salem, both of N.C., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,088

Int. Cl. B24c 3/12

U.S. Cl. 51—8

3 Claims



Material is removed from opposite sides of a substrate while protecting intermediate surfaces thereof by employing a pair of wheels biased toward each other to establish peripheral contact. Each of the wheels has a urethane tire bonded thereto

and is mounted for rotation in opposite directions to one another. The substrate is engaged between the urethane tires to mask the intermediate surfaces and as the wheels are rotated the substrate is displaced relative to streams of air abrasive particles emanating from each one of a pair of nozzles mounted on either side of the wheels. Material from the opposite sides is removed by the abrasive action of the air abrasive particles while the intermediate sides thereof are protected against the abrasive action by the urethane tires masking the intermediate surfaces.

3,750,342

## GRINDING MACHINE

Lars Soderstrom, Centro-Maskin i Goteborg AB, Box 47052, S-400 51 Goteborg, Sweden

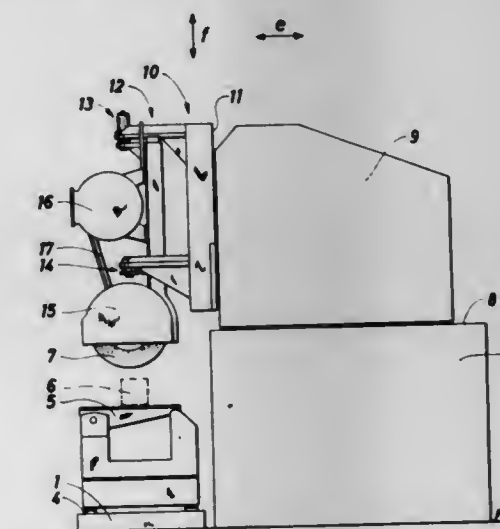
Filed May 19, 1971, Ser. No. 144,900

Claims priority, application Sweden, May 12, 1971, 6155/71

Int. Cl. B24b 7/00, 9/00

U.S. Cl. 51—34 R

4 Claims



A grinding machine for grinding the upper surface of a workpiece having a reciprocable table for the workpiece and a driven grinding wheel pivotally supported above said table and having a horizontal axis with the axis of pivoting of said grinding wheel extending through the center of said grinding wheel axis and also located between the outer sides of said grinding wheel while said grinding wheel is also capable of vertical movement relative to said table.

3,750,343

## MACHINE TOOL

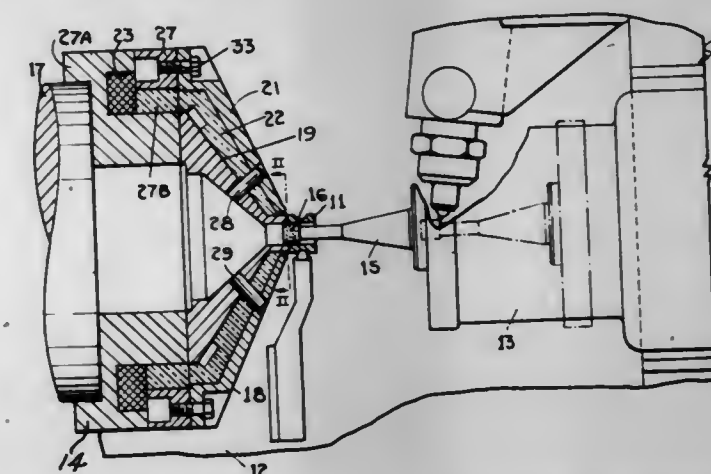
Donald R. Johnson, Worcester, Mass., assignor to Cincinnati Milacron-Heald Corp., Worcester, Mass.

Filed Apr. 30, 1971, Ser. No. 138,936

Int. Cl. B24b 5/00

U.S. Cl. 51—50 R

4 Claims



A machine tool having a work driving means consisting of concentric conical shells associated with a coil for generating magnetic lines of flux.



3,750,344

**LENS EDGING MACHINE FOR FITTING SPECTACLE LENSES**

Osmond Philip Raphael, 52, Clarewood Ct., Seymour Pl., London, England

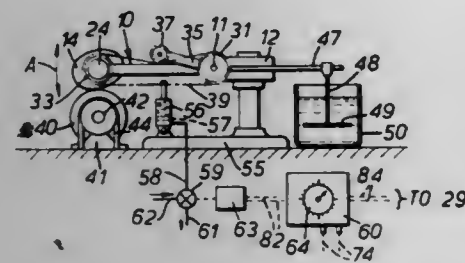
Filed July 21, 1971, Ser. No. 164,795

Claims priority, application Great Britain, July 22, 1970, 35,444/70

Int. Cl. B24b 9/14

U.S. Cl. 51-97 R

4 Claims



A lightweight edge grinding machine having a grooved grinding wheel receiving the edge of a lens supported upon a pivoted head. A fluid-actuated cylinder and piston unit pivots the head toward and away from the wheel.

A lens is adjusted to fit the wire rim of a spectacle frame by trying it for size, estimating the duration of additional edge grinding necessary, setting this duration on an automatic timing device of the lightweight edge grinding machine, inserting the lens in the machine and starting the operation. The machine stops automatically when the requisite amount of grinding has been effected.

3,750,345

**MACHINE TOOL**

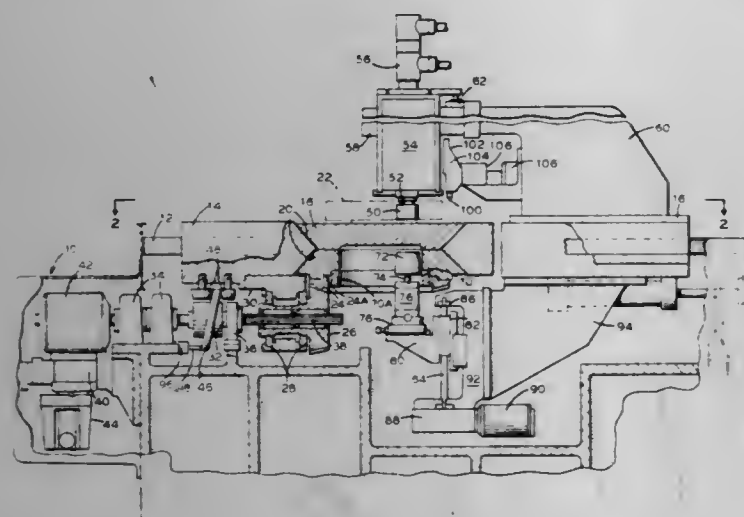
Daniel J. Kolesar, Troy, and Charles W. Stahl, St. Clair Shores, both of Mich., assignors to The Babcock &amp; Wilcox Company, New York, N.Y.

Filed Mar. 6, 1972, Ser. No. 231,882

Int. Cl. B24b 7/00, 9/00

U.S. Cl. 51-101 R

10 Claims



A machine tool organization or assembly where a workpiece is mounted for lineal and rotational movement in relationship to a machine tool which is separately mounted for lineal movement relative to the workpiece. The movement of the workpiece is regulated by a cam while the movement of the machine tool is regulated by a template. The movements of both are coordinated to effect the formation of the workpiece shape to a high accuracy.

3,750,346

**AUTOMATIC DEGATING APPARATUS**

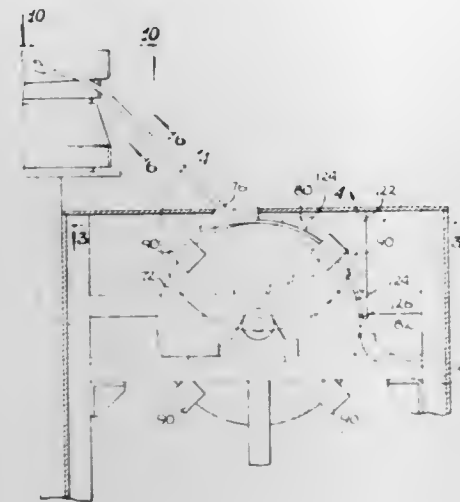
Louis Beauregard, North Hollywood, Calif., assignor to Techno-Components Corp., Van Nuys, Calif.

Filed Oct. 7, 1971, Ser. No. 187,462

Int. Cl. B24b 5/00, 47/02

U.S. Cl. 51-134

9 Claims



An automatic degating apparatus for removing the gate from molded parts. The apparatus comprises a system for automatically feeding the parts in a prealigned manner to a position adjacent a pickup wheel. The pickup wheel is adapted to receive the molded parts, one at a time, and to carry the parts in a guided manner past a sanding disc disposed so as to remove the gate and then to deposit the part in a finished parts tray. The sanding disc is slightly conical in shape with an axis of rotation annularly offset with respect to the axis of rotation of the pickup wheel so as to present to the parts an initially tapered sanding surface as the parts travel past the sanding disc. The apparatus has various adjustment devices and other features allowing the degating of parts of various sizes.

3,750,347

**SEGMENTAL ABRASIVE WHEEL**

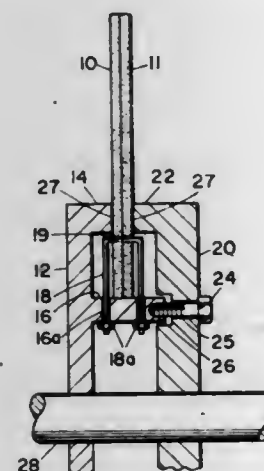
Roger H. Homeyer, Tonawanda, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed May 30, 1972, Ser. No. 257,502

Int. Cl. B24d 7/00

U.S. Cl. 51-206.5

4 Claims



A segmental abrasive wheel comprises a multiple layer of abrasive segments with overlapping joints, the segments being supported in grinding position between two circular flanges and held firmly by internal L-shaped bolts engaging the lower ends of the segments.

3,750,348

**MEANS AND TECHNIQUE FOR REMOVING FLUX ON A WELDING ROD**

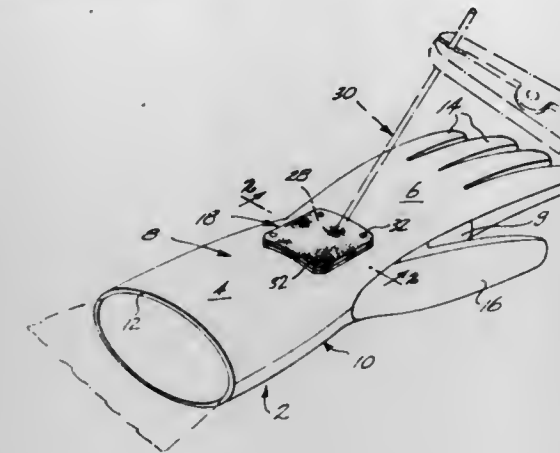
Robert P. Johnson, 7237 S. 129th, Seattle, Wash.

Filed Oct. 20, 1971, Ser. No. 190,761

Int. Cl. B24d 15/04; B24b 1/00

U.S. Cl. 51-391

11 Claims U.S. Cl. 52-27



The re-fused flux on the tip of a welding rod, is removed by striking the tip against an abrasive surface defined by a strike-plate on the overside of one of the welder's gloves.

3,750,349

**STABILIZER FOR MOBILE HOMES**

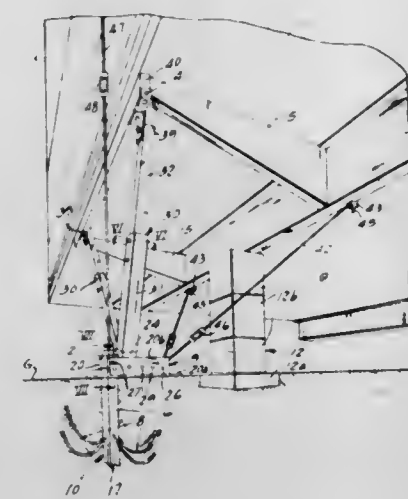
Robert F. Deike, P.O. Box 4067, Cheyenne, Wyo.

Filed May 15, 1972, Ser. No. 253,231

Int. Cl. F16f 11/00

U.S. Cl. 52-23

15 Claims



A stabilizer and support for mobile homes, trailers, building constructions and the like effective to resist wind, vibration, unequal weight distributions, and settling. The stabilizers have a combined supporting and tie-down capacity and cooperate on opposite sides of the trailer or building structure so that a tension applying load on one side will result in a compression load on the other side. Angular distribution stresses are also provided so that a force in any direction will be resisted by balancing counter-forces. The devices of this invention include anchors driven in the ground, compaction plates resting on the ground and secured to the anchors, telescoped struts supported by the compaction plates and supporting the underframing of the building structure to a predetermined load setting and tensioned cables diverging from the compaction plates to the frame structure together with tie-down cables or straps anchored to the post carried structure. The struts will shorten or lengthen when the loads thereon exceed the predetermined setting and resist impact loads in the manner of shock absorbers.

3,750,350

**HANGING TELEPHONE BOOTH**

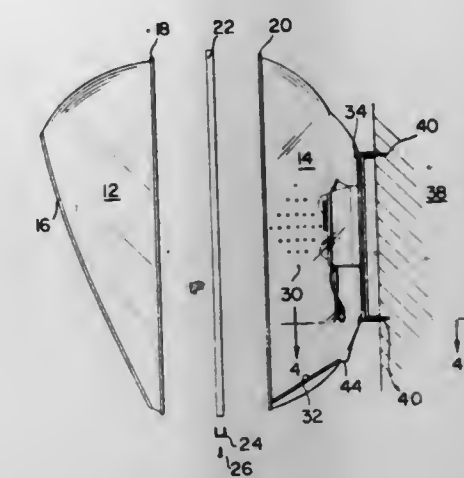
Modesto Vazquez Anon, 16 Villanueva St., Madrid, Spain

Filed Dec. 13, 1971, Ser. No. 207,064

Claims priority, application Spain, Jan. 21, 1971, 165,419

Int. Cl. E04b 1/14

8 Claims



A hanging telephone booth of simple, inexpensive construction for enclosing the head and upper part of the body of the user while the user stands or sits outside the booth, with most of his body outside thereof. The booth includes a shaped front shield and a shaped back shield which, when joined, form the booth by clamping means along a peripheral edge of the front and back shields.

3,750,351

**MOBILE HOME PORCH**

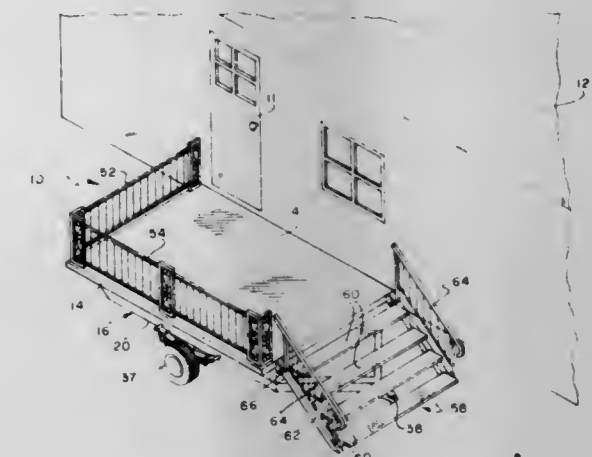
Jesse J. Greenburg, 506 W. 5th St., Solomon, Kans.

Filed June 8, 1972, Ser. No. 260,739

Int. Cl. B60r 27/00

U.S. Cl. 52-64

8 Claims



A portable porch for use with a mobile home having a flat deck surrounded by removable railing members, the flat deck being slidably attached to the frame of the trailer in a lateral direction to assist in positioning the deck in abutting relation with the mobile home, the porch having a secondary function as a conventional flat bed trailer.

**ERRATUM**

For Class 52-79 T see:  
Patent No. 3,750,366



3,750,352

**RAILWAY CAR CORNER CONSTRUCTION**

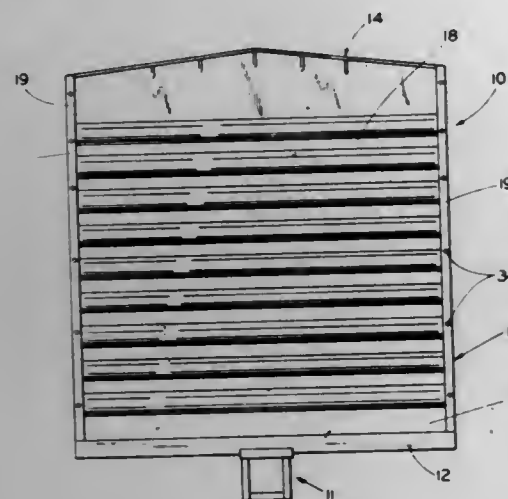
Waymond R. Jones, Michigan City, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jan. 13, 1972, Ser. No. 217,483

Int. Cl. B61d 17/06

U.S. Cl. 52-282

7 Claims



A railway car body includes side sheathing having vertical reinforcing posts on the outer side of such sheathing. The ends of the box car include corner posts of generally channel shaped configuration including longitudinally extending flanges to which the side sheathing is connected. The end construction includes a corrugated end having longitudinally extending flanged portions connected to the webs of the channel shaped corner posts which provide a strong and easily assembled design.

3,750,353

**METHOD FOR PRODUCING ARCHED STRUCTURES**

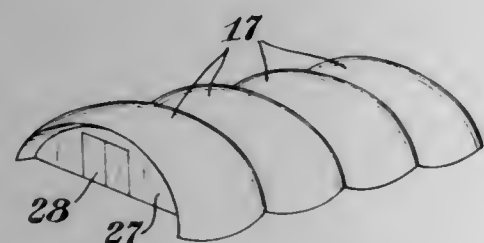
Hubert Stacy Smith, Jr., Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 1, 1971, Ser. No. 148,381

Int. Cl. E04b 1/32

U.S. Cl. 52-745

5 Claims



Arched structures are prepared by spirally generating a spherical segment of two bases, dividing the structure along generally axial planes to form a plurality of doubly curved segments. The segments are then assembled into a barrel vault-like structure.

3,750,354

**MULTI-STORY BUILDING STRUCTURE**

Yedidya Boros, 15 Prinsher St., Rishon Le Zion, Israel

Filed July 12, 1971, Ser. No. 161,778

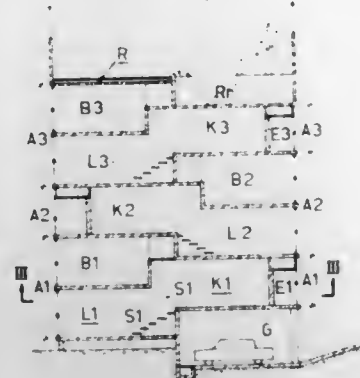
Int. Cl. E04h 1/04

U.S. Cl. 52-236

6 Claims

A multi-story building structure comprises a plurality of apartment units some or all of which include rooms on the entrance level of the respective unit, on a level lower than the entrance level, and on a level higher than the entrance level. In each such apartment unit, the higher level overlies the lower level, and the entrance level is horizontally laterally of,

and vertically spaced between, the lower and higher levels. The entrance level of each unit overlies the higher level of the next lower unit. One or more walls of the building structure are shear walls, the corridor openings of which are horizon-



tally staggered at successive stories. Part of the higher and lower levels of each apartment unit are joined together to provide a double-story room suitable for landscaping, gardening, etc.

3,750,355

**FACADE COMPOSITE PANEL ELEMENT**

Eduard Blum, Troisdorf-Oberlar, Germany, assignor to Blum-Bau K G, Troisdorf-Oberlar, Germany

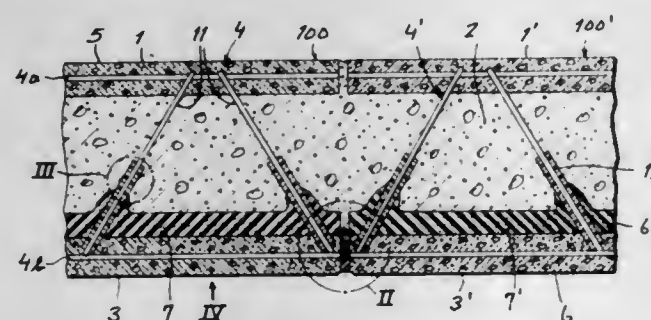
Filed Nov. 3, 1971, Ser. No. 195,123

Claims priority, application Germany, Apr. 28, 1971, P 21 20 746.5

Int. Cl. E04c 1/40

U.S. Cl. 52-309

7 Claims



A facade-forming structural element comprises an outer slab of concrete or of like composition, an inner wall-forming slab of concrete or like composition, a core between the slabs and preferably cast in place from a gravel-containing concrete, and at least one single-shear section lattice-like reinforcing girder spanning the two slabs and embedded therein. A layer of foamed insulation, e.g., polyurethane, is disposed between the core and the facade-forming outer slab.

3,750,356

**MOBILE HOME**

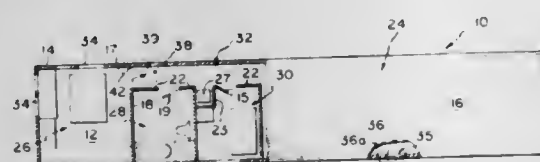
William L. Morse, P.O. Box 51, W. U.S. 10, Clare, Mich.

Filed Apr. 24, 1972, Ser. No. 246,696

Int. Cl. E06b 3/48; E05b 65/04

U.S. Cl. 52-204

2 Claims



A mobile home including a doorway in the outer wall thereof communicating with a restricted, interior hallway and an outwardly swingable exterior door and an inwardly swingable interior door mounted on said outer wall for closing said

doorway, the interior door including relatively foldable door sections which are precluded from folding when the inner door blocks the doorway but are relatively foldable to overlie one another when the door is swung inwardly.

3,750,357

**CRIMPING ASSEMBLY FOR RIMMED CONTAINERS HAVING A FLEXIBLE COVER SHEET**

Andrew W. Anderson, West Caldwell, and Adam Szura, Jr., Rutherford, all of N.J., assignors to Scandia Packaging Machinery Company, Clifton, N.J.

Filed Mar. 3, 1972, Ser. No. 231,685

Int. Cl. B65b 7/16

U.S. Cl. 53-329

13 Claims



A pair of feed members are rotatably mounted adjacent each other for supporting and feeding a rimmed container having a flexible cover sheet folded over the rim structure thereof. First and second crimping means are movably mounted on one of the feed members. The first crimping means presses the folded cover sheet material beneath the leading rim of the container passing between the rotating feed members. The second crimping means presses the folded cover sheet material beneath the trailing rim of the container passing between the rotating feed members. Movement of the first and second crimping means is effected with respect to the feed member to sequentially engage the flexible cover sheet first below the leading rim of the container and then below the trailing rim of the container. Various types of removable elements are used in conjunction with the crimping assembly so that it may be adapted to various sized and shaped containers. A lateral side crimping means may be used to press the folded cover sheet material beneath the laterally projecting rims which may extend in the direction of movement of the container as it passes between the rotating members.

3,750,358

**SELF LOCKING DOOR LIGHT MOLDING**

Bernard Lewkowitz, Pleasantville, N.J., assignor to Rimar Manufacturing, Inc., Manheim, Pa.

Filed Sept. 9, 1971, Ser. No. 179,039

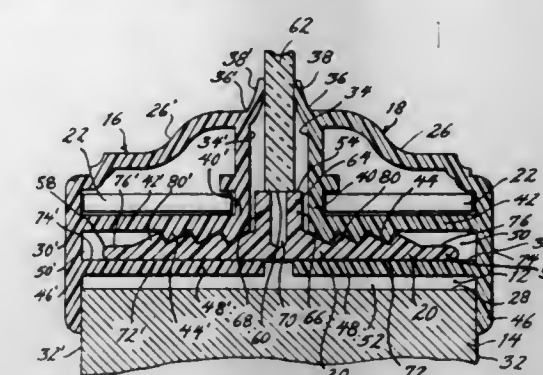
Int. Cl. E06b 3/62

U.S. Cl. 52-400

5 Claims

A self locking door light molding for use with doors of steel or other construction wherein it is desired to mount glass in a door light opening. The molding incorporates a peripheral exterior frame member and a matching, peripheral interior frame member, the said exterior and interior frame members projecting inwardly about the door light opening for glass holding purposes. Both the interior frame member and exterior frame member include matching facing, locking surfaces of saw tooth configuration which extend about the periphery of the opening. A plurality of horizontal locking members space about the periphery of the door light opening and incorporate

saw tooth construction of size and design to cooperate with and lock upon the locking surfaces of the interior and exterior



3,750,359

**EXPANSION JOINT COVER ASSEMBLY**

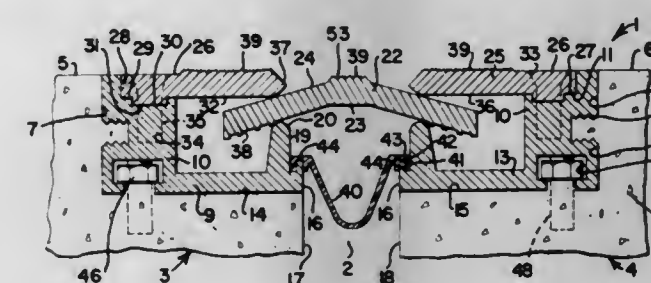
Claude P. Balzer; Edward M. Corman, and Almer A. Reiff, all of Wichita, Kans., assignors to Balco, Inc., Wichita, Kans.

Filed June 5, 1972, Ser. No. 259,567

Int. Cl. E04b 1/68; E04c 11/02

U.S. Cl. 52-468

10 Claims



An expansion joint cover assembly for covering an elongate expansion joint between adjacent and spaced apart structural sections. The assembly includes support members mounted on the structural sections with an elongate rigid arcuate plate member engaging the support members. The rigid plate member overlies the joint and has a greater width with lateral portions engaging the support members in such a manner as to permit relative movement between the structural sections in any direction with the rigid plate member covering the joint and maintaining its load carrying capability.

3,750,360

**SILL PLATE ANCHOR DEVICE**

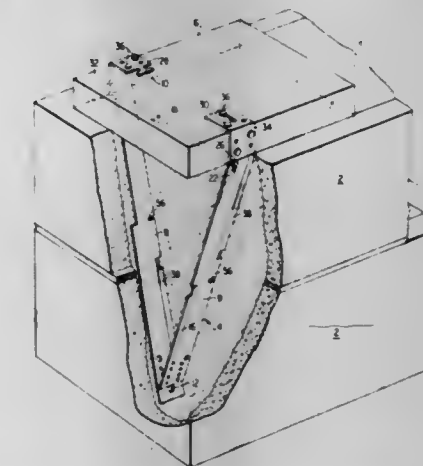
George W. Kingston, Chevy Chase, Md., assignor to Timber Engineering Company, Washington, D.C.

Filed Dec. 17, 1971, Ser. No. 209,635

Int. Cl. E04b 1/41

U.S. Cl. 52-714

14 Claims



An anchor device for securing a wood sill plate on masonry foundation or wall. The anchor device has a pair of side mem-



bers which are joined together at the lower end and which are spaced apart at the upper end and the device is substantially V-shaped. The anchor device includes a bridge member which extends between the side members adjacent the upper end of the device. The bridge member maintains a predetermined distance between the side members. The ends of the respective side members include lateral portions which overlap the bridge member and the sill plate is received in the space between the lateral portions and the bridge member. Nail holes are provided in the lateral portions of the side members to permit the anchor device to be secured to the sill plate by nails. When installed, the lower portion of the anchor device is enveloped by the concrete of the foundation of wall.

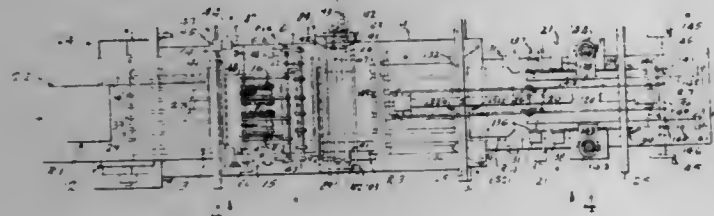
3,750,361

# MACHINE AND METHOD FOR WRAPPING THREE DIMENSIONAL RECTANGULAR OBJECTS

Charles R. Stevens, 4931 Oak Ridge Dr., Toledo, Ohio  
Filed Feb. 8, 1971, Ser. No. 113,580  
Int. Cl. B65b 11/12, 49/00, 49/08

U.S. Cl. 53—32

16 Claims



A machine and method for wrapping a three-dimensional, rectangular object, such as a ream or stack of paper sheets. The object to be wrapped is delivered onto a table at one end of the machine. The machine feeds a length of wrapper material off of a supply roll and beneath the object, feeds the wrapper material and the object along the machine, cuts off a proper length of wrapper material to form a wrapper of sufficient size to properly enclose the object and spreads a glue line on the wrapper along one edge thereof. The machine then folds the wrapper around the object to overlap the ends of the wrapper and seals the overlapped ends together to form a girth seam that extends transversely to the direction of movement of the wrapper and object along the machine. After the girth seam is closed, the object and wrapper are then fed in the same direction and between means which apply glue to and then tuck in, fold, and seal, the lateral margins around the sides of the object. The machine and method are particularly adapted for overwrapping stacks of sheets of paper of various sizes and quantities.

3,750,362

# METHOD OF PACKAGING GRANULAR MATERIAL

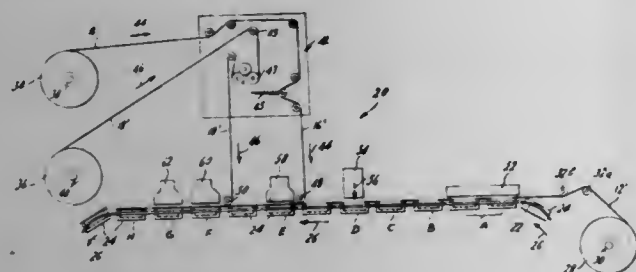
Allan Kishpaugh, and Donald J. Hagen, both of Wayne, N.J., assignors to Standard Packaging Corporation, New York, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,076

Int. Cl. B65b 31/02

U.S. Cl. 53—22 A

8 Claims



A package for a granular material includes a bottom package member and a top package member. A gas-permeable

intermediate package member is disposed between the bottom package member and the top package member to facilitate the evacuation of the package by retaining the granular material in the package during such evacuation. A method is provided for packaging the granular material which includes fully sealing the gas-permeable intermediate package member to the bottom package member and thereafter evacuating the package through the face of the gas-permeable intermediate package member.

3,750,363

# ARTICLE CARRIER AND METHOD OF INTERLOCKING A PAIR OF PANELS IN FACE CONTACTING RELATION

Prentice J. Wood, Jonesboro, Ga., assignor to The Mead Corporation, Dayton, Ohio

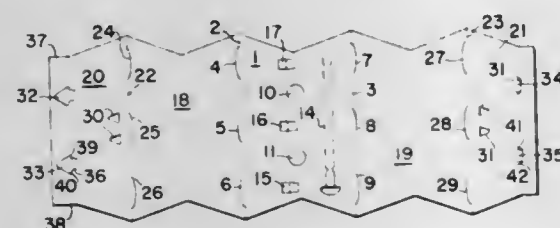
Division of Ser. No. 811,859, April 1, 1969, Pat. No.

3,570,746. This application Dec. 10, 1970, Ser. No. 96,687

Int. Cl. B65b 17/02; B65d 71/00

U.S. Cl. 53—32

3 Claims



An article carrier of the wrap-around type having top, bottom and side walls foldably joined along their side edges to form a tubular structure wherein one wall is a composite panel incorporating a pair of face contacting lap panels is provided with locking means in the form of a locking tab formed in one of the lap panels which is inserted through an opening defined by a retaining tab formed in the other lap panel and disposed in coincidental relationship with respect to the locking tab. Formation of the lock is facilitated by angularly extending slits formed in the lap panel in which the opening is formed. One end of each slit is in communication with one side of the opening. During formation of the lock the laterally projecting shoulders of the arrowhead type locking tab are received by the slits so as to facilitate the formation of the lock. Upon completion of the lock the lateral projections of the locking tab are out of registry with the slits.

3,750,364

# METHOD AND APPARATUS OF WRAPPING FOR ANNULAR GOODS

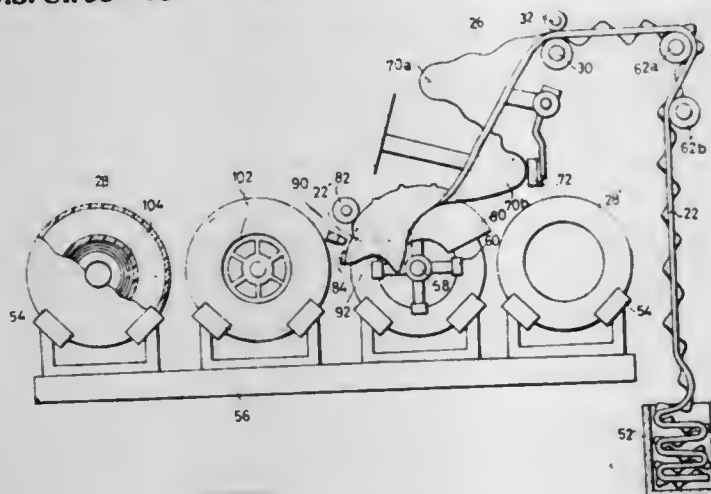
Isago Miura, 1-4-19, Honcho, Asaka-shi, Saitama-ken, Japan  
Continuation-in-part of Ser. No. 113,376, Feb. 8, 1971. This

application Nov. 15, 1971, Ser. No. 198,643

Int. Cl. B65b 11/48

U.S. Cl. 53—13

9 Claims



A method and an apparatus are provided for packing or wrapping annular articles automatically. A sheet of ther-

moplastic film tape is stretched in advance to eliminate folds and the outer side of the annular article is wrapped with this sheet in a circumferential direction. Both hems or marginal side edges across the width of the sheet join together at the inside of the annular article, and they are sealed in a ring shaped manner around the inside of the annular article.

3,750,365

# METHOD AND APPARATUS FOR OPENING AND SEALING BAGS

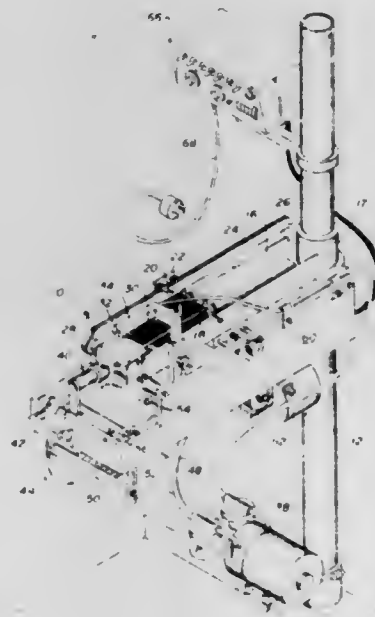
Joseph J. Darby, Jr., and Joseph J. Darby, III, both of Dallas, Tex., assignors to The Darby Manufacturing Corporation, Dallas, Tex.

Filed Sept. 10, 1970, Ser. No. 71,010

Int. Cl. B65b 43/30

U.S. Cl. 53—29

19 Claims



A magazine supports a horizontal stack of collapsed open-top flat bags. A suction head is reciprocable relative to the magazine and vacuum is applied thereto in order to open and remove the end bag from the magazine. The bag is withdrawn from the magazine and maintained in an opened position by the suction head to allow filling of the bag with a suitable material. Vacuum is released from the suction head after the bag is filled such that the filled bag falls by gravity into a gate located below the suction head. A sealing member moves against the top of the filled bag to seal the bag during which the gate opens to drop the filled and sealed bag, upon opening of the sealing member, onto a suitable conveyor.

3,750,366

# BUILDING

Frank D. Rich, Jr., Darien, and Alexander D. McDonald, Glenbrook, both of Conn., assignors to F. D. Rich Housing Corp., Stamford, Conn.

Continuation-in-part of Ser. No. 4,156, Jan. 19, 1970, abandoned. This application July 16, 1971, Ser. No. 163,274

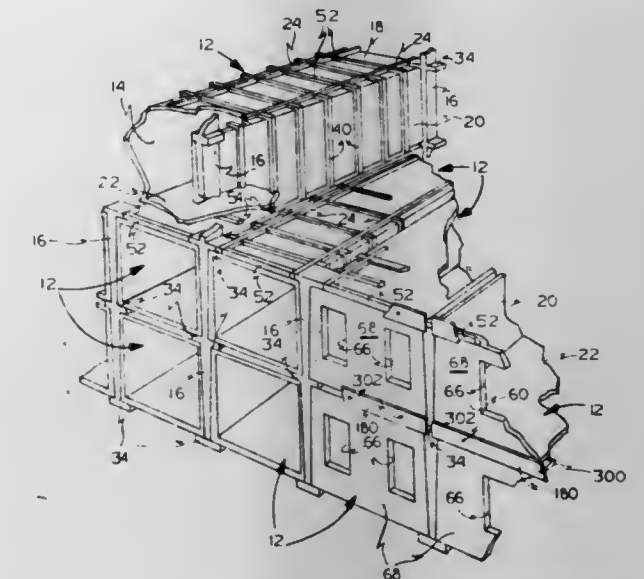
Int. Cl. E04h 1/12, 9/06

U.S. Cl. 52—79

11 Claims

A building employing prefabricated room-enclosing modules which function also as box-shaped horizontal beams and ties for connecting vertical weight-supporting columns into a rigid framework. The columns are preferably concrete members which are poured in place into spaces formed between the modules. The inter-module spaces include vertical chases and horizontal plenums which are in communication with each other and with a heating/cooling plant output, to form an air jacket which surrounds each module over a plu-

ality of its exterior surfaces, and operates as an effective radiant heat exchanger therewith. The heated or cooled air is ultimately discharged into the interior occupancy space of the modules, so as to provide a combination radiant and convective heating/cooling system. The interior occupancy space of the modules is sealed during on-site construction, so that no workmen may enter. The interior of the modules is finished



3,750,367

# WEB STERILIZING SYSTEM

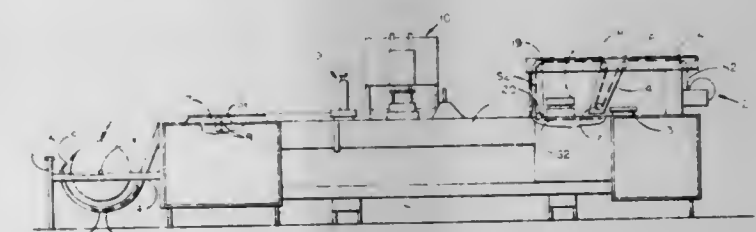
Charles J. Barker, Atlanta, and John H. Perry, Doraville, both of Ga., assignors to The Mead Corporation, Dayton, Ohio

Filed Mar. 28, 1972, Ser. No. 238,872

Int. Cl. B65b 9/04

U.S. Cl. 53—180

6 Claims



A form-fill-seal type of packaging machine in which a pair of rolls of plastic are used in respectively forming and sealing containers is provided with a pair of utilization tanks through which the two webs of plastic material are fed in order to sterilize the webs or sheets due to contact with a sterilizing liquid such as hydrogen peroxide contained in the two tanks. Should the machine be shut down either deliberately or by inadvertence for any reason, the germicidal agent may affect the plastic material immersed therein in an adverse manner. Thus means are provided for draining the germicidal liquid from the utilization tanks into a reservoir tank thereby to preclude any possible undesired effects by controlling suitable valves in the supply and return conduits or by other means.

## ERRATUM

For Class 53—329 see:  
Patent No. 3,750,357



3,750,368

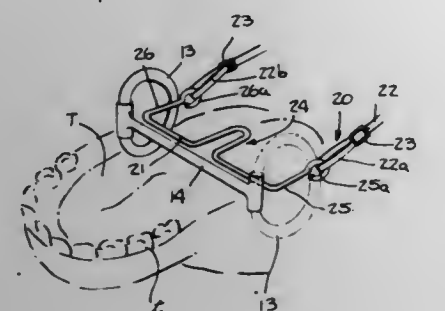
## TONGUE GUARD FOR HORSES

Thomas J. Hyland, Box 16, Bedford, N.Y.

Filed Dec. 1, 1971, Ser. No. 203,758

Int. Cl. B68b 01/06

U.S. Cl. 54-8



Tongue guard having a deeply ported, bit-like crossbar element and a headstrap for positioning and maintaining the crossbar element within a horse's mouth immediately adjacent to, and behind the conventional snaffle or bar bit for preventing horse from moving its tongue over the latter. Tongue guard is a part of the bridle arrangement, but is separate from, and is positioned independently of all other bridle elements, including the referred to conventional bit for controlling the horse's movement.

3,750,369

## SYSTEM FOR CONTROLLING GAS MOISTURE CONTENT

Donald H. Friedland, 3619 Bedford Ave., Brooklyn, N.Y.

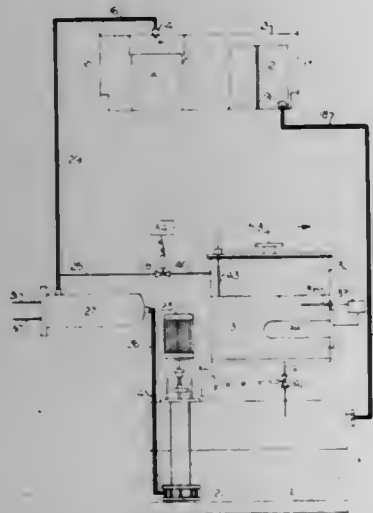
Continuation-in-part of Ser. No. 103,595, Jan. 4, 1971,

abandoned. This application July 2, 1971, Ser. No. 159,172

Int. Cl. B01d 53/14, 47/00

U.S. Cl. 55-20

11 Claims



A system for simply controlling the moisture content of gases, such as air, by use of a hygroscopic medium which is subject to regeneration characterized by the combination of (a) means for maintaining constant temperature of the medium in the regeneration zone, (b) a liquid level controller for maintaining constant liquid level in the regeneration zone, and (c) a density controller system sensitive to changes of liquid density of the circulating medium, units (b) and (c) serving to add additional quantities of hygroscopic medium to the regeneration zone upon a drop in liquid level therein, and/or concentration of the circulating medium.

3,750,370

## AIR PURIFIER

Erhard Brauss, and Albert Dercho, both of Windsor, Ontario, Canada, assignors to Proto Manufacturing Ltd., Windsor, Ontario, Canada

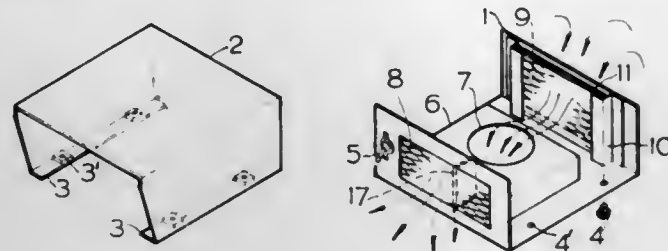
Filed Dec. 9, 1971, Ser. No. 206,342

Int. Cl. B01d 45/00

9 Claims

U.S. Cl. 55-279

3 Claims



This air purifier consists of a rectangular unit having two opposite grills in its walls through which the air in a room enters and leaves. The Air entering the unit passes through one of the grills which is equipped with a filter containing activated carbon, and before it is discharged through the opposite grill, it is exposed to the action of ultraviolet light. The air is sucked into and forced out of the unit by means of an electrically motorized fan located inside of the unit.

3,750,371

## APPARATUS FOR SEPARATING LIQUIDS FROM WET STEAM

Viktor Heinz Gutman, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Continuation of Ser. No. 882,038, Dec. 4, 1969, abandoned.

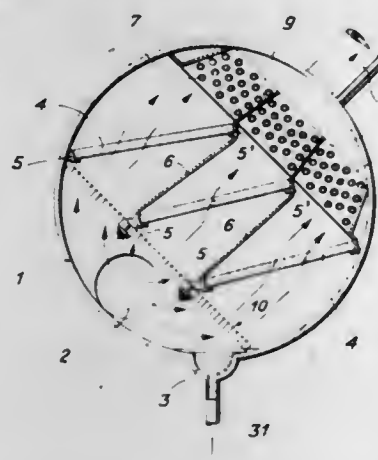
This application Dec. 9, 1971, Ser. No. 206,510

Claims priority, application Switzerland, Dec. 4, 1968, 18071/69

Int. Cl. B01d 46/12

U.S. Cl. 55-419

14 Claims



The apparatus includes a grid-like flow straightening means, a pressure reducer in the form of a perforated plate, and a separator for separating out the liquid. A wire mesh screen is also positioned between the pressure reducer plate and separator to provide an equalizing chamber for the steam leaving the plate.

3,750,372

## PREVENTION OF AIR POLLUTION BY USING SOLID ADSORBENTS TO REMOVE PARTICULATES OF LESS THAN 0.5 MICRONS IN SIZE FROM FLUE GASES

Lewis A. St. Cyr, Thornton, and Loren H. Young, Northglenn, both of Colo., assignors to Vulcan Materials Company, Birmingham, Ala.

Filed Apr. 1, 1971, Ser. No. 130,398

Int. Cl. B01d 53/04

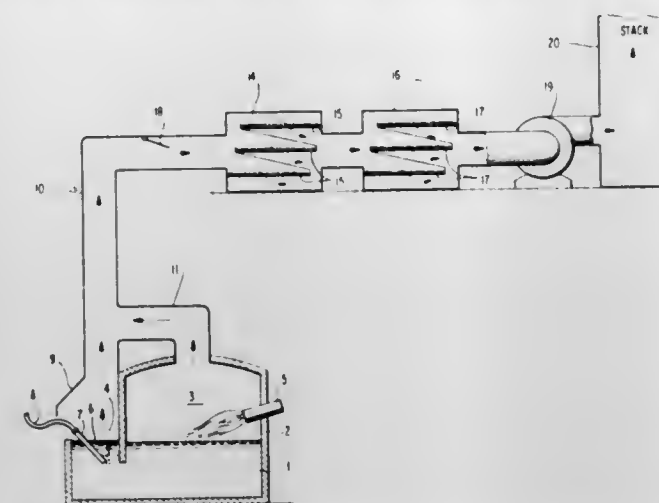
U.S. Cl. 55-71

15 Claims

Particulates less than 0.5 microns in size are removed from flue gases by passing the flue gases into intimate contact with a

solid adsorbent such as calcium sulfate or zeolite A. Calcium sulfate in its anhydrous and hemihydrate forms is particularly effective in removing metal halide solids, e.g.,  $AlCl_3$ ,  $KCl$ ,

the filter in place it makes a dust light unit; arrangements may be made for the structure to carry a lighting unit; the structure when bolted to a similar structure may be hung from the ceil-



$NaCl$ , and  $AlF_3$ , of less than 0.1 microns in size from the gaseous effluent of aluminum processing operations which utilize a gaseous chlorine treatment of molten aluminum.

3,750,373

## ELECTROSTATIC MIST PRECIPITATOR

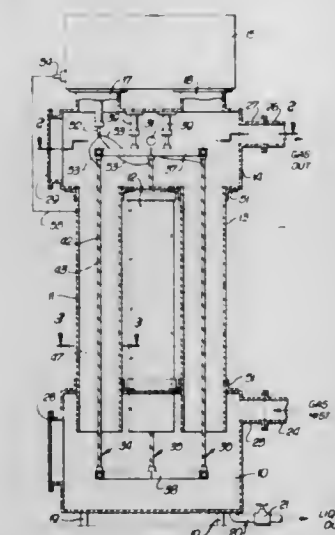
Rodney I. Olson, 2080 Balmer Dr., Los Angeles, Calif.

Filed Oct. 1, 1971, Ser. No. 185,726

Int. Cl. B03c 3/06

U.S. Cl. 55-146

1 Claim



An electrostatic precipitator for removing mist from a gas stream. A precipitator formed of electrical insulating material, typically resin impregnated glass fiber. A precipitator with a plurality of tubular flow passages, each having a rod conductor within the tube and another conductor within the tube wall. A helical wire conductor embedded between resin impregnated glass fiber layers to form a tubular flow passage.

3,750,374

## GAS FILTERS

Gerhard Max Neumann, Berlin, Germany, assignor to Delbag-Luftfilter Gesellschaft mit beschränkter Haftung, Berlin, Germany

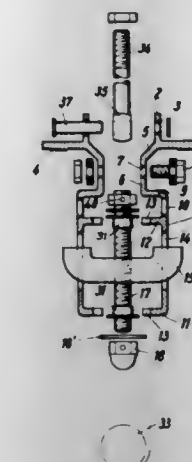
Filed June 7, 1971, Ser. No. 150,298

Int. Cl. B01d 31/00

U.S. Cl. 55-484

5 Claims

Air filter structure primarily for the ceilings of clean rooms, the structure being formed from a profiled section which can be bolted to a similar structure and hung from the ceiling or supported from a wall each structure being formed to releasably carry a filter, arrangements being provided for filters of different thicknesses, the structure being such that with



3,750,375

## HYDRAULIC VENTURI

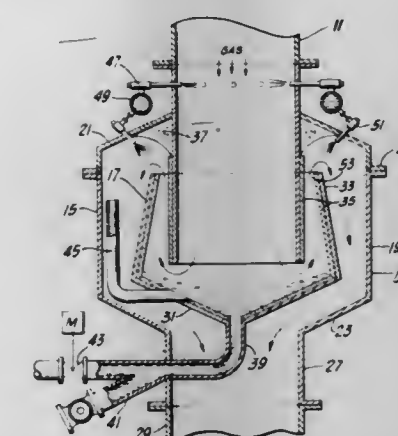
Reginald Wintrell, Gibsonia, Pa., assignor to Koppers Company Inc., Pittsburgh, Pa.

Filed May 25, 1971, Ser. No. 146,638

Int. Cl. B01d 47/10

U.S. Cl. 55-223

1 Claim



Dirty gases entering a chamber pass through a zone in which they are treated with primary water sprays, and thereafter the gases impinge on a confined mass of water. The gases then pass through a peripheral venturi section and through another zone in which they are treated for a second time with venturi water sprays.

3,750,376

## MOTORIZED LANDSCAPING MACHINE CARRYING ONE OR MORE LANDSCAPING APPLIANCES AND CAPABLE OF AUTOMATICALLY CIRCUMVENTING OBSTACLES

Paolo Cioni, Via dei Bassi 11, Firenze, Italy

Filed Nov. 22, 1971, Ser. No. 201,020

Claims priority, application Italy, Dec. 16, 1970, 9789 A/70

Int. Cl. A01d 35/26

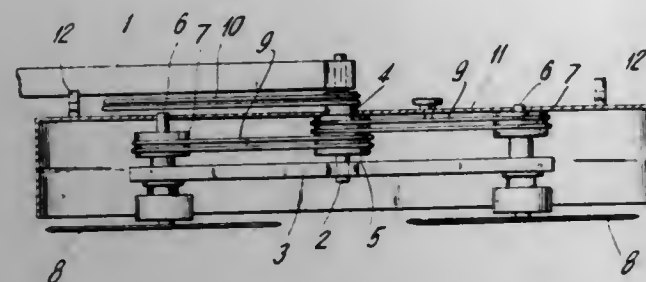
U.S. Cl. 56-10.4

8 Claims

The landscaping machine includes a relatively elongated bearing arm arranged to be secured, at one end, to a motorized vehicle, having a power source, to project laterally from the vehicle, and a relatively elongated yoke is rotatably supported, at substantially its midpoint, on the opposite end of the arm for rotation in a substantially horizontal plane. At least one landscaping appliance is interchangeably mounted



on an end of the yoke, and releasable stop means restrain the yoke to extend substantially parallel to the bearing arm and substantially perpendicular to the direction of movement of the motorized vehicle. A pivot or shaft, swingably supporting the yoke on the bearing arm, carries pulleys, one of which is



connected by a belt to the power source on the motorized vehicle, and the other of which is connected by belts to pulleys driving the landscaping appliances. When an appliance strikes an obstacle in its path of movement, the releasable lock or restraining means releases the yoke for swinging in a direction to enable the appliance to circumvent the obstacle.

### 3,750,377 WEED CUTTER

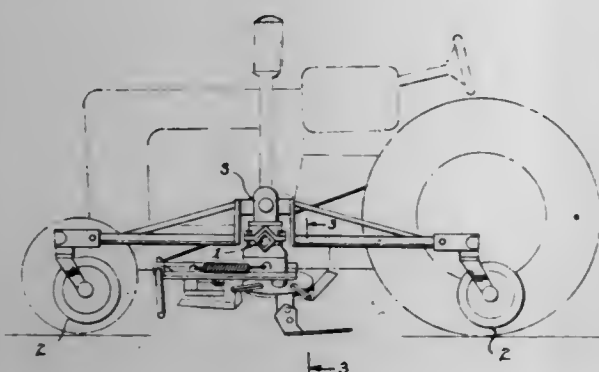
Jerald R. Clark, Maricopa, Ariz., assignor to Farmers Investment Company, Sahuarita, Ariz.

Filed Oct. 4, 1971, Ser. No. 186,297

Int. Cl. A01d 35/26

U.S. Cl. 56—10.4

10 Claims



The present invention, attached to a moving vehicle and conveyed through a weed infested orchard, cuts the weeds without causing injury to the tree trunks or tree roots. A horizontally oriented cutting blade, angled at approximately 45° with respect to the direction of travel, rides beneath the surface of the soil cutting the weeds. A plurality of these blades are equi-angularly disposed about a rotatably positionable platform. The platform is angled with respect to horizontal such that only one blade is in contact with the soil at any one position of the platform. A feeler extends forwardly of the platform to detect any trees in the path of the cutting blade. Upon detection of a tree, the feeler trips a release mechanism, which permits the platform to rotate due to the drag of the embedded blade. Rotation of the platform will, because of the angular relationship of the platform, the blades, and the soil, cause the then embedded blade to rotate and rise above the soil. Simultaneously, another of the cutting blades will be rotated until it comes into contact with the soil and embeds itself to resume the weed cutting function. During the rotation of the platform, the position of the tree with respect to the moving platform is such that the aforementioned cutting blades pass on either side of the tree thereby preventing them from inflicting damage to the tree. In this manner, weeds growing between trees in a row of trees may be mechanically cut without causing any injury to the trees.

### 3,750,378 ROTARY MOWER WITH SAFETY DISCHARGE

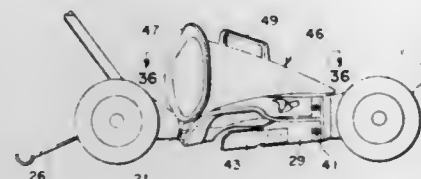
Richard A. Thorud, and Kenneth N. Hasenbank, both of Minneapolis, Minn., assignors to Toro Manufacturing Corporation, Minneapolis, Minn.

Filed Aug. 27, 1971, Ser. No. 175,441

Int. Cl. A01d 35/26

U.S. Cl. 56—10.5

5 Claims



A side discharge rotary mower having a baffle across the lateral discharge mouth of the housing. A deflector overlies and encloses the top and sides of the discharge opening of the housing and the aforementioned baffle and extends laterally outwardly from the housing and the discharge opening. The top of the deflector includes a discharge opening with a hinged spring loaded cover or door therefor, which cover is cooperatively related to a switch. The opening in the deflector is designed for use with a lift-out bag chute to permit optional bagging of the clippings where desired. The switch, which is actuated by the cover and bag chute, is designed to permit the engine to operate whenever the cover is closed or the bag chute is properly installed in the deflector, but is further designed to short and shut off the motor when the cover is raised and the bag chute is not installed therein. The rear half of the housing is provided with a curved, generally horizontal, underguard which under-lies the path of travel of the outer cutting portion of the blade in the rear half of the mower. A smaller underskirt in the left front quadrant prevents blow-out, and a curved depending wall on the top of the deflector disperses the clippings before they leave the deflector and are scattered on the ground. An improved rear safety shield is hinged to the rear of the housing and freely rides on the turf behind the mower. A shroud hingedly mounted on the engine and held in place by the gas cap overlies and protects the engine, carburetor, gas tank, muffler and ignition system.

### 3,750,379 COLLAPSIBLE RAKE

Fred J. Huspen, 750 Lincoln St., Glenview, Ill.

Filed June 19, 1972, Ser. No. 263,848

Int. Cl. A01d 7/00

U.S. Cl. 56—400.18

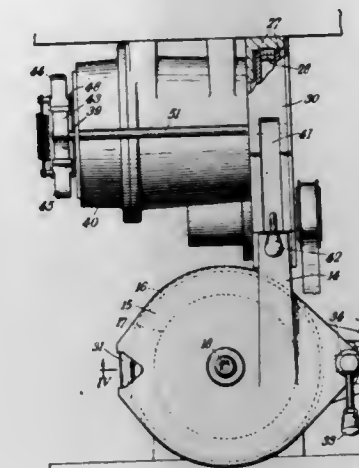
5 Claims



An adjustable rake including an elongated handle having a transverse prong guide secured thereto at one end thereof.

Mounted on the handle for slidable movement is a prong carrier and it in turn pivotally mounts respective ends of a plurality of prongs which extend therefrom through the prong guide. By changing the position of the carrier on the handle, the width of swath of the rake can be regulated. Means are provided for securing the prong carrier to the handle at any of several desired positions of adjustment.

via a yarn delivery duct provided in the closure member. Fibers are fed to the fiber inlet duct by an opening roller which



### 3,750,380 DEVICE FOR SEPARATING FIBROUS MATERIAL

Milos Mladek; Bohumir Burget; Ladislav Bures, all of Usti nad Orlici, and Jaroslav Rajnoha, Tyniste nad Orlici, all of Czechoslovakia, assignors to Elltex, Zavody Textilniho Strojirenstvi, Liberec, Czechoslovakia

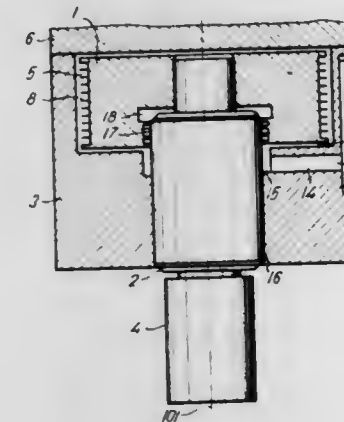
Filed Dec. 14, 1971, Ser. No. 207,835

Claims priority, application Czechoslovakia, Dec. 22, 1970, 8660/70

Int. Cl. D01h 1/12

U.S. Cl. 57—58.95

7 Claims



A device for separating fibrous material, for use with textile machines, and particularly open end spinning machines, includes a housing which defines a chamber. During operation of the device, and for the purpose of doffing separated fibers, an underpressure is maintained in said chamber. A carding roller is located within the chamber and is mounted for rotation by a bearing arrangement, which is itself at least partially located in the chamber. The bearing arrangement has at least one portion from which lubricant may leak and then, under the influence of the prevailing underpressure, be sucked into contact with the fibrous material being separated. To prevent such possibility, a pressure-compensation arrangement is provided which is adapted to prevent the lubricant from coming under the influence of the underpressure.

is arranged to the side of the rotor so as not to constitute an obstruction to the ready removal of the closure member from the rotor.

### 3,750,382 PROCESS AND APPARATUS FOR FEEDING FIBER IN AN OPEN END SPINNING MACHINE

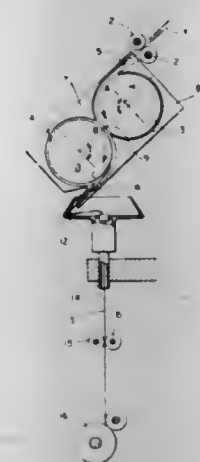
Kelichi Minami; Kozo Susami, both of Otsu, and Masaaki Sakai, Kyoto, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Mar. 10, 1972, Ser. No. 233,576

Int. Cl. D01h 1/12

U.S. Cl. 57—58.91

7 Claims



The present invention relates to a process and to an apparatus for feeding fibers in a process for manufacturing spun yarn using the open end system. More particularly, the invention relates to an improvement in a process for separating and feeding a fiber bundle in an open end spinning machine using combing rollers.

### 3,750,381 TEXTILE SPINNING MACHINES

Robert Greenwood, Whalley, near Blackburn, and John M. Shepherd, Ilkley, both of England, assignors to T.M.M. (Research) Limited, Lancashire, England

Filed July 8, 1970, Ser. No. 53,248

Int. Cl. D01h 1/12, 1/24

U.S. Cl. 57—58.91

5 Claims

In an open end spinning machine fibers are passed to the interior fiber-collecting surface of a spinning rotor via a fiber inlet duct provided in a closure member removably secured over the forwardly facing open end of the spinning rotor, a tail end of spun yarn being continuously withdrawn from the rotor

### 3,750,383 QUARTZ-OSCILLATOR CONTROLLED TIMEPIECE USING LIQUID CRYSTAL DISPLAY DEVICE

Kouji Kakizawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 212,248

Claims priority, application Japan, Dec. 29, 1970, 45/128117

Int. Cl. G04b 19/30; G04c 3/00

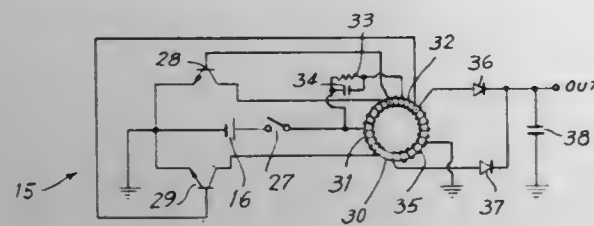
U.S. Cl. 58—50 R

10 Claims

A timepiece which is quartz-oscillator controlled and which displays the time by means of a liquid crystal digital device,



contains a low voltage battery for operating the quartz-oscillator circuit and attendant divider, decoder, and driving circuits.



The high voltage necessary for operating the liquid crystal display device is provided by a DC voltage boosting circuit energized by the same low voltage battery.

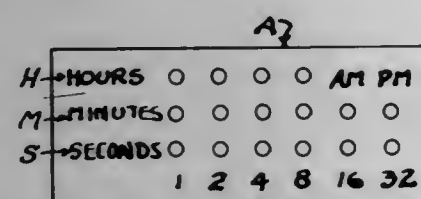
3,750,384

**ELECTRIC CHRONOMETER WITH BINARY READOUT**  
Arthur D. Miller, 1042 4th St., Hermosa Beach, Calif., and  
Robert Verbel, 3666 Cardiff Ave., Los Angeles, Calif.

Filed Aug. 13, 1971, Ser. No. 171,457  
Int. Cl. G04b 19/30

U.S. Cl. 58—50 R

7 Claims



A chronometer provided with three rows of readout lights which indicate seconds, minutes and hours through binary counting of control pulses from an electronic pulse generating system. For setting the readout for correct time, a series of manual overcontrols are operable in conjunction with a start-stop control for rapid advance of minutes and hours counting. Provided, is a control for "dark" operation in which the counting mechanism continues to operate without energizing the readout lights.

3,750,385

**CALENDAR WATCH SETTING MECHANISM FOR VARIOUS MONTH LENGTHS**

Hans Kocher, Erkenweg 24, 3294 Buren a/Aare, Switzerland  
Filed Mar. 13, 1972, Ser. No. 234,288

Claims priority, application Switzerland, Apr. 7, 1971, 5078/71

Int. Cl. G04b 19/24

U.S. Cl. 58—58

12 Claims



A mechanism for setting the date-indicating indicia on a calendar watch including a date-setting mechanism having an

inactive position and at least one first active position, said setting mechanism causing the date-indicating indicia to advance by one step into the first active position immediately after the date-indicating mechanism has been brought to a position corresponding to the date "31."

3,750,386

**PENDULUM CONTROLLED ELECTRODYNAMIC CLOCKWORK**

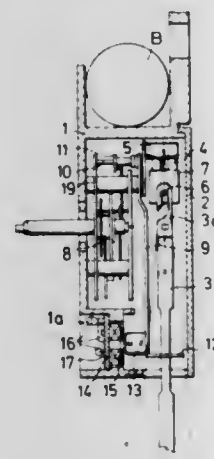
Ernst-Heinrich Harting, Gosheim, Germany, assignor to Franz Hermle & Sohn, Uhrenfabrik, Gosheim/Wuertt., Germany  
Filed Dec. 16, 1970, Ser. No. 98,768

Claims priority, application Germany, Dec. 17, 1969, P 19 63 259.8

Int. Cl. G04c 3/02; H02k 33/12

U.S. Cl. 58—30

13 Claims



The magnet of an electrodynamic clockwork is secured to a control lever connected by coupling means with a pendulum so that the magnet swings with the control lever and the pendulum to generate pulses in windings for driving the pendulum. The coupling means includes a fork embracing the pendulum and permitting the lower part of the same to assume a vertical position when the housing is displaced. Since the magnet is not carried by the pendulum, but by the control lever, the winding can be secured to the housing near the clockwork.

3,750,387

**LEAKAGE INDICATOR FOR EVACUATED AND PRESSURIZED WATCHCASES**

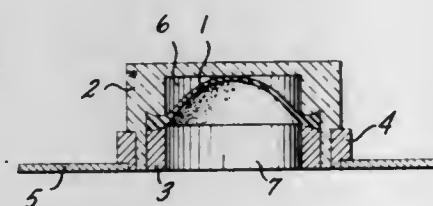
Ervin Piquere, deceased, late of Bassecourt, Switzerland; by  
Ami Scholler, 3, rue Hugli, Bienne, and by Edouard Bandelier, 10, Neubadrain, 4102 Binningen, both of Switzerland (executors)

Continuation-in-part of Ser. No. 42,131, June 1, 1970, abandoned. This application Dec. 10, 1971, Ser. No. 206,834

Int. Cl. G04b 37/02

U.S. Cl. 58—90 B

28 Claims



An evacuated or pressurized sealed watchcase comprises a member such as a piston or membrane movable in response to a pressure change in the watchcase, and means for signalling the position of the member so as to enable the detection of leaks.

3,750,388

**HERMETIC WATCH CASE**

Ervin Piquere, deceased, late of Bassecourt, Switzerland; by  
Ami Scholler, Bienne, and by Edouard Bandelier, Binningen, both of Switzerland (executors)

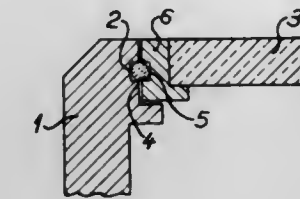
Filed Sept. 15, 1969, Ser. No. 858,083

Claims priority, application Switzerland, Sept. 16, 1968, 13997/68

Int. Cl. G04b 37/08

U.S. Cl. 58—90 R

7 Claims



A watch case with a seal between the case and a mounting fitted on the watch glass where the glass can either be swaged or bonded to the mounting or the glass can be provided with a seal between the rim of the glass and the mounting in the same way that the mounting is fitted to the case, in this latter case the rim of the glass and the mounting could be provided with grooves for the seal.

3,750,390

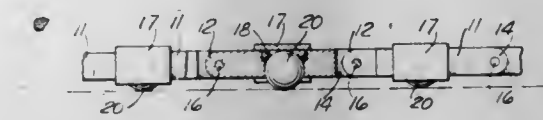
**CHAIN LINKS**

Floyd F. Edwards, 10831 W. St. Martins Dr., Franklin, Wis.  
Filed Mar. 8, 1971, Ser. No. 121,782

Int. Cl. F16g 13/18

U.S. Cl. 59—78

3 Claims



A chain link for use in chains utilized in the operations of cutting or welding relatively large pipe elements by means rotated about the pipe. The link carries a large ball bearing which protrudes from an aperture in the link body to bear against the pipe, and a plurality of relatively smaller bearings concealed within the link body and in contact with the large bearing.

3,750,391

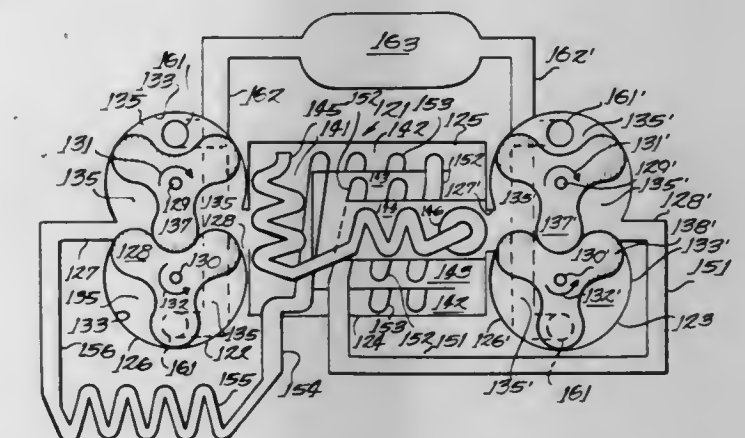
**HOT GAS ENGINE**

Steven P. Roblyer, 376 E. Montana, Glendale Heights, Ill.  
Filed Dec. 9, 1971, Ser. No. 206,246

Int. Cl. F02g 1/04

U.S. Cl. 60—24

12 Claims



A hot gas engine construction employing either external combustion, internal combustion, or a combination of both internal and external combustion. The engine has a fresh air or gas intake means connected to a casing with a motor connected to the opposite end of the casing, and a chamber in the casing having heat supplied thereto by either heat exchangers or by internal ignition of combustionable fluids thereby effecting the expansion of the gas and the increase of the pressure in the chamber between the intake means and the motor means. This forces the heated gases out of the chamber through the motor effecting the driving of the motor which has its output connected through suitable means to a load to be driven along with being drivingly connected to the intake means for effecting the operation of the same to introduce fresh air or gas into the chamber.

3,750,389

**LIQUID ANNULAR ORIFICE DASHPOT TIMER WITH INERTIAL EFFECTS**

David S. Breed, Box 270 R.D. 2, Hillcrest Rd., Boonton Twp., N.J.

Filed Feb. 16, 1971, Ser. No. 115,442

Int. Cl. G04f 1/00

U.S. Cl. 58—144

20 Claims



The dashpot of this invention includes the substantially cylindrical cylinder in which travels a piston having a diameter slightly less than that of the interior of the cylinder. A liquid or modified liquid defines the medium in the cylinder in which the piston is adapted to travel. The flow ingenerated in the cylinder is predominantly a pressure flow with the shear flow being relative insignificant. The flow is also at sufficiently high Reynolds numbers such that inertial effects are present. The device of the present invention operates in the lubrication regime whereby relatively small timers are capable of providing time delays of up to several seconds or more.



3,750,392

## HIGH ENERGY IGNITION DEVICE

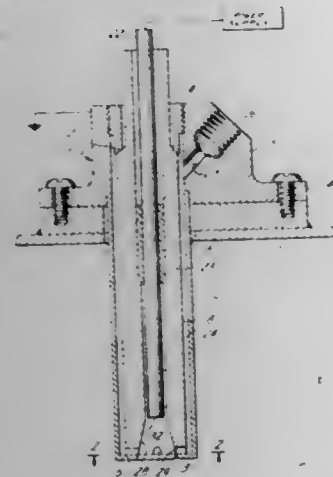
August H. Zoll, Cedar Grove, N.J., assignor to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Dec. 22, 1971, Ser. No. 210,975

Int. Cl. F02c 7/26

U.S. Cl. 60—39.82 S

4 Claims



A spark igniter for gas turbine engines, having passage means for positioning a small quantity of liquid fuel directly in the path of the spark, which fuel is vaporized, ignited, and expelled as a jet of flame into the combustion chamber to ignite the main fuel flow.

3,750,393

## PRIME MOVER SYSTEM

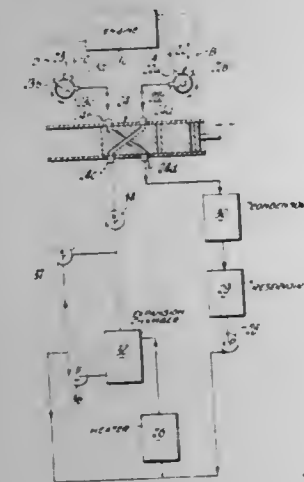
Wallace L. Minto, and Leonard J. Keller, both of Sarasota, Fla., assignors to Kinetics Corporation, Sarasota, Fla.

Continuation-in-part of Ser. No. 40,623, May 26, 1970, abandoned. This application June 11, 1971, Ser. No. 152,325

Int. Cl. F01k 25/06

U.S. Cl. 60—36

16 Claims



A prime mover system employing in a closed circuit a volatile fluorocarbon drive medium with a low heat of vaporization includes as a vapor engine at least two intermeshing male and female helical screw elements with different numbers of teeth or a pair of eccentric inner and outer gerotor elements housed in a mating casing having inlet and outlet ports communicating with the contract and expanded expansion chambers delineated by the cooperating engine elements. The pressurized inlet vapor is directed to impinge on the chamber-defining grooves in the female screw to use the vapor flow momentum and a plurality of inlet ports afford different cut off points to the engine chambers and hence adjustability of the engine torque characteristics. A valve system permits the feed of the high pressure vapor to the exhaust ports to provide engine reversibility. Liquid drive medium mixed with the vapor drive medium is fed to the engine input port and a fluorosilicone lubricant is carried by the drive medium.

3,750,394

## STARTER ENGINE

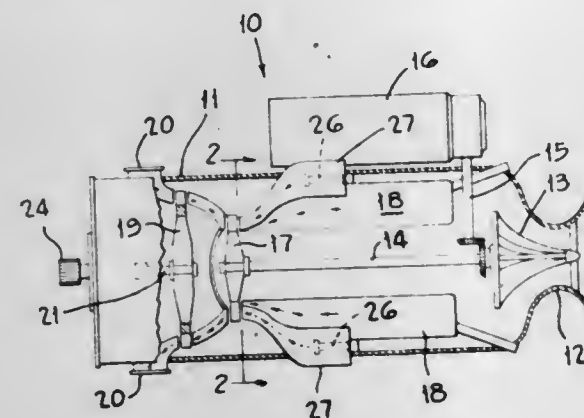
Agnew E. Larsen, deceased, late of Jenkintown, Pa.; by William H. Larsen, executor, Doylestown, and Manuel Welstock, Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 4, 1972, Ser. No. 215,294

Int. Cl. F02c 7/26

U.S. Cl. 60—39.14

1 Claim



A self-sufficient system for assuring reliable starting of aircraft engines including a plurality of propellant actuated initiators located in parallel arrangement adjacent corresponding jet fuel combustors to lead and direct the products of combustion directly onto the turbine blades of the starter engine for setting the same into motion long enough to enable the jet fuel combustion to take over in the starter.

3,750,395

## OVERSPEED PROTECTION SYSTEM FOR A TURBO-GENERATOR UNIT

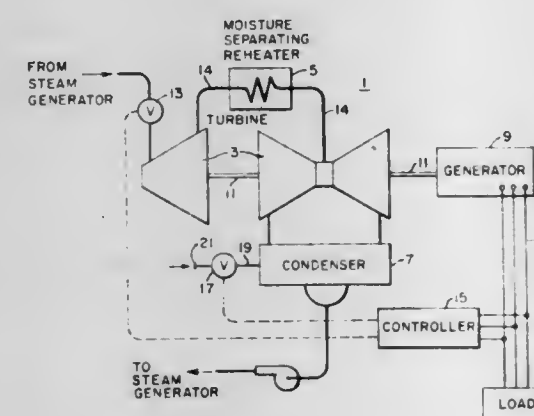
Donald N. Tapper, Media, and James M. Fieglein, Clifton Heights, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 22, 1971, Ser. No. 191,583

Int. Cl. F01k 19/10; F28f 27/02

U.S. Cl. 60—73

4 Claims



A vacuum breaking valve on a condensing turbine is operable by a controller responsive to losses of load on the generator to admit a pre-determined quantity of air to the condenser to reduce vacuum and the acceleration of the turbo-generator unit upon loss of load by the generator.

3,750,396

## VORTEX VALVE FUEL DISTRIBUTION SYSTEM FOR GAS TURBINE ENGINES

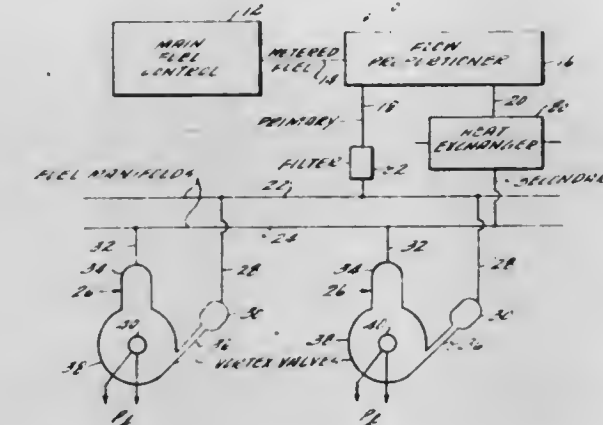
Stephen B. Tucker, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 1, 1971, Ser. No. 194,668

Int. Cl. F02c 9/02

U.S. Cl. 60—39.74 R

10 Claims



A fuel distribution system for a gas turbine engine includes a plurality of vortex valves to accurately distribute fuel to fuel injection points of the engine. Metered fuel is delivered to a flow proportioner, which divides the metered fuel between two manifolds. Each manifold, in turn, delivers the fuel to either the control inlets or the power inlets of the vortex valves. Dual outlet vortex valves are used to reduce weight and to simplify the system. The outputs of the vortex valves are delivered to fuel injection points of the engine. A fuel-to-air heat exchanger is positioned within the system between the flow proportioner and one of the fuel manifolds.

3,750,397

## AREA CONTROL INSERT FOR MAINTAINING AIR FLOW UNIFORMITY AROUND THE COMBUSTOR OF A GAS TURBINE ENGINE

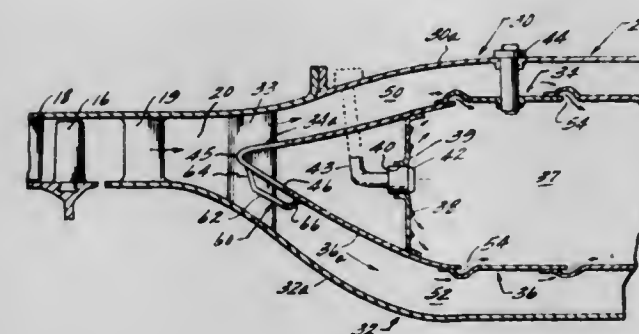
Joseph David Cohen, Danvers; Neil Roger Brookes, Topsfield; Herbert Carl Stark, West Peabody; Robert Hirschkron, Marblehead, and Gerald William Lawson, Boxford, all of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Mar. 1, 1972, Ser. No. 230,839

Int. Cl. F02c 7/18

U.S. Cl. 60—39.36

1 Claim



Means for improving flow uniformity and reducing disturbances in compressor discharge air flowing through passages around the combustion chamber of a gas turbine engine are provided by an area control insert. The insert comprises circumferentially and longitudinally extending walls within the forward portions of the air passages to constrict the cross-sectional areas of the passages. Such constriction operates to minimize pressure gradients within the turning and splitting air flow and thereby reduce the tendency for the air flow to separate from the passage walls at random locations around the periphery thereof.

3,750,398

## STATIC SEAL STRUCTURE

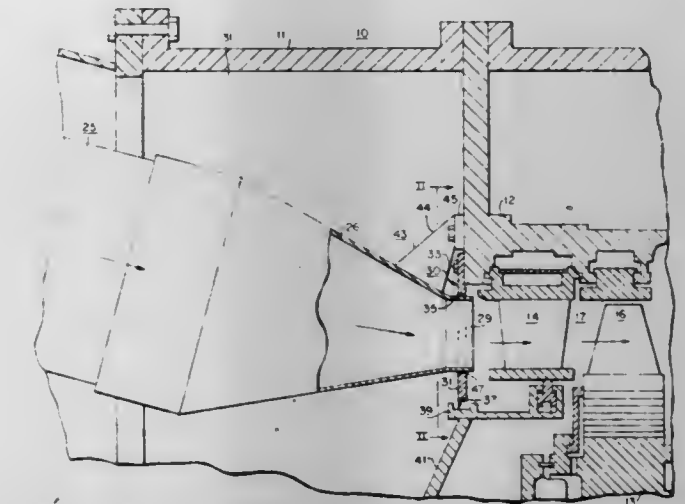
Richard S. Adelizzi, Marlton, N.J., and James A. Laurelli, Springfield, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 17, 1971, Ser. No. 143,774

Int. Cl. F02c 7/20

U.S. Cl. 60—39.37

3 Claims



A static seal structure in a gas turbine which prevents leakage of pressurized compressor air from a plenum chamber into the first stage of the turbine around the combustion chambers. The structure comprises two semicircular frame halves, which have openings to receive the combustion chambers. The radially outer portion of the frame is secured to the turbine casing and statically seals around the radially outer portions of the combustion chambers and the radially extending sides between adjacent combustion chambers. The radially inner portion of the frame is secured to an annular seal member which cooperates with an annular seal housing structure to statically seal around the radially inner surfaces of the combustion chambers.

3,750,399

## COMBUSTOR-BOILER FOR RANKINE-CYCLE ENGINES

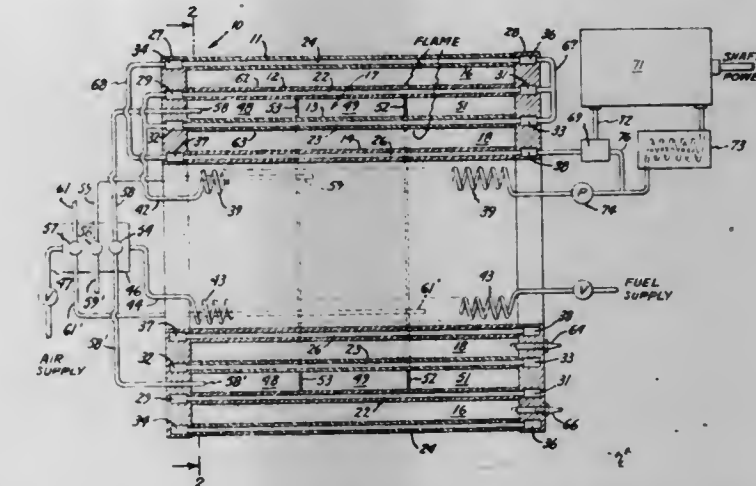
George E. Moore, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 15, 1972, Ser. No. 253,182

Int. Cl. F22b 15/00, 31/00

U.S. Cl. 60—108

10 Claims



A compact combustor-boiler construction is described that during operation will emit substantially no nitrogen oxides, while burning a fuel/air mixture essentially to completion. Nested cooled porous plug burners with a common fuel/air supply chamber are flanked by inner and outer burned gas cooler units with the coolant flow paths through the burners being connected in series with a flow path through the outer and inner cooler units in sequence whereby the coolant (working fluid) is sequentially exposed to liquid heating, nucleate boiling, film boiling and, preferably, super-heating.

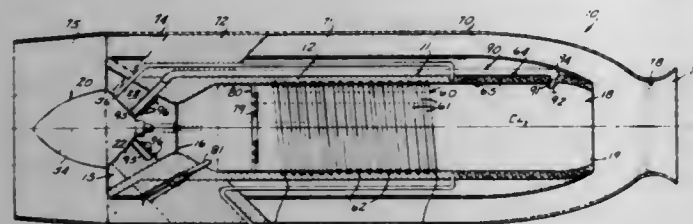


# 3,750,400 SELF-STARTING AIR FLOW INDUCING REACTION MOTOR

Thomas H. Sharpe, 310 Palmetto Ave., Belvedere, S.C.  
Filed Oct. 22, 1971, Ser. No. 191,627  
Int. Cl. F02k 3/00

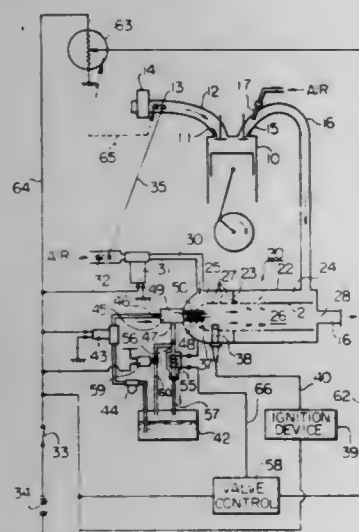
U.S. Cl. 60-269

6 Claims



An engine including a self-starting engine compressor unit comprising a burner duct defining a converging-diverging inlet at its forward end, a converging exhaust nozzle at its rear end, and a combustion chamber therebetween; a fuel injection device for injecting fuel under pressure axially through the throat of the inlet into the combustion chamber to draw air therewith into the chamber; and preheater means for heating the chamber to a predetermined temperature. The compressor unit may include a bypass duct encircling the burner duct with an inlet opening forward of the inlet to the burner duct and a converging exhaust opening rearward of the exhaust nozzle so that air will be drawn through the bypass duct by the jet pumping action of the exhaust gases from the burner duct in combination with the exhaust opening in the bypass duct. The fuel injection device may be equipped with pressure responsive means for transferring the point of injection from forward of the throat of the inlet of the burner duct to a point rearward of the throat and within the combustion chamber. The compressor unit may be embodied in a jet engine as a start stage with intermediate and final ram-jet type stages.

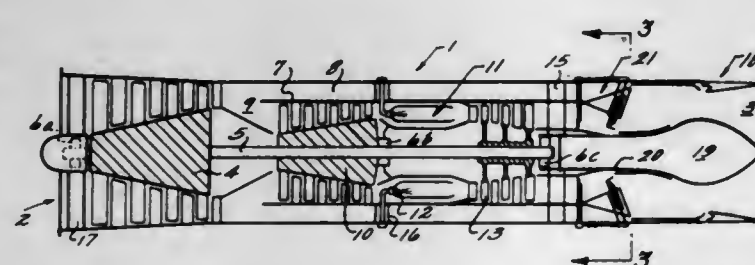
3,750,401  
EXHAUST GAS AFTER-BURNING SYSTEM FOR  
AUTOMOTIVE INTERNAL COMBUSTION ENGINE  
Shyuya Nambu, Yokohama, Japan, assignor to Nissan Motor  
Company, Limited, Yokohama City, Japan  
Filed Dec. 7, 1971, Ser. No. 205,696  
Claims priority, application Japan, Dec. 28, 1970, 45/119924  
Int. Cl. F01n 3/14  
U.S. Cl. 60-286  
11 Claims



An exhaust gas after-burning system for reducing vehicular air pollution, which system includes a reactor for re-oxidizing the unburned components of engine exhaust gases, such as hydrocarbons and carbon monoxides. A fuel supply unit is incorporated in the system for supplying secondary fuel in controlled quantities to the reactor. The system also includes an air supply unit for supplying air in controlled quantities to the reactor. The quantities of the secondary fuel and air supplied

to the reactor increase with engine loads, the air-fuel ratio of the mixture being kept low, for example, of the order of 20:1 to 50:1. The combustible mixture of the secondary fuel and air is ignited within the reactor by an ignition plug, so that the exhaust's unburned gases are burned completely. The fuel supply unit includes a check valve having a pressure chamber and adapted to be opened to allow the fuel flow from the pressure chamber to the reactor therethrough when the pressure within the pressure chamber exceeds a predetermined value. A fuel pump is provided for delivering the secondary fuel from a fuel tank to the pressure chamber. In response to engine loads, a solenoid valve operates to control the return flow of the secondary fuel from the pressure chamber to the fuel tank to thereby vary the fuel pressure within the chamber, so that the quantity of secondary fuel supplied to the reactor is controlled.

3,750,402  
MIXED FLOW AUGMENTATION SYSTEM  
John W. Vdovjak, Samuel A. Belk, and Barry Weinstein, all of  
Cincinnati, Ohio, assignors to General Electric Company,  
Cincinnati, Ohio  
Filed Aug. 7, 1963, Ser. No. 300,432  
Int. Cl. F02k 3/10  
U.S. Cl. 60-261  
10 Claims

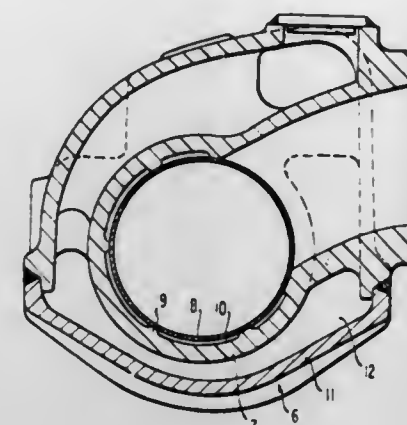


1. In an axial flow reaction engine a mixed flow augmentation system comprising:  
a first plurality of motive fluid flow passages;  
a second plurality of motive fluid flow passages, the passages of said first and second pluralities having openings interspersed in circumferential alternation about the axis of the engine; and  
a plurality of radially-extending flow blockage members located entirely within the flow passages of said second plurality upstream of the openings thereof, wherein the plane of maximum aerodynamic flow blockage of said members is coplanar with the plane of static pressure balancing between the motive fluid streams of said first and second pluralities of flow passages, respectively, to facilitate flow mixing and combustion stability in said mixed flow augmentation system.

3,750,403  
LINE AND/OR SPACE FOR RECEIVING OR  
CONDUCTING HOT GASES  
Herbert Deutschmann, Stuttgart-Bad Cannstatt; Wolfgang  
Kruczek, Stuttgart, and Karl-Helz De Lazzer, Waiblingen,  
all of Germany, assignors to Daimler-Benz Aktien-  
gesellschaft, Stuttgart-Untertuerkheim, Germany  
Filed July 29, 1970, Ser. No. 59,060  
Claims priority, application Germany, July 29, 1969, P 19  
38 404.4  
U.S. Cl. 60-323  
10 Claims

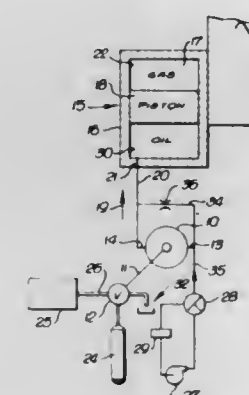
A structure forming lines and/or spaces that are preferably provided with a cooling water jacket and serve for the accommodation and/or conduction of hot gases, and which may be utilized as exhaust gas lines and/or combustion spaces of inter-

nal combustion engines, particularly of Diesel engines with exhaust gas turbochargers; the lines and/or the spaces are pro-



vided with a heat insulation on the side of their wall in contact with the gas; the heat insulation is formed by a sheet metal liner and/or a ceramic layer.

3,750,404  
HYDRAULIC FAIL-SAFE VALVE OPERATOR  
Fernando Mitrman, Palos Verdes Peninsula, and Lyle E. Hiatt,  
Long Beach, both of Calif., assignors to Hydril Company,  
Los Angeles, Calif.  
Filed Jan. 17, 1972, Ser. No. 218,116  
Int. Cl. F15b 1/02  
U.S. Cl. 60-413  
12 Claims

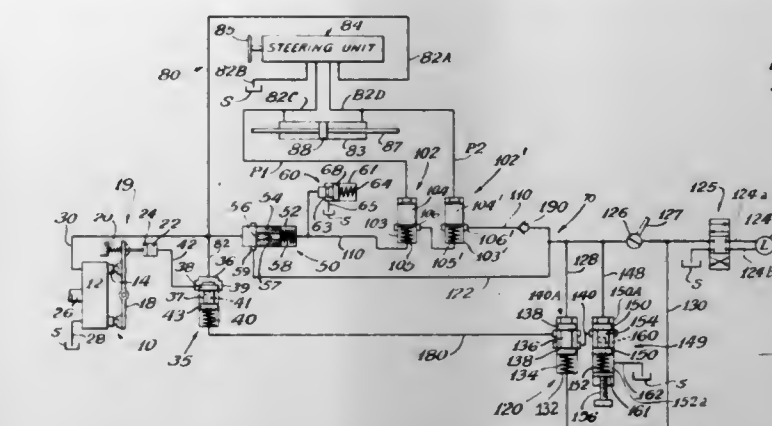


The invention relates generally to the control of sub-surface oil tools. A fail-safe operator for such tools is characterized as hydraulically operated and adapted to be connected in a system wherein hydraulic fluid is not wasted to the sea, in order to obviate contamination problems.

3,750,405  
CLOSED CENTER HYDRAULIC SYSTEM  
Richard J. Lech, Hickory Hills; Joseph F. Ziskal, Downers  
Grove; Marvin D. Jennings, Naperville; Harold R. Orth,  
Hinsdale, and Eugene P. Virtue, Tinley Park, all of Ill., as-  
signors to International Harvester Company, Chicago, Ill.  
Filed Aug. 16, 1971, Ser. No. 171,933  
Int. Cl. F15b 1/16  
U.S. Cl. 60-422  
20 Claims

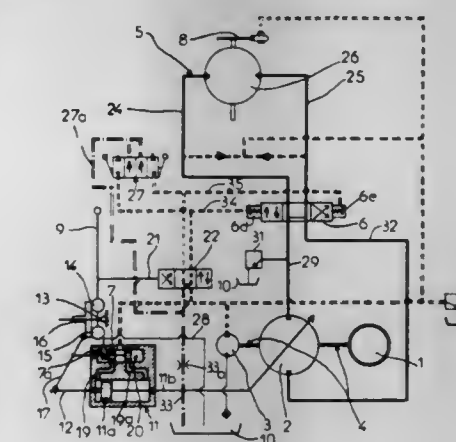
A closed center hydraulic system having a variable displacement pump, two or more motor circuits associated therewith, one circuit being of the proportional demand type, priority

means assuring the power requirements of said proportional demand circuit are met prior to permitting power flow to the



other circuit, and flow and pressure compensating means in the other circuit for controlling the displacement of the pump.

3,750,406  
SERVO-CONTROL DEVICE FOR VARYING THE  
DELIVERY AND DIRECTION OF DISTRIBUTION OF A  
VARIABLE DELIVERY PUMP  
Auguste Verlinde, Wicres, and Henri Dorot, Saches Thumesnil,  
both of France, assignors to Verlinde S. A., Nord, France  
Filed June 23, 1971, Ser. No. 155,847  
Int. Cl. F15b 15/18  
U.S. Cl. 60-442  
12 Claims



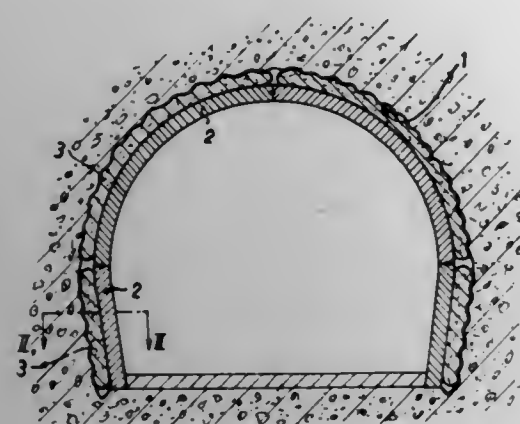
A servo-control device for varying the delivery and distribution of a variable delivery pump to a hydraulic motor comprises means for varying the output of the pump and a two-way distributor between the outlet of the pump and two inlets of the motor. The distributor has two control chambers connected to two outlets of an auxiliary two-way distributor, the inlet of which is connected to the outlet of a feed pump driven by the variable delivery pump. The outlet of the feed pump is connected to the inlet of a control distributor which supplies fluid to two chambers of a ram having a ram rod coupled to the means for varying the output of the pump. The spool valves of the auxiliary distributor and the control distributor are operated by a common actuating lever.

3,750,407  
TUNNEL CONSTRUCTION METHOD  
Werner Heierl, Culmannstrasse 56, Zurich, and Rudolf Am-  
berg, Churfürstenstrasse 1056, Sargans, both of Switzerland  
Filed June 1, 1971, Ser. No. 148,790  
Claims priority, application Switzerland, June 12, 1970,  
8940/70  
Int. Cl. E21d 5/00; E01g 5/16  
U.S. Cl. 61-42  
8 Claims

A method of constructing tunnels wherein a tunnel is excavated, braced and lined. The invention contemplates that as excavation of the tunnel proceeds load-carrying internal elements are installed within the tunnel, and expandable body



members are arranged between the tunnel wall and the surfaces of the internal elements confronting the tunnel wall.



These expandable body members are then brought to bear against the tunnel wall and the internal elements in order to form a pressure- or force-transmitting support.

3,750,408

**PROCESS FOR THE CONTINUOUS DREDGING OF INCOHERENT MATERIAL, PARTICULARLY SANDY MATERIAL, WITH A CIRCULAR PATH**  
Willem Cornelis den Hartog, Kinderdijk, Netherlands, assignor to N. V. Industriële Handelscombinatie Holland, Kinderdijk, Netherlands

Filed Apr. 16, 1971, Ser. No. 134,654  
Int. Cl. E02f 1/00; E02d 17/16

U.S. Cl. 61-2

2 Claims

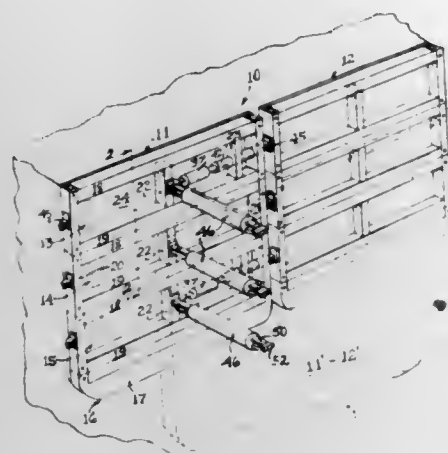


A process for the continuous dredging of incoherent material, particularly sandy material, with a circular path, including the steps of drawing continuously the incoherent material from a zone where it is brought and conveying, also continuously, said material to an erosion zone, to such an amount as to integrate the same erosion. The drawing is carried out progressively in a zone having the shape of an annular ring, the size of which is such, in relationship with the supply of incoherent material, that at the end of a complete turn of the dredging unit, the initial point will be carried again to its initial level. A device is also disclosed for carrying out the process, comprising a drawing pipe, carried by an arm glidingly mounted on a circular guide, for instance a rail located on a landing stage, hydraulic means for turning said drawing pipe about a horizontal shaft, and a pump suitable to cause the water + sand mud to be drawn by said tube and to be conveyed through trunk line, provided with a knuckle joint coincident with the centre of rotation of the arm and connected to a pipe leading to the delivery zone.

**3,750,409**  
**SELF-PROPELLED TRENCH-SHORING APPARATUS**  
Louis A. Orfel, 1818 Lake St., Melrose Park, Ill.  
Filed Aug. 8, 1972, Ser. No. 278,730  
Int. Cl. E21d 5/00

U.S. Cl. 61-41 A

8 Claims



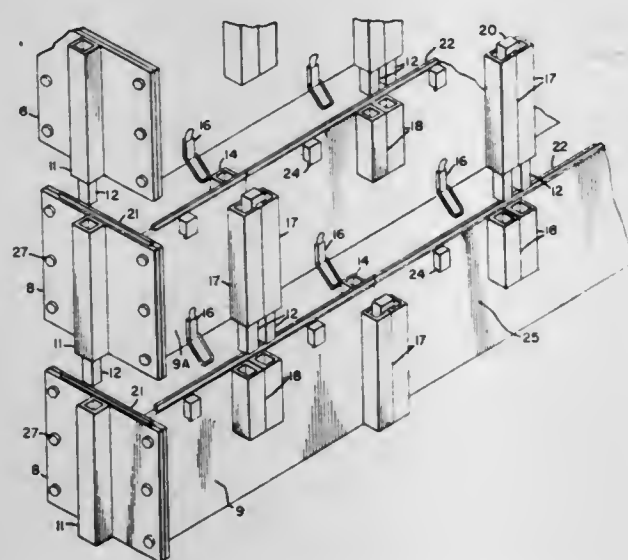
A trench-shoring apparatus having a modular panel construction whereby it may be readily adapted for use for lining trenches or open ground cuts of various depths and widths, with the apparatus being self-propelled by a series of cooperating and related hydraulic cylinders, so arranged and interconnected to different panels of the apparatus as to selectively create holding pressures against the side of the trench while effecting a forward moving thrust between panels.

**3,750,410**  
**SIMPLE SHORING TO FORM DITCHES-CANALS-PILLARS AND POSTS**

Helena M. Converse, 808 S. Hobart Blvd., Los Angeles, Calif.  
Filed Feb. 17, 1970, Ser. No. 886,049  
Int. Cl. E21d 5/00; E02d 5/02

U.S. Cl. 61-41 A

3 Claims

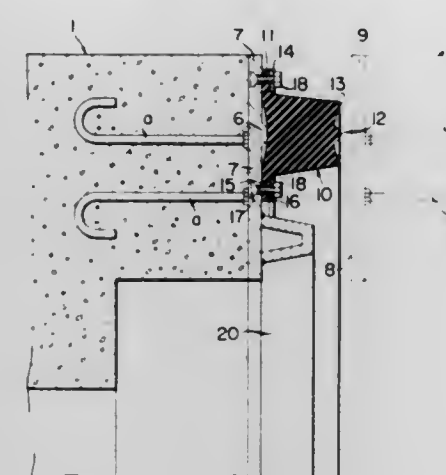


An adjustable trench showing device is disclosed wherein the separable side and endwalls are formed as modules with releasable attaching means whereby the device may be formed of varying lengths vertically and horizontally.

**3,750,411**  
**JOINT FOR UNDER-WATER STRUCTURES**  
Soichiro Shimizu, 7-5, 2-chome, Higashi-Shimbashi, Minato-ku, Tokyo, Japan  
Filed Apr. 16, 1971, Ser. No. 134,765  
Claims priority, application Japan, Apr. 16, 1970, 45/31975; May 1, 1970, 45/42335 (utility model)  
Int. Cl. E01g 3/10

U.S. Cl. 61-43

7 Claims U.S. Cl. 62-42



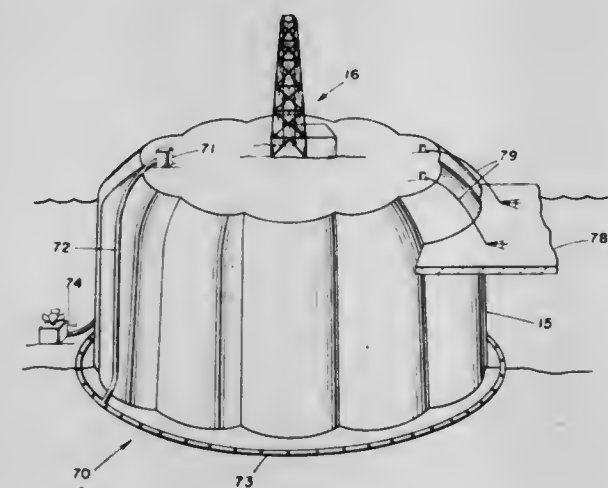
A joint for under-water structures comprising a fixed retaining plate having a projected line extended along the periphery of the end surface of an adjacent under-water structure, onto said end surface thereby fixing the gasket made of elastic material such as rubber onto said retaining plate in such a manner that the middle portion of the end surface of said gasket is against the projected line of said retaining plate; and presses the central projected line and projected lines on both sides formed at the end portion of said gasket onto the end surface of the other adjacent under-water structure.

**3,750,412**  
**METHOD OF FORMING AND MAINTAINING OFFSHORE ICE STRUCTURES**

John L. Flitch, and Lloyd G. Jones, both of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.  
Filed Oct. 19, 1970, Ser. No. 81,940  
Int. Cl. F25c 1/02

U.S. Cl. 61-46

7 Claims

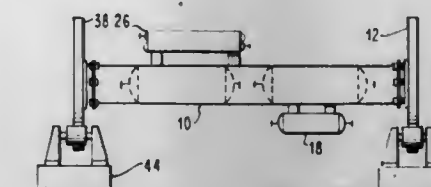


The specification discloses a method of constructing and maintaining an ice structure at a desired, frigid, offshore location which can be used for drilling and/or producing oil wells. An ice floe or a part of a fast ice mass forms the base on which ice is accumulated to form the structure. The ice can be accumulated by spraying, flooding, or piling up of ice. The structure may be reinforced and has means to protect it from marginal melting during the "summer" months.

913 O.G.-3

**3,750,413**  
**CRYOGENIC APPARATUS ASSEMBLY METHOD**  
J. David Milligan, Little Silver, N.J., and Murray Shulman, Brooklyn, N.Y., assignors to Hydrocarbon Research, Inc., New York, N.Y.  
Continuation of Ser. No. 767,713, Oct. 15, 1968, abandoned.  
This application Feb. 5, 1971, Ser. No. 113,034  
Int. Cl. F25j 1/00, 5/00, 3/02

1 Claim



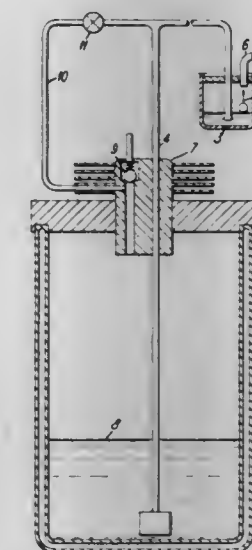
An apparatus for carrying out cryogenic processes wherein the major pieces of equipment, such as fractionating towers, separators, etc., form a central vertical column on which the various pieces of accessory equipment, such as heat exchangers, absorbers, compressors, etc. are both supported and operatively connected.

**3,750,414**  
**CRYOGENIC DEVICE FOR COOLING OBJECTS**  
George Heftman, Hatch End, England, assignor to The Rank Organization Limited, London, England  
Filed Sept. 16, 1971, Ser. No. 181,111  
Claims priority, application Great Britain, Sept. 16, 1970, 44,106/70

Int. Cl. F17c 7/02

U.S. Cl. 62-55

3 Claims



A cryogenic device incorporates a liquid storage vessel from near the bottom of which a transfer passage leads to a closed cryogenic chamber having an exhaust passage closable by a liquid level sensitive device in the closed chamber. A heat sink is in heat-exchanging relation with the transfer passage. A bypass pipe in which a shut-off valve is intercalated connects the upper part of the liquid storage vessel to the transfer passage.

**3,750,415**  
**METHOD AND APPARATUS FOR DRYING A GAS AND CHILLING IT TO LOW TEMPERATURES**  
Wilfred S. Peuchen, Wilmington, and Glenwood K. Pase, Whitehall, both of Del., assignors to Peuchen Inc., Wilmington, Del.  
Filed Mar. 1, 1972, Ser. No. 230,752  
Int. Cl. F25b 43/00

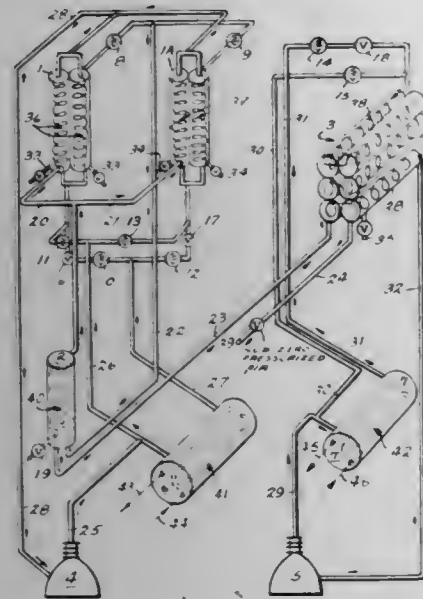
U.S. Cl. 62-93

9 Claims

A method and apparatus are provided for continuously drying and chilling a high temperature, pressurized gas such as air



to sub-zero temperatures. The high temperature pressurized gas is passed alternately through each of two parallel heat exchangers containing cooling coils through which cold refrigerant from a refrigeration system is passed. While one of the heat exchangers is being cooled by the cold refrigerant, the hot, pressurized gas is passed through it in heat exchange relationship with the cooling coils. Simultaneously, the other heat exchanger is cleared of moisture and other condensables by passing hot refrigerant gas from the compressor of the refrigeration system through its cooling coils. Before reversing the function of the heat exchangers, the flow of hot refrigerant



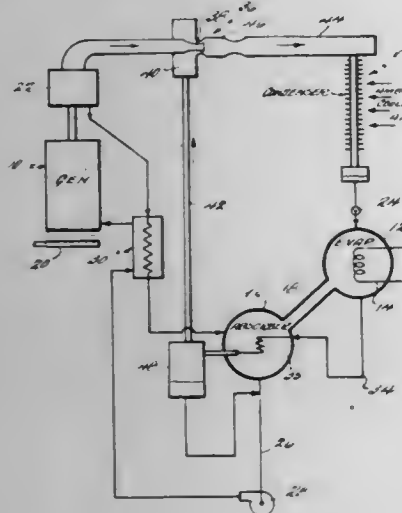
gas to the one being defrosted is terminated and replaced with the flow of cold refrigerant to cool it in order to prevent carryover of moisture on changing stages of operation. A continuous flow of cooled, dried pressurized gas is obtained from the two heat exchangers and can be passed through a third heat exchanger provided with refrigerated coils to further chill the gas to sub-zero temperature. Prior to being passed to the third heat exchanger, the cooled gas from the two parallel heat exchangers can be cycled through a preliminary heat exchanger to effect pre-cooling of the entering hot, pressurized gas.

**3,750,416**  
**COOLING OF ABSORPTION REFRIGERATION SYSTEM**  
Donald Kuhlenschmidt, Evansville, Ind., assignor to Arkla Industries, Inc., Evansville, Ind.

Filed Apr. 2, 1971, Ser. No. 130,660  
Int. Cl. F25b 15/02

U.S. Cl. 62-101

6 Claims



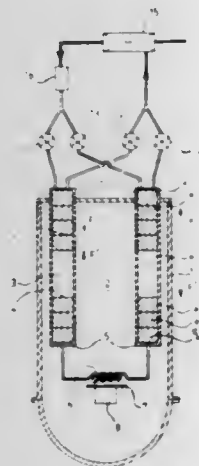
The absorber in a salt solution absorption refrigeration machine is cooled by heat exchange with a stream of refrigerant liquid obtained from the evaporator. The

refrigerant vaporizes in absorbing heat and the vapor then passes to an air-cooled condenser by means of an ejector device which employs hot refrigerant vapor flowing from the generator as the driving fluid.

**3,750,417**  
**METHOD OF GENERATION OF FRIGORIFIC ENERGY AND A REFRIGERATOR UTILIZING SAID METHOD**  
Conrad Johannes, deceased, late of Meylan (by Marie Jose Johannes, Administratrix); Emile Carbonell, Grenoble; Pierre Sauty, Bagnolet, and Maurice Grenier, Paris, all of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes, Paris, France  
Filed Feb. 24, 1972, Ser. No. 228,841  
Claims priority, application France, Feb. 26, 1971, 7106623  
Int. Cl. F25b 1/00

U.S. Cl. 62-114

7 Claims



A method and apparatus for the generation of frigorific energy in accordance with a cycle employing a charge of refrigerant mixture having as its main constituents a plurality of substances which are condensable in the liquid state under the operating conditions of temperature and pressure of said method, in which, during the course of a cycle, said charge is circulated under high pressure from a hot extremity to a cold extremity of a first thermal regeneration column so as to carry out a fractional condensation of said charge, one residual fraction partly in the liquid form, derived from said first regeneration column is expanded to a low pressure, and said fraction is vaporized so as to produce part of said frigorific energy; the residual fraction vaporized at the low pressure is circulated from the cold extremity to the hot extremity of a second thermal regeneration column so as to effect a fractional vaporization of part of the charge fractionally condensed during the previous cycle; and in which, during the following cycle, the direction of circulation of said charge is reversed so as to effect the fractional condensation and the fractional vaporization in said second and first regeneration columns respectively. The gaseous charge is pre-cooled before circulation, and the equipment comprises at least two thermal regeneration columns each having a permeable metallic packing which is longitudinally a poor conductor of heat.

**3,750,418**  
**EVAPORATOR AND CONDENSATE COLLECTOR ARRANGEMENT FOR REFRIGERATION APPARATUS**  
Wendell E. Maudlin, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 20, 1972, Ser. No. 236,048

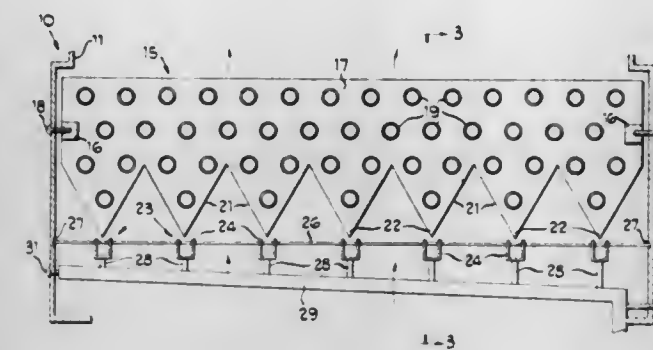
Int. Cl. F25d 21/14

U.S. Cl. 62-290

1 Claim

A fin and coil type evaporator positionable in a vertically-flowing air stream and including a horizontally disposed plate fin construction with V-shaped fins providing a path for the

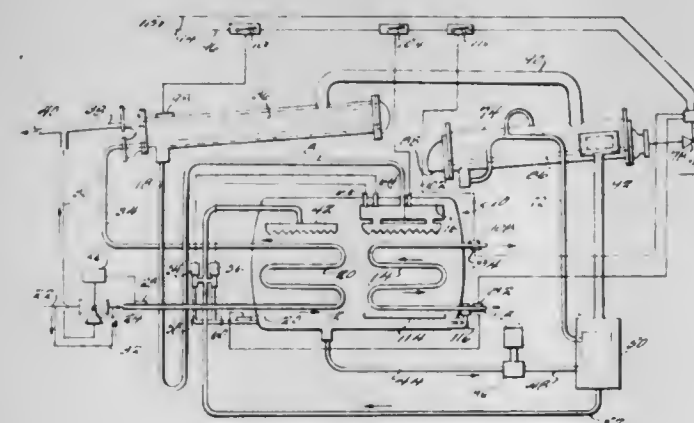
flow of moisture, condensed from the air stream, to collectors extending beneath the fins and being of such narrow width as



to underlie only the pointed lower ends of the fins to minimize interference with the flow of air through the evaporator.

**3,750,419**  
**CONTROL CIRCUITS FOR ABSORPTION REFRIGERATION MACHINE**  
Fred W. Bawel, Boonville, Ind., assignor to Arkla Industries, Inc., Evansville, Ind.  
Division of Ser. No. 16,021, March 3, 1970, Pat. No. 3,616,390. This application Aug. 11, 1971, Ser. No. 170,776  
Int. Cl. F25b 15/06  
U.S. Cl. 62-141

5 Claims



In an absorption refrigerating machine, such as a salt absorption type of machine, control of the temperature in the refrigerant flash chamber is effected by bypassing absorbent around the absorber when the chamber temperature approaches the freezing temperature. Concentration of the salt solution is controlled by withdrawing refrigerant from the circuit into a chamber and dumping the refrigerant into the absorber circuit when there is a drop in the temperature of the cooling water entering the absorber. The heat input to the refrigerant generator is controlled in accordance with the load on the machine as determined by measuring the temperature of the chilled water entering and leaving the evaporator.

**3,750,420**  
**REFRIGERATOR INCLUDING AUTOMATIC ICEMAKER AND WATER PUMP DRIVEN THEREBY**  
William M. Webb, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

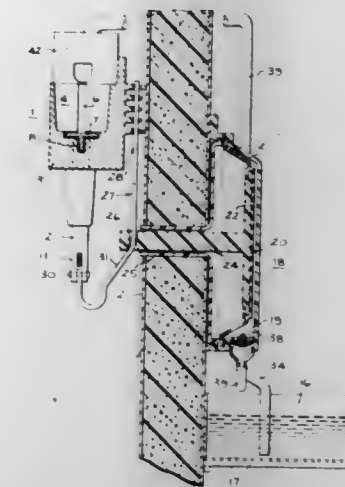
Filed Mar. 17, 1972, Ser. No. 235,609

Int. Cl. F25c 1/04

U.S. Cl. 62-331

3 Claims

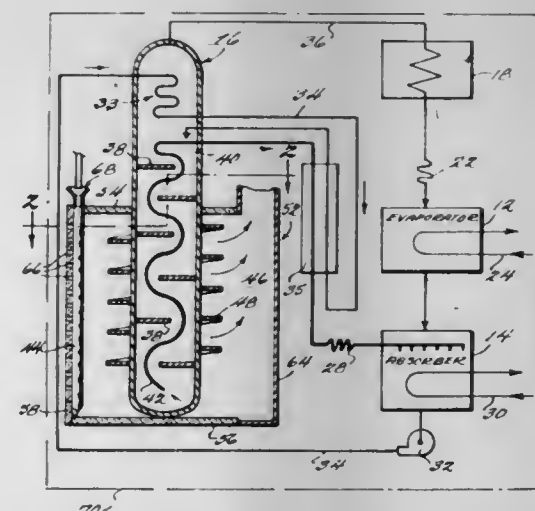
A refrigerator including a freezer compartment containing



ice ejecting means forming part of the icemaker for transferring measured quantities of water to the icemaker.

**3,750,421**  
**HORIZONTAL FIRING OF GENERATOR IN ABSORPTION REFRIGERATOR**  
Richard H. Merrick, Evansville, Ind., assignor to Arkla Industries, Inc., Evansville, Ind.  
Continuation of Ser. No. 813,527, April 4, 1969. This application July 21, 1972, Ser. No. 273,809  
Int. Cl. F25b 15/02  
U.S. Cl. 62-476

3 Claims



A heat exchanger, such as a vertically disposed cylindrical generator in an absorption refrigeration appliance, is heated by means of a horizontal flow of hot combustion products from a gas burner tube which is disposed parallel to the generator thereby reducing the height of the appliance.

**3,750,422**  
**FLEXIBLE TORQUE TRANSMISSION COUPLINGS**  
Carlo Via, Milan, Italy, assignor to Societa Applicazioni Gomma Antivibranti Saga S.p.A., Milan, Italy  
Filed May 30, 1972, Ser. No. 257,611  
Claims priority, application Italy, Oct. 28, 1971, 30461 A/71

Int. Cl. F16d 3/28

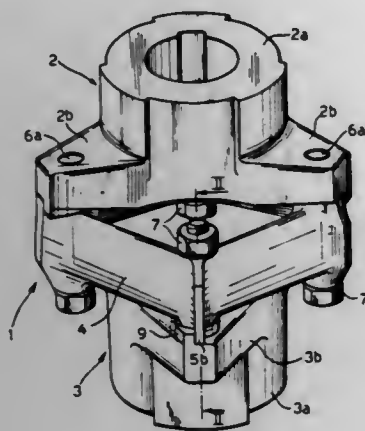
U.S. Cl. 64-11 R

1 Claim

This invention relates to resilient couplings of the type comprising a ring assembly of alternate rigid and resilient members clamped between two shaft coupling members adjacent rigid members of the ring assembly being connected to opposite shaft coupling members to provide a flexible torque transmission coupling. The rigid members of the ring assembly have a



tooth which projects towards the shaft coupling member to which it is attached and abuts one side of a ridge which extends tangentially with respect to an annular ridge which surrounds the hole through which extends a bolt to clamp the two



members together. This abutment prevents the rigid member of the ring assembly from rotating during clamping of the bolt so that the adjacent resilient elements of the ring assembly are not distorted during this clamping.

3,750,423

**BOREHOLE SHOCK ABSORBER**

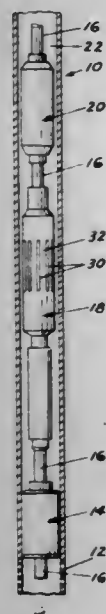
Robert Carl Williams, Spring, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 28, 1972, Ser. No. 266,879

Int. Cl. F16d 8/00

U.S. Cl. 64-23

9 Claims



Disclosed herein is an improved borehole shock absorber for use between down hole well tools such as between a hydraulic pump and packer to absorb the shock loading created by the pump and, thereby, avoid damage to the packer. The shock absorber includes at least two relatively moveable members, one of which is connected to the packer and one to the pump with a shock absorbing material located therebetween arranged to absorb the shock created by the pump. One of the members is to be provided with a plurality of circumferentially spaced, elongated slots. The slots are located in the member adjacent the rubber so that when the shock absorbing material has been loaded, deformation in the slotted member can occur to permit additional deformation of the rubber and absorb shocks of a magnitude beyond the normal loading.

3,750,424

**ROTARY COUPLINGS**

David John Nettleton, South Wigston, Leicestershire, England, assignor to The Rank Organization Limited, London, England

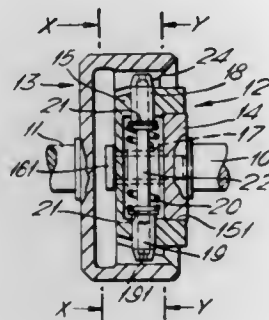
Filed Dec. 6, 1971, Ser. No. 205,198

Claims priority, application Great Britain, Jan. 27, 1971, 3,305/71

Int. Cl. F16d 3/04

U.S. Cl. 64-31

4 Claims



A rotary coupling comprising a male member for attachment to one shaft and a female member for attachment to another shaft, in which one of said members is formed to present at least two slots, parallel to the axis and spaced equidistantly about said one member, towards the other member, the axial edges of each slot being sloped to give it a wedge shape being wider towards said other member, and in which the other member includes two radial drive pins located diametrically opposite each other and biased towards said one member for engagement with the slots, the ends of the drive pins being tapered to mate with the slots.

3,750,425

**SLIDING CLASP FASTENER STRINGERS**

Christopher Frederic Austin, 27 Jordan Rd., Four Oaks; Philip Simpson Crowther, 137 Lichfield Rd., Four Oaks; David Warren, 456 Walmley Rd., all of Sutton Coldfield, and David Howitt, 24 Livingstone Rd., Birchfields, Birmingham, all of England

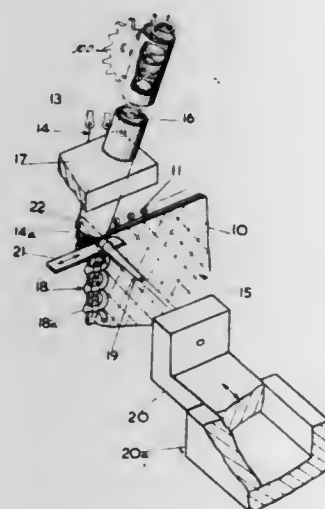
Continuation-in-part of Ser. No. 52,189, July 6, 1970. This application Mar. 27, 1972, Ser. No. 238,594

Claims priority, application Great Britain, June 3, 1969, 27,972/69

Int. Cl. D04b 23/00

U.S. Cl. 66-86

11 Claims



A slide fastener stringer comprising a knitted tape and a series of coupling elements secured thereto by loops of the knitting yarns drawn between successive elements and interlinked with one another.

3,750,426

**PUSHING DEVICE IN DOUBLE CYLINDER CIRCULAR KNITTING MACHINES**

Francesco Lonati, Via S. Polo 11, Brescia, Italy

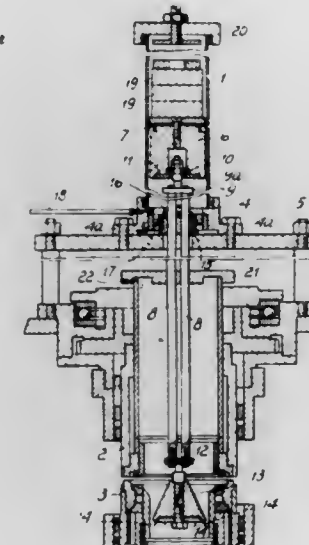
Filed Oct. 12, 1971, Ser. No. 188,693

Claims priority, application Italy, Oct. 21, 1970, 7218 A/70

Int. Cl. D04b 15/88

U.S. Cl. 66-149 R

1 Claim



Pushing device in double-cylinder circular knitting machines, comprising a vertical cylinder, coaxially fixed above the two needle cylinders, a piston slideably mounted within said cylinder, and means for hydraulically feeding said cylinder. A pair of vertical rods, placed at a short distance from each other, are coupled to piston so as to rotate around its axis, said rods passing through respective passages perforated within a body, rigidly fastened to the needle cylinders, and supporting beneath them a member arranged to engage (by means of points) with the articles under manufacture.

3,750,427

**KNITTING METHOD**

Lee D. Gilchrist, 222 Sidewinder Dr., K. I. Sawyer Air Force Base, Mich.

Filed Nov. 12, 1969, Ser. No. 876,090

Int. Cl. D04b 3/02

U.S. Cl. 66-172 R

6 Claims

Method of knitting garments by hand is carried out by casting-on the desired number of stitches on one needle, and thereafter forming the successive rows by knitting through each stitch twice before removing it from the needle, whereby the successive stitches are drawn closely together and the loops formed by each stitch are transverse the plane of the work. A dense, shape-retaining knitted texture is obtained.

3,750,428

**APPARATUS FOR WASHING, DRYING AND FIXING A TEXTILE WEB**

Kurt Bruckner, Michelstadt, Germany, assignor to Bruckner-Apparatebau Michelstadt GmbH, Erbach Odenwald, Germany

Filed Mar. 29, 1971, Ser. No. 129,027

Claims priority, application Germany, Apr. 2, 1970, P 20 15 752.2

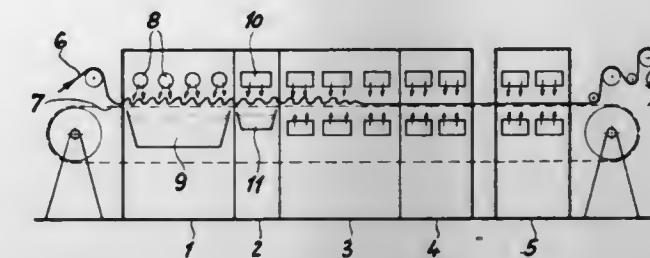
Int. Cl. D06c 1/08, 3/02; B05c 9/14

U.S. Cl. 68-3 SS

15 Claims

Apparatus for washing, drying and fixing a textile web having endless, driven means for moving a textile web successively through washing, drying and fixing zones and wherein the web is partially dried prior to the drying zone by causing an airstream to pass through the web. Partial drying of the web is

facilitated by vibrating the web and means is provided for recovering the washing solvent. Means is provided for condensing or preventing condensation of vaporized washing solvent depending upon whether the washing liquid is cold or hot, respectively.



3,750,429

**CONTROL FOR AN AUTOMATIC WASHER**

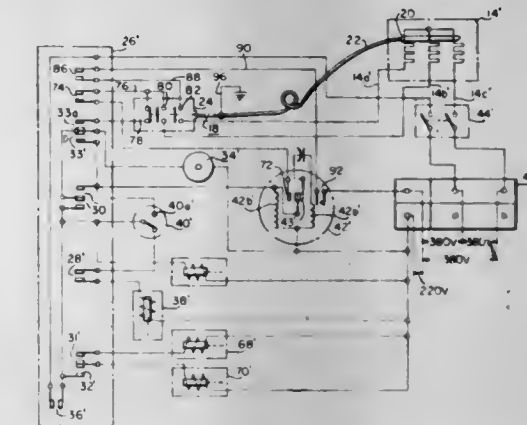
Harold F. Gorsuch, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 26, 1971, Ser. No. 128,369

Int. Cl. D06f 33/02, 39/04

U.S. Cl. 68-12 R

3 Claims



This invention provides a control for an automatic washer having a self-contained heating element for heating the wash water to the desired temperature. In the preferred embodiment the control is shown in conjunction with 380v/220v, three-phase, four wire circuit providing a high voltage for the heater and a lower voltage for the controls and drive means of the machine. The control includes a switch directly connected to a heat sensing element intimately disposed on the heater. The switch has a plurality of forward contacts connected to the heater and back contacts connected to a timer motor so that when the heat sensing element indicates heat should be added to the wash water, the forward contacts are closed and the back contacts opened so that the timer does not advance during the period the heater is energized. Further, the controls include two switches centrifugally operated which close when the motor is up to running speed. The switches are connected to the heater so the drive motor must be running before the heater can be energized. The heat sensing element in contact with the heater is grounded so that any electrical leakage from the heater flows through the sensing element causing it to become warm and move the switch to its heater open position thereby deenergizing the heater.

3,750,430

**AUTOMOTIVE LOCKING SYSTEM**

Anthony Crisa, 7801 34th Ave., Jackson Heights, Queens, New York, N.Y.

Filed July 10, 1972, Ser. No. 270,149

Int. Cl. B60r 25/04

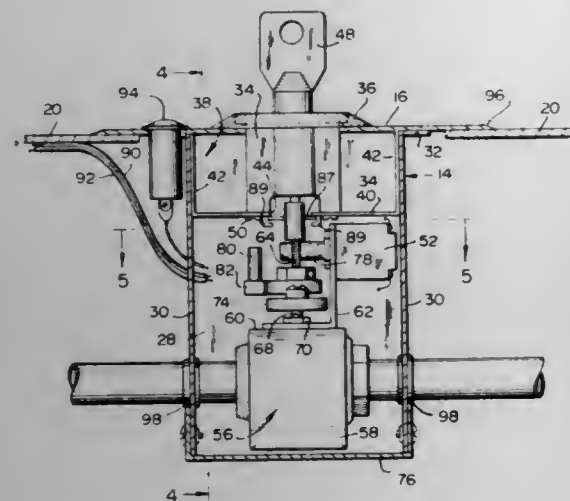
U.S. Cl. 70-1.5

10 Claims

An ancillary ignition cutout switch and a fuel line valve are carried in a housing secured beneath an automobile floor-



board. The housing includes a cage rendering the switch and valve inaccessible to unauthorized manipulation. A cylinder lock, the key slot of which is accessible from the floorboard is



key operable to rotate the valve stem and open or close the fuel line. A cam rides on the valve stem to actuate the switch which completes the ignition circuit only when the valve is in the open position.

3,750,431

## PADLOCK CONSTRUCTION

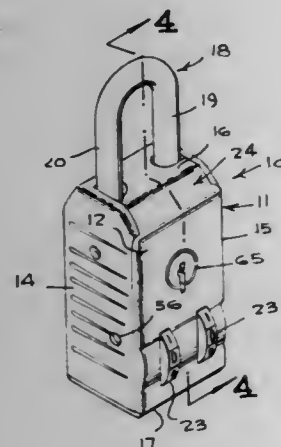
Wallace E. Atkinson, Petersburg, Va., assignor to Long Manufacturing Co., Inc., Petersburg, Va.

Filed Aug. 29, 1972, Ser. No. 284,581

Int. Cl. E05b 37/02, 67/00

U.S. Cl. 70-21

19 Claims



An exposed shackle combination padlock having a padlock body and a U-shaped shackle capable of lateral swinging movement to shift a shackle leg through an arcuate path between locking and unlocking positions. The padlock body includes an outer shell portion and a core portion reciprocally movable relative to each other. The other shackle leg is journaled in the core portion and the shell portion includes a barrier wall portion normally blocking the shackle in locking position when said shell and core portions occupy a selected registering position and shifted out of such blocking position when said shell and core portions are shifted to a displaced relative position. Combination dial wheel assemblies and a fence member selectively interlock the shell and core portions in the registering position. A key locking mechanism may also be provided in the padlock to make both combination locking and key locking available in the same padlock, or key locking alone.

3,750,432

## PADLOCK WITH LAMINATED BODY AND REMOVABLE CYLINDER

Deo Errani, and Roberto Bucci, both of Faenza, Italy, assignors to S.P.A.C.I.S.A. Costruzioni Italiane Serrature Affini, Faenza, Italy

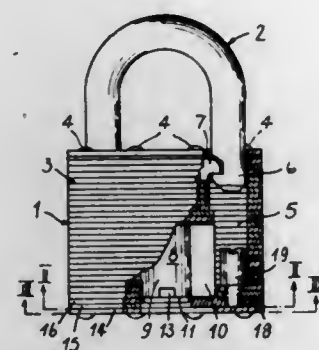
Filed Sept. 3, 1971, Ser. No. 177,582

Claims priority, application Italy, June 12, 1971, 3449 A/71

Int. Cl. E05b 67/24

U.S. Cl. 70-38 R

5 Claims



A padlock with a laminated body and removable cylinder housed in said body and restrained therein by fixing means, comprising at least a plate housed in a recess in said laminated body adjacent the laminate defining the key insertion side, the said plate being movable to and fro a locking position.

3,750,433

## MORTISE LOCK RETRACT MECHANISM

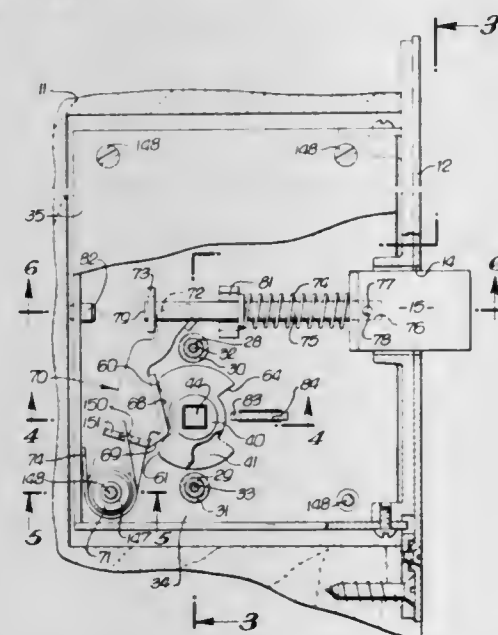
Vernard W. Sanders, Los Angeles, Calif., assignor to Norris Industries, Inc., Los Angeles, Calif.

Filed Feb. 7, 1972, Ser. No. 223,866

Int. Cl. E05c 1/16

U.S. Cl. 70-146

18 Claims



A thin casing adapted to fit in a recess between opposite faces of a door has a front plate mounted flush with the door edge through which extends a reciprocating latch bolt for engagement within an opening of a strike plate mounted upon the adjacent door frame. The latch bolt is spring urged into a normally extended position and is retracted by rotation of either an inside or an outside knob. Rotation of the knobs in either a clockwise or counterclockwise direction is transferred rotating one or the other of a pair of hubs mounted within the casing. Roll backs on the hubs engage a lever, one end of which is coupled to the latch bolt and the other end of which is pivotally mounted on the wall of the case. In one form of the device a lock is provided for blocking rotation of the outside knob, while the inside knob is free to withdraw the latch bolt. Openings in the casing on opposite sides of the hubs accommodate threaded sleeves and screws for fastening the knobs in place.

3,750,434

## SCREW CAP WITH LOCK

Theo Gerdes, Langenfeld/Rhld., Germany, assignor to Blau K.G. Fabrik Fuer Kraftfahrzeugheteile, Langenfeld/Rhine-land, Germany

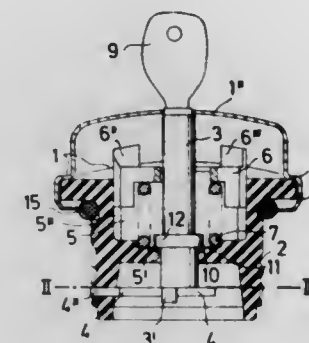
Filed May 25, 1971, Ser. No. 146,668

Claims priority, application Germany, May 25, 1970, P 20 25 451.7

Int. Cl. B65d 55/14

U.S. Cl. 70-172

8 Claims



An arrangement of locking bolts for engaging in screw thread or pipe socket parts of cylinder or mortise locks in closure caps and having a removable key, wherein the socket is provided with an inside thread which is partly interrupted, with which a locking bolt engages laterally to secure the cap when the key is turned.

3,750,435

## CONTAINER HAVING A TIME CONTROLLED LOCKING MECHANISM

Theo Gerdes, Langenfeld/Rhld., Germany, assignor to Blau K.G. Fabrik Fuer Kraftfahrzeugheteile, Langenfeld/Rhine-land, Germany

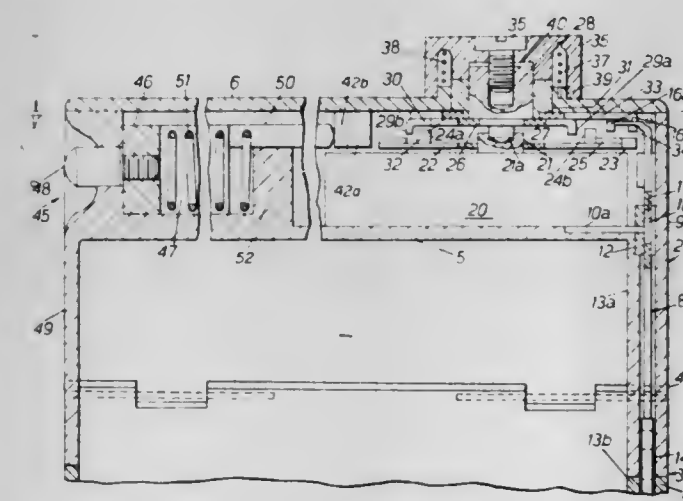
Filed Dec. 15, 1971, Ser. No. 208,365

Claims priority, application Israel, Jan. 5, 1971, 35957

Int. Cl. E05b 43/00, 65/52; A24f 15/12

U.S. Cl. 70-272

14 Claims



A container such as, for example, a cigarette container having a time controlled locking mechanism whereby the user can only have access to the container contents at predetermined times, the container having a time controlled locking mechanism wherein the tensioning of the mechanism is effected automatically by the user as a consequence of the steps he may take to open the container at the predetermined time.

3,750,436

## FORGING CONTROL

Robert Henry Harrison, Sheffield; John Patrick Russell, Unstone, Near Sheffield, and Anthony Edward Middleton, Sheffield, Yorkshire, England, assignors to Davy and United Engineering Company Limited, Yorkshire, England

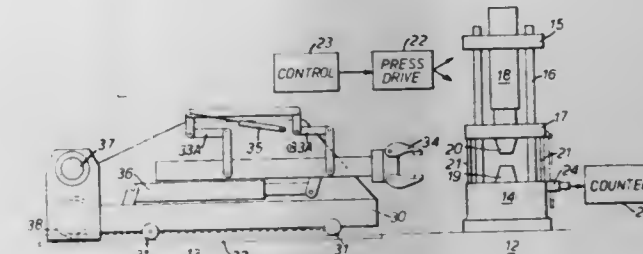
No Drawing. Filed Aug. 24, 1971, Ser. No. 174,363

Claims priority, application Great Britain, Sept. 3, 1970, 42,219/70

Int. Cl. B21b 37/12; B21d 43/02

U.S. Cl. 72-8

9 Claims



Method and apparatus for forging a workpiece in a series of press squeezes displaced along the length of the workpiece, in which the workpiece is carried by a manipulator peel which can be driven longitudinally relative to the manipulator carriage which has an intermittently operable longitudinal drive, and in which the carriage is driven towards or away from the press through the bite distance within the press cycle time, the peel is driven, during the period in which the workpiece is free of the press, relative to the carriage and in the same direction as the carriage to have a speed relative to ground higher than the carriage speed, the movement of the peel relative to ground is monitored, the drive of the peel in that direction being terminated when the peel has traversed the bite distance, and then the peel is held stationary relative to ground until the next press free period.

3,750,437

## METHOD AND APPARATUS FOR CONTROLLING CONTINUOUS TANDEM ROLLING MILLS

Seiji Fujii; Hiroshi Kuwamoto; Masayuki Ishida, all of Fukuyama, and Masamoto Kamata, Kawasaki, all of Japan, assignors to Nippon Kabushiki Kaisha, Tokyo, Japan

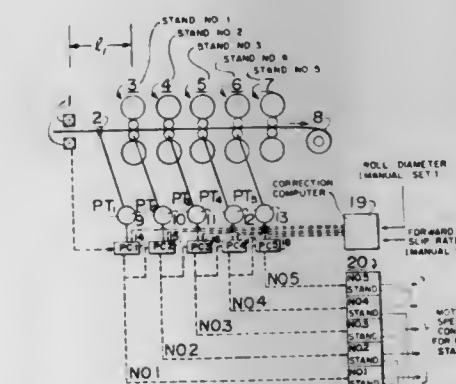
Filed Feb. 26, 1971, Ser. No. 119,220

Claims priority, application Japan, Mar. 7, 1970, 45/19212

Int. Cl. B21b 37/14

U.S. Cl. 72-12

8 Claims



In a continuous tandem rolling mill, for varying the gauge of a strip during high speed rolling operation thereof, the number of pulse signals from a pulse transmitter associated with a



deflector roller on the entry side of a plurality of mill stands is counted in response to a signal from a gauge varying point detector disposed on the entry side of the mill, the first mill stand is set to a predetermined rolling schedule when the number of pulse signals counted has reached a predetermined value under the assumption that the gauge varying point reaches the first mill stand, at the same time the counting operation of the number of pulses from a pulse transmitter associated with the roll of the first mill stand is commenced, the second mill stand is set to the predetermined rolling schedule when the counted number of pulses from the last mentioned pulse transmitter reaches the predetermined value, and similar setting operations are repeated for succeeding mill stands until the last mill stand is set to the predetermined rolling schedule.

3,750,438

## PROCESS FOR FINISHING STEEL BARS

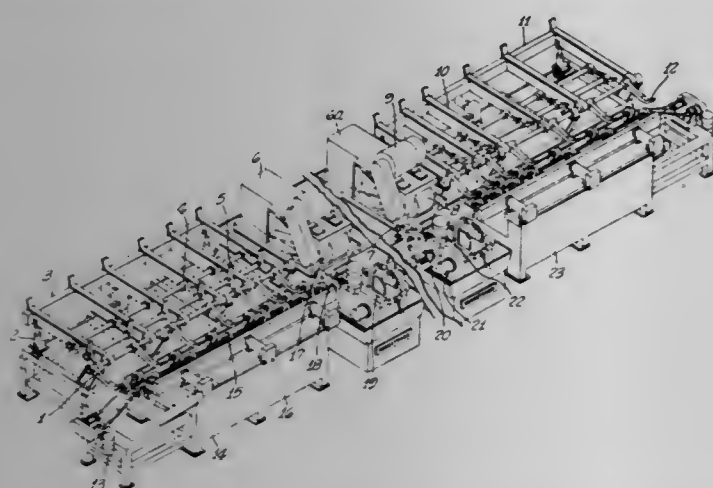
Daniel L. Elman, 12421 Mulholland Dr., Beverly Hills, Calif.

Filed Oct. 30, 1970, Ser. No. 85,420

Int. Cl. B21b 45/04

U.S. Cl. 72-39

1 Claim



The process of the invention comprises a treatment for rough-turned hot-rolled or hot-finish steel bars to provide a defect-free finished product. The process of the invention serves to remove maximum stock from a straightened bar and to finish the surface of the bar in one complete operation from hot-rolled stock. The finished product is completely free from surface defects, and is rust inhibiting and ready for use without the need for any surface machining, or the like.

3,750,439

## METHOD AND APPARATUS FOR MAKING CORRUGATED PIPE

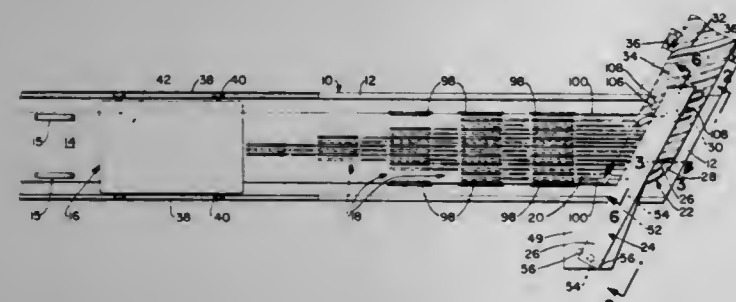
Howard G. Pratt, Brownsville, Calif., assignor to Eugene W. Sirachenko, Redding, Calif.

Filed Jan. 20, 1971, Ser. No. 107,920

Int. Cl. B21b 45/02; B21c 37/12

U.S. Cl. 72-43

24 Claims



Corrugated pipe is made from flat strips of corrugated material by helically coiling the strip about the pipe axis. A plurality of laterally spaced ball raceways graze the strip from

both sides and helically deform it by rollingly engaging the strip corrugations with the balls as the strip is fed past the raceways. Coiled strip edges are simultaneously seamed. A flying shear intermittently severs the flat strip along a diagonal line for the production of limited length pipe sections having straight ends.

3,750,440

## TUBING SWAGE UTILIZING EXPLOSIVES

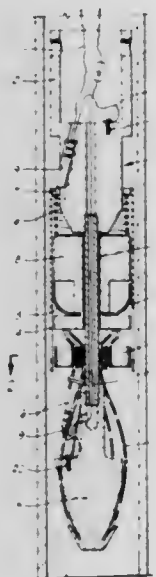
Paul A. Pausky, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 12, 1972, Ser. No. 217,114

Int. Cl. B21d 26/08

U.S. Cl. 72-56

3 Claims



A system for swaging a flared end of an oil well tubing. A ring of explosive material is placed in an inwardly collapsed condition and transported through the tubing. After the explosive material exits from the flared end of the tubing, it is opened and moved to a position substantially surrounding the flared end of the tubing. The ring of explosive material is detonated, causing the flared end of the tubing to be swaged inwardly to a desired configuration. An anvil with a geometry corresponding to the desired internal configuration of the end of the tubing may be positioned within the tubing prior to detonation of the ring of explosive material.

3,750,441

## DEVICE FOR FORMING WORKPIECES BY MEANS OF UNDERWATER SPARK DISCHARGES

Gerd Schneider, and Joachim-Friedrich Mammann, both of Nurnberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin &amp; Munich, Germany

Filed Feb. 26, 1971, Ser. No. 119,158

Claims priority, application Germany, Mar. 18, 1970, P 20 12 783.7

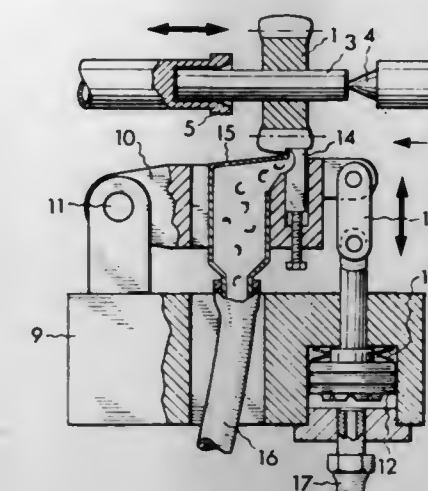
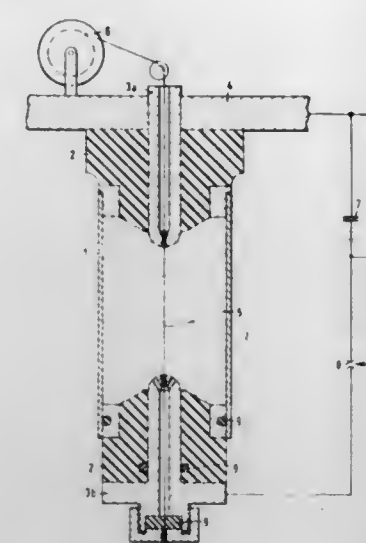
Int. Cl. B21d 26/10

U.S. Cl. 72-56

3 Claims

A device for forming workpieces by pressure waves generated in a liquid by an undersurface spark discharge has two electrodes in the liquid and mutually separated so as to define a spark gap. A capacitor battery is connected across the electrodes and an ignitor is suspended between the electrodes

in the spark gaps. The ignitor has a synthetic carrier thread made of thermoplastic and a thin metal ignition wire is embedded in the thread. The ignitor is mounted in its location in the machine for the rolling operation.



mounted in its location in the machine for the rolling operation.

3,750,442

## COMPRESSIVE FORMING

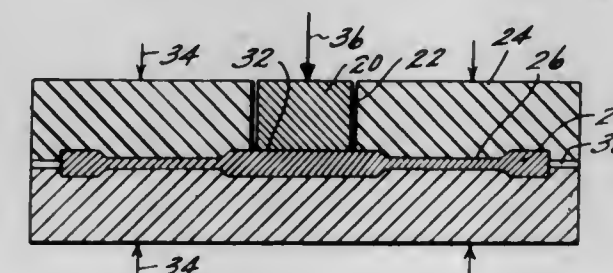
Richard Cogan, Hamilton, Mass., assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 19, 1962, Ser. No. 245,734. The portion of the term of this patent subsequent to Aug. 7, 1984, has been disclaimed.

Int. Cl. B21d 39/08

U.S. Cl. 72-57

4 Claims



1. Apparatus for the compressive forming of an article comprising:

- a die including
  - a. a die cavity,
  - b. a workpiece receiving chamber connected with and angularly disposed with the die cavity and
  - c. port means in a wall of the die cavity and distinct from the workpiece receiving chamber;

a soft metal matrix contained within the die cavity; means to introduce a workpiece into the die cavity; force means to press the workpiece into the die cavity; and control means to control the rate of release of matrix from the die cavity through the port means.

3,750,443

## GEAR ROLLING MACHINES

Oskar Maag, and Otto Wenger, both of Zurich, Switzerland, assignors to Maag Gear Wheel &amp; Machine Company Limited, Zurich, Switzerland

Filed Nov. 5, 1971, Ser. No. 195,921

Claims priority, application Germany, Nov. 6, 1970, P 20 54 740.4

Int. Cl. B21h 5/00

U.S. Cl. 72-72

3 Claims

A gear rolling machine has one or more cutting tools mounted in it to remove material upset to the periphery or end

## 3,750,444 METHOD OF CONTINUOUS PRODUCTION OF TUBING WITH HELICAL OR ANNULAR RIBS

Herbert Bittner, Krahenwinkel, Germany, assignor to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hanover, Germany

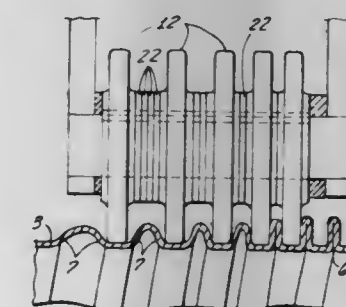
Filed Oct. 13, 1971, Ser. No. 188,752

Claims priority, application Germany, Oct. 29, 1970, P 20 53 085.2

Int. Cl. B21d 15/04

U.S. Cl. 72-78

6 Claims



Method of continuous production of ribbed tubes using a smooth-walled tube, corrugating same, and axially squeezing hollow corrugation crests of the tube, preferably by means of revolving die rollers, so that the interior surface portions of the sides of the crests as facing each other axially are folded and squeezed into surface to surface contact, to obtain integral ribs.

3,750,445

## TUBE-COILING APPARATUS

Derek Miles, Colespond Farm, West Tytherley, near Salisbury, Wiltshire, and Ian M. Musson, 61 Riverside Gardens, Romsey, Hampshire, both of England

Filed June 1, 1971, Ser. No. 148,683

Claims priority, application Great Britain, Oct. 13, 1969, 50,252/69; Dec. 12, 1969, 60,759/69

Int. Cl. B21f 3/04

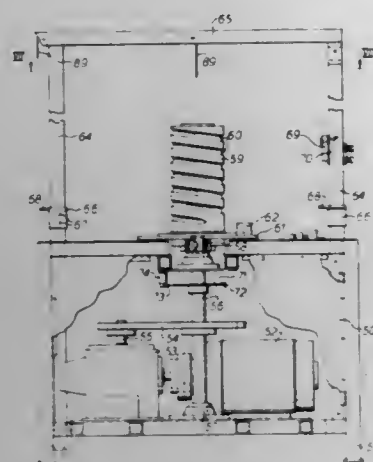
U.S. Cl. 72-144

10 Claims

Tube coiling apparatus comprises a rotatable cylindrical member having a helical groove in its cylindrical surface, the groove being semi-circular in cross-section and equal in diameter to the diameter of the tube to be coiled. A roller has a groove therein of a cross-section corresponding to the cross-section of the groove in the cylindrical member and is mounted adjacent the groove in the cylindrical member for rotation about an axis offset from the axis of the cylindrical



member by the helix angle of the groove in the cylindrical member. One end of a length of tube to be coiled is inserted between the roller and the cylindrical member and is secured to the cylindrical member. The cylindrical member is then rotated and the grooved roller moved axially of the cylindrical



member to wind the tube into the groove in the cylindrical member and thus into a helical coil. The grooved roller may be moved axially of the cylindrical member by a lead screw or by mounting it in a yoke which also mounts rollers having convex peripheral surfaces engaged in the groove in the cylindrical member.

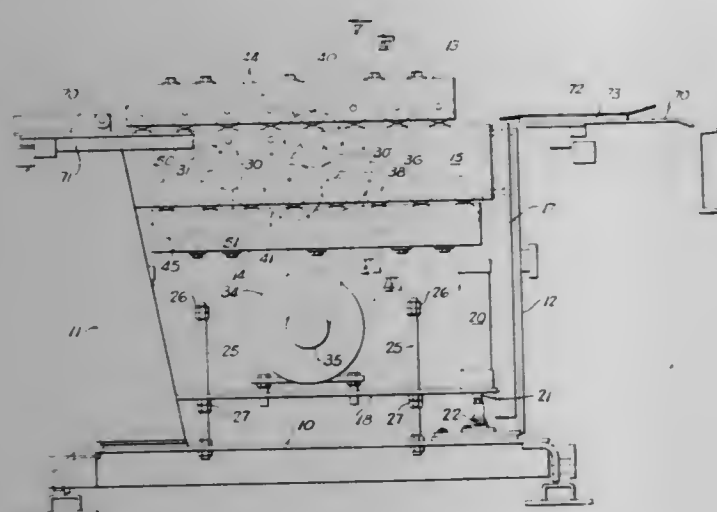
3,750,446

**SHIFTABLE MULTIPLE ROLL FORMING APPARATUS**  
Clarence O. Jones, Jr., Eggertsville, N.Y., assignor to Niagara Machine & Tool Works, Buffalo, N.Y.

Filed Nov. 5, 1970, Ser. No. 87,225  
Int. Cl. B21d 5/08, 5/14

U.S. Cl. 72-181

6 Claims



A roll forming apparatus for sheet metal comprises a generally stationary framework having a vertically movable carriage supported thereby, which carriage includes two separate sets of progressive forming rolls, one above the other. The carriage is movable vertically by fluid cylinder means to dispose either of the two sets of forming rolls at a particular working level to selectively form two different types of formations in a work sheet. A drive motor for the forming rolls and the transmission therefrom to the forming rolls is mounted upon the vertically movable carriage.

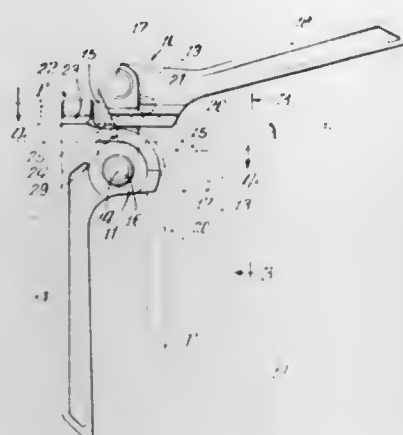
3,750,447  
TUBE BENDER

Leonard J. Kowal, Prospect Heights, and William R. Saddler, Grayslake, both of Ill., assignors to Imperial-Eastman Corporation, Chicago, Ill.

Filed Sept. 28, 1971, Ser. No. 184,567  
Int. Cl. B21d 11/04; B21j 13/08

U.S. Cl. 72-319

18 Claims



A manually operable tube bender wherein a straight tube is inserted between a mandrel and a bending shoe with the bending shoe being swung about the axis of the mandrel groove to progressively bend the tube into the groove. A hook is provided for preventing longitudinal movement of the tube as a result of the friction forces generated by the sliding of the hook against the tube as it is bent. A number of different forms of such hooks are disclosed for providing improved tube retention.

3,750,448

**TWIN STAND ROLLING MILL-AZIAL ROLL ALIGNMENT**

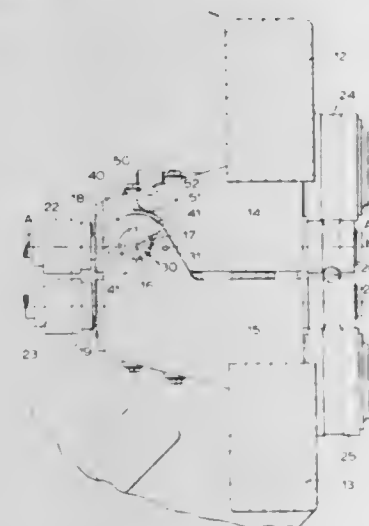
Roy R. Oxlade, London S. W. 8, England, assignor to The British Iron and Steel Research Association, London, England

Filed Mar. 18, 1971, Ser. No. 125,678  
Claims priority, application Great Britain, Mar. 18, 1970, 12,997/70

U.S. Cl. 72-247

Int. Cl. B21b 31/18

9 Claims



A four-high rolling mill stand has each work roll mounted to the free end of a preloaded drive shaft rotatably carried in an individual arm pivotally mounted in the mill frame. The effective position of the pivot axis of one arm is movable through a limited arc relative to the pivot axis of the other arm by means of limited rotation of eccentric pivot pins, whereby to effect adjustment of the axial position of the work rolls relative to one another to avoid ovality or asymmetry in the rolled stock.

3,750,449

**ARRANGEMENT IN STORAGE TYPE WIRE DRAWING MACHINES FOR CONTINUOUSLY CONTROLLING THE SPEED OF AN INDIVIDUALLY DRIVEN DRAWING BLOCK HAVING AN ASSOCIATED GUIDE BLOCK ARRANGED COAXIALLY THEREWITH AND A GUIDE PULLEY ARRANGED BETWEEN THE BLOCKS**

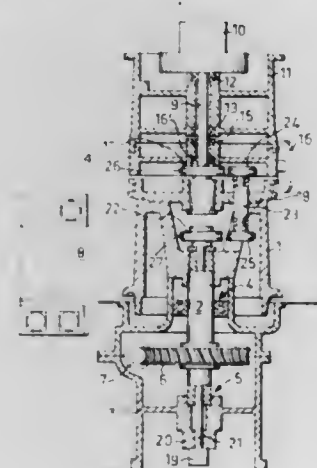
Karl Lars Gunnar Rabe, Arboga, and Karl Sune Ingemar Hanaeus, Smedjebacken, both of Sweden, assignors to Aktiebolaget Arboga Mekaniska Verkstad, Arboga, Sweden  
Filed Oct. 10, 1971, Ser. No. 190,890

Claims priority, application Sweden, Oct. 21, 1970, 14188/70

U.S. Cl. 72-288

Int. Cl. B21c 1/12

3 Claims



There is provided an arrangement in storage type wire drawing machines for continuously and automatically controlling the speed of an individually driven drawing block having an associated guide block arranged coaxially therewith and a guide pulley arranged between the blocks, which guide pulley is mounted for rotation on a support means journaled between the blocks and being capable of pivoting relative to the blocks. The pivoting movements of the support means are used to control the speed of rotation of the driven drawing block. The arrangement also includes a machine element which is securely mounted between the blocks on a depending journal pin or shaft over the drawing block and supports transmission means adapted to transmit the pivoting movements of the support means to a device which transmits a signal in response to said pivoting movements to the motor driving the block, thereby to change the speed at which the block rotates.

3,750,450

**MANUFACTURE OF ARTICLES**

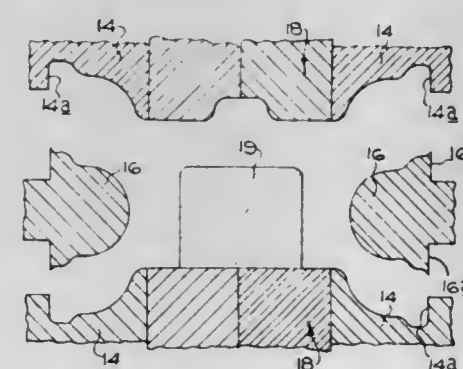
Herbert John Sharp, Greenford, and Margaret Evelyn Norrish, London, both of England, assignors to GKN Sankey Limited, Bilston, England

Filed June 22, 1971, Ser. No. 155,586  
Claims priority, application Great Britain, June 26, 1970, 31,088/70

U.S. Cl. 72-353

Int. Cl. B21j 13/02; B21k 1/32

7 Claims



The specification discloses a method of making a road wheel for a vehicle in which the material of the wheel has

anisotropic properties. The wheel comprises a central portion, a peripheral or rim portion and a plurality of separate radial portions between the central portion and the rim portion. The specification describes how anisotropic properties can be obtained in the radial portions and the peripheral portion by causing the material to flow radially along the radial portions and peripherally around the peripheral portion during the formation of the wheel. This formation is effected by placing a billet of flowable material in a cavity and then moving selected elements of the cavity to produce the desired flow of the material. The wheel can be made of a thermoplastic, synthetic polymeric material with or without fibre reinforcement, a thermosetting, synthetic polymeric material with fibre reinforcement or a metal with or without fibre reinforcement.

3,750,451

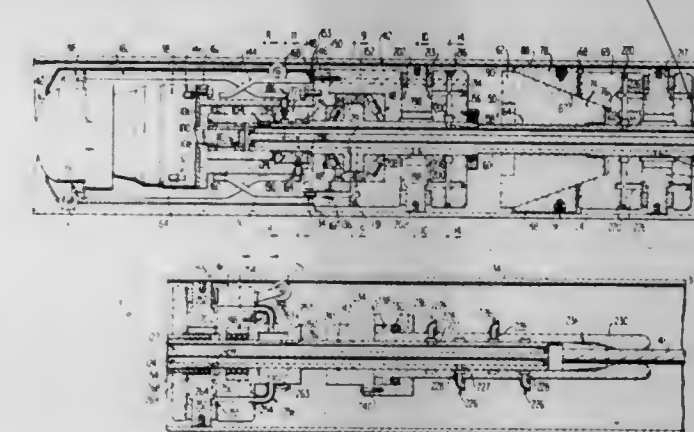
**INTERNAL TENSIONING SYSTEM FOR LAYING PIPELINE**

Clyde E. Nolan, Jr., Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Division of Ser. No. 28,733, April 15, 1970, Pat. No. 3,645,105. This application Nov. 9, 1971, Ser. No. 197,176  
Int. Cl. B21d 39/08

U.S. Cl. 72-393

7 Claims



A method and apparatus for laying pipeline wherein the pipeline is externally clamped so as to be substantially fixed with respect to a floating vessel prior to connection of a new section of pipeline. After this connection, the pipeline is internally engaged by internal clamp means which is paid out with the pipeline being held under tension. Then the pipeline is again clamped externally and the internal clamp means is retrieved. A new section of pipeline is added and the payout operation is repeated.

The internal clamp means may be fluid operated and may be provided with means for engaging both the existing pipeline and the new joint. The portion of the internal clamp means engaging the new joint is mounted for rotation and translation with respect to the remaining portion of the internal clamp means to permit alignment of the pipeline and the new joint. Power transfer means is carried by a mandrel of the internal clamp means for use in actuating and moving the clamp means as well as for possible use with other equipment utilized internally of the pipeline.

3,750,452

**COLLET CRIMPER**

Irving Frank, Euclid, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

Filed Oct. 7, 1971, Ser. No. 187,410  
Int. Cl. B21d 41/00

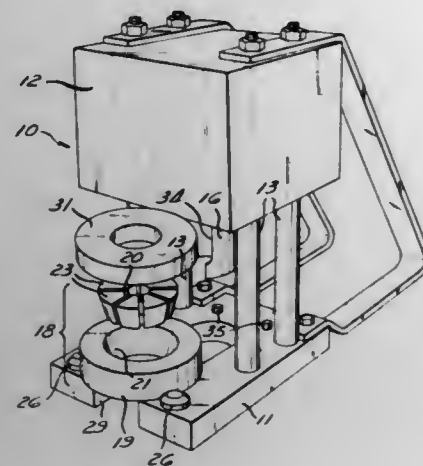
U.S. Cl. 72-402

10 Claims

A collet crimping machine for permanently attaching fittings to hose assemblies including a crimping die assembly, having a die block and a multi-jawed collet, and resilient spacer means for angularly aligning the collet jaws in the die block while permitting the jaws to provisionally grip the fitting



and allowing the jaws to be separated along a radial line for lateral passage of the fitting into and out of the collet. The



machine is preferably arranged such that the collet is automatically biased in the die ring to the sleeve gripping position to minimize manual set-up operations.

3,750,453

### CRIMPING TOOL FOR FORMING PERIPHERAL GROOVES IN CYLINDRICAL ARTICLES

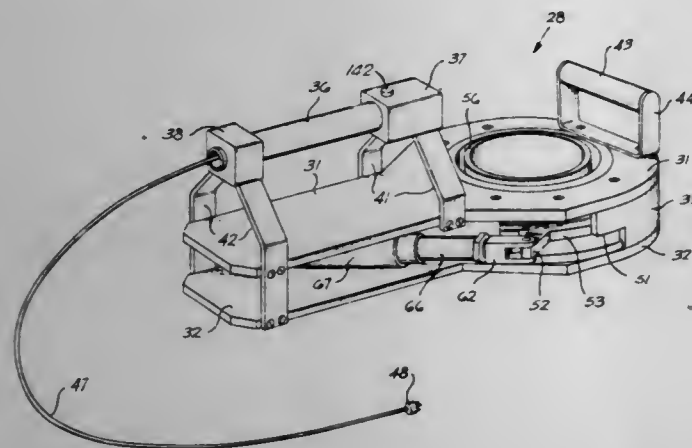
Kerin Lee Dryden, Lawrenceville, and Roger George Anthony Ebrey, Snellville, both of Ga., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Sept. 9, 1971, Ser. No. 178,922

Int. Cl. B21d 41/00

U.S. Cl. 72-402

9 Claims



A crimping tool includes a plurality of curved article forming members or blades pivotally supported at one end in two adjoining layers in an apertured housing to define a circular opening for axially receiving a cylindrical article, for example, a cap-type seal for sealing a communications cable. A rotatable member overlying the blades is provided with a plurality of cam follower rollers, each of which engages one side of the free end of each blade. An arm on the rotatable member is coupled to a movable piston rod disposed in a hydraulic cylinder supported on the housing and driven by an electrically activated hydraulic control system which may be selectively actuated through a pushbutton switch on a handle attached to the housing. The closure of the switch activates the cylinder, moving the arm, partially to rotate the rotatable member urging the rollers against the free ends of the blades inwardly to contract the circular opening to form a pair of adjoining internally-projecting ribs in the cap to form a hermetic seal between the inner surface of the cap and the contiguous outer surface of the cable sheath. The hydraulic pressure may be adjusted to provide grooves of a sufficient depth to seal caps on cables of various sizes.

### 3,750,454 HORIZONTAL METAL-WORKING MACHINE

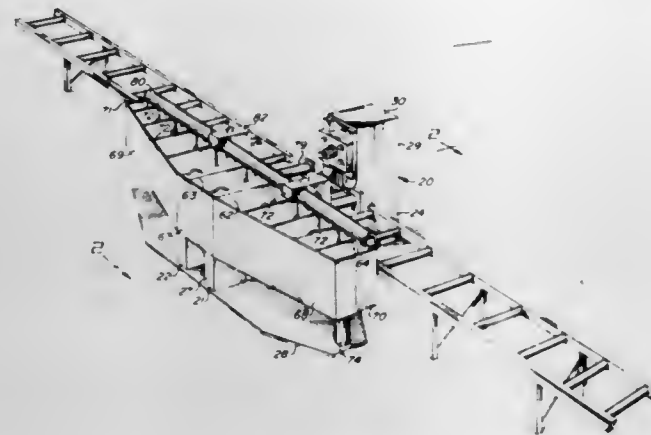
Robert M. Jepson, Phoenix, Ariz., assignor to Ramsey Steel Company, Inc., El Paso, Tex.

Filed Feb. 9, 1972, Ser. No. 224,668

Int. Cl. B21d 3/10

U.S. Cl. 72-441

9 Claims



A metal-working machine adapted for performing a plurality of operations, including bending, straightening or punching metal shapes. The machine, briefly, consists of a horizontal load-bearing frame with an upstanding head stock at one end of the frame and a bolster member at the other end for carrying anvils, female die or other cooperative metal working elements. The frame carries a work supporting bed such that horizontal oriented metal shapes are horizontally carried between the head stock and the bolster. An hydraulic cylinder is supported by the head stock and actuates a ram or other metal working tool to engage the metal shape and exert pressure on the work in the direction of the bolster to cooperate with the appropriate metal working element carried by the bolster. The head stock is provided with controls for varying the vertical placement of the horizontal hydraulic cylinder. The bolster supports the cooperative metal working element such that it can be moved along the bolster to proper cooperative position with the metal element actuated by the horizontal ram.

3,750,455

### ERECT TUBE BENDING MANDREL

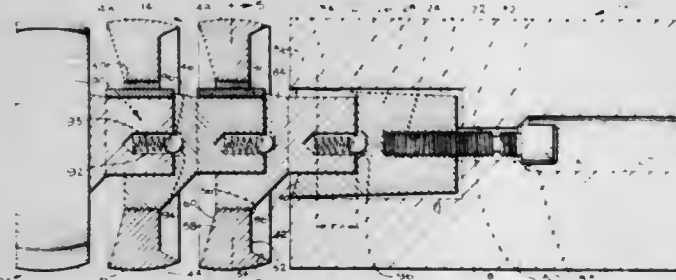
Ronald R. Stange, Denver, and Gary B. Ward, Aurora, both of Colo., assignors to Tools for Bending, Inc., Denver, Colo.

Filed Dec. 27, 1971, Ser. No. 212,229

Int. Cl. B21d 9/01

U.S. Cl. 72-466

12 Claims



A tube bending mandrel for bending tubes in a single plane has a flexible mandrel section comprising connecting links having a cylindrical male portion and a cylindrical socket female portion of one-piece construction wherein each male portion is pivotally seated in the socket portion of each next connecting link and retained therein by outer ring members that are threaded onto the respective links.

### 3,750,456 MEANS FOR DETERMINING HEADING ALIGNMENT IN AN INERTIAL NAVIGATION SYSTEM

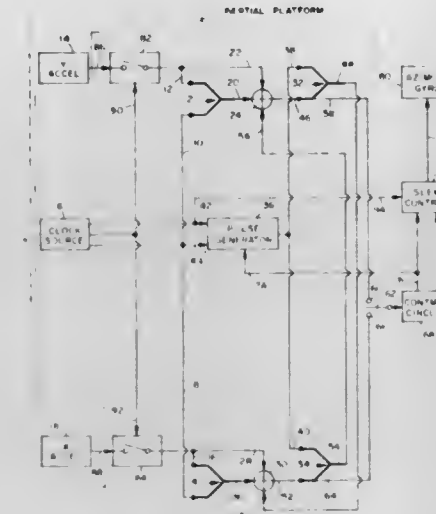
Ferman L. Walker, Cedar Rapids, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Dec. 30, 1970, Ser. No. 102,575

Int. Cl. G01c 25/00

U.S. Cl. 73-1 E

4 Claims



This invention relates to apparatus for determining the heading alignment of an inertial navigation system by allowing the inertial platform to drift and employing the outputs of the accelerometers on the platform axes to compute the drift rate components, determining the amount and direction of platform drift corresponding to the computed components, and correcting the heading data of said system with the computed data.

3,750,457

### PNEUMATIC MACHINE FOR THE CREATION OF MECHANICAL SHOCKS OF VARIABLE AMPLITUDE AND INTENSITY

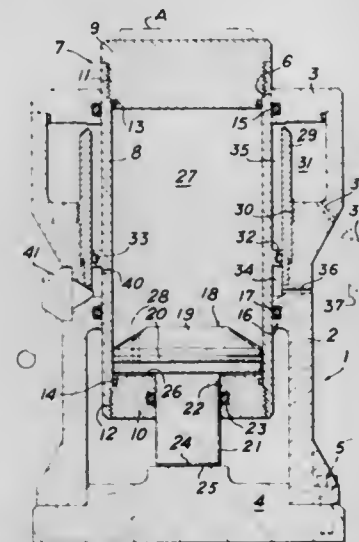
Adrien Pasquet, Toulon, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Dec. 1, 1971, Ser. No. 203,638

Int. Cl. G01n 3/30

U.S. Cl. 73-12

8 Claims



The machine comprises a moving system consisting of a hollow cylinder which supports the sample to be tested and has two separate internal chambers which vary in volume in a complementary manner according to the position of a piston within the cylinder.

A fixed body which guides the moving system in translation comprises an internal jacket against which bears an external collar of the cylinder, thus forming two chambers which are external to the cylinder and vary in volume with the movement of the moving system.

Means are provided for applying different pressures of a pneumatic control fluid to the internal and external chambers and for abruptly varying the pressure in one of the external chambers in order to cause rapid displacement of the moving system.

3,750,458

### HIGH PRESSURE CAN TESTING APPARATUS

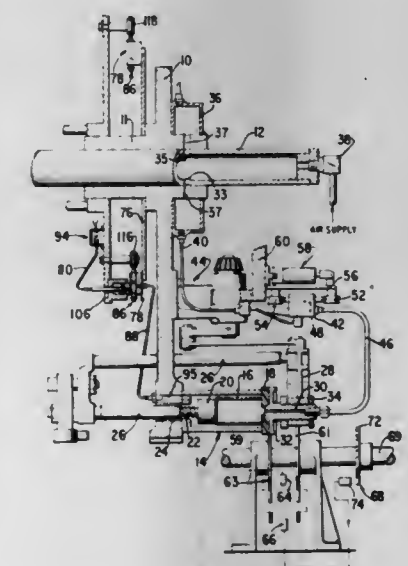
Clifford Harry Messervy, East Randolph, and Maynard Harry Riddell, Randolph, both of N.Y., assignors to Borden, Inc., New York, N.Y.

Filed Dec. 23, 1970, Ser. No. 100,892

Int. Cl. G01m 3/02

U.S. Cl. 73-45.1

14 Claims



The apparatus includes a plurality of chambers in association with a spider wheel for receiving cans to be tested, means for supplying pressurized gas into the cans disposed in the chambers, sensing means in communication with the chambers for detecting gas leaking out of the cans, three-way spool valves interposed between the chambers and the supply means, two-way spool valves interposed between the sensing means and the chamber, means for actuating the three-way valve to a closed position when a chamber is empty so as not to pressurize needlessly an empty chamber and means for bleeding the gas from the sensing means.

3,750,459

### HYDRO-DYNAMIC TESTING APPARATUS

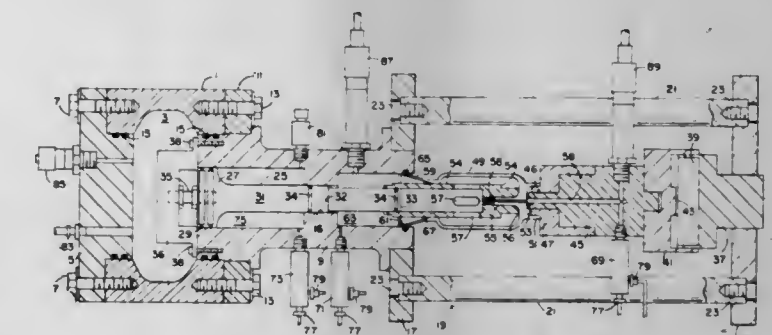
Thompson, Johnny L. Prater, and Steven P. Ryder, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 14, 1972, Ser. No. 271,955

Int. Cl. G01m 3/02

U.S. Cl. 73-49.4

5 Claims



An apparatus for hydro-dynamically testing missile motor cases under simulated flight conditions. The apparatus provides means for mounting the motor case and produces the



resultant loads equivalent to reaction loads that a case would encounter in flight. Water under low pressure is induced inside of the motor case and when combined with a high pressure piston acting on the water produces two of the simulated resultant loads. Water under low pressure in a separate cavity combined with high pressure from the same piston produces the third simulated resultant load.

3,750,460

# THROUGH-FLOW POLAROGRAPHIC ANALYZER HAVING CONSTANT FLOW FACILITIES

Miloslav Vesely; Zdenek Bohac, and Frantisek Vondrak, all of Pardubice, Czechoslovakia, assignors to Vyzkumny ustav organickkyk syntez, Pardubice, Czechoslovakia

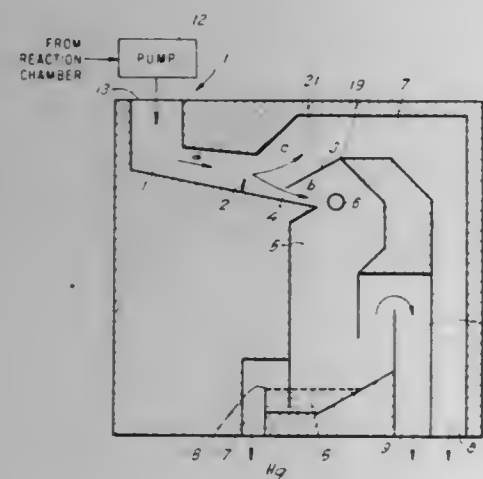
Filed Apr. 10, 1972, Ser. No. 242,379

Claims priority, application Czechoslovakia, Apr. 9, 1971, 2543

Int. Cl. B01k 3/00

U.S. Cl. 73-61.1 R

4 Claims



A main measuring path and an auxiliary path individually extend from a common junction at the input of a polarographic analyzer to separate output ports thereof. A vane defining a common wall between the two paths cooperates with a transversely disposed baffle member located upstream of a vane to direct a relatively small, substantially constant portion of the total input flow toward the main path, thereby permitting efficient liquid separation at the output of the main path. The remainder of the input flow is directed through the auxiliary path.

3,750,461

# METHOD OF AND AN APPARATUS FOR DETERMINING THE CROSS-SECTION OF PRODUCTS OF THE TEXTILE INDUSTRY, ESPECIALLY THAT OF YARNS, ROVINGS AND SLIVERS

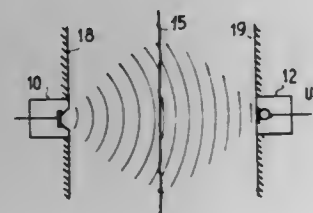
Ernst Felix, Uster, Switzerland, assignor to Zellweger Ltd., Uster, Switzerland

Filed June 16, 1971, Ser. No. 153,765

Int. Cl. G01n 29/00

U.S. Cl. 73-67.5

22 Claims



Method and apparatus for determining the cross-section of textile products including means for generating a sound field at least partially within a resonator and means for measuring the phase disturbance in said sound field created by the passage of a textile product therethrough.

## 3,750,462 ULTRASONIC VISUALIZATION IMPROVEMENT

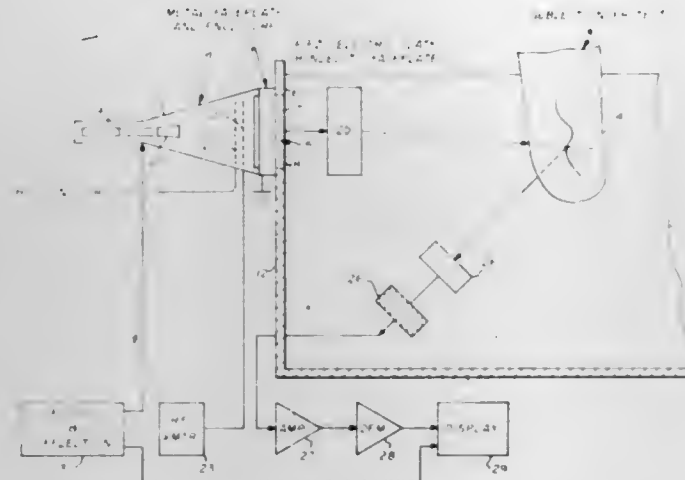
George William Gray, Lambertville, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 73,521, Sept. 18, 1970, Pat. No. 3,718,032. This application June 22, 1972, Ser. No. 265,129

Int. Cl. G01n 29/04

U.S. Cl. 73-67.7

3 Claims



An ultrasonic transmitting apparatus for examination of a subject in a field comprising, a CRT transmitter having a transducer excited at relatively low energy level and at a frequency which is half of the resonating frequency of the transmitting transducer to enhance receiver sensitivity. The transmitting transducer is excited in a pattern to generate corresponding successive acoustic waves to scan the subject in "flying spot" type fashion, and a receiver including a non-scan receiving transducer for electrically converting the subject reflected signals and providing a visual display.

3,750,463

# FUEL MEASURING SYSTEM FOR VEHICLES

Curtis L. Erwin, Jr., 5805 S.E. Gladstone St., Portland, Oreg.

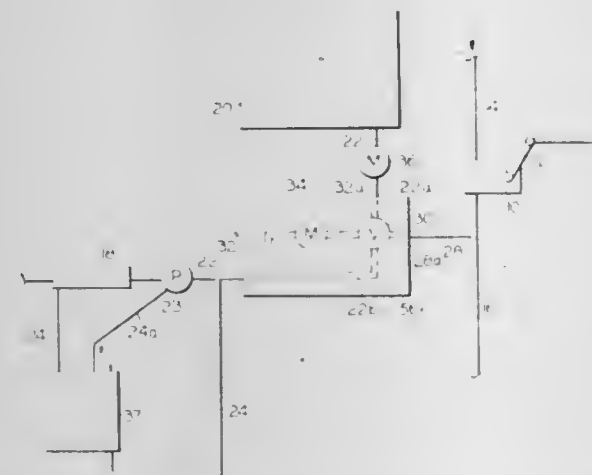
Continuation of Ser. No. 733,961, June 3, 1968. This

application July 10, 1970, Ser. No. 53,970

Int. Cl. B60k 15/02

U.S. Cl. 73-113

10 Claims



The fuel measuring system of the invention is intended for use with a vehicle of the type wherein its fuel mixing device returns unburned fuel to the fuel supply. Such system includes an air bubble eliminator and further includes a fuel by-pass provided with a meter. A valve is included in the system which has two positions a first one of which provides normal flow of fuel to the fuel mixing device and a second one of which provides flow through the by-pass to measure the flow. The valve is operably connected to the emergency brake or a power take-off so that it is moved to its second position when the

emergency brake or power take-off is activated. Also included in the system is a second meter arranged to measure total flow of fuel from the fuel tank of the vehicle. The valve and the meter associated with the by-pass are preferably incorporated in a single compact housing.

3,750,464

# DYNAMOMETER APPARATUS FOR CLEATED VEHICLES

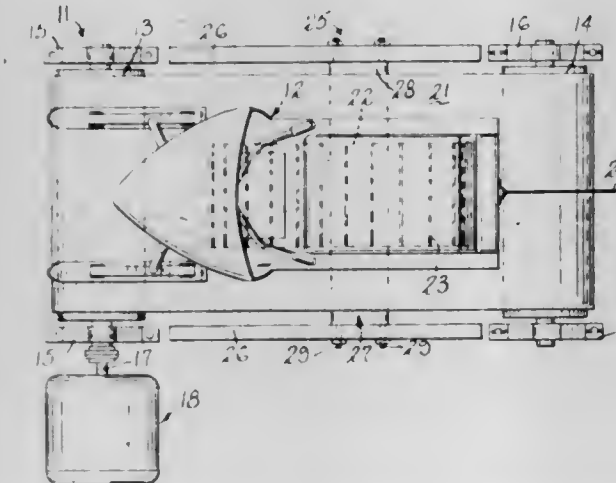
Robert F. Ostrander, Orange, Conn., assignor to Ostradyne, Inc., Milford, Conn.

Filed Jan. 29, 1971, Ser. No. 111,059

Int. Cl. G01l 5/13

U.S. Cl. 73-117

7 Claims



Chassis dynamometer apparatus for cleated, track driven vehicles having an endless belt for frictional contact with the cleats, wherein the belt is a V-belt or a cog belt having a surface layer of a resilient material capable of embedding the cleats of such vehicles without substantial slippage and destruction of the belt.

3,750,465

# ENGINE PERFORMANCE INDICATOR

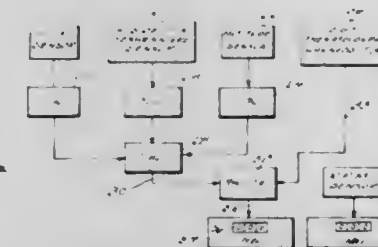
John S. Howell, and Richard L. Rowan, both of Fort Worth, Tex., assignors to Howell Instruments, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 89,580, Nov. 16, 1971. This application Sept. 9, 1971, Ser. No. 179,141

Int. Cl. G01m 15/00

U.S. Cl. 73-117.3

10 Claims



A method and means for measuring changes in the quality of gas turbine engine performance, efficiency or engine trim by measuring at least a first engine parameter such as RPM, computing a second engine parameter value such as exhaust gas temperature (EGT) from the first measured parameter, also measuring the actual value of the second engine parameter and subsequently comparing the computer with the actual values (after possible correction factors have been taken into account) to indicate changes in engine performance or trim. The computed and actual values may also be integrated prior to comparison or a difference between the computed and actual values may first be taken and this difference subsequently integrated for comparison with a standard comparison value

such as may be obtained by integrating one of the parameters or a time representative signal over the same timed interval. If the comparison takes the form of a ratio, the periods of integration may be chosen to insure that the denominator is an even power of ten such that the integral representing the numerator may be directly interpreted as a performance index. Simpler trim test equipment is also disclosed for measuring engine parameters such as EGT and RPM and automatically converting such measurements to standard day conditions before display to permit quick static or ground trim testing without requiring numerous hand calculations.

3,750,466

# DEVICE FOR MEASURING THE TENSION OF EXTENDED FLEXIBLE MATERIALS

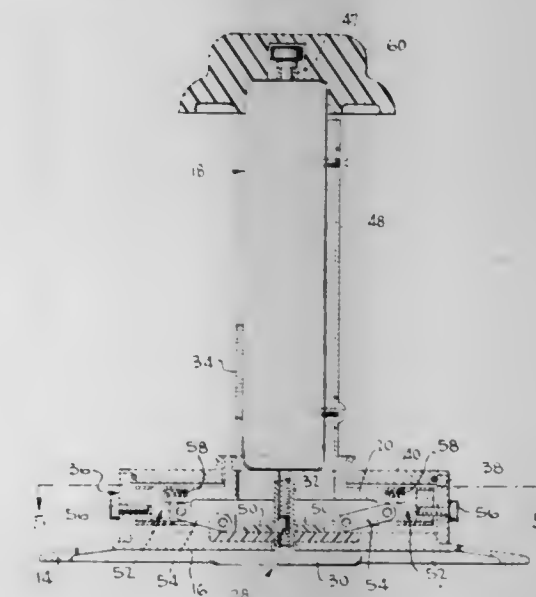
William C. Ott, Westmount, and Leo Paul Dionne, Trois-Rivieres, both of Quebec, Canada, assignors to Niagara Wire Weaving Company Limited, Niagara Falls, Ontario, Canada

Filed Dec. 29, 1971, Ser. No. 213,578

Int. Cl. G01m 33/36

U.S. Cl. 73-159

6 Claims



A device for measuring the tension of extended flexible materials is disclosed, the device comprising a substantially circular ring member having a handle assembly slidably connected thereto for axial movement towards and away from the ring member. Resilient biasing means such as compression springs are disposed between the ring member and the handle assembly for resisting the axial movement. Pressure sensing means are disposed for axial movement with the ring member for thereby measuring the amount of pressure to which it is exposed upon thrusting of the device against an extended flexible material. During such thrusting of the device and upon a predetermined axial movement of the handle assembly relative to the ring member, brake means are actuated by the handle assembly for restraining the pressure sensing means against further movement to thereby deactivate same. The device is capable of measuring the tension of extended flexible materials irrespective of the angle, position, or pressure at which it is thrust upon the material, and further, the device is capable of taking readings even in an upside-down or inverted position.

3,750,467

# DEVICE TO MEASURE COMPRESSIBILITY OF SOFT MATERIALS

Manuel Jesus Rubio, Bridgeport, Conn., and Victor Mario Leal, Monterrey, N.L., Mexico, assignors to Roberto Gonzalez Barrera, Monterrey, N.L., Mex.

Filed Nov. 3, 1971, Ser. No. 195,314

Int. Cl. G01n 3/08, 33/10

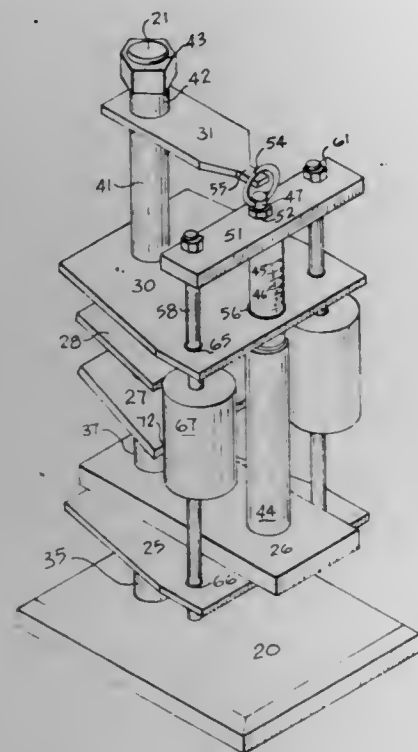
U.S. Cl. 73-169

3 Claims

In testing soft materials, particularly tortilla cooked corn, the invention provides a simple device having a vertical



cylinder cooperating with a vertical piston and means to apply a starting weight. A crosshead and crosshead guides assure satisfactory operation of the piston without binding. Weights in one position float on the crosshead guides held by latches



and in another position apply their load to the crosshead guides, the crosshead and the piston. To permit insertion of the cylinder and the sample a latch is provided to hold the crosshead and the piston in inoperative position, to remove or insert the cylinder and to substitute samples.

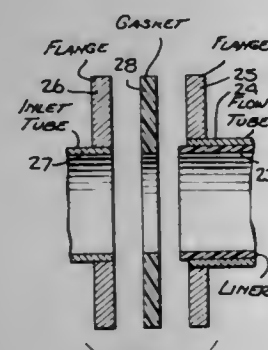
### 3,750,468 LINED FLOW TUBE FOR ELECTROMAGNETIC FLOWMETER

Oscar Grauer, Philadelphia, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Apr. 8, 1971, Ser. No. 132,385  
Int. Cl. G01f 1/00; G01p 5/08

U.S. Cl. 73—194 EM

4 Claims



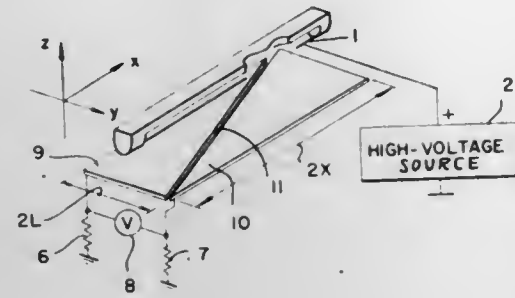
An electromagnetic flowmeter having a pipe section through which fluid to be measured is conducted, the pipe section being constituted by a titanium tube having an insulating liner formed of alumina. A pair of electrodes are mounted at diametrically opposed positions on the pipe section and are insulated from the tube. Surrounding the pipe section are electromagnetic coils adapted to establish a field within the pipe section.

### 3,750,469 IONIZATION-TYPE FLOW METER

Owen Storey, Varenne-Jarey, France, assignor to Societe Industrielle d'Electronique et d'Informatique, Paris, France  
Filed Aug. 3, 1971, Ser. No. 168,715  
Claims priority, application France, Aug. 3, 1970, 7028636  
Int. Cl. G01f 1/00

U.S. Cl. 73—194 F

10 Claims



Ions generated in a moving gas stream by corona discharge in the vicinity of a high-voltage anode, in the form of a wire or a disk, are intercepted by two flat or tubular collector members with closely spaced edges extending obliquely to the direction of gas flow which is perpendicular to the anode wire or disk. The oblique edges may be straight or curved, continuous or zigzagging, and extend over the entire zone in which ions may impinge upon the collectors at different flow velocities to be measured.

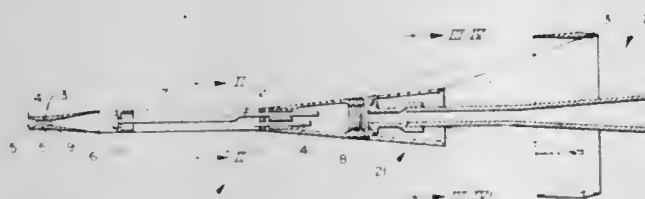
### 3,750,470 FLOW SONDE FOR MEASURING THE TOTAL PRESSURE AND THE STATIC PRESSURE OF A FLOW

Peter Partzsch, Eichenau near Munich, Germany, assignor to Dornier A.G., Friedrichshafen/Bodensee, Germany  
Filed Oct. 18, 1971, Ser. No. 189,932  
Claims priority, application Germany, Nov. 7, 1970, P 20 54 954.6

Int. Cl. G01p 5/16

U.S. Cl. 73—212

3 Claims



This invention relates to a flow sonde for measuring the total pressure and the static pressure of a flow comprising a cylindrical forward section, a conical transitional section, a rearward cylindrical section, said forward section having a smaller diameter than said rearward section and the transitions from each section to the next extending in a sharp-edged manner, and aperture means on said sonde for taking the total pressure and the static pressure.

### 3,750,471 BIFURCATED THERMOMETER PROBE

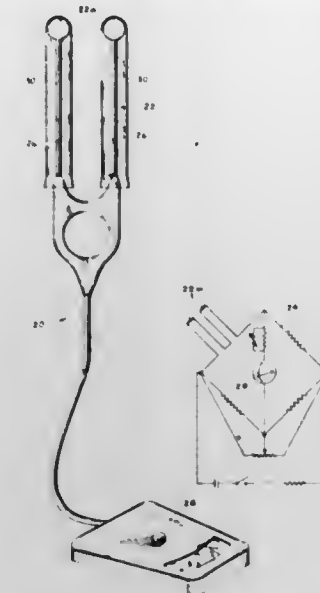
Norman C. Bremer, 608 E. Seneca St., Ithaca, N.Y.  
Filed Mar. 4, 1971, Ser. No. 120,825  
Int. Cl. G01k 7/24; H01c 7/04

U.S. Cl. 73—342

5 Claims

For use in connection with oral clinical thermometers and average reading industrial thermometers, a plurality of branches on a single probe connected to yield a temperature reading which is the average of the temperatures sensed at

each branch. For oral use, the spaced distance between two branches is substantially the same as the distance between the



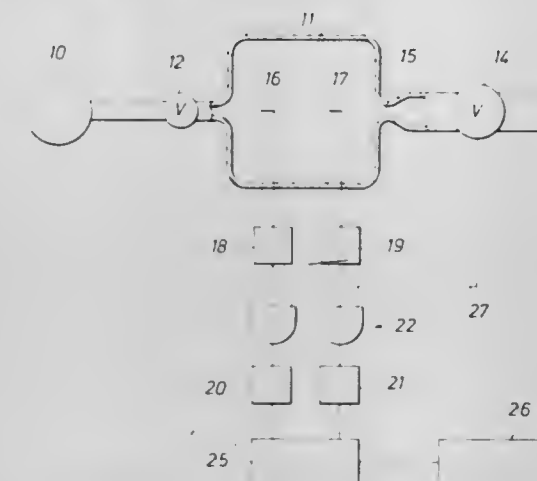
pockets on opposite sides of the fraenum of the tongue to prevent lateral movement of the probe and resulting erroneous temperature measurement.

### 3,750,472 APPARATUS FOR MEASURING THE MASS FLOW OF GASES

Robert Eugene Raymond Ducousset, Clamart, France, assignor to Compagnie Des Compteurs, Paris, France  
Filed Feb. 1, 1971, Ser. No. 111,297  
Claims priority, application France, Feb. 6, 1970, 7004219  
Int. Cl. G01f 1/00

U.S. Cl. 73—205 D

8 Claims



The disclosed apparatus measures the mass rate of flow of gas through an orifice of a flow nozzle under critical flow conditions and comprises a reservoir having an inlet connected to a source of high pressure through a first valve and an outlet connected to a flow nozzle adapted to conduct pressurized gas from said reservoir under critical flow conditions to a region of low pressure downstream of the flow nozzle. The critical flow conditions are established by a second valve mounted downstream of the nozzle orifice. Density and pressure measuring devices are coupled to the reservoir and provide signals representative of the density and pressure, respectively, of the gas flowing through the flow nozzle. The density and pressure signals are applied to a device which calculates the square root of the product of density and pressure to provide a signal proportional to the mass rate of gas flow.

In a first embodiment, the second valve is operatively coupled to the calculating device in order that this device provides a signal only when the second valve is opened.

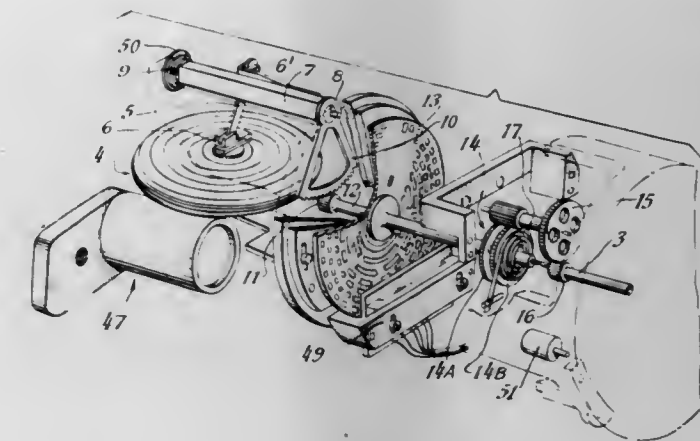
In a second embodiment the density measuring device is operatively coupled to the first valve in order to maintain the density of the gas flowing through the flow nozzle at a constant value.

### 3,750,473 ALTIMETERS

John Theodore George Bennett, Romsey, and John Anthony Read, Southampton, both of England, assignors to Kollsman Instrument Limited, Southampton, England  
Filed Mar. 4, 1971, Ser. No. 120,878  
Claims priority, application Great Britain, Mar. 17, 1970, 12,825/70  
Int. Cl. G01f 7/14

U.S. Cl. 73—387

3 Claims



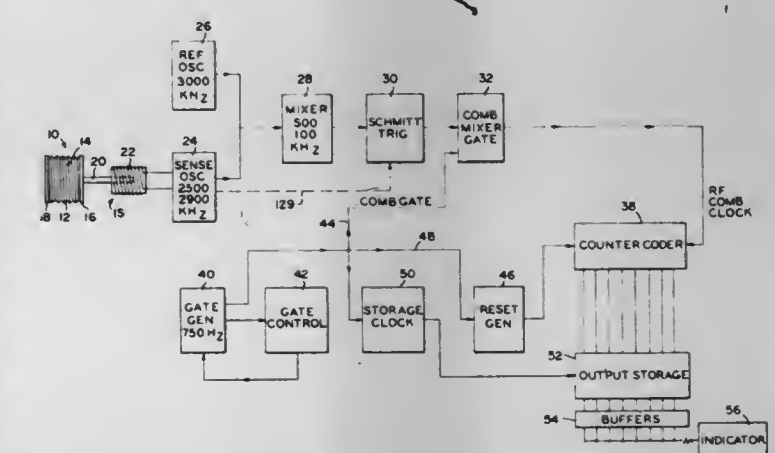
An aircraft altimeter which provides a signal indicative of altitude represented in coded form. The altimeter includes an indicator dial, one or more pointers driven by a pointer shaft, and an evacuated capsule coupled to the pointer shaft via a linkage and differential gear mechanism associated with a main shaft cooperating with the linkage such as to effect rotation of the pointer shaft in response to changes in atmospheric pressure with altitude. An encoder disc, which has opaque and non-opaque portions in coded form, is mounted on the main shaft and a light source arranged to direct light on to the disc together with sensing means responsive to the light passing through the disc provide a coded signal representation of the movement imparted to the pointer shaft.

### 3,750,474 ALTITUDE ENCODER

Dale Pollack, Clearwater, Fla., assignor to Aerosonic Corporation, Clearwater, Fla.  
Filed June 28, 1971, Ser. No. 153,478  
Int. Cl. G01f 7/12, 9/10

U.S. Cl. 73—386

18 Claims



An altitude encoder which provides a digital readout from a barometric sensor comprised of an aneroid bellows linked mechanically with a means to control the frequency of a sense oscillator. The sense oscillator produces a frequency proportional to altitude which constitutes an output signal to a counter. The output of a counter represents altitude and is stored for readout or fed into a transponder for transmission to the ground.



3,750,475

**FLUID PRESSURE MONITORING SYSTEM**

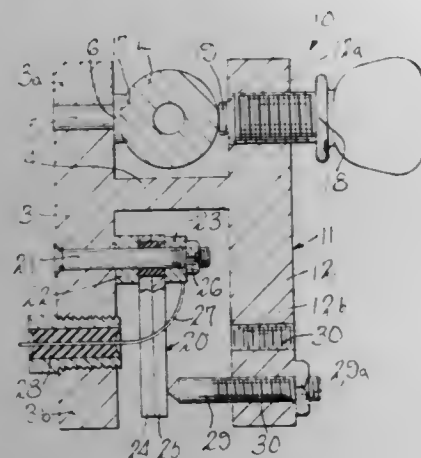
Preston R. Weaver, Rocky Hill, Conn., assignor to UMC Electronics Company, North Haven, Conn.

Continuation-in-part of Ser. No. 60,429, Aug. 3, 1970. This application Aug. 3, 1972, Ser. No. 277,602

Int. Cl. G011 9/00

U.S. Cl. 73—398 AR

10 Claims



This specification discloses an apparatus for measuring pressure in a tubular line without interruption of the line, comprising a pair of spaced apart arms; a bridging member extends between the arms and is constructed and arranged to flex upon expansion of a line clamped between the arms on one side of the bridging member, and a transducer effective to produce a signal which varies as a function of a force applied thereto is supported on one of the arms on the other side of the bridging member while a force transmitting member is carried on the other of the arms on the other side of the bridging member.

3,750,476

**PRESSURE TRANSDUCER**

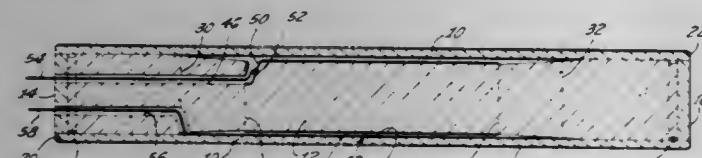
Neil L. Brown, El Cajon, Calif., assignor to The Bissett-Berman Corporation, Santa Monica, Calif.

Filed Sept. 25, 1967, Ser. No. 670,210

Int. Cl. G011 9/12

U.S. Cl. 73—398 C

6 Claims



This invention relates to a pressure transducer which is able to operate in all types of environments, including normally adverse environments, to provide an accurate indication of pressure. The pressure transducer is able to provide accurate indications of relatively high pressures in one embodiment and of relatively low pressures in a second embodiment. The pressure transducer provides such accurate indications by varying the distance between two plates of a capacitor in accordance with the variations in the pressure to be measured. The pressure transducer is made by novel methods also included within this invention.

3,750,477

**LIQUID SAMPLING**

Michael D. Rutkowski, Phoenixville, and Richard R. Thompson, West Chester, both of Pa., assignors to Pro-Tech, Inc., Malvern, Pa.

Filed Jan. 4, 1972, Ser. No. 214,822

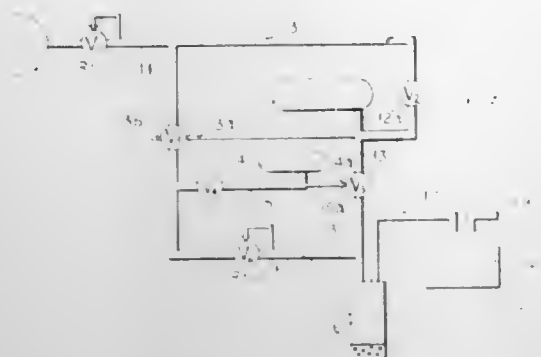
Int. Cl. G01n 1/14

U.S. Cl. 73—421 B

12 Claims

Samples are taken from a body of liquid at intervals by converting continuous flow of fluid from a pressurized source into

intermittent sample-propelling flow. Both the repetition frequency of sampling and the duration of individual samplings is controlled through regulation of the propellant



flow rate. Principal uses are in stream monitoring for pollution control, sewage treatment facilities, and industrial waste reduction programs.

3,750,478

**SAMPLING APPARATUS**

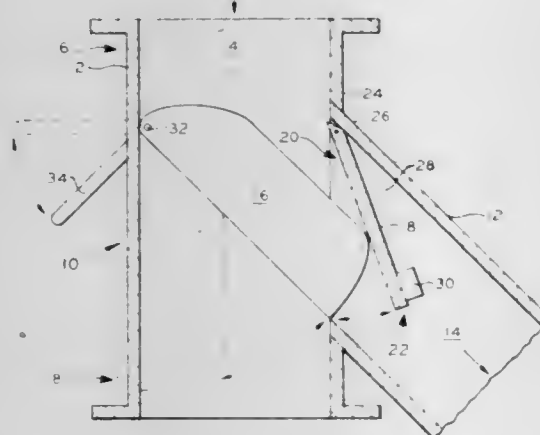
William A. Keene, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed June 5, 1972, Ser. No. 259,715

Int. Cl. G01n 1/20

U.S. Cl. 73—423 R

7 Claims



First and second angularly disposed conduits are connected to one another in fluid communication with a diverting element positioned in the first conduit for movement between a first position at which materials pass through the first conduit and a second position at which the first conduit is closed by the diverting element, materials are diverted into the second conduit by the diverting element, and the sealing element is moved to an open position in response to movement of the diverting element.

3,750,479

**TILTING TABLE FOR ERGOMETER AND FOR OTHER BIOMEDICAL DEVICES**

Raymond L. Gause, and Raymond A. Spier, both of Huntsville, Ala., assignors to The United States of America as represented by the National Aeronautics and Space Administration

Filed May 8, 1972, Ser. No. 251,609

Int. Cl. G011 5/02

U.S. Cl. 73—379

9 Claims

The apparatus is for testing the human body in a variety of positions, ranging from the vertical to the supine, while exercising on an ergometer; and can also be used for angular positioning of other biomedical devices. It includes a floor plate

and a hinged plate upon which to fix the ergometer, a back rest and a head rest attached at right angles to said hinged plate and behind the seat of the ergometer, dual hydraulic cylinders for raising and lowering the hinged plate through 90° by means of a self contained hydraulic system, with valve



means for control and positive stops on the apparatus to prevent over travel. Tests can be made with the subject positioned on the seat of the ergometer, through the various angles, with a substantially normal body attitude relative to said seat and ergometer.

3,750,480

**PNEUMATIC MEASUREMENT APPARATUS**

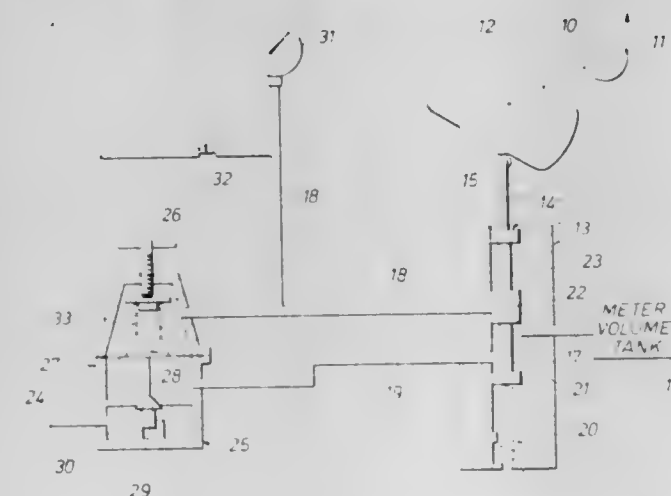
Ethell J. Dower, Houston, Tex., assignor to Warren Automatic Tool Company, Houston, Tex.

Filed Apr. 23, 1971, Ser. No. 136,740

Int. Cl. G01p 3/26; E21b 45/00

U.S. Cl. 73—506

13 Claims



A pneumatic apparatus and method for measuring a function. Pneumatic pulses representative of the function are generated, integrated and monitored as an indication of the function. The integrated pulse pressure is controllably vented and means are provided for supplying to the pulse generator a pressurized pneumatic fluid which is incrementally higher in pressure than the pressure of the integrated pulses.

3,750,481

**ACCELEROMETER**

Eric L. Hays, West Allis, Wis., assignor to AMU Company, West Allis, Wis.

Filed July 1, 1971, Ser. No. 158,738

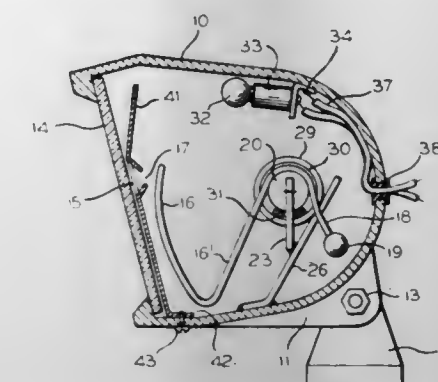
Int. Cl. G01p 15/02

U.S. Cl. 73—515

1 Claim

A balanced arm comprising an indicator wire and a counterweight is supported on a taut cord that serves as a rotational axis which is transverse to the direction in which acceleration is to be measured. The indicator wire extends toward a scale

which is visible from the front of the instrument. Linear acceleration of the vehicle on which the instrument is mounted



causes the arm to turn and the indicator to assume a position relative to the scale corresponding with instantaneous relative acceleration. The instrument will also indicate inclination.

3,750,482

**HIGH SPEED OVERSPEED SENSOR**

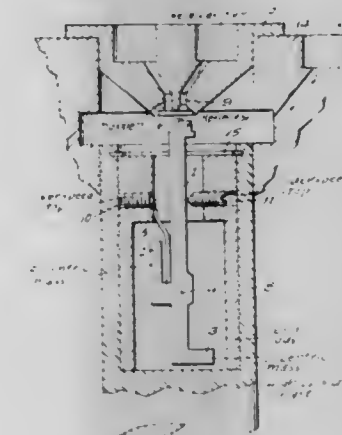
Howard B. Kast, Fairfield, Ohio, assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 9, 1971, Ser. No. 206,394

Int. Cl. G01p 3/20, 3/26

U.S. Cl. 73—521

6 Claims



Simple inexpensive apparatus senses an overspeed condition of a high speed shaft, of a turbine for example. There is no wearing moving part unless the shaft overspeeds. Then one pivoted part or arm moves a very small degree carrying a cup-shaped reflector into the path of a small jet of fluid. This reflector cup reflects the jet stream to a receiver hole and conduit. The conduit leads off to apparatus which shuts off the engine or reduces the power input until the shaft speed is reduced below the overspeed limit.

3,750,483

PORTABLE RECIPROCATING SAW DRIVE MECHANISM  
Milford D. Burrows, Avon, and Peter H. Morganson, Winsted, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Apr. 21, 1972, Ser. No. 246,156

Int. Cl. F16h 21/18

U.S. Cl. 74—50

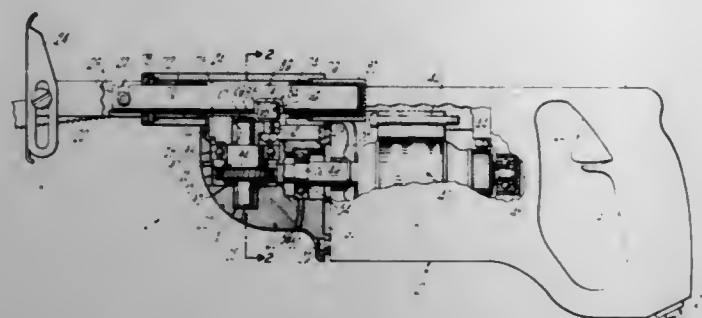
7 Claims

An elongated portable reciprocating saw having a rear spade handle, a forwardly projecting tubular saw blade support slide, an intermediate electric motor with a longitudinally extending drive shaft in parallel overlapping relationship with the tubular slide, and a pair of upstanding rotary drive assem-



blies on opposite sides of the motor shaft and tubular slide each having a worm wheel in engagement with a worm on the

way clutches a constant speed actuation of the driven member, the drive through the several one-way clutches actuated by the corresponding mechanical oscillators being over-



forward end of the motor shaft and an upstanding roller received within a yoke crosspiece on the slide.

3,750,484

### CENTRIFUGAL THRUST MOTOR

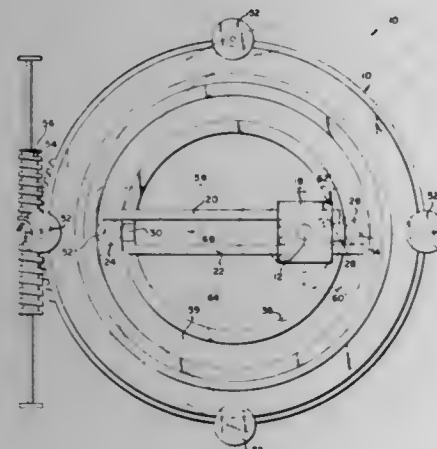
Paul M. Benjamin, R.R. 2, Onawa, Iowa

Continuation-in-part of Ser. No. 836,815, June 26, 1969, abandoned. This application June 16, 1971, Ser. No. 153,782

Int. Cl. F03g 3/00

U.S. Cl. 74—84 S

10 Claims



A centrifugal thrust motor for vehicles or the like including a frame member having a continuous track portion and a rotating shiftable shaft positioned within said track portion; at least two weight support members each having a working length secured to the shaft, and a drive mechanism provided for rotating the shaft in a direction transverse to the axis of the shaft, whereby when the shaft is rotating, upon shifting the shaft, the working length of the remainder of the weight support members in at least one point of the rotation of the weights, so as to move a vehicle or the like by providing a thrust in a direction transverse to the shaft, with appropriate braking for the opposite thrust of the weights.

3,750,485

### INFINITELY VARIABLE POSITIVE MECHANICAL TRANSMISSION

John H. Blakemore, Oak Park, Ill.

Filed Sept. 16, 1971, Ser. No. 180,983

Int. Cl. F16d 21/10

U.S. Cl. 74—125.5

11 Claims

A positive drive mechanical transmission providing infinite variations of output speed relative to input speed and comprising an output member driven continuously by one or another of a plurality of one-way clutches connected in parallel with each other and driven in synchronism but in phase displacement to each other by a corresponding plurality of mechanical oscillators of infinitely variable angular displacement which are continuously driven by an input driving member. The mechanical oscillators are powered by cams which can be shaped through design to assure through the intervening one-

lapping to the end that the driving connection between the transmission input member and the transmission output member is positive and continuous.

3,750,486

### SAFETY DEVICE FOR NEUTRALIZING THE CLUTCH OF A SNOWMOBILE

Regis Belanger, St-Isidore, Quebec, and Edouard Belanger, St-David, Quebec, both of Canada

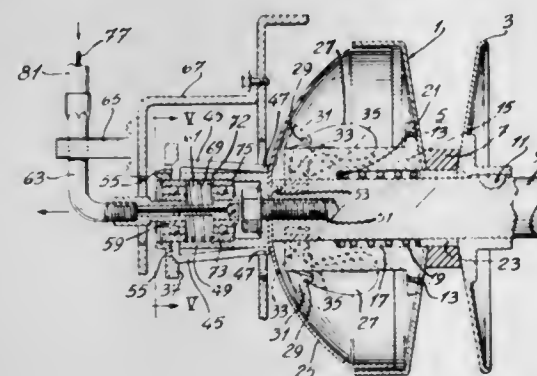
Filed Dec. 9, 1971, Ser. No. 206,423

Claims priority, application Canada, July 2, 1971, 117,290

Int. Cl. F16h 55/52

U.S. Cl. 74—230.17 E

5 Claims



Device for neutralizing, when starting up, the driving effect of a pulley having truncated cheeks of which a first one is secured on a rotary axle whereas a second one is slidably mounted thereon, the cheeks being biased by a spring tending to move the second cheek from the first one, this movement being however subjected to the counter-effect of a governor mounted on the axle to rotate therewith and of which the centrifugal masses act on the second cheek to bring it back toward the first one as soon as the axle is brought into rotation beyond a predetermined speed. This device comprises a locking mechanism mounted on the axle to cooperate with the second cheek in such a manner as to prevent it, as soon as the axle starts rotating, from moving toward the first cheek under the action of the centrifugal masses. It also comprises a manually operable mechanism related to the said locking mechanism in such a way as to release, when operated, the second cheek so that it may suddenly be projected toward the first cheek when the axle is placed in rotation at a speed greater than the said predetermined speed. This locking mechanism comprises a collar solid with the second cheek and two levers pivotally mounted at one end on the axle so that their other end may move away from the axle under the effect of the centrifugal force. The collar and the levers are made so

that the said other end of the levers may come in abutment against the collar when the axle starts rotating and thus hold it; the manually operable mechanism comprises means capable of holding the levers in abutment position, this means being displaceable at will to release the levers once the axle has reached the aforesaid predetermined speed.

3,750,487

### AUTOMATIC CHAIN OR BELT RE-TENSIONING DEVICE FOR VARIABLE-SPEED DRIVE

Graham Garton King, Lyon, France, assignor to Societe PIV, Villeurbanne, France

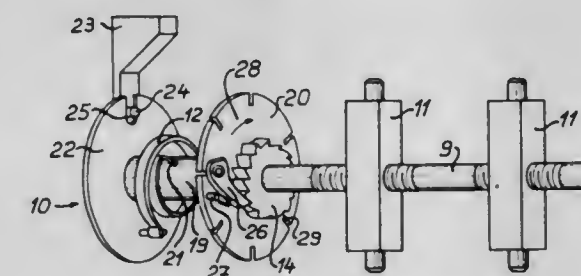
Filed Oct. 21, 1971, Ser. No. 191,231

Claims priority, application France, Oct. 22, 1970, 7039151

Int. Cl. F16h 7/08, 55/22

U.S. Cl. 74—242.8

5 Claims



This device for automatically re-tensioning the chain or belt of a variable speed drive or mechanism of the type comprising two pairs of conical disks of which the distance between centers is controlled by means of a pair of levers pivoted about pivot pins of which the relative spacing is adjustable by means of a transverse screw comprises a spiral spring having its outer end attached to a first disk held against motion by suitable means and its inner end anchored to a ring member rigid with another disk provided with a first pair of pawls co-acting with a first ratchet wheel rigid with the re-tensioning screw, this screw being also rigid with another ratchet wheel adapted to be actuated by a second pawl carried by the first disk when said first disk is released from its holding means. (FIG. 4).

3,750,488

### HANDBRAKE APPARATUS

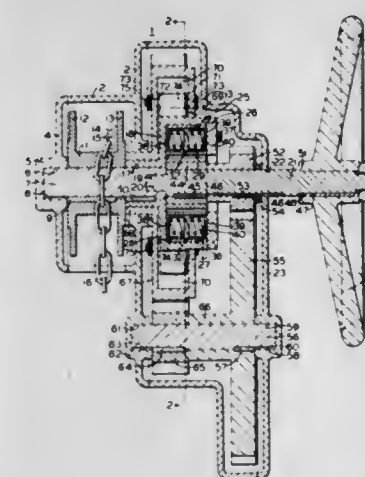
Glenn T. McClure, McKeesport, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Jan. 17, 1972, Ser. No. 218,179

Int. Cl. F16h 5/54; G05g 1/08

U.S. Cl. 74—337

9 Claims



This invention relates to a railway car hand brake apparatus having a spring-biased friction clutch to provide for automatic change from high to low speed drive of a driven member by a drive member upon engagement of the brake shoes with the tread surface of the corresponding wheels in response to the manual rotation of a hand brake wheel. Until the brake shoes

engage the tread surface of the wheels, the driven member, which carries thereon a drum upon which a hand brake chain is wound, is driven at fast speed through the friction clutch from the drive member that constitutes a drive shaft and a hand wheel keyed thereto. Slippage of the clutch occurs upon the shoes engaging the tread surface of the wheels, whereupon the drum is driven at a slow speed through a gear train interposed between the driven member to which the drum is keyed and the drive shaft.

3,750,489

### COMPOSITE DRIVE ASSEMBLY

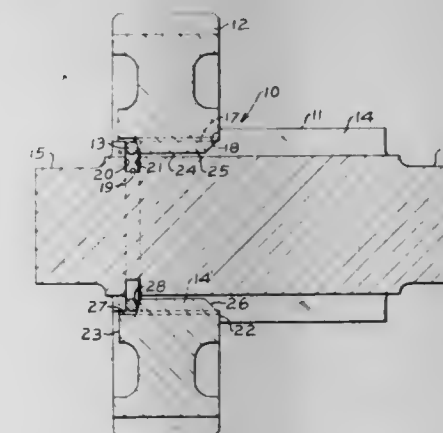
Samuel I. Caldwell, Aurora, Ill., assignor to Caterpillar Tractor Company, Peoria, Ill.

Filed June 7, 1972, Ser. No. 260,491

Int. Cl. F16h 55/04

U.S. Cl. 74—434

13 Claims



There is disclosed a cluster gear assembled from a pair of separate gear members. The gears are non-rotatably connected by means of a splined connection and retainer means that is operative to eliminate axial movement between the gears. The retaining means includes opposing radial shoulders on each side of one of the gear members, with one shoulder forming a camming surface and an expandable ring engaging the camming surface and one shoulder on the other gear to keep the gear members in a fixed axial position with respect to one another.

3,750,490

### MATERIALS HANDLING DEVICE

William Frederick Fisher, Peterborough, Ontario, Canada, assignor to Fisher Gauge Limited, Peterborough, Canada

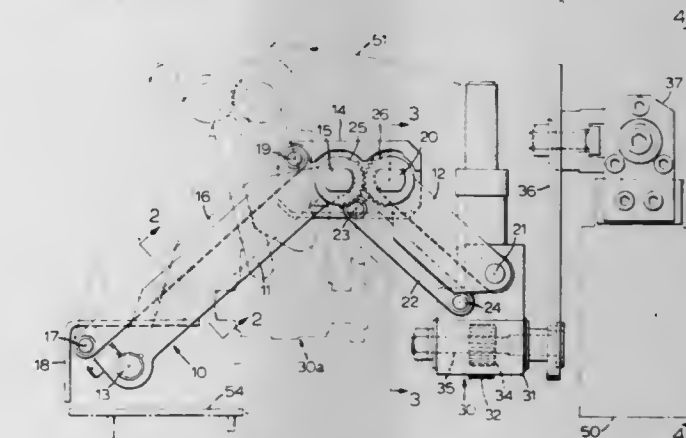
Filed June 11, 1971, Ser. No. 152,343

Claims priority, application Great Britain, Sept. 11, 1970, 43,593/70

Int. Cl. G05g 1/00

U.S. Cl. 74—469

14 Claims



An articulated device for use with apparatus for handling materials, in which a radial arm on a drive shaft is connected



remote from the drive shaft to a second arm by a member pivotally interconnected to both arms. Intermeshing gears are fixed one to each arm and the member is also connected to a fixed base by means such as a rod parallel to the first arm, whereby the member and the second arm are moved angularly proportional to the angular movement of the first arm.

3,750,491

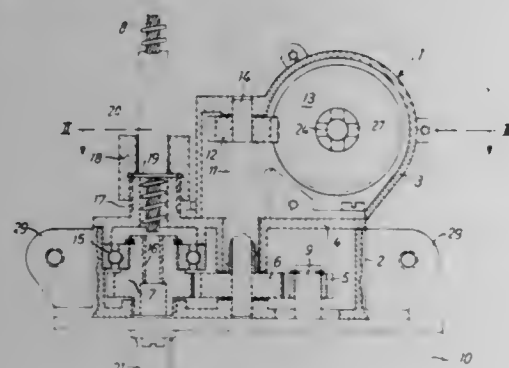
# WINDOW ACTUATING APPARATUS WITH AUXILIARY MANUAL OPERATION

Friedrich Herrmann, Dornigheim ub. Hanau, Germany, assignor to H. T. Golde GmbH, Frankfurt am Main, Germany  
Filed June 8, 1971, Ser. No. 151,067  
Claims priority, application Germany, June 10, 1970, G 70 21 751.5

Int. Cl. F16h 35/00

U.S. Cl. 74—625

5 Claims



In an electrically operated window actuating device in which power is normally transmitted from a motor to an operating cable through a reducing gear system, a manual emergency drive is provided in which a normally idling gear of the drive is mounted coaxially on the same shaft as the intermediate gear of the reducing gear system. Resilient means normally urge the driving gear of the emergency drive out of engagement with the idling gear. When the manual drive is put into operation, its driving gear actuates the idling gear and the intermediate gear of the reducing gear system thereby causing displacement of the operating cable. The housing for the apparatus is made up of symmetrical parts which can be reversed so as to fit both right and left hand side windows.

3,750,492

# ENERGY ABSORBING SHIFT LEVER

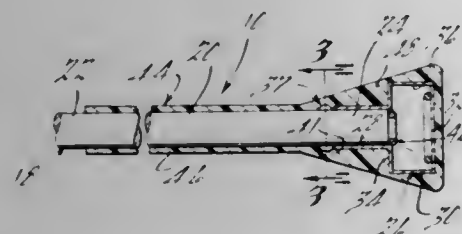
Horace D. Holmes, Jr., Clawson, Mich., assignor to Horace D. Holmes, Sr., Ypsilanti, Mich.

Filed Sept. 20, 1971, Ser. No. 181,723

Int. Cl. G05g 1/04

U.S. Cl. 74—523

13 Claims



A shift lever adapted for mounting on the steering column or the like of an automotive vehicle and including a first end portion designed to be operatively connected to the steering column and a second end portion projecting or protruding

outwardly from the column and having energy absorbing means thereon for absorbing at least a portion of the impact energy or force of a person or other object moving into engagement therewith during a vehicular collision or the like.

3,750,493

# VARIABLE SPEED POWER TRANSMISSION

John R. Allsup, Sr., 1203 Garfield Ave., Yakima, Wash.

Filed Oct. 20, 1971, Ser. No. 190,854

Int. Cl. F16h 47/06; F16d 35/00

U.S. Cl. 74—720

4 Claims



The present invention comprises: a drum assembly, connected to an input shaft from a suitable torque power source, having a cylindrical chamber carrying fluid, the chamber having fins at intervals on its inner cylindrical wall; a rotor connected to an output shaft, carried in the drum assembly, having a plate perpendicularly disposed to the rotor output shaft, and having a plurality of selectively movable blades disposed at intervals distally from the circumference of the rotor plate; and means for selectively changing the angular relationship of the blades with respect to the rotor plate.

3,750,494

# ROTARY INDEXING TABLE

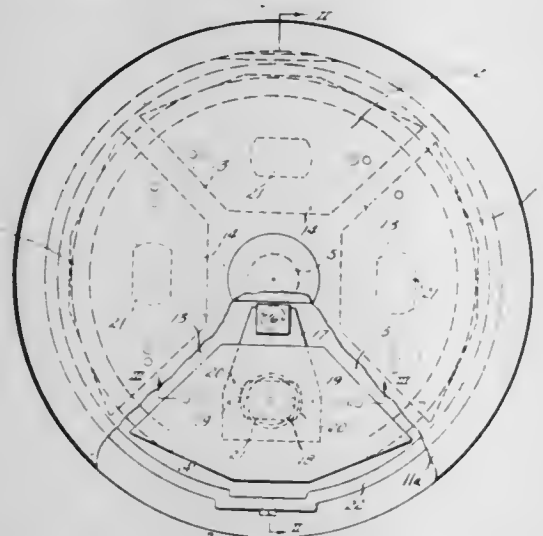
Edwin E. Rice, Ann Arbor, Mich., assignor to Chemotronics International, Inc., Ann Arbor, Mich.

Filed Nov. 5, 1971, Ser. No. 196,128

Int. Cl. B23b 29/32

U.S. Cl. 74—820

3 Claims



An improved rotary indexing table of the Geneva type having an outboard or relatively perimetric locking during dwell

and in which all table forces are isolated during dwell from stress on the drive mechanism. The drive members through an arc of somewhat more than 180° achieve an indexing path act and provide a lock trace path holding the table firm during any dwell stations and wherein the lock is effective through a drive arc somewhat less than 180°

3,750,495

# CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Shin Ito; Seitoku Kubo; Mashanao Hashimoto, and Chihiro Hayashi, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

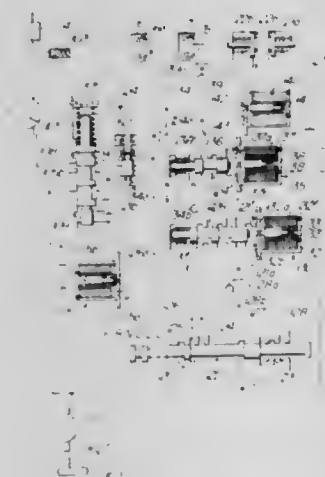
Filed June 10, 1971, Ser. No. 151,851

Claims priority, application Japan, Aug. 6, 1970, 45/68858

Int. Cl. B60k 21/00

U.S. Cl. 74—866

11 Claims



A control system for an automatic transmission for an automotive vehicle having at least a torque converter, a planetary gear unit, brake bands and clutches actuated by hydraulic servos, a manual valve, shift valves, line pressure control means, detectors for a plurality of parameters indicative of the operating conditions of the engine, and discriminating circuits for carrying out an automatic shift from one speed ratio to another. In the system, an electrically operated shift shock control valve is provided to make an on-off operation in response to a timing control signal applied from a timing controller so as to alleviate the shift shock occurring during a shift from one gear position to another.

## ERRATUM

For Class 81—52.35 see:  
Patent No. 3,750,500

3,750,496

# DEVICE FOR SPHERICAL TURNING

Alexandr Pavlovich Ivanov, Nevsky prospekt, 139, kv. 76, and Rudolf Alexeevich Romanov, ulitsa Kuibysheva, 21, kv. 54, both of Leningrad, U.S.S.R.

Filed Feb. 24, 1972, Ser. No. 229,005

Int. Cl. B23b 5/40

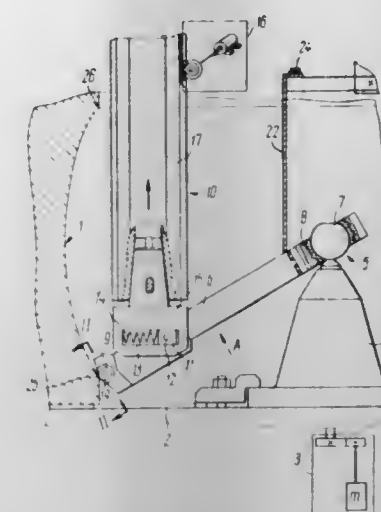
U.S. Cl. 82—12

5 Claims

The device comprises a faceplate with a drive providing for rotation of the faceplate.

In addition, the device comprises a support and a support feed mechanism. The support is made in the form of a lever of the secondclass at one end of which there is arranged a bearing made as a ball-and-socket joint and associated with the faceplate at a point located on the axis of rotation of the faceplate and on the other end of which there is located a tool holder mounting the rotary cup tool.

The tool holder is equipped with means for controlling the degree of rotation of the cup holder in the process of turning



the spherical surface. The spherical surface being turned, the faceplate and the support form a single closed dynamical system.

3,750,497

# ADJUSTING MECHANISM FOR RADIALLY MOVABLE TOOLS IN ROTARY TUBULAR TOOL HOLDERS OF SHAVING MACHINES FOR WIRE OR THE LIKE

Alfons Goeke; Franz Riedel, and Karl Gustav Weck, all of Sollingen, Germany, assignors to Th. Kieserling & Albrecht, Sollingen, Germany

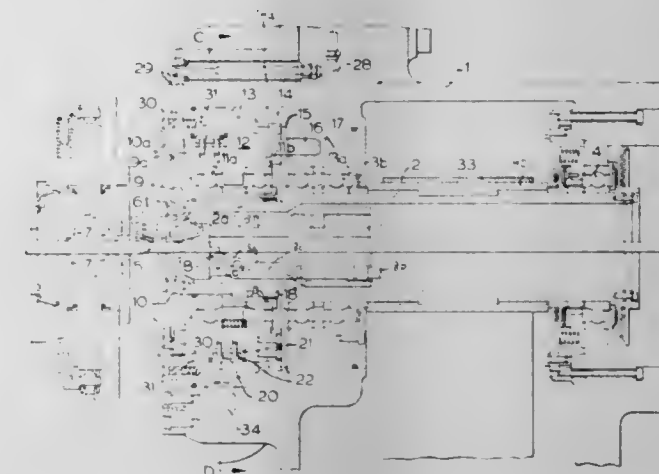
Filed Nov. 17, 1971, Ser. No. 199,628

Claims priority, application Germany, Dec. 10, 1970, P 20 60 760.7

Int. Cl. B23b 5/00

U.S. Cl. 82—20

10 Claims



A shaving machine for rolled wire or the like wherein the tubular shaving head carries one or moreshaving tools which are caused to move radially in response to axial movement of an adjusting sleeve which is connected to the inner race of an axially movable antifriction bearing spacedly surrounding the shaving head. The outer race of the bearing is provided with annuli of equidistant plenum chambers which are sealed by a stationary ring-shaped guide surrounding the bearing and having conduits for admission of pressurized fluid into the plenum chambers. The plenum chambers serve as a stabilizing or cushioning means for holding the bearing against radial movements with reference to the frame. The adjusting sleeve is loosely coupled to the shaving head so that it rotates with but need not share vibratory or other stray movements of the shaving head. This insures that such stray movements need not be shared by the tools whose supports are biased against a conical internal surface of the adjusting sleeve.



3,750,498

## TOOL HOLDERS FOR MACHINE TOOLS

Charles Willen, Villeneuve, Switzerland, assignor to Charles Willen & Cie, Villeneuve, Switzerland

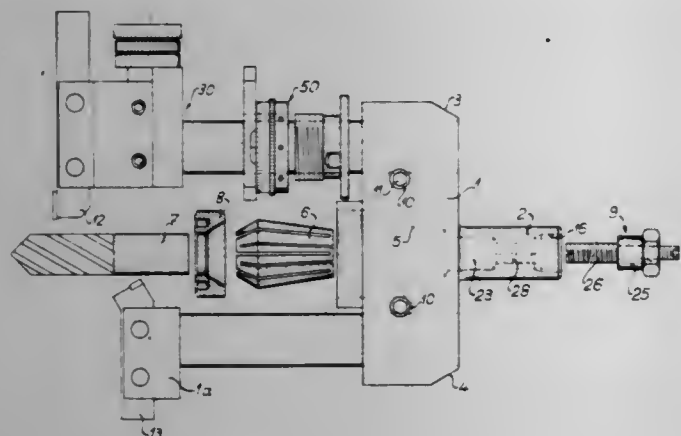
Filed Aug. 27, 1970, Ser. No. 67,370

Claims priority, application Switzerland, Aug. 29, 1969, 13108/69; Aug. 29, 1969, 13109/69; Aug. 29, 1969, 13110/69; Aug. 29, 1969, 13112/69

Int. Cl. B23b 29/26

U.S. Cl. 82—36 R

9 Claims



A tool holder for machine tools, such as automatic lathes, includes a body for attachment to the turret of the lathe. A tool support is connected to the body and adjusting means is attached to the tool support for adjusting the position of the tool support relative to the body. The adjusting means includes two relatively rotatable parts and roller means between the parts.

3,750,499

## ADAPTER FOR LATHE

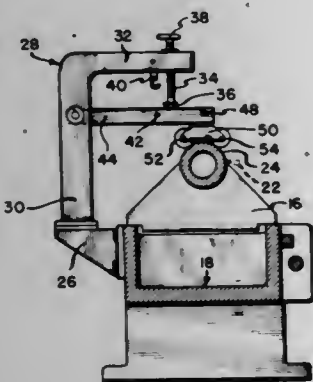
Douglas W. Peasley, Cicero, Ill.

Division of Ser. No. 714,235, March 19, 1968, Pat. No. 3,561,300. This application Jan. 28, 1971, Ser. No. 110,557

Int. Cl. B23b 25/00

U.S. Cl. 82—39

11 Claims



A method and apparatus are provided for steadying an elongated horizontally disposed rotating shaft against oscillatory movement during a turning operation. In the apparatus disclosed, downward pressure is applied at spaced points along the shaft through sets of rollers formed of a vibration-damping material.

3,750,500

## DOWEL PIN EXTRACTOR TOOL

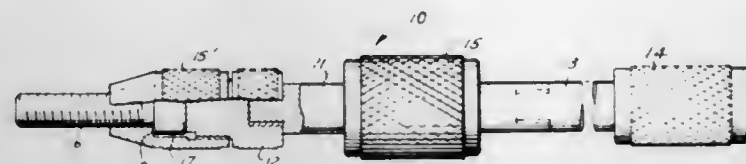
Alton Peterson, 5826 S. Hatley Ave., Cudahy, Wis.

Filed Apr. 29, 1971, Ser. No. 138,505

Int. Cl. B25b 19/00, 13/50

U.S. Cl. 81—52.35

1 Claim



A pin extractor tool which may use screw fasteners of various sizes. This device includes a shank portion with a slideable sleeve which a chuck portion having a locking sleeve.

3,750,501

## METHOD AND APPARATUS FOR CONDITIONING CANS

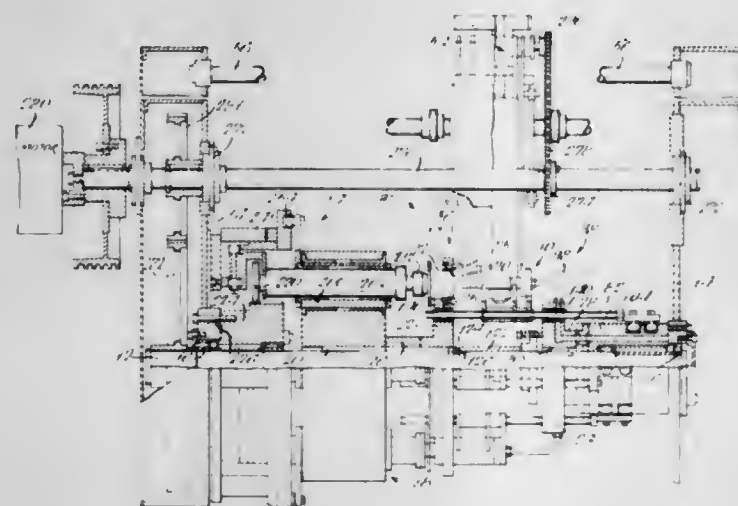
Stanley J. Miller, Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Oct. 19, 1970, Ser. No. 81,872

Int. Cl. B23b 3/04, 5/14

U.S. Cl. 82—59 R

15 Claims



A method for trimming salvage edges from container ends by axially inserting a cutter into the open end of a container surrounded by a backing member, shifting the cutter transversely of the longitudinal axis of the container and producing relative rotation between the cutter and container to trim salvage edges from the inside to the outside of the container. The apparatus for trimming salvage edges includes an elongated member rotated about an axis and having a plurality of circumferentially spaced trimming stations. Each of the trimming stations includes a fixed backing member having an opening, a container support movable between first and second positions on one side of the backing member, and a cutter supported eccentrically of a shaft on the opposite side of the backing member with the shaft being movable transversely and axially to temporarily align the cutter with the axis of the opening, and position the cutter inside the container in engagement with the container wall so that rotation of the shaft will trim the salvage edge. The cutter is designed to automatically produce an arcuate surface on the inner edge of the container wall during the cutting operation. Camming members cooperate with the shaft and the container support to move the shaft and container support to the various positions during each cycle of rotation of the elongated member.

## ERRATUM

For Class 82—101 see:  
Patent No. 3,750,506

3,750,502

## APPARATUS FOR THE MANUFACTURE OF PUNCHED CARDS

Karlheinz Ball, Lievelingsweg 102-104, Bonn, Germany

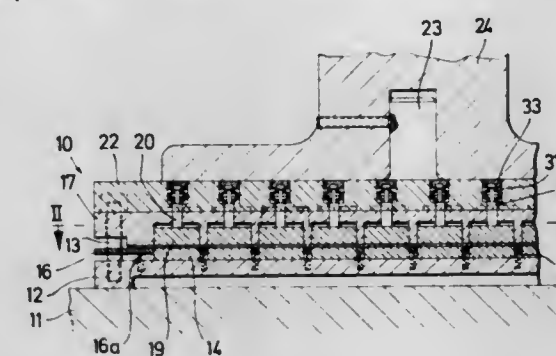
Division of Ser. No. 53,252, July 8, 1970. This application Feb. 16, 1972, Ser. No. 226,914

Claims priority, application Germany, July 11, 1969, P 19 35 260.4; Apr. 21, 1970, P 70 14 573.2

Int. Cl. B26f 1/14

U.S. Cl. 83—9

7 Claims



Punched and printed cards are produced in large groups by severing and simultaneous punching of printed plastic sheets in such a way that each card continues to adhere to but is readily separable from the remainder of the sheet. The apparatus for the punching and severing of sheets has two relatively movable sections one of which supports a sheet and the other of which can be moved against the sheet by the ram of a press. The sections have cooperating cutting edges which effect nearly complete separation of cards and one of the sections carries punches which can be forced through the sheet to form punch holes by motion transmitting pins or balls which are shifted in response to closing of the press. The pins or balls are inserted into the one section in accordance with a selected program, such as by copying the distribution of holes in a punched tape which is employed for precoding of the apparatus.

3,750,503

## METHOD AND MEANS OF GANG SAW LUBRICATION AND COOLING

James R. McMillan, Box 17, Lone Butte, British Columbia, Canada

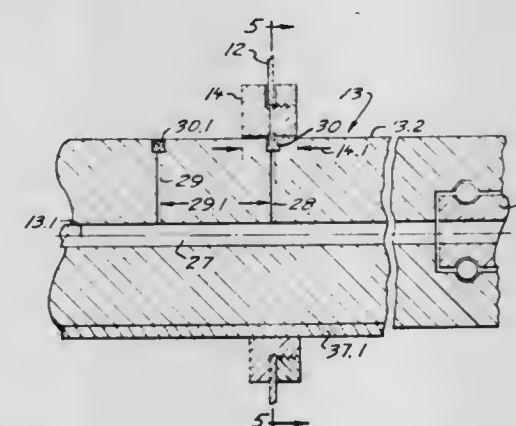
Filed May 4, 1971, Ser. No. 140,232

Claims priority, application Great Britain, May 6, 1970, 21,703/70; Nov. 26, 1970, 56,546/70

Int. Cl. B26d 7/08

U.S. Cl. 83—16

13 Claims



Apparatus and method for cooling and lubricating collar and saw mounted on an edger arbor. Arbor has bore connected with valves mounted in arbor or in keys secured to arbor, valves being opened when in register with collar; valves not in register remain closed. Collar has manifolds and passages communicating with opened valve, and has grooves adjacent saw surfaces. Liquid in arbor bore passes through opened valve into collar, then to both saw surfaces for lubrication after cooling eye of saw and arbor.

3,750,504

## METHOD FOR THE UNPACKING OF CYLINDRICAL BODIES INTERCONNECTED GROUPWISE BY BANDS, AND DEVICE FOR THE PERFORMANCE THEREOF

Werner Sidler, Esslingen, Switzerland, assignor to Schweizerische Aluminium AG Corporation, Chippis, Switzerland

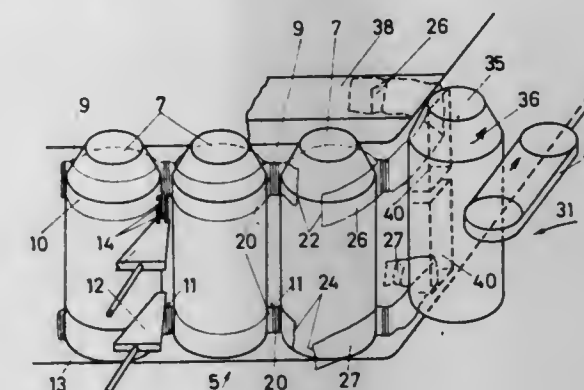
Filed Nov. 17, 1971, Ser. No. 199,570

Claims priority, application Switzerland, Dec. 3, 1970, 17864/70

Int. Cl. B26d 7/14; B26f 3/12

U.S. Cl. 83—16

7 Claims



A method for and an apparatus for unpacking a plurality of bodies; the bodies are arranged in a row and are held together by a pair of strips running along the bodies; the strips are welded together between adjacent bodies; the bodies are conveyed to a slide which tensions the strip portion between two bodies by pushing the two bodies apart; one of the two tensioned strip portions is severed and the freed body is rolled off the other strip.

3,750,505

## BILLET PRODUCTION

Allan John Organ, Birmingham, and Clifford Gerald Price, Stourbridge, both of England, assignors to The University of Birmingham, Birmingham, England

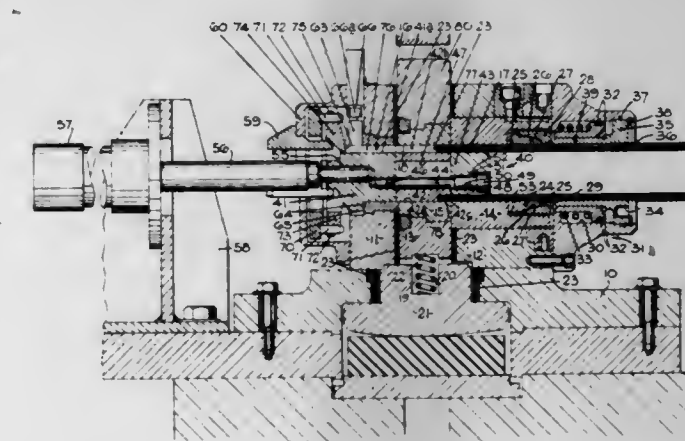
Filed Dec. 27, 1971, Ser. No. 212,288

Claims priority, application Great Britain, Dec. 30, 1970, 61,815/70

Int. Cl. B26d 3/16

U.S. Cl. 83—54

23 Claims



An apparatus and method for shearing tubular billets, the billet being engaged within apertures in a fixed and a moveable shear blade, the end part of the stock to be sheared off being located in the moveable shear blade and adjacent part of the stock in the fixed shear blade. A mandrel comprising three relatively moveable parts is provided. The free end or location part of the mandrel is engaged in the part of the stock within the fixed shear blade and the mandrel has a location part externally of the stock and fixed relative to a base part of the apparatus, and there being a moveable part engaged in the part of the stock within the moveable blade and engaged with



guide surfaces on the location end support parts. In use, the moveable blade is moved relative to the fixed blade transversely of the tubular stock so that the moveable part of the mandrel moves with the end part of the tube and the end part of the tube and adjacent part of the tube are internally supported by the mandrel.

3,750,506

# APPARATUS FOR CUTTING ELBOW SECTIONS FROM PIPE

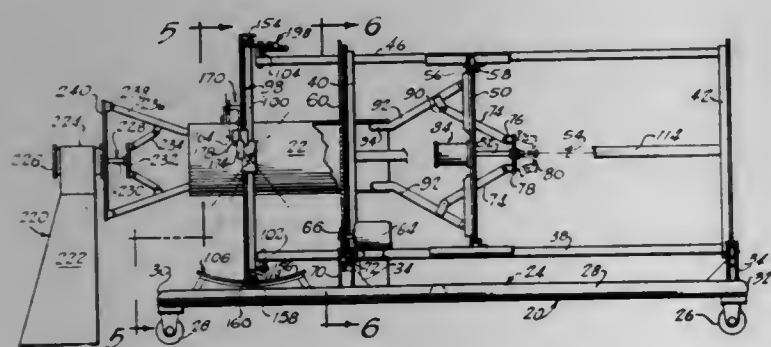
Denver D. Saxon, 4384 Glenwood Pky., Dekalb City nr. Decatur, Ga.

Division of Ser. No. 735,903, June 10, 1968, Pat. No. 3,589,220. This application Feb. 8, 1971, Ser. No. 113,552

Int. Cl. B23b 3/04

U.S. Cl. 82-101 R

17 Claims



Bends and elbows for use in larger size pipe, tube or conduit, such as circular and cylindrical sheet metal duct, for the purpose of installation normally come in several different stock sizes and angles and may be made from a series of sections or gores. The present method of making a section at a pre-selected angle is to place the pipe or tube from which the section is to be cut in a jig or fixture in proper alignment for rotation about a constant longitudinal axis, and while the pipe or tubing is rotating bring a cutting blade in cutting contact through the wall of the pipe while sustaining said blade in a movable gimbel or mounting corresponding to the angle desired. One form of the present machine comprises a wheeled base having a pipe or tubing jig thereon comprising adjustable arms which adjust radially from a center with end portions that are inserted inside the end of the tubing to hold same to rotate in alignment about a constant longitudinal center line. A second jig or fixture may be used on the other end of the pipe if desired. An electric motor-driven circular cutting blade with a carbide edge is mounted in a fixed location on a pivotal frame which supports the blade against the wall of the pipe or conduit being cut and the angle of the support of the cutting blade is adjustable from a gear adjustment means. The pipe jig support is rotatably driven to rotate the pipe while the cutting blade is making a cut at the desired angle and the cutting blade pivots to cut at an angle on the circular pipe or tubing.

3,750,507

# METHOD AND APPARATUS FOR HOLDING SHEET MATERIAL

Heinz Joseph Gerber, and David R. Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed Dec. 9, 1970, Ser. No. 96,384

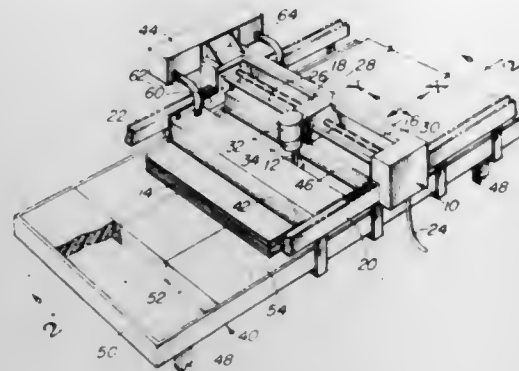
Int. Cl. B26d 1/10, 7/02

U.S. Cl. 83-169

9 Claims

A method and apparatus are disclosed for holding sheet material such as woven and non-woven fabrics, plastic or paper while the material is being worked upon by a tool which translates over the sheet material to perform a cutting,

plotting or other material processing operation. The apparatus which holds the sheet material in a fixed position during the operation includes a table which supports the material as a single sheet or in a layup and a fluid compartment which is positioned over and exposes the material to pressurized air to force the material onto the supporting surface of the table. While maintaining a region of increased air pressure in the im-



mediate vicinity of the tool, the compartment may be translated along one or two orthogonal directions in conjunction with the movements of the tool. The compartment is open or perforated at the side confronting the material to expose the material to the air under pressure within the compartment. When appropriate, a sheet of impervious material may be overlaid on a layup of the material to increase the effective pressure on each ply of the layup.

3,750,508

# FOAM PIERCING APPARATUS

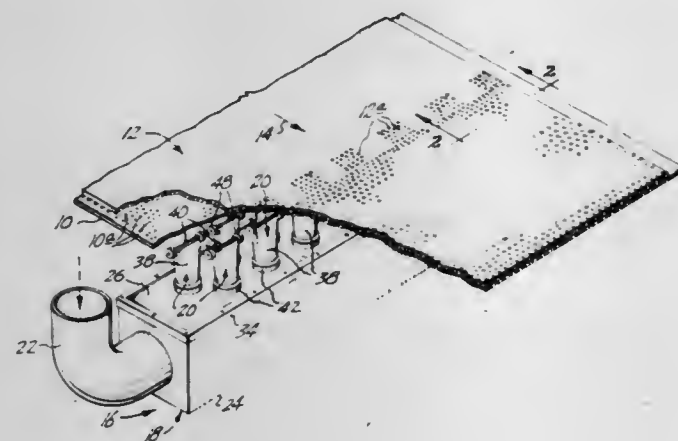
Thomas R. Miles, Portland, Oreg., assignor to Foamate Foods Corp., Corvallis, Oreg.

Filed Dec. 23, 1971, Ser. No. 211,271

Int. Cl. B26f 3/00

U.S. Cl. 83-177

24 Claims



Apparatus for piercing a wet food-substance foam mat to prepare the same for air-circulation drying, where the mat is carried on a traveling perforate conveyor belt. The apparatus includes a plurality of nozzles distributed across the underside of the upper run of the belt having elongated discharge openings that direct laterally overlapping streams of gas upwardly against the belt. The nozzles are mounted for lateral rocking beneath the belt to compensate for transverse waviness in the belt, and are equipped with top rollers that ride against the underside of the belt run-supporting it a predetermined distance from the discharge openings, and operating to sense any such waviness.

3,750,509

# PROFILE STEEL CUTTER

Erwin Kruse, Gevelsberg, Germany, assignor to Werner Peddinghaus, Sprockhovel-Hassling-Rausen, Germany

Filed May 17, 1972, Ser. No. 253,980

Int. Cl. B23d 23/00

U.S. Cl. 83-198

13 Claims

3,750,511

# TAPE SEVERING DEVICE

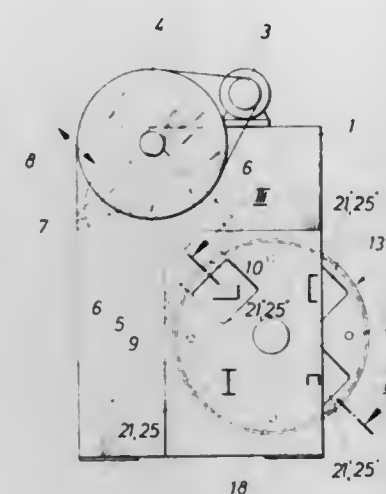
James W. Toensing, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 2, 1971, Ser. No. 167,924

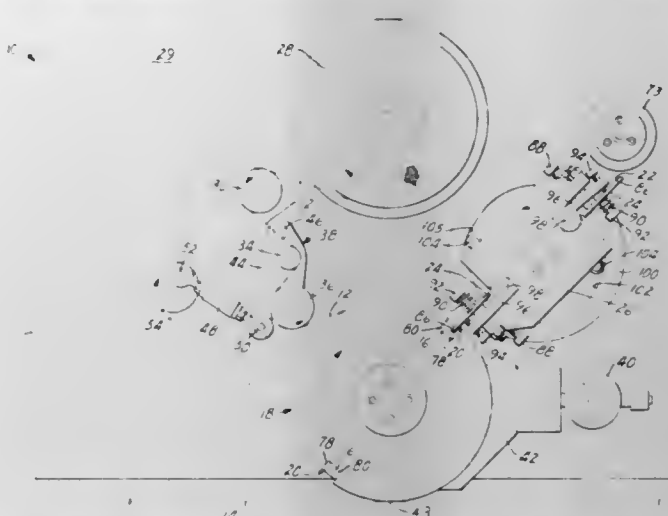
Int. Cl. B23d 25/12

U.S. Cl. 83-337

2 Claims



A tool device in which an indexable disc has tool plates in circumferentially spaced positions. A tool actuator is moveable radially to move a tool plate aligned therewith radially inwardly of the disc for a cutting operation. The plate is adapted to support cutting tools to cut a work piece against which the cutting tools are moved by the radially inward movement of the respective tool plate. When a tool plate carried by the disc is rotated away from the actuator, the tool plate can be removed from the disc, while the actuator actuates a different one of the tool plates.



An improvement in a device for severing strip material. The device includes a first wheel supporting a fixed cutting member, and a second wheel supporting a pivotal spring biased cutting member. The wheels are spaced and synchronously driven to bring edges on the cutting members into periodic shearing engagement with strip material fed therebetween during an intersecting path portion for the cutting members. The improvement comprises a cam actuated arm for moving the pivotal cutting member out of engagement with the fixed cutting member subsequent to engagement of their cutting edges and prior to the end of their intersecting path portions.

3,750,512

# CUTTING MACHINE

Stanley T. Gotham, Somerset, Mass., and Gerald A. Thurber, Pawtucket, R.I., assignors to Cumberland Engineering Company Inc., Pawtucket, R.I.

Filed Apr. 26, 1972, Ser. No. 247,713

Int. Cl. B23d 25/00

U.S. Cl. 83-356.3

16 Claims

3,750,510

# CUTTING APPARATUS FOR PAPER AND LIKE WEBS

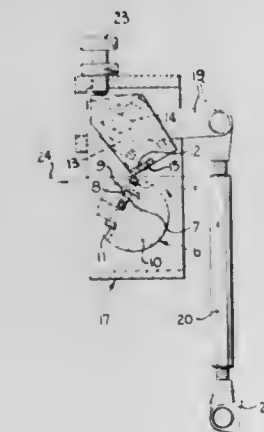
Leonard Gabriels, Hollinwood, England, assignor to Frastan (Hollinwood) Limited, Lancashire, England

Filed May 4, 1971, Ser. No. 140,184

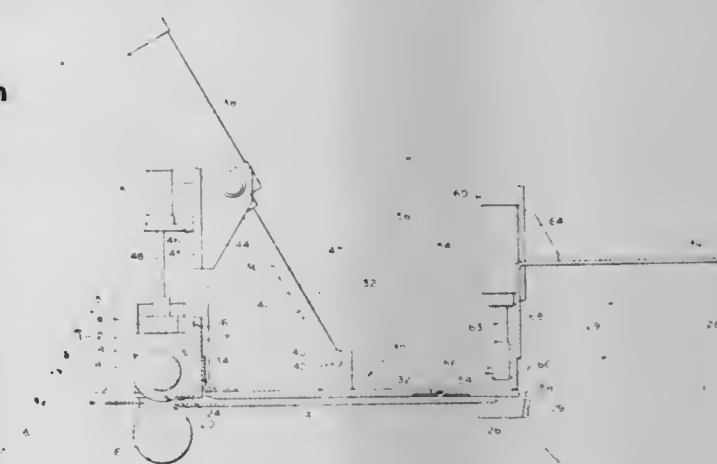
Int. Cl. B26d 1/38

U.S. Cl. 83-305

1 Claim



Paper and like material web cutting apparatus including a blade and a cutting knife rotatably mounted so as to enable the webs to be cut when engaged between the knife and the blade, the blade being mounted in such a manner as to be rockable to present a stationary edge during cutting and to enable the blade to be moved to an inoperative position when cutting action is not required.



A restraining and hold-down apparatus for use in conjunction with a machine (for cutting thin sheet material) having a feed table, cutting means located at the inner end of the table, and top and bottom feed rolls at the outer end of the table, comprising a main plate hinged at the outer end of the feed table and resiliently held in proximity to the feed table, a pressure pad attached to the inner end of the plate and adjacent the cutting means, the pad being resiliently biased toward the table, and resilient means for biasing the top feed roll toward the bottom feed roll and biasing the rear end of the main plate toward the table simultaneously with the top roll.



### 3,750,513 TELESCOPIC ARBOR ASSEMBLY

Jeff Y. Crommens, Mesquite, Tex., assignor to Industrial Wood-working Machine Co., Inc., Garland, Tex.

Filed May 15, 1972, Ser. No. 253,277  
Int. Cl. B27b 5/34

U.S. Cl. 83-425.4

6 Claims U.S. Cl. 83-599



A telescopic arbor assembly for a gang of ripping saws disposed between a pair of edgers and secured to the adjacent ends of telescopic shafts of progressively inward increasing length supported by and having slidable driving connection with a longer rotatable axle. One of the edgers is relatively fixed and mounted on a cup-shaped member adapted to contain the saws when the latter are retracted out of operative position whereby the number of saws exposed to the lumber to be ripped may be varied. The other edger is movable with and/or relative to the saws as well as relative to the relatively fixed edger.

### 3,750,514 MANUALLY OPERATED PAPER PUNCHING DEVICE

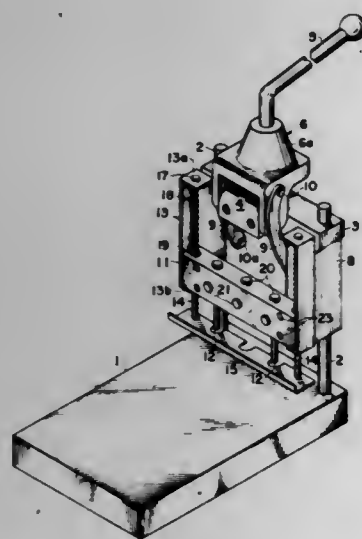
Norihito Tanaka, Osaka-City, Japan, assignor to Lihit Industrial Co., Ltd., Osaka-City, Japan

Filed Oct. 12, 1971, Ser. No. 187,949

Claims priority, application Japan, Jan. 8, 1971, 46/381  
Int. Cl. B26d 7/02

U.S. Cl. 83-454

10 Claims



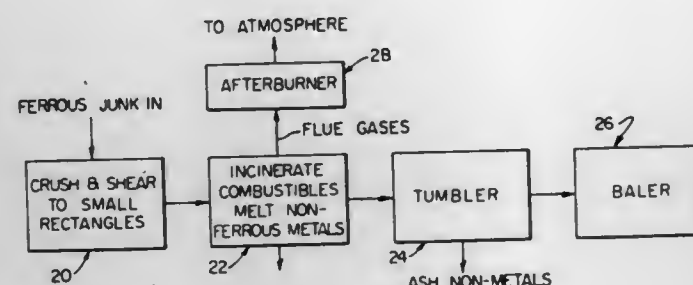
An improved manually operated paper punching device comprising a base plate, a cross bar fixed to the upper portion of at least one guide member secured to the base plate, a slidable member slidably mounted on the said guide member, a handle-carrying member pivotably attached to the fixed cross bar, a curved linking bar rotatably attached at both ends to the handle-carrying member and to the slidable member, and a punching blade holding member secured to the slidable member. This arrangement allows a thick stack of sheets to be punched through precisely at the desired position in a single punching operation with only a small amount of external force without causing local displacement of the sheets in the stack, and this simple structure of the punching device permits its manufacture in large numbers at a low cost.

### 3,750,515 SHEARING APPARATUS

Fidelis J. Wasinger, 1972 S. Parker Rd., Denver, Colo.  
Division of Ser. No. 789,764, Jan. 8, 1969, Pat. No. 3,615,084.

This application Dec. 28, 1970, Ser. No. 102,024  
Int. Cl. B23d 17/06

3 Claims



Process and apparatus for salvaging bulky junk material of principally ferrous content characterized by crushing to predetermined thickness and thence shearing same into relatively small rectangular pieces, continuously conveying the pieces through a furnace to combust entrained combustible materials and separate, by melting, non-ferrous metals, resulting in a final ferrous product for subsequent refining which contains a minimum of contaminants to be removed in the refining process. Optionally, undesired combustible air pollutants formed in the furnace are also oxidized before discharge into the atmosphere to thus permit practice of the invention in loci where air pollution is not tolerated.

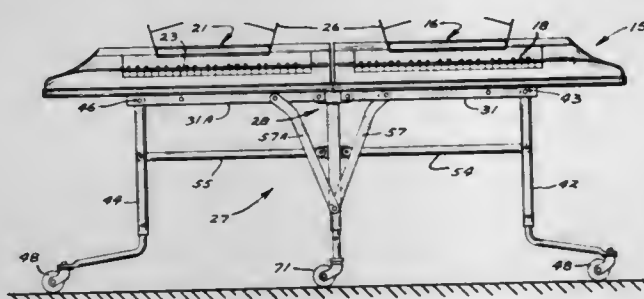
### 3,750,516 MULTIPLE KEYBOARD APPARATUS

Percy Dean Olson, Rt. 4, Oakview Dr., Owatonna, Minn.  
Filed Dec. 14, 1970, Ser. No. 97,736

Int. Cl. G09b 15/00; G10c 1/00

U.S. Cl. 84-470

30 Claims



A transportable multiple keyboard instrument having two pivotally connected keyboard units. Each unit has a plurality of keyboards connected to an electronic sound producing system. Folding leg structure supports the keyboard units in a generally horizontal playing position and a folded upright position. Each keyboard unit has a fold open housing for access into the interior of the housing. The leg structure has end legs and a center leg supporting the units in the horizontal playing position and the folded transport position.

### 3,750,517 DRUM PEDAL DEVICE

Donald Eric Sleishman, 2 Loville Ave., Peakhurst, Sydney, Australia

Filed Dec. 9, 1971, Ser. No. 206,372

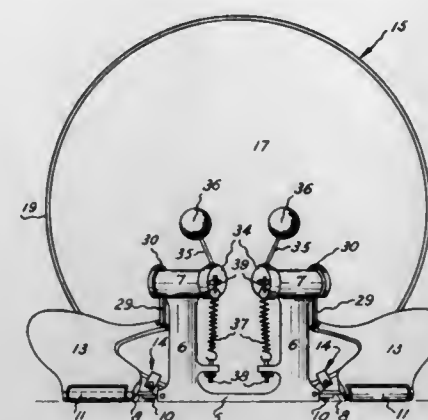
Int. Cl. G10d 13/00

U.S. Cl. 84-422

5 Claims

A drum double pedal device comprising two beaters mounted in front of the drum, each of the beaters comprising a stem and a head. Two depressible foot pedals are connected

to the beaters by means of a drive transmission. The beaters are mounted for swing movement about axes oriented in a



manner such that the heads of the beaters are farther apart when remote from the drum than they are when in contact with the drum.

### 3,750,518 SELF-DRILLING BLIND RIVET

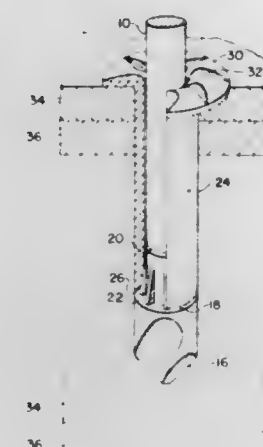
Charles Calvin Rayburn, Glenview, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed June 7, 1972, Ser. No. 260,683

Int. Cl. F16b 13/04

U.S. Cl. 85-68

9 Claims



A self-drilling and blind-setting rivet assembly for power tool application to workpiece means, and including a hollow rivet sleeve with an outward radial head flange at the outer end thereof configured for a rotatable driving connection with a power tool and with the inner end portion thereof configured for engagement with cooperative means on an included shank with a drilling head at the inner end thereof whereby torque is transmitted through the rivet sleeve to the drilling head at the end of the shank for causing the drilling head to penetrate the workpiece means in locating the rivet sleeve, and the shank having an area of weakness in rear of the drilling head for fracture thereof upon withdrawal of the shank to collapse and blind set the rivet sleeve in position securing together the workpiece means.

### 3,750,519 ANCHOR BOLT WITH EXPANSION SLEEVE

Lester Lerich, Broomfield, Colo., assignor to Wej-It Expansion Products, Inc., Broomfield, Colo.

Filed Oct. 20, 1971, Ser. No. 190,810

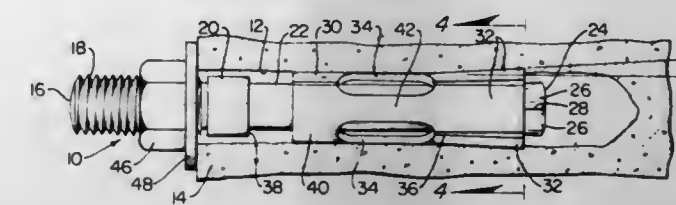
Int. Cl. F16b 13/06

U.S. Cl. 85-77

2 Claims

An anchor bolt includes a bolt portion having an expansion sleeve and in one embodiment a spacer collar concentrically mounted thereon in axially aligned abutting relationship with

each other. The expansion sleeve has a trailing end with a collar portion and three circumferentially spaced wedging sections extending toward its opposite leading end. The wedging sections are connected to the collar portion by relatively narrow neck portions which flare out into wider wedging portions at the leading end of the sleeve. Longitudinally extending flat-



tened bearing surfaces on a head portion of the bolt forwardly of the expansion sleeve diverge outwardly in the direction of the leading end of the bolt portion so that when the expansion sleeve is axially moved toward the head by an axially adjustable trailing pressure member on the bolt portion, the bearing surfaces will cause the wedging sections to expand circumferentially due to flexing of the narrow neck portions.

### 3,750,520

### COMBINATION OF MUSICAL BOX AND ODOMETER FOR A BICYCLE

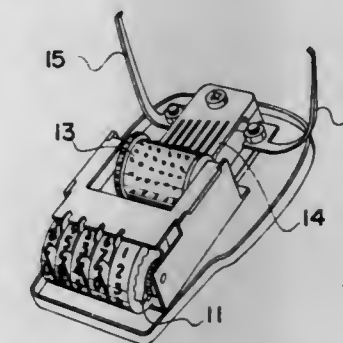
Shiro Inoue, Ageo City, Saltama Prefecture, Japan, assignor to Kabushiki Kaisha Inoue Seisakushyo, Kashiwaza Ageo City, Saltama Prefecture, Japan

Filed Apr. 13, 1972, Ser. No. 243,579

Int. Cl. G10f 1/06

U.S. Cl. 84-94 C

1 Claim



An odometer for a bicycle and a musical box are placed in the same casing and are driven by the same power source.

### 3,750,521 RECORDERS

Carl Frederick Dolmetsch, Haselmere, Surrey, England, assignor to Arnold Dolmetsch Limited

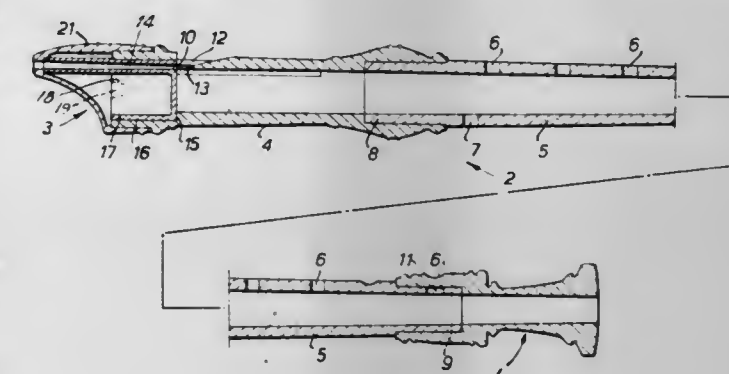
Filed Aug. 6, 1971, Ser. No. 169,790

Claims priority, application Great Britain, Aug. 6, 1970, 38,001/70

Int. Cl. G10d 7/00

U.S. Cl. 84-380

2 Claims



A recorder having a windway which is rigid with a unit to be inserted in the body of the recorder. The unit has a portion of



substantial length arranged to fit into a portion forming part of the body of the recorder. Means are provided for bringing the two portions together to locate the windway angularly relative to the sounding slot.

3,750,522

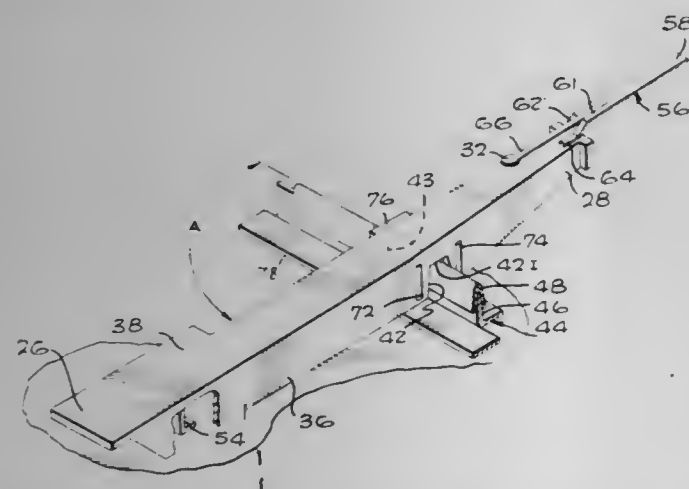
## KEYBOARD ASSEMBLY FOR ORGAN

Sydney L. Groves, Redondo Beach; Harvey W. La Branche, Palos Verdes Peninsula, and Stanley Cutler, Van Nuys, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.  
Continuation of Ser. No. 98,369, Dec. 15, 1970, abandoned.  
This application Nov. 3, 1972, Ser. No. 303,460.

Int. Cl. G10c 3/12

U.S. Cl. 84-423

5 Claims



An electronic organ having a piano-type keyboard for playing tones and a button region for playing chords or the like, which is economical to manufacture. The keyboard includes lever-type keys that have recesses in their bottom walls for dropping onto a long thin bar to provide a pivotal mounting, and the organ housing having fingers between groups of twelve keys to limit sideward shifting of the keys. The button region includes a sheet of resilient electrically conductive material with tabs formed therein that are bent to an upward incline, a circuit board with contacts positioned below the tabs, and buttons that can be manually depressed to push selected tabs against contacts of the circuit board.

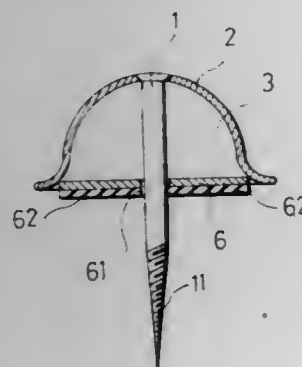
3,750,523  
NAIL

Keiichi Fujita, Kawasaki, Japan, assignor to Fujita Kenzo Kogyo Co., Ltd., Kawasaki City, Kanagawa, Japan  
Filed Nov. 26, 1971, Ser. No. 202,080  
Claims priority, application Japan, Nov. 27, 1970, 45/117939; Jan. 14, 1971, 46/11163

Int. Cl. F16b 35/00

U.S. Cl. 85-28

2 Claims

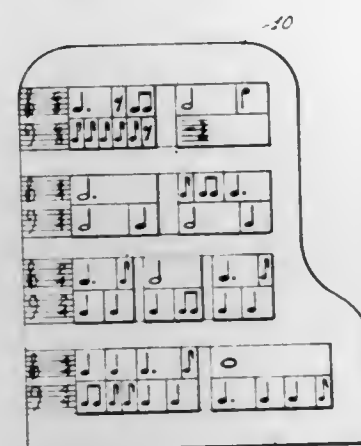


A nail comprised of a bar-shaped drive member and a nail head which forms the top of the pin, the nail head being shaped in the form of a dish which is open toward the end of the pin with the interior of the nail head being filled with a variable water-proof material.

3,750,524  
MUSICAL GAME PUZZLE  
Ayleen Ito Lee, 38 Erstwld Ct., Palo Alto, Calif., and Jean Marie Yoder, 4262 Los Palos Pl., Palo Alto, Calif.  
Filed Jan. 3, 1972, Ser. No. 214,780  
Int. Cl. G09b 15/02

U.S. Cl. 84-476

5 Claims



An improved game puzzle is provided which has particular utility for the instruction of children, and beginner adults, in the fundamentals of the musical rhythmic notation. The game includes a game board with parallel transverse channels formed in its upper surface. Each channel is separated by transverse partitions into lengths representative of various musical measures, so that different musical meters may be represented by each channel. The game puzzle consists of fitting different sized blocks into the measures in the various channels, and in order to complete the game all of the blocks must be correctly fitted into all of the measures. The blocks have different sizes representative of different types of musical notes and rests. The musical staff is inscribed at the bottom of each channel. In addition, removable transparent plastic strips are provided, which are marked with actual beats, and which may be inserted into the different channels.

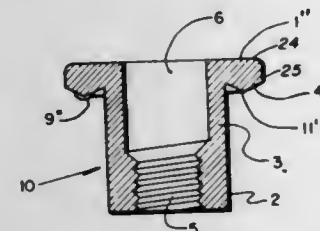
## ERRATA

For Classes 85-77 and 85-28 see:  
Patents Nos. 3,750,519 and 3,750,523

3,750,525  
COLLAPSIBLE THREADED INSERT DEVICE  
Kenneth A. Waters, and William E. Waters, both of Weymouth, Mass., assignors to Textron, Inc., Providence, R.I.  
Filed May 3, 1971, Ser. No. 139,577  
Int. Cl. F16b 13/04

U.S. Cl. 185-70

9 Claims

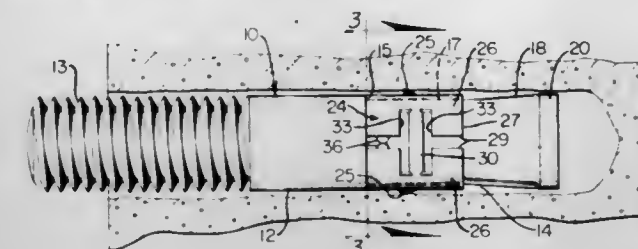


An improved collapsible threaded insert device for securing items to a plate-like workpiece of the type consisting of an annular flange portion integrally attached to an internally threaded, collapsible shank portion. The improvement comprises the addition of various mechanical gripping means formed on the undersurface of the flange to frictionally engage the workpiece when the threaded insert device has been collapsibly secured thereto, thus, increasing the resistance to rotation of said insert within the workpiece.

3,750,526  
EXPANSION BOLT WITH UNITARY WEDGE ASSEMBLY  
Lester Lerich, Lakewood, Colo., assignor to Wej-It Expansion Products, Inc., Broomfield, Colo.  
Filed Feb. 4, 1970, Ser. No. 8,658  
Int. Cl. F16b 13/06

U.S. Cl. 85-79

7 Claims



A masonry anchor bolt is characterized by having a unitary wedge assembly which is preformed out of a blank of metal to comprise generally sleeve-like wedge members with a connecting bail between adjacent sides of the wedges so that the wedge assembly may be expanded into surrounding relation to an annular recess on the bolt surface, the connecting bail serving to maintain proper spacing and alignment of the wedge members both with respect to the recess and with respect to one another for selective automatic expansion of the wedge members along an inclined bearing surface into anchored engagement with the wall of the hole.

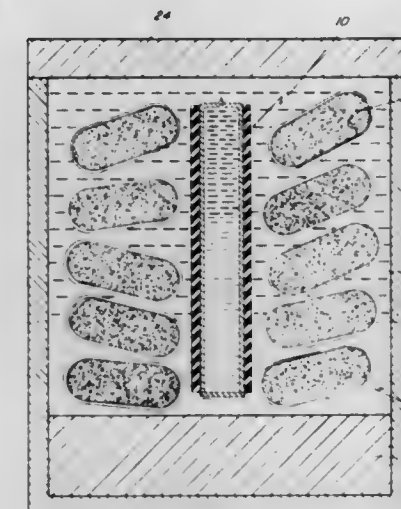
3,750,527  
FAIL-SAFE DEVICE FOR CHEMICALLY ARMED MINES  
Robert W. Heinemann, Dover, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 11, 1972, Ser. No. 252,168

Int. Cl. C06b 21/02

U.S. Cl. 86-1

7 Claims



A safety device is provided for inclusion into a dispenser for permeable chemically armed mines which are stored in a desensitized state by immersion in certain halocarbon liquids. A fluid which will permanently sterilize or deactivate the explosive composition of the mine is encapsulated in a sealed frangible container. The container is then partially enclosed in a polymeric material which has the property of swelling while under the influence of certain organic liquids and then forcefully contracting when this influence is absent, thereby breaking the container and permitting the encapsulated material to contact and permanently desensitize the explosive.

For example, KOH encapsulated in a glass ampoule which is, in turn, enclosed in a tube of buna rubber. This device can be inserted in a dispenser loaded with chemically armed mines containing lead azide and RDX as the explosive, the dispenser is then filled with 1,1,2 trichloro- 1,2,2 trifluoro ethylene, to insure desensitization until activation is desired.

3,750,528  
SHOTGUN SHELL PRIMER REBUILDER  
James Matthew Boddie, Charleston, S.C.  
Filed Mar. 16, 1972, Ser. No. 235,059  
Int. Cl. F42b 33/10

U.S. Cl. 86-37

1 Claim



A small portable hand tool is provided for rebuilding expended shotgun shell primers for use in reloading shotgun shells on the range or in the field. The said tool utilizes a screw/threaded action providing an exact desired pressure for rebuilding expended shotgun shell primers.

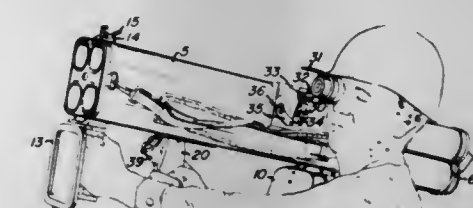
3,750,529  
MULTISHOT PORTABLE LAUNCHING APPARATUS  
Jerry A. Reed, Placentia; Ronald Van Delden, Shuji U. Maruko, both of Orange; George E. Garner, Placentia; Stanley Ryan, Yorba Linda, Winfred F. Waring, La Mirada, all of Calif.; Jacob Klein, Baltimore; Herman W. Schmidt, Jr., Baldwin, and Simon Friedrich, Columbia, all of Md., assignors to the United States of America as represented by the Secretary of the Army

Filed Nov. 2, 1971, Ser. No. 194,838

Int. Cl. F41f 3/04

U.S. Cl. 89-1.8

9 Claims



An apparatus and method to launch a projectile containing a viscoelastic solution of high molecular weight polyisobutylene in triethylaluminum to a target site to inflict casualties and/or produce a conflagration; the apparatus being a multiple shot and portable means.



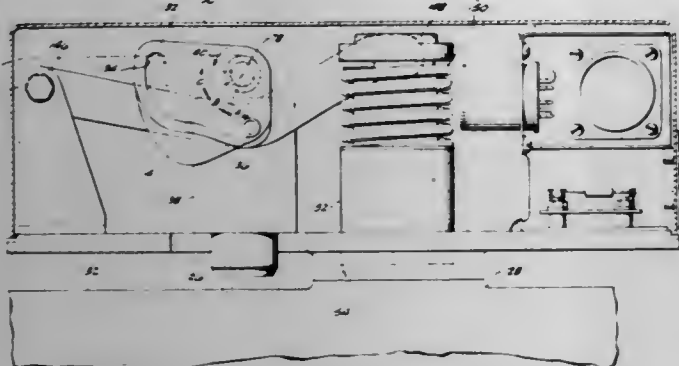
3,750,530

**MODULAR AIRBORNE LAUNCHER**

Ernest Cords, Woodland Hills, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.  
Division of Ser. No. 882,986, Dec. 8, 1969, abandoned. This application Oct. 4, 1971, Ser. No. 186,342  
Int. Cl. F41f 3/04

U.S. Cl. 89-1.807

3 Claims



Missile-launching apparatus for mounting on aircraft which enables conversion in the field between several configurations and which facilitates loading of missile containers in cramped locations. The apparatus includes a launching module having a central beam and a missile launcher on either side of the beam, the beam having mounts on its upper end for attachment to an aircraft bomb rack and mounted on its lower end for supporting another almost identical module. Each launcher includes a bulkhead at its front end, a debris tube at its rear end, and a gate at its center for receiving a missile-holding container. The missile container can be installed in a sideward direction by fully opening the gate, or in a front or rearward direction by pivoting open the bulkhead or debris tube. An arming handle is provided which sequentially moves a shear pin in the container to free the missile for launching, and then connects an electrical connector to the missile container.

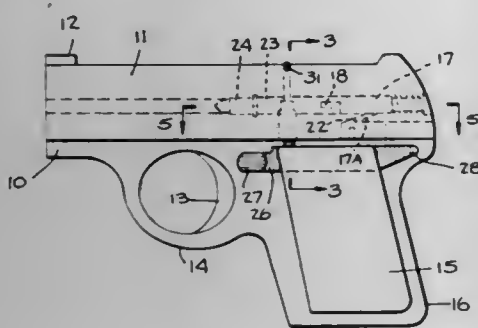
3,750,531

**DUAL PROTECTION SAFETY DEVICE FOR SEMI-AUTOMATIC PISTOL**

Robert H. Angell, 514 E. 88th St., New York, N.Y., and Robert S. Frielich, 396 Broome St., New York, N.Y.  
Filed Sept. 13, 1971, Ser. No. 179,904  
Int. Cl. F41c 17/04

U.S. Cl. 89-148

4 Claims



A semi-automatic pistol having a manually-operated safety device affording dual protection whereby, should the standard safety mechanism fail, a secondary safety mechanism acts to prevent firing. The safety device is constituted by a lever pivotally mounted on the receiver of the pistol and cooperating in its operative position with a standard safety mechanism adapted to lock the striker to prevent accidental firing. To afford additional security, the lever is also adapted to cooperate with a safety block assembly having a block which is movable within a recess in the pistol slide communicating with the

striker tunnel in a direction transverse to the longitudinal axis of the tunnel. The block in the operative position of the safety lever is disposed to obstruct the tunnel passage, the block being clear of the tunnel in the retracted position of the lever.

3,750,532

**SERVOACTUATOR WITH MECHANICAL FEEDBACK**

Charles A. Kubilos, Oxnard, Calif., assignor to Abex Corporation, New York, N.Y.

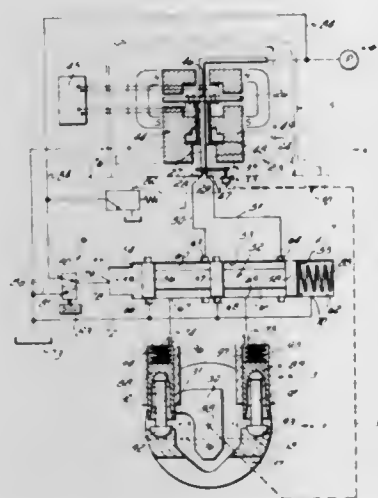
Continuation of Ser. No. 858,604, Sept. 17, 1969, abandoned.

This application July 22, 1971, Ser. No. 165,063

Int. Cl. F01b 1/00; F15b 13/16

U.S. Cl. 91-3

18 Claims



The displacement of a servoactuator such as a variable volume pump or motor is controlled by a servovalve of the jet discharge type having a movable jet tube which is responsive to an electrical input to establish a pressure differential between a pair of fluid lines in accordance with the magnitude of an electrical signal. The pressure differential is applied to operate the opposed hydraulic motors which position the displacement changing means of the pump or motor. A resilient feedback spring is connected mechanically from the displacement changing means to the wet side of the jet tube, and as the displacement changing means is moved by the hydraulic motors, the spring increasingly urges the jet tube toward its null position.

3,750,533

**HYDRAULIC PUMPS OR MOTORS**

Oswald H. Thoma, St. Clement, Jersey, Channel Islands, England, assignor to Hydraulic-Drive A.G., Glarus, Switzerland

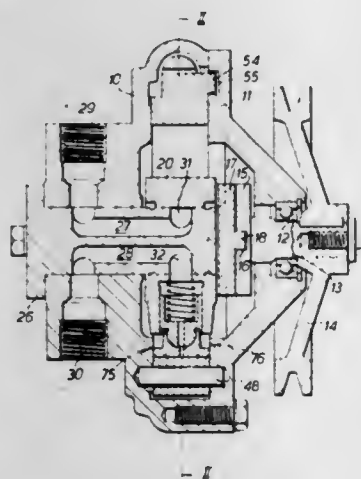
Filed July 7, 1969, Ser. No. 839,458

Claims priority, application Great Britain, July 27, 1968, 35,958/68; July 27, 1968, 35,960/68

Int. Cl. F04b 13/06

U.S. Cl. 91-498

5 Claims



A radial piston hydraulic pump or motor comprising a rotary cylinder block receiving a number of radial pistons whose

outer ends are connected to bearing pads engaging the inner surface of an annular cam ring, the pads being rectangular in end view and located in an axial direction between inwardly facing shoulders of a surrounding casing, while the rotary cylinder block is free to move axially on a central supporting shaft and is located axially through the pistons and bearing pads.

3,750,534

**FLUIDIC REGULATING APPARATUS FOR A REVERSIBLE HYDRAULIC PUMP OR MOTOR**

Volkmar Leutner, Hemmingen, and Roman Romes, Friolshelm, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

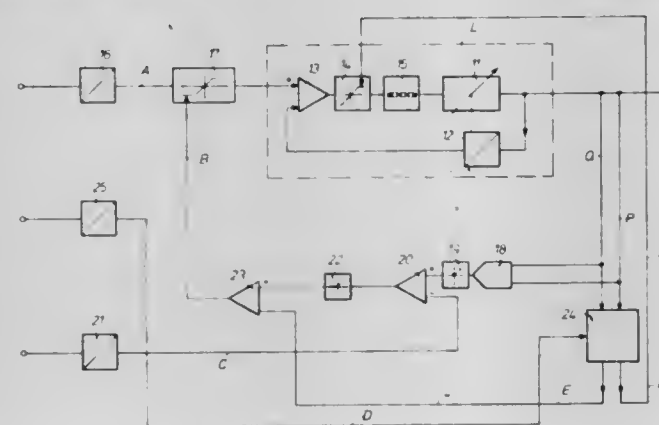
Continuation-in-part of Ser. No. 232,477, March 7, 1972. This application Apr. 20, 1972, Ser. No. 245,747

Claims priority, application Germany, Apr. 22, 1971, P 21 19 647.4

Int. Cl. F01b 13/04, 25/00

U.S. Cl. 91-506

10 Claims



A regulating apparatus for a reversible hydraulic machine operating as pump or hydraulic motor in both directions of rotation. The machine can be adjusted to different displacement volumes by fluidic actuating means controlled by an output control signal of an additive control amplifier which compares a first control signal representing the actual displaced volume with a second control signal representing the desired displaced volume. The second control signal is generated in a fluidic control device which includes a fluidic limiting device limiting the second control signal, and being controlled by a first fluidic circuit responsive to the product of the actual and desired volume and fluid pressure of the machine, and by a second fluidic circuit responsive to the highest actual fluid pressure of the machine.

3,750,535

**ROTARY ACTUATOR**

Yasuo Higuchi, Komaki-shi, Aichi-ken, Japan, assignor to Kabushiki Kaisha Chukyo Gijutsu Center, Chujoda-Ku, Tokyo, Japan

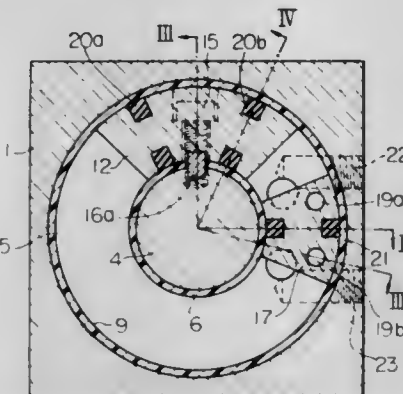
Filed Oct. 1, 1971, Ser. No. 185,762

Claims priority, application Japan, Oct. 13, 1970, 45/89342

Int. Cl. F01c 9/00

U.S. Cl. 92-121

4 Claims



In a rotary actuator, seal material of, for example, synthetic resin, is provided on internal periphery of the cylinder and/or

3,750,536

**ROD ALIGNMENT DEVICE FOR FLUID POWER CYLINDERS**

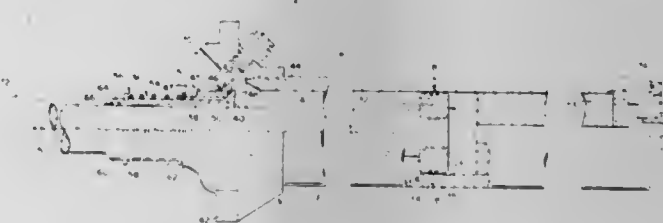
Floyd K. Walpole, Kaneohe, Hawaii, assignor to the United States of America as represented by the Secretary of the Army

Filed Oct. 6, 1971, Ser. No. 187,033

Int. Cl. F16j 11/00

U.S. Cl. 92-165

4 Claims



A piston is mounted in a cylinder and provided with means for allowing axial and/or angular misalignment of a piston rod with respect to the axial center-line of its rigidly mounted cylinder. A rod alignment tube seals the piston in the cylinder without imposing restrictions (or undue added friction) on the piston rod during axial or angular movement thereof.

3,750,537

**HYDRAULIC CYLINDER WITH SELF-LOCKING END CAP**

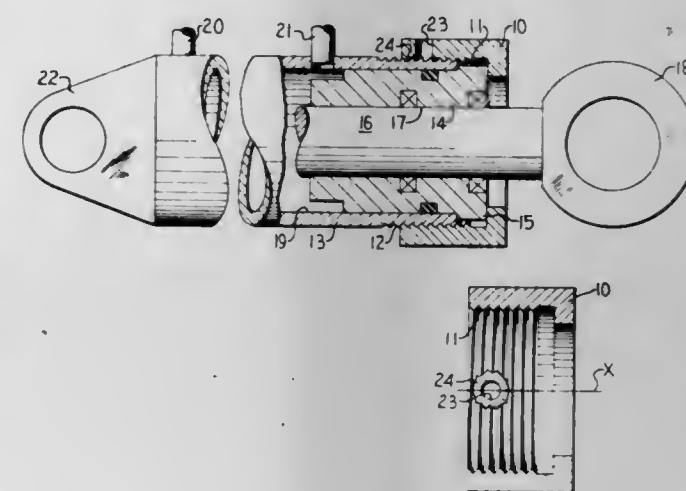
James C. Goade, Joliet; John A. McDonald, Morton, and Herschel M. Williamson, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 28, 1971, Ser. No. 157,534

Int. Cl. F01b 31/00

U.S. Cl. 92-165

3 Claims



A self-locking, internally threaded end cap for a hydraulic cylinder comprises a tool engaging aperture formed through a sidewall thereof adapted for tightening the end cap in place on the cylinder. A plastic patch completely circumvents the aperture, internally of the end cap, for sealing and locking purposes. The patch is formed by sprinkling a powdered plastic, such as nylon, through a hole formed in a template and onto heated portions of the threads.



3,750,538

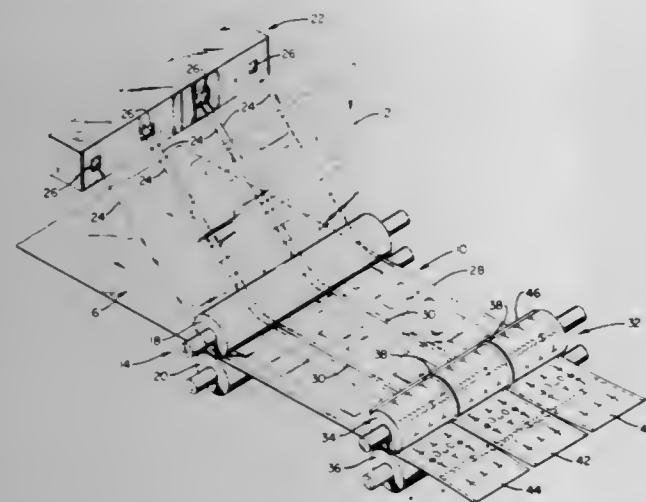
**CARTON AND METHOD OF MAKING**Robert E. Confer, 7338 Club House Rd., Boulder, Colo.  
Division of Ser. No. 797,180, Feb. 6, 1969, Pat. No. 3,603,501.

This application Oct. 5, 1970, Ser. No. 78,226

Int. Cl. B32b 23/10; B65d 5/54

U.S. Cl. 93—94 R

4 Claims



Open end carton of "six-pack" type has longitudinal slits on corner edges, one for each can. End slits tend to tear through to end margin, releasing cans. Reinforcing strand surrounds each end of container adjacent to margin, and its tensile strength prevents tearing. Tear strip is cut through strand intermediate top and bottom to permit intentional release. Additional reinforcing strands may be provided to retain each lateral row of cans separately, with multiple tear strips to release each row of cans separately. Carton blanks are made by laminating continuous label web and backing web wide enough for several blanks with longitudinal reinforcing strands between webs and spaced laterally at margins and lines of division of master strip. Latter is divided along lines of division to produce single strips having reinforcing strands along both margins, and then single strips are cut laterally to produce individual carton blanks having lines of reinforcement at two parallel margins.

3,750,539

**PROJECTION STENCIL ASSEMBLY**

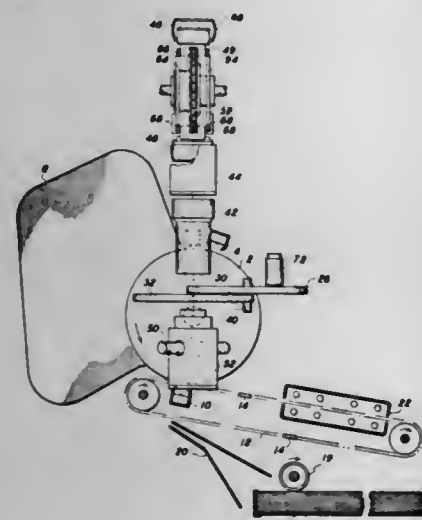
Lawrence J. Mason, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1970, Ser. No. 100,988

Int. Cl. B41b 17/32

U.S. Cl. 95—4.5 R

5 Claims



A recording system wherein a character disc or the like having transparent light modulating patterns thereon is rotated

through an exposure zone so that selected patterns may be projected by the energization of a flash lamp. The projected pattern is collimated and directed to a recording zone through which move lens-mirror units at a constant speed that intercept the projected pattern and focus it onto a photoreceptive recording medium. The patterns are arranged on the character disc in spiralled configurations such that as the disc is rotated, the first and last patterns of a spiral move through a fixed exposure zone at different positions relative thereto.

3,750,540

**ELECTRIC EXPOSURE CONTROL DEVICE**

Takeshi Yanagisawa, Kanagawa-ken; Kinzi Tanikoshi, and Yusuke Ono, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Ohta-Ku, Tokyo, Japan

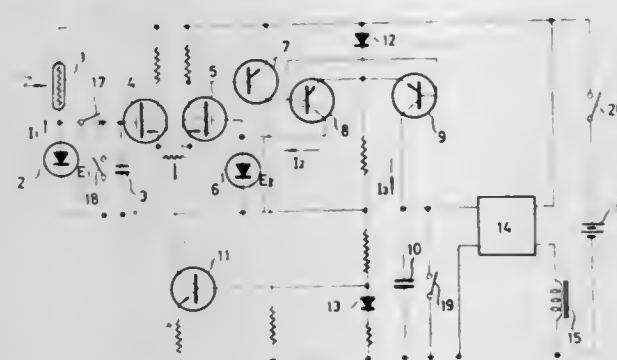
Filed June 9, 1970, Ser. No. 44,670

Claims priority, application Japan, June 13, 1969, 44/46555; Nov. 18, 1969, 44/92428; Dec. 1, 1969, 44/96421; Dec. 19, 1969, 44/102718; Jan. 12, 1970, 45/3407; July 21, 1969, 44/67685 (utility model); July 21, 1969, 44/69121 (utility model); Nov. 18, 1969, 44/109639 (utility model); Nov. 18, 1969, 44/109640 (utility model); Nov. 18, 1969, 44/109641 (utility model); Dec. 19, 1969, 44/121098 (utility model); Feb. 13, 1970, 45/14046 (utility model)

Int. Cl. G03b 7/08

U.S. Cl. 95—10 CT

33 Claims



In the exposure control device disclosed, a photo-sensitive element varies its resistance in response to the ambient light, and forms a voltage divider with a logarithmic compression diode. A capacitor senses the voltage across the diode and stores that voltage. A differential amplifier senses the stored voltage and varies the current through a transistor. The latter controls the current through a second compression diode, identical with the first, and connected across the other input of the differential amplifier so that the voltage across the other input equals the capacitor voltage. The transistor current then equals the current through the photo-sensitive elements. A network uses this current value to charge a control capacitor when a camera shutter is opened. Charging takes place at a rate determined by the photosensitive element. A shutter actuator senses when the charge across the control capacitor reaches a given level, and closes the shutter.

3,750,541

**METHOD OF MAKING A COMPOSITE PICTURE TRANSPARENCY**

John J. Jason, 21165 Escondido St., Woodland Hills, Calif.

Filed Apr. 26, 1972, Ser. No. 247,871

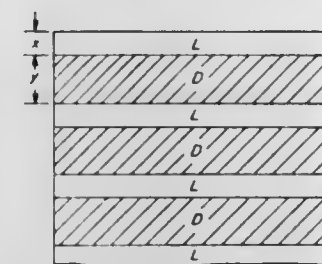
Int. Cl. G03b 27/02

U.S. Cl. 95—18 R

11 Claims

A method of making a multiple picture composite photographic transparency including providing a number of shutter elements equal to the number of pictures to be created on the composite transparency. Each shutter having a number of transparent stripes for permitting transparency film exposure therethrough and a number of dark stripes resisting transparency film exposure therethrough disposed in alternating position with respect to the transparent stripes. A first shutter

member is positioned in indexed surface to surface contact with respect to the unexposed transparency film. A first picture member is projected onto the portions of the transparency film which are exposed through the shutter. The first shutter is then removed and a second shutter is placed in a second indexed position with respect to the transparency film in surface to surface contact therewith. A second picture member is exposed through the second shutter transparent



stripes onto the transparency film. Additional picture members may be similarly projected on the exposed transparency film with the use of additional shutters. Shutter and transparency film indexing means are employed to insure sequential indexed positioning of the respective shutters with respect to the transparency film. The transparency film and the successive shutters are preferably positively retained in intimate surface to surface contact during picture exposure. Vacuum means may be employed for this purpose.

3,750,542

**CONTAINER FOR PHOTOGRAPHIC FILM**

Johann Putscher, Munich; Josef Gerach, Unterhaching; Otto Wiedemann, Starnberg, and Alfred Winkler, Munich, all of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Germany

Division of Ser. No. 45,874, June 12, 1970, Pat. No. 3,665,829.

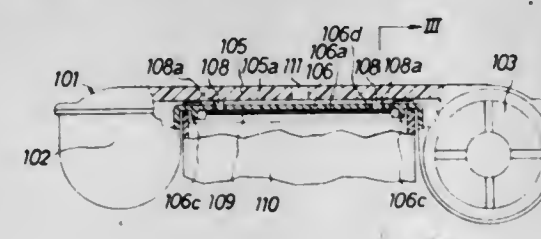
This application Dec. 9, 1971, Ser. No. 206,258

Claims priority, application Germany, June 19, 1969, P 19 31 117.2; Aug. 18, 1969, P 19 41 101.9

Int. Cl. G03b 17/28

U.S. Cl. 95—31 CA

10 Claims



A container for photographic film has a hollow web connecting a film-supplying chamber with a film-collecting chamber. The front wall of the web has a window which exposes one film frame at a time and such frame is held at a fixed distance from the picture-taking objective of the camera by locating surfaces provided on pins forming part of the rear wall of the web. The pins extend through openings of the front wall of the web and abut against a stop in the camera body.

3,750,543

**FOCUS RESPONSIVE EXPOSURE CONTROL SYSTEM**

Valto K. Eloranta, Needham, and Edwin K. Shenk, Littleton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 19, 1971, Ser. No. 135,211

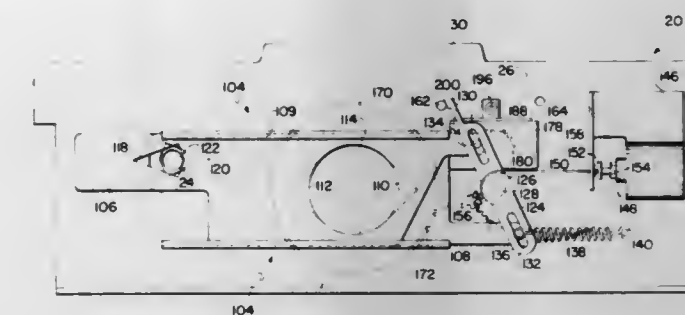
Int. Cl. G03b 7/08, 7/16, 15/05

U.S. Cl. 95—10 CE

50 Claims

An exposure control system for a single lens reflex camera. The system incorporates an exposure mechanism having a normally open status for camera viewing and focusing. An exposure cycle is commenced upon energization of a solenoid

which drives the exposure mechanism to a closed position. This solenoid is de-energized to commence an exposure interval at which time the blades of the exposure mechanism are driven under spring bias to define a progressively varying exposure aperture. The solenoid is re-energized to terminate an



3,750,544

**EXPOSURE CONTROL DEVICE FOR CAMERA**

Hideaki Akiyama, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

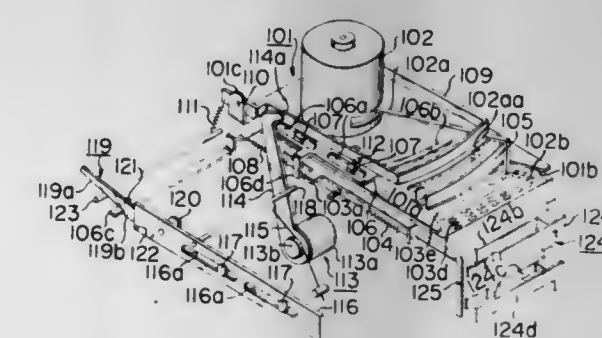
Filed Oct. 22, 1971, Ser. No. 191,934

Claims priority, application Japan, Oct. 27, 1970, 45/106076 (utility model); Oct. 27, 1970, 45/106077 (utility model)

Int. Cl. G03b 7/04

U.S. Cl. 95—10 C

14 Claims



The leading portion beyond the leading arcuate edge of a base plate for an exposure meter or exposure control meter is so bent that the leading end of the pointer may extend upwardly through an arcuate slot formed in the base plate from the undersurface thereof. The detecting arm of a detecting lever slides on the base plate in response to the shutter release operation toward the leading end of the pointer and engages therewith when the brightness of a subject is sufficient for EE photography. Thereafter a pointer retaining plate presses the pointer against the base plate, and depending upon the position of the pointer or the retaining plate, the exposure conditions are determined. When the brightness of a subject is not sufficient for EE photography, the leading end of the pointer is moved away from the path of the detecting arm so that the latter is displaced a greater stroke without being interrupted by the leading end of the pointer, and actuates a switch or switches in an electric circuit to select a slow shutter speed or set both of the shutter and flash cube triggering circuits ready for flash photography.



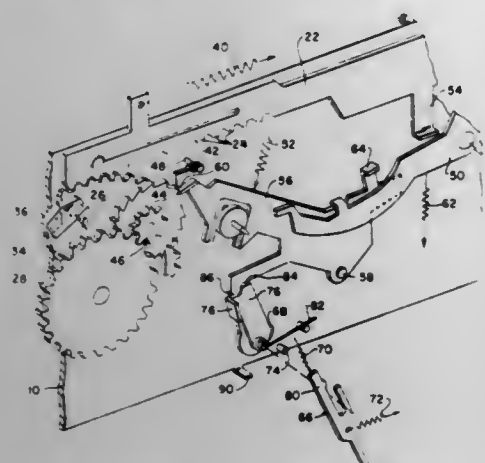
3,750,545

**FILM METERING DEVICE FOR ROLL FILM CAMERAS**  
David E. Beach, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,629  
Int. Cl. G03b 19/04

U.S. Cl. 95—31 FM

4 Claims



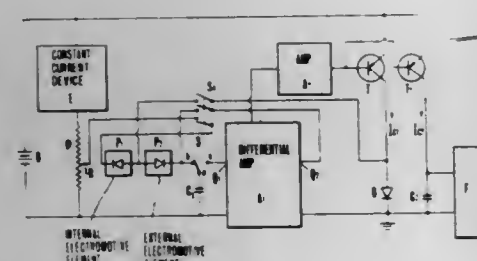
A camera for roll film having perforations at predetermined metering intervals includes a transport mechanism for advancing the film along an exposure plane and a metering mechanism having an active condition for stopping film transport when the film is correctly positioned for exposure and an inactive condition. A film sensing pawl is mounted for movement between a retracted position resting on the film surface, an extended position transversing the film while in a film perforation and a metering position spaced from the extended position in the direction of film advancement. When moved to its metering position by advancing film, the sensing pawl actuates the metering mechanism to disable the transport mechanism. A resilient force is applied to the sensing pawl in a direction urging the pawl from its metering position toward its extended position. The force on the sensing pawl is sufficient to cause the film to move in a direction opposite to the direction of film advancement after the transport mechanism has been disabled to accurately back the film to a position for exposure. Once backed to its extended position, the sensing pawl engages a stop to relieve the spring force on the film.

3,750,546

**ELECTRIC SHUTTER OPERATING CIRCUIT**  
Masaya Fujii, Tokyo, and Osamu Tchihashi, Hamamatsu, both of Japan, assignors to Yashica Company, Ltd., Tokyo, Japan  
Filed June 10, 1971, Ser. No. 151,720  
Int. Cl. G03b 7/08

U.S. Cl. 95—10 CT

5 Claims



An external electromotive element is disposed in front of the camera. An internal electromotive element is disposed in a position to receive the light transmitted through the lens, for through-the-lens metering. A first capacitor is charged from a source of constant voltage through the internal and external electromotive elements to store a voltage representative of the ratio of externally and internally measured light. A switch, interlocked with the shutter release button connects the output of the first capacitor to the one input of a differential amplifier and connects the external electromotive element, with its

polarity reversed, to the second input of the differential amplifier concurrently with the opening of the shutter. A second capacitor is charged in accordance with the output from the differential amplifier and a shutter control circuit is responsive to a predetermined terminal voltage of the second capacitor to close the shutter.

3,750,547

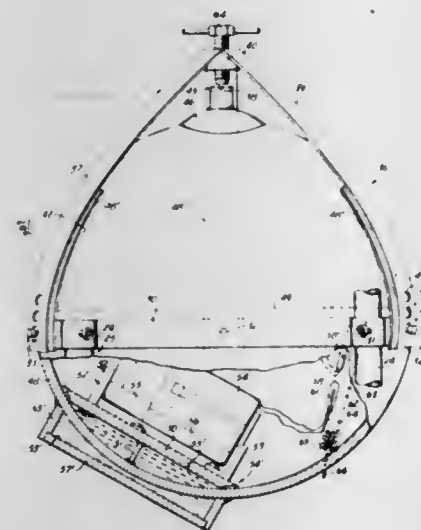
**FREE FALL BOTTOM SAMPLER**

Thomas N. Walthier; Andre Marcel Rosefelder, and Clifford E. Schatz, all of New York, N.Y., assignors to Bear Creek Mining Company, Salt Lake City, Utah

Division of Ser. No. 711,792, March 8, 1968, Pat. No. 3,572,129. This application Oct. 16, 1970, Ser. No. 81,222  
Int. Cl. G03b 17/08

U.S. Cl. 95—11 UW

15 Claims



A bottom sampler to obtain a sample of the bottom of a body of water. A pair of clam shell jaws are pivotally connected to the base of an upright frame of the sampler. Hollow buoyant spheres are retained within the upright portion of the frame. The jaws are latched in an open position against the bias of resilient elements which close the jaws when the latch is released in response to impact with the bottom. Two weights, one on the back of each jaw stabilize the sampler during descent and fall off when the jaws close. A camera located within one of the hollow spheres photographs the bottom of the body of water from which the sample is taken. A unique signal-flare and smoke producing device automatically actuated when the sampler returns to the surface. Other day or night signal devices such as a radio or flasher can also be used and provision is made to attach such devices to the sampler.

3,750,548

**PHOTOGRAPHIC APPARATUS FOR USE WITH PERCUSSIVE FLASH DEVICES**

Dieter Engelsmann, Unterhaching, and Horst Karl, Munich, both of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Germany

Filed Aug. 30, 1971, Ser. No. 176,123

Claims priority, application Germany, Aug. 31, 1971, P 20 43 145.2

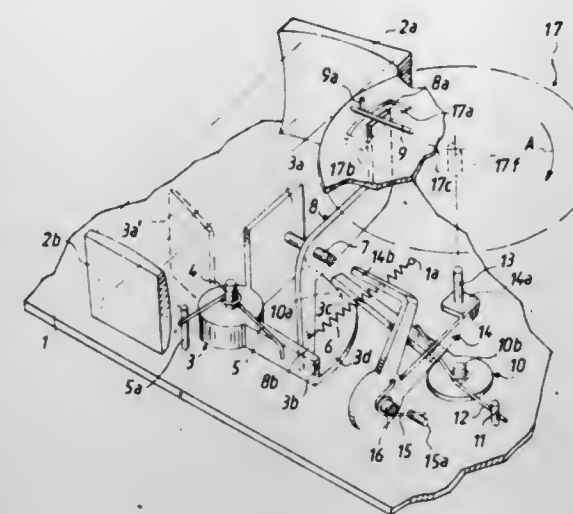
Int. Cl. G03b 19/02

U.S. Cl. 95—11 R

17 Claims

A striker which dwells in its energized position and forms part of a percussion flash device is engaged by a sensing lever when the flash device is properly attached to the housing of a camera. The sensing lever thereby allows a pawl to maintain the flag of a signaling lever out of the viewfinder. When the striker leaves its energized position to fire a flash lamp, the sensing lever is free to pivot under the action of a spring and

disengages the pawl from the signaling lever so that the flag moves into the viewfinder under the action of a second spring.



A resetting lever is pivoted by a third spring in response to detachment of the flash device from the housing to thereby expel the flag from the viewfinder by way of the sensing lever.

3,750,549

**PHOTOGRAPHIC ROLL FILM CAMERA WITH A MOVABLE LENS TUBE**

Heinz Waaske, Braunschweig, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

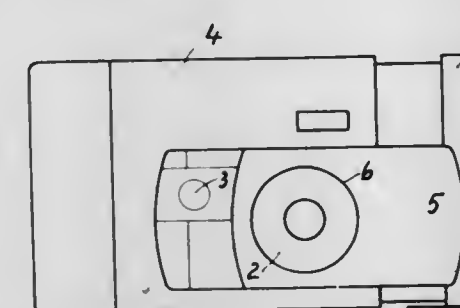
Continuation-in-part of Ser. No. 150,983, June 8, 1971, abandoned, and a continuation-in-part of Ser. No. 150,984, June 8, 1971, abandoned. This application Oct. 15, 1971, Ser. No. 189,687

Claims priority, application Germany, June 10, 1970, P 20 28 430.4; June 10, 1970, P 20 28 431.5

Int. Cl. G03b 19/02

U.S. Cl. 95—11 R

6 Claims



A roll film camera in which the lens tube moves forwardly to a picture-taking position when pictures are to be taken, and rearwardly to a collapsed or compact position for carrying or storage. In the rear position, the lens tube does not project at all beyond the front wall of the camera, but is completely behind the front wall, and the lens tube opening in the front wall is closed by a laterally movable closure member. A single actuating member, preferably in the form of a telescopic part of the camera case or housing, operates through various linkages to uncover the lens tube opening in the front wall of the camera and project the lens tube forwardly through it and lock the lens tube in its forward or picture-taking position, when the actuating member is moved in one direction, and to unlock the lens tube and move it rearwardly to its collapsed position within the body and then close the lens tube opening in the front wall of the body, when the actuating member is moved in the opposite direction.

3,750,550

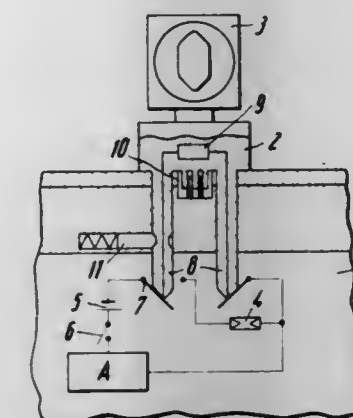
**STILL CAMERA WITH AN ELECTRONICALLY CONTROLLED SHUTTER AND A RECEIVER FOR A PHOTO-FLASH DEVICE**

Rolf Kasemeler, Heuchelheim, and Karl Gunter Behr, Biebertal, both of Germany, assignors to Minox GmbH Optische Und Feinmechanische Werke, Postfach, Giessen, Germany

Filed Oct. 20, 1972, Ser. No. 299,261  
Int. Cl. G03b 15/03, 9/58

U.S. Cl. 95—11 L

6 Claims



There is disclosed a still camera with an electronically controlled shutter and a receiver for a photo-flash device. The circuit system in the camera controls the opening time of the shutter in accordance with the incident light and includes for this purpose a light-sensitive resistor and a normally closed switch. The photo-flash device includes a resistor and a circuit component which is insertable into the receiver of the camera. Insertion of this circuit component into the camera receiver device disconnects the light-sensitive resistor in the control circuit on the camera and connects instead the resistor on the flash device to the control system of the camera. The resistor on the flash device has a resistance such that the circuit control system on the camera automatically sets the shutter opening time to the optimal shutter opening time for the flash device.

3,750,551

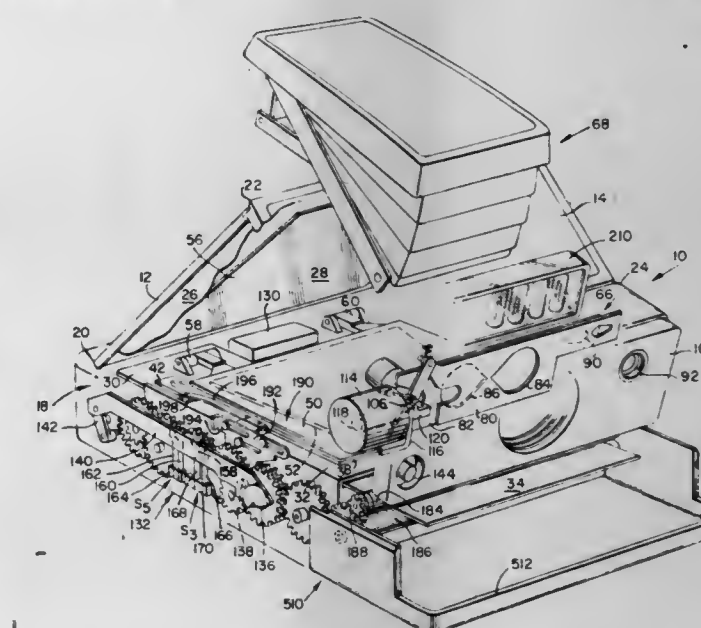
**PHOTOGRAPHIC APPARATUS AND SYSTEM WITH AUTOMATIC FILM COVER EJECTION**

Edwin H. Land, Cambridge, and Peter P. Carcia, Reading, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1971, Ser. No. 213,318  
Int. Cl. G03b 19/10

U.S. Cl. 95—11

45 Claims



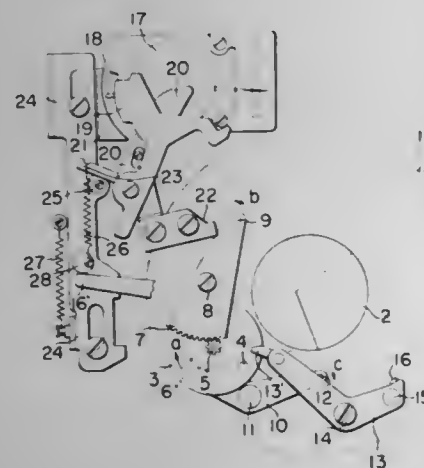
A highly automatic photographic camera of a variety having a receiving chamber for accepting a film laden cassette struc-



ture having a dark slide film cover. This dark slide is automatically removed from the camera when the cassette is inserted within the receiving chamber and a loading door is closed, the operator of the camera not having to perform any actuating steps. Switch logic is provided in response to movement of the loading door as well as in response to a counter mechanism of the camera. The invention further incorporates a flash suppression feature which is activated during the dark slide removal operation.

### 3,750,552 EXPOSURE CONTROL APPARATUS FOR FLASH CAMERAS

Mutsunobu Yazaki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan  
Filed Sept. 29, 1971, Ser. No. 184,718  
Claims priority, application Japan, Oct. 2, 1970, 45/98261  
Int. Cl. G03b 9/70, 7/08, 9/24  
U.S. Cl. 95—11.5 R 7 Claims

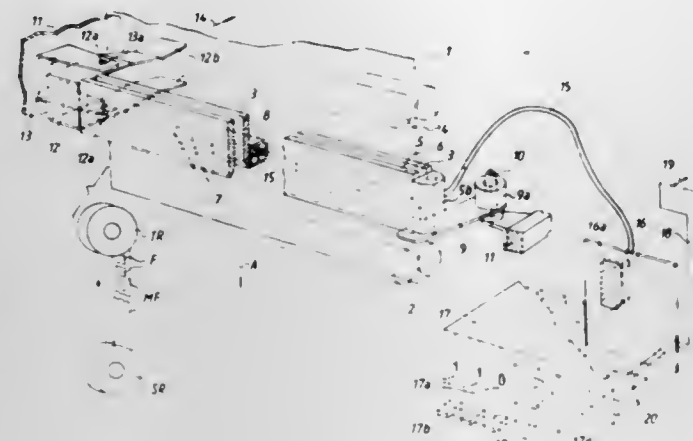


In the disclosed exposure control device for a flash camera, a diaphragm shutter is movable from a normally closed position to a plurality of open positions each of which corresponds to a diaphragm opening of a different size. An indicating pointer projects from an exposure meter and stops at a position corresponding to a measured condition. A shutter release frees a scanning arm from an initial position and allows it to move until the arm is stopped by the pointer at a position determined by the meter. The pointer and arm in effect lock each other in position. The scanning arm carries a stopping cam to a position determined by the pointer. An aperture adjuster in the diaphragm shutter moves in response to the shutter when the latter is released by the shutter release. A movable portion in the aperture adjuster travels with the aperture adjuster until it engages one of a number of different portions of the cam on the basis of the pointer-determined position of the cam. The cam and the movable portion are conductive so as to form a synchronizing switch for a flash.

3,750,553  
MICROFILM CODING METHOD AND APPARATUS  
Josef Pfeifer, Unterhaching; Wilfried Hofmann, and Karl-Heinz Dietrich, both of Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany  
Filed Apr. 12, 1972, Ser. No. 243,201  
Claims priority, application Germany, Apr. 17, 1971, P 21 18 732.6; Dec. 4, 1971, P 21 60 211.9  
Int. Cl. G03b 17/24  
U.S. Cl. 95—1.1 11 Claims

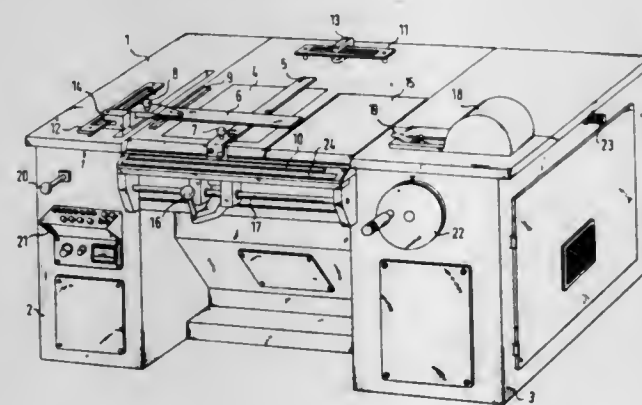
A microfilming apparatus wherein one of two transparent plates which define the image plane for originals carries a row of enclosed electric lamps serving to encode information on microfilm during exposure of successive originals onto successive microfilm frames. The encoded information facilitates the

finding of selected microfilm frames. The plates are movable from operative to exposed positions to be accessible for cleaning. The number and distribution of lamps which light up to encode information on microfilm is controlled by a programming unit which can be actuated by hand or automatically, either in response to detection of successive originals in the image plane or in response to detection of signal generating



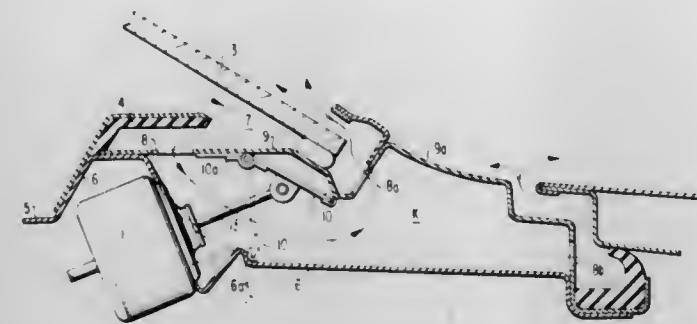
sheets which are fed into the image plane alternately with successive originals. A detector scans the thickness and/or the conductivity of signal generating sheets and causes the programming unit to change the number and/or distribution of lamps which are lighted simultaneously or substantially simultaneously with the exposure of successive originals onto the microfilm.

3,750,554  
PHOTOCOMPOSING MACHINE  
Karl Debus, Karl-Jürgen Debus, both of Bad Homburg v. d. H., and Eberhard Mohr, Langenselbold, all of Germany, assignors to Mergenthaler Linotype GmbH, Frankfurt am Main, Germany  
Filed July 15, 1971, Ser. No. 162,999  
Claims priority, application Germany, July 16, 1970, P 20 35 313.3  
Int. Cl. B41b 21/34  
U.S. Cl. 95—4.5 10 Claims



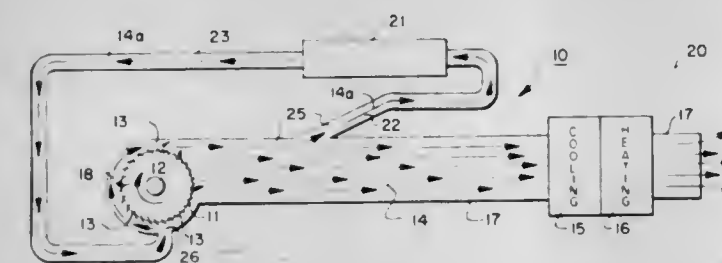
A photocomposing machine especially adapted for display work. The machine employs a film holder that is horizontally disposed and movable along two coordinate axes. A layout sheet viewable by the machine operator can be placed on the upper side of the film holder so that latter can be positioned in accordance with the requirements of the copy to be produced as indicated on the layout sheet.

3,750,555  
INSTALLATION FOR PREVENTION OF DRAFT IN THE INTERIOR SPACE OF MOTOR VEHICLES  
Hans Gotz, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany  
Filed May 20, 1971, Ser. No. 145,422  
Claims priority, application Germany, May 21, 1971, P 20 24 793.2  
Int. Cl. B60h 1/24  
U.S. Cl. 98—2.01 13 Claims



An installation for preventing a draft in the interior space of motor vehicles equipped with air discharge openings in the vehicle rear section to provide a ventilation, in which the discharge openings are provided with an automatically controllable closure flap.

3,750,556  
AIR PURIFYING MEANS  
Douglas Roy Duke, and Asa M. Pearson, both of Dallas, Tex., assignors to Air Guard Inc., Garland, Tex.  
Filed Aug. 23, 1971, Ser. No. 173,824  
Int. Cl. B60h 3/00; F24f 3/12; A61H 9/00  
U.S. Cl. 98—2.11 6 Claims

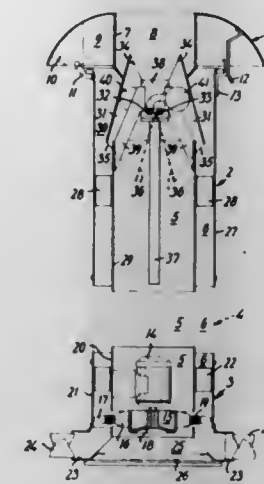


Disclosed is apparatus for conditioning the air being supplied to a confined space, such as the compartment of a motor vehicle, the apparatus including an ozone generator being disposed as the feedback loop of the heating-cooling system of the motor vehicle. The ozone generator disclosed includes either a single sealed gas tube or a plurality of adjacently disposed sealed tubes.

3,750,557  
SYSTEM FOR THE VENTILATION OF BUILDINGS  
Jürgen Eberhardt Pell; Alf Gerritse; Miroslav S. Osmera, all of Canning, N.S., Canada, and Christian Karmark Andersen, Naestved, Denmark, assignors to Nordisk Ventilator Co. Aktieselskab, Naestved, Denmark  
Filed Nov. 9, 1971, Ser. No. 197,128  
Claims priority, application Canada, Nov. 16, 1970, 98,213  
Int. Cl. F24f 13/00  
U.S. Cl. 98—33 7 Claims

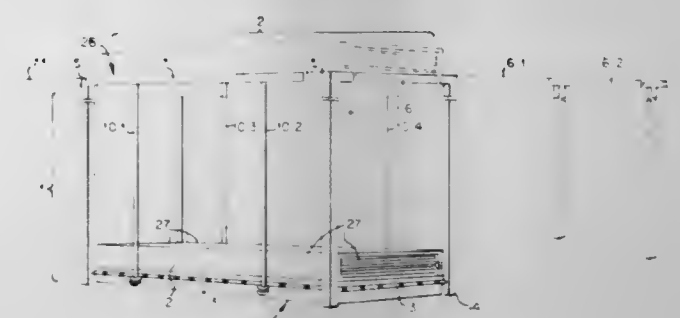
A system for the ventilation of buildings, comprising vertical and concentric exhaust and injection ducts extending from a fan section located in the room to be vented to a roof hood and between said ducts a passage for recirculating part of the exhausted air to the injection duct, damper means in the form of a single unit comprising two adjustable damper mem-

bers being provided in said exhaust and injection ducts and said passage for controlling the ventilation to any desired condition between full supply of fresh air and full recirculation without supply of fresh air, said damper members being con-



structed as double-walled elements made of a plastic material, in which a porous insulating material may be provided in the cavity between the walls. In a method for manufacturing such a damper member said member is poured from a plastic foam.

3,750,558  
APPARATUS FOR PRODUCING CLEAN AIR  
Theodor Jokiel, Dortmund-Brunningshausen, and Karl Bracht, Dortmund, both of Germany, assignors to Ceag Dominit Aktiengesellschaft, Dortmund, Germany  
Filed Jan. 31, 1972, Ser. No. 222,235  
Claims priority, application Germany, Jan. 29, 1971, P 21 04 234.2  
Int. Cl. F24f 1/04  
U.S. Cl. 98—40 D 5 Claims



Apparatus for producing clean air includes an air supply unit for supplying a downdraft of inlet air; and a rectangular upright frame having vertical upright supports, joint members at the top of the upright supports, and horizontally disposed beams joined by the joint members perpendicularly to one another and defining a horizontal rectangular opening at the top of the upright frame, the beams being formed with respective rows of vertically extending bores, the air supply unit having a housing formed with a rectangular base and including four upright rectangular walls having a rectangular profile frame blocked out at the corners thereof and including four horizontally projecting flange lengths formed with respective rows of vertically extending bores therein, the base of the air supply unit being displaceable with clearance through the horizontal rectangular opening of the upright frame, the projecting flange being engageable with the underside of the beams, respectively, with the bores formed in the beams in alignment with the bores formed in the projecting flange lengths.



3,750,559

**COFFEE MAKING BOTTLE AND METHOD FOR MAKING SAME**

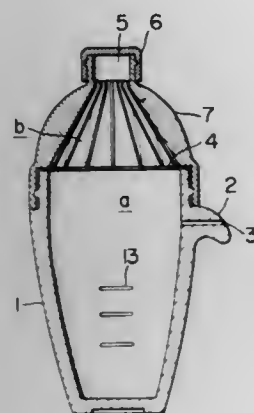
Hideo Wakabayashi, 34-6, 5-chome, Yoyogi, Shibuya-ku, Tokyo, Japan

Filed Oct. 26, 1971, Ser. No. 192,225

Int. Cl. A47j 31/00

U.S. Cl. 99-279

2 Claims



Coffee making bottle consisting of two separated parts of upper and lower members, each being partitioned by a filter paper to form a coffee extraction chamber and filtration chamber.

3,750,560

**DEEP FAT FRYER**

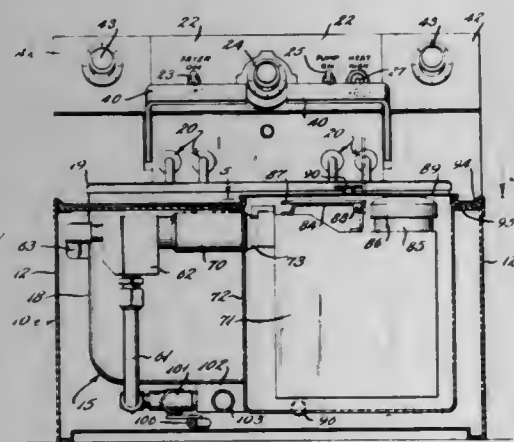
Brandon M. Holmes, Nashville, Tenn., assignor to Progressive Products Corporation, Nashville, Tenn.

Filed Sept. 3, 1971, Ser. No. 177,549

Int. Cl. A47j 37/12

U.S. Cl. 99-408

6 Claims



Apparatus for cooking foods by immersion in a cooking medium maintained at a predetermined temperature and in which the liquid cooking medium is constantly circulated in a manner that particulate matter is removed from the surface and from the bottom of the cooking vessel and such particulate matter is removed from the circulating cooking medium without interrupting the flow of such medium. The particulate matter separated from the cooking medium is discharged into a collection receptacle which can be removed when desired without draining the cooking medium from the vessel.

3,750,561

**ROLL CONDENSER FOR PRODUCING A ROLLED STRAND OF STALK AND/OR LEAF MATERIAL**

Franz Wieneke, No. 14, August-Lange-Strasse, Bovenden, Germany

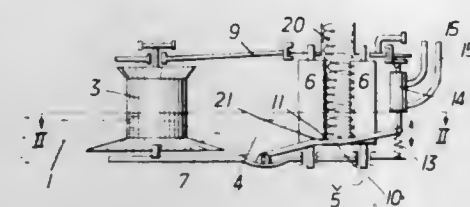
Filed July 1, 1971, Ser. No. 158,833

Claims priority, application Germany, July 4, 1970, P 20 33 275.6

Int. Cl. B30b 3/04

U.S. Cl. 100-89

8 Claims



A roll condenser for producing a rolled strand of stalk and/or leaf material, consisting of a group of driven rollers which can rotate in the same direction and are adjustable to a certain angle in relation to one another, the said roll condenser possessing a regulating device arranged automatically to regulate said angle of tilt and constructed so as to adjust said angle of tilt in inverse proportion to the degree in which the rolling compartment has been emptied, while a measuring feeler measuring the said degree and belonging to the regulating device is situated in that zone of the rolling compartment from which it begins to empty when the feed of material thereto is interrupted.

3,750,562

**FLUID-ACTUATED PRESS**

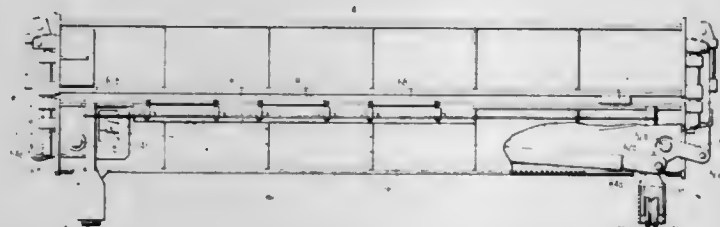
John Calvin Jurelt, Coral Gables, Fla., assignor to Automated Building Components, Inc., Miami, Fla.

Filed Oct. 20, 1971, Ser. No. 190,724

Int. Cl. B30b 1/32

U.S. Cl. 100-100

12 Claims



The press includes a base structure carrying a press platen and an upper floating head carrying a press platen, the floating head being movable toward and away from the base. A fluid-actuated cylinder is provided at each end of the press to raise and lower the head. A load transfer assembly interconnects opposite ends of the press and includes a transfer bar pivotally connected at opposite ends to bellcranks at opposite ends of the base. Rods at opposite ends of the press connect between the bellcranks and head. When the press is subjected to asymmetrical loadings, the load transfer apparatus transfers a portion of the force applied to the head by the cylinder at one end of the press to the head at the opposite end of the press.

3,750,563

**HAM PRESS OPERATOR**

John A. Tonjum, Austin, Minn., assignor to Geo. A. Hormel Co., Austin, Minn.

Filed Nov. 11, 1971, Ser. No. 197,695

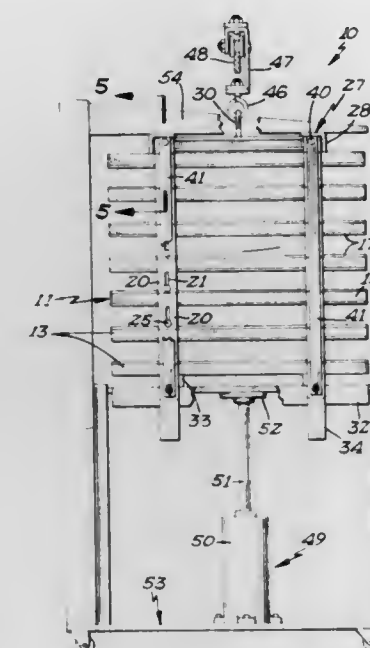
Int. Cl. B30b 7/02

U.S. Cl. 100-194

3 Claims

A ham press for compressing hams during the cooking and smoking thereof comprises a plurality of similar racks inter-

connected together by pins and slotted coupling elements. The racks are shiftable between an open position and a closed pressing position wherein the hams are compressed between adjacent racks. Each rack includes a frame having perforated upper and lower press members which engage the hams to be



pressed. Smoke may freely circulate between the upper and lower press members while the racks are in pressing condition thereby permitting smoking and heating while the hams are being pressed. The diamond shaped configuration of perforations in the press members of each rack impart the desirable surface ornamentation to the hams being pressed.

3,750,564

**ELECTROSTATIC CAPILLARY APPARATUS FOR PRODUCING AN IMPRINT**

Hubertus Bettin, Braunschweig, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

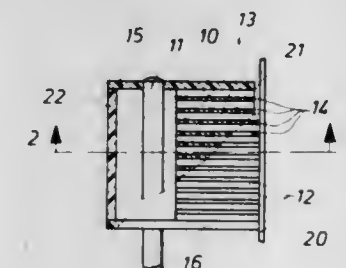
Filed Jan. 19, 1972, Ser. No. 219,107

Claims priority, application Germany, Feb. 5, 1971, P 21 05 373.6

Int. Cl. G01d 15/18; H01v 7/00

U.S. Cl. 101-1

8 Claims



A method of and an apparatus for producing an imprint on a recording carrier by providing capillary media, supplying writing liquid in the capillary media, positioning a recording carrier in close spaced proximity to the capillary media, and causing displacement forces to occur by the application of a voltage across the capillary media. The steps result in the electrokinetic movement and discharge of the writing fluid from the capillary media onto the recording carrier.

3,750,565

**PRINT-SETTING APPARATUS**

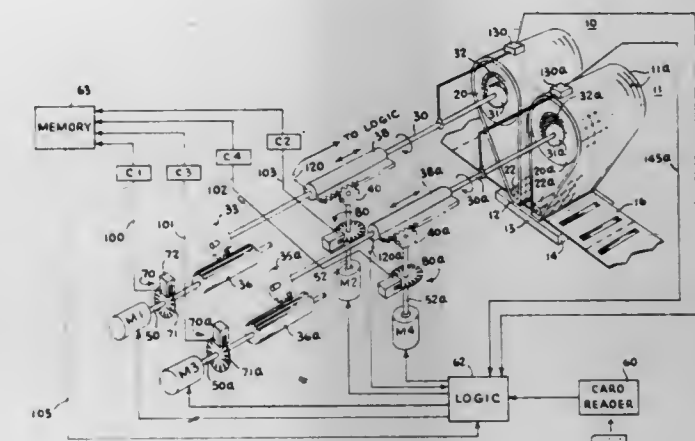
David W. Hubbard, Stamford, and Alton B. Eckert, Jr., Norwalk, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 10, 1972, Ser. No. 216,668

Int. Cl. B41j 1/20

U.S. Cl. 101-93 C

3 Claims



Print-setting apparatus of the kind which employs a number of separately drivable character-bearing belts in side-by-side relation is provided with electrically operated stepping means for positioning the various belts in desired locations. Slotted code wheels having precise driving and structural relationships with the driving system for the belt-positioning apparatus are employed for counting the incremental movements of that apparatus. Results of the counting are used for monitoring and controlling the functioning of the print-setting apparatus as a whole.

3,750,566

**DEVICE FOR CONTROLLING THE FEEDING OF COPY SHEETS TO A SMALL OFFSET PRINTING MACHINE**

Toshiya Ogawa, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

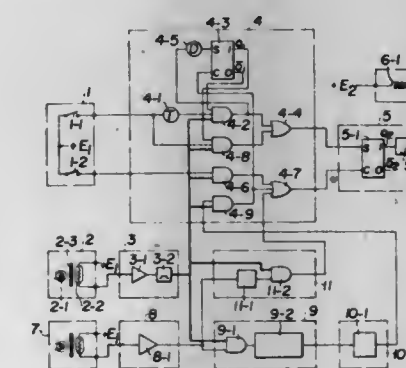
Filed Nov. 27, 1970, Ser. No. 93,164

Claims priority, application Japan, Dec. 3, 1969, 44/97408

Int. Cl. B41f 9/00

U.S. Cl. 101-144

8 Claims



The device has means producing a synchronizing pulse in synchronism with rotation of a cylinder of the printing machine and responsive to completion of each revolution of the cylinder, timing means producing a time signal responsive to completion of the inking time of the printing machine, and a push button switch operable to initiate feeding of the sheets. A logic circuit is operable, responsive to simultaneous receipt of a time signal, operation of such push button and receipt of a synchronizing pulse, to effect operation of a lever for feeding copy sheets to the printing machine under the control of a feed cam on a cylinder of the machine. A "stop feeding" signal is produced responsive to printing of a preset number of sheets and coincident with a synchronizing pulse, or respon-



sive to a lack of synchronism of the sheet feeding and the synchronizing pulse, or responsive to operation of a "stop" push button switch coincident with a synchronizing pulse. The synchronism is checked by a checking circuit including means producing a signal responsive to the termination of feeding of each individual sheet.

**3,750,567**  
**DYE TRANSFER APPARATUS WITH STAIN PREVENTING DEVICE**

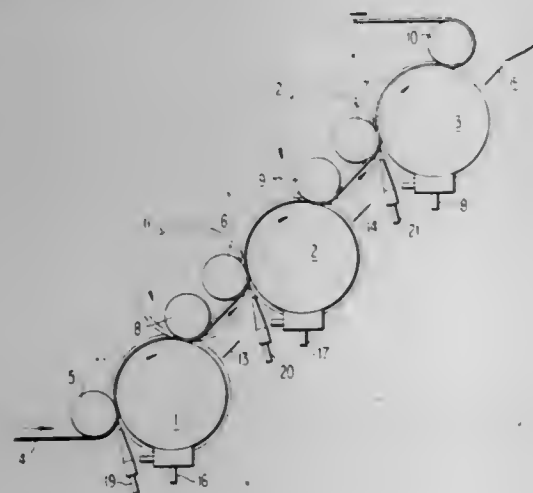
Seiichi Taguchi, Sigeru Tezuka, Takeshi Tomotsu, and Eiichi Mizuki, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 26, 1971, Ser. No. 166,148

Claims priority, application Japan, July 24, 1970, 44/64904  
Int. Cl. B41f 5/16

U.S. Cl. 101-181

7 Claims



A dye transfer apparatus having a stain preventing device. The apparatus comprises a rotatable plate cylinder on which a matrix is mounted, a dye solution applying device for applying a dye solution on the matrix, a washing liquid supplying device positioned downstream of the dye solution applying device, a squeeze roller positioned downstream of the washing liquid supplying device for urging a receiving material into contact with the matrix, and a washing liquid removing device having a head with a narrow tip end disposed closely adjacent the nip of the plate cylinder and the squeeze roller to remove washing liquid containing dye from the surface of the receiving material.

**3,750,568**  
**REGISTER CONTROL APPARATUS FOR CONTROLLING BOTH AXIAL AND CIRCUMFERENTIAL REGISTER OF A PLATE CYLINDER**

Willie Weisgerber, Johannesburg/Rheingau, Germany, assignor to Miller Printing Machinery Co., Pittsburgh, Pa.

Filed May 20, 1971, Ser. No. 145,446

Claims priority, application Germany, May 22, 1970, P 20 24 937.0

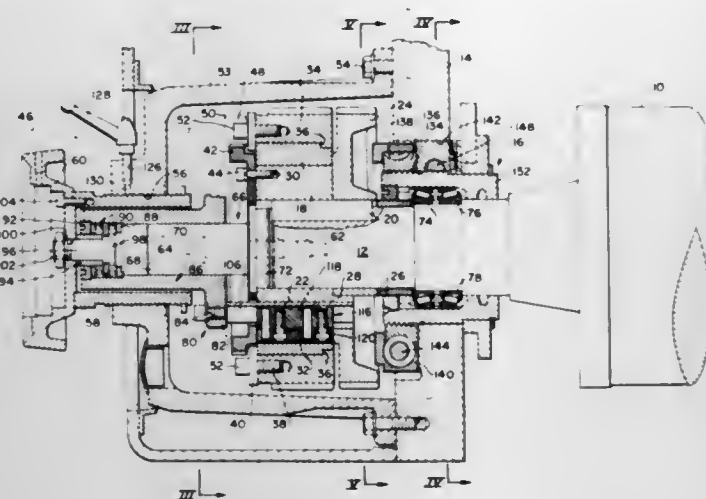
Int. Cl. B41f 13/24

U.S. Cl. 101-248

10 Claims

The register control apparatus includes a ring member coaxially positioned on a hub portion of the plate cylinder shaft. A drive gear is coaxially positioned on the ring member and drivingly connected thereto. The hub, ring, and drive gear are axially fixed on the plate cylinder shaft and the ring member is rotatable relative to the hub member by means of a circumferential register adjusting apparatus that includes a pair of spline members slidable longitudinally in slots of the hub member and a pair of key members positioned in slots in the ring member. The key members have an upper key portion extending into slots in the slidable splines. The slots and key portion extend angularly relative to the shaft periphery at the same helix angle as the helical gear teeth of the drive gear and

in the opposite direction. The lower portion of the key member has arcuate side walls that mate with arcuate side walls of the longitudinal slots in the ring. By axially moving the splines relative to the plate cylinder shaft the hub and plate cylinder are rotated relative to the drive gear to thus change



the circumferential register of the plate cylinder. The plate cylinder shaft is rotatably supported in a bearing housing that is axially fixed to the plate cylinder shaft. Apparatus is provided to move the bearing housing axially in the press frame to thus move the cylinder axially and adjust the side register.

**3,750,569**  
**SPRING BIASED AXIALLY SHIFTING PLATEN ROLLER IN A TRAVELING CYLINDER IMPRINTER**

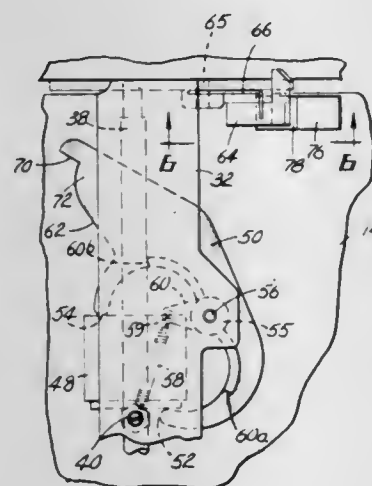
Walter E. Janik, Willoughby, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Jan. 10, 1972, Ser. No. 216,549

Int. Cl. B41f 3/02

U.S. Cl. 101-269

5 Claims



A data recorder is provided which has a carriage movable over a bed having printing elements thereon. The carriage is movable from a home position to an actuated position and returned to the home position to perform a printing function. The carriage mounts a roller platen which is axially shiftable, in response to movement of the carriage, to two different positions to thereby travel in two separate parallel paths of travel. A yoke is provided to shift the platen between the two positions. The yoke is moved to shift the platen in one direction by movement of the carriage through a stroke past the printing elements and the yoke is releasably latched in this position. At the other end of the carriage stroke the latch is released and biasing means causes the yoke to shift the platen to its other position.

**3,750,570**  
**DEVICE FOR CLEANING COLOR STIRRER AND COLOR CHESTS OF PRINTING MACHINES**

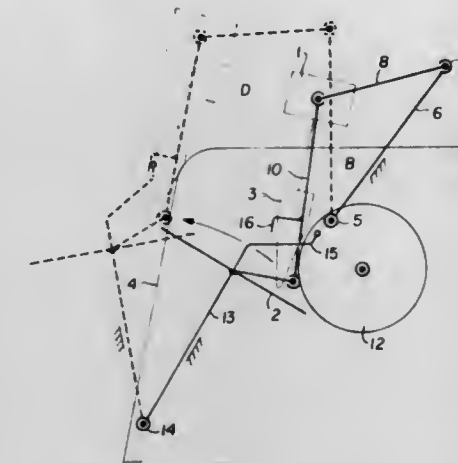
Hans Johne, Radebeul, and Eberhard Graupner, Freital, both of Germany, assignors to Veb Polygraph Leipzig Kombinat für Polygraphische Maschinen und Ausrüstungen, Leipzig, Germany

Filed Apr. 2, 1971, Ser. No. 130,751

Int. Cl. B41f 31/06

U.S. Cl. 101-364

4 Claims



The color stirrer unit and also the color chest unit of a printing machine are tiltably linked for positioning either in operative relationship or in positions for easy cleaning of the stirrer, or of the chest, or of the color ductor which normally dips into the chest, or of all of these devices. For these purposes the respective linkages are interconnected to allow free access to each unit and also to facilitate re-establishment of the operative relationship between these units.

**3,750,571**  
**PLATE CLAMPING DEVICE FOR INTAGLIO PRINTING PRESSES**

Albrecht Germann, Würzburg, Germany, assignor to Schnellpressenfabrik Koenig & Bauer Aktiengesellschaft, Würzburg, Germany

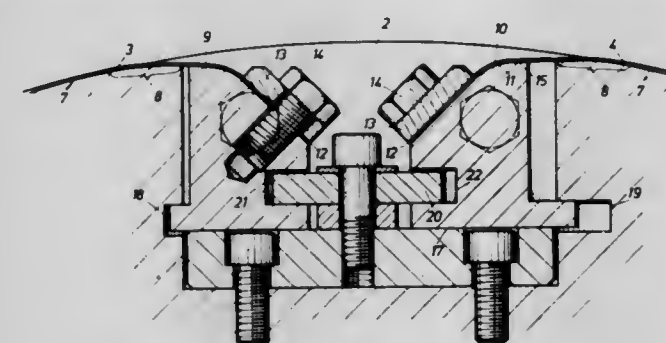
Filed Aug. 3, 1971, Ser. No. 168,541

Claims priority, application Germany, Feb. 6, 1971, P 21 05 633.7

Int. Cl. B41f 27/10, 27/12

U.S. Cl. 101-415.1

4 Claims



A clamping system is provided for tightening printing plates on a form cylinder of an intaglio printing press to avoid plate ruptures. Adjacent the sides of the grooves in the cylinder in which the leading and trailing ends of the plates are clamped, the cylinder is formed with a convex transition curve over which the ends of the plate are led and this transition curve has a curvature which curves the plate such that it does not exceed the elastic limit of the plate and the plate fits snugly around the cylinder surface, thus the tension force that is applied to the plate end does not act on this transition portion of the plate such that it deforms it. Clamping bars for the leading and trailing ends of the plates are slidably mounted in the grooves. There is a clamping strip having screws mounting it

on the clamping bar and under which the end of the plate is clamped to the bar. Each clamping bar has a convexly curved surface portion in its upper portion joining at its upper end with a flat surface portion thereon lying in a plane extending tangentially to the radius of curvature of the convexly curved portion and adjacent the convex curved portion on the cylinder so as to receive and direct the end of the printing plate into the cylinder groove and a portion to lie in the plane as a straight line portion as it leaves the transition portion of the cylinder. The clamping bars for the trailing edge are divided into segments and each has a pressure adjusting screw acting on a spring pressing against a wall of the groove. A compression spring is positioned between the clamping bar for the leading edge and each clamping bar segment for the trailing edge of the plate and moves the clamping bars into their initial position. An adjusting screw is mounted in the clamping bar for the leading edge, and it acts against an adjacent wall of the grooves. The clamping bars are slidably secured in the grooves by securing bars.

**3,750,572**  
**PRINTING PLATE CYLINDER SADDLE**

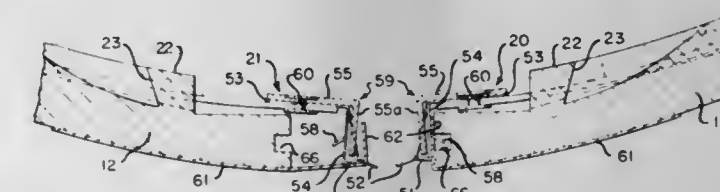
Gordon Etchell, Downers Grove, and Bohdan Washchynsky, Westchester, both of Ill., assignors to North American Rockwell Corporation, Pittsburgh, Pa.

Filed June 12, 1972, Ser. No. 261,876

Int. Cl. B41f 27/06, 27/14

U.S. Cl. 101-415.1

5 Claims



A printing plate cylinder saddle is provided with construction features for mounting on a printing plate cylinder and for attaching a thin, flexible printing plate. Identical plate engaging assemblies are provided at each end of the saddle and are selectively operable to releasably clamp and interlock the lead edge of the flexible plate in register along the lead edge of the saddle or to interlock and exert a constant tension upon the tail edge of the flexible plate along the trailing edge of the saddle.

**3,750,573**  
**APPARATUS FOR ATTACHING A PRINTING FOIL OR MASTER TO THE CYLINDER OF A PRINTING MACHINE**

Wolfgang Guenter Haeusler, Koenigsutter, and Horst Herok, Helmstedt, both of Germany, assignors to Roto-Werke GmbH, Koenigsutter, Germany

Filed Sept. 12, 1972, Ser. No. 288,252

Claims priority, application Germany, Sept. 15, 1971, P 21 46 037.7

Int. Cl. B41f 27/12

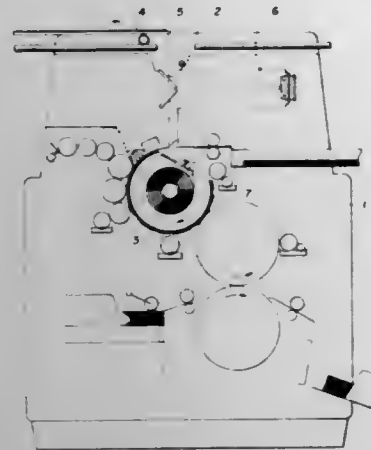
U.S. Cl. 101-415.1

12 Claims

The present apparatus greatly facilitates the handling of the printing foil or sheet material of which a printing master is produced for use in printing machines such as offset machines. The foil handling means include a first pair of rollers arranged inside a hollow foil cylinder for paying out a length of foil. First clamping means are provided for securing the leading edge of the foil to said cylinder. Second clamping



means are provided for clamping down a portion of the foil which after severing becomes the trailing edge of the preced-



ing master and the leading edge of the next following master. For this purpose the second clamping means are combined with severing means.

### 3,750,574 ILLUMINATING ROUND HAVING DUAL RANGE CAPABILITY

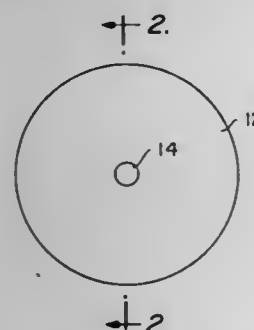
Carl W. Lohkamp, Bloomfield, Ind., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1972, Ser. No. 230,539

Int. Cl. F42b 13/38

U.S. Cl. 102—34.1

1 Claim



An illuminating round having propulsion means and a flare composition, and means for deploying a parachute upon ignition of the flare composition. The forward end of the round is configured for low drag and means are provided for attaching an auxiliary part which provides for high drag during propulsion of the round.

### 3,750,575 SPIN-STABILIZED PROJECTILE

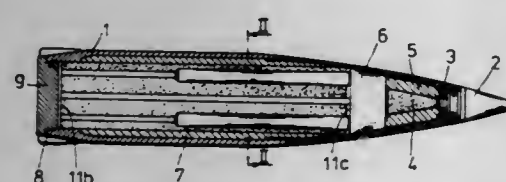
Konrad Heede, Neuss, and Peter Bender, Dusseldorf, both of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany

Filed Aug. 26, 1971, Ser. No. 175,054

Int. Cl. F42b 13/50

U.S. Cl. 102—69

6 Claims



A spin-stabilized projectile which comprises a casing having a front nose fuse connected with an ejection charge. A thrust

plate is disposed at the rear of the ejection charge. A cluster includes at least one stick which is disposed between the thrust plate and the base, and clamping means are provided for holding together the cluster at its rear end and adapted to hold the cluster until leaving the casing.

### 3,750,576 ROCKET WITH THERMAL CONTROL FOR INFLUENCING THE WEATHER

Leopold Balcarczyk, Vienna, Austria, assignor to Österreichische Studienstiftung für Atomenergie Ges. m.b.H., Vienna, Austria

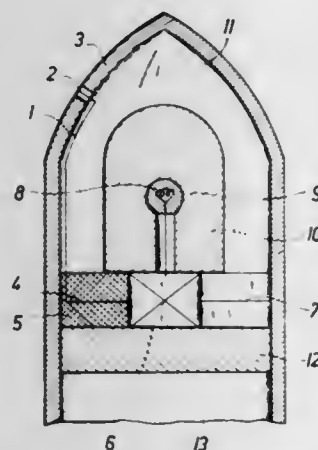
Filed Sept. 23, 1971, Ser. No. 182,989

Claims priority, application Austria, Sept. 24, 1970, 862970

Int. Cl. F42b 13/00

U.S. Cl. 102—70.2 G

3 Claims



A rocket for influencing the weather has an explosive charge and the substance to be atomized in its head portion. A thermocouple is provided one soldered junction of which is provided at the exterior of the rocket and the other soldered junction is kept on a constant temperature.

### 3,750,577 PROJECTILE CARRIED IGNITABLE DEVICE HAVING DELAYED, LARGE SURFACE IGNITION

Bjorn Herman Olof Simmons, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

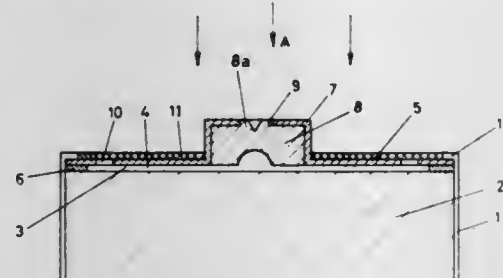
Filed May 31, 1972, Ser. No. 258,168

Claims priority, application Sweden, June 21, 1971, 8002/71

Int. Cl. F42b 13/40

U.S. Cl. 102—37.6

8 Claims



The main charge of a flare is delayed from being ignited, due to hot gases directed toward a surface of said main charge, by a member covering said surface. The covering member defines a plurality of flare outlet openings communicating with a gap formed between said covering member and said flare surface, and also defines a cavity containing a priming charge, or a priming charge and a delayed charge, exposed for ignition by said hot gases and operative, after a time delay, to ignite the flare over a large surface area via said gap. A further member temporarily covers said plurality of flare outlet openings, said further member being removed to expose said outlet openings upon sudden deceleration of the flare, or due to hot gases produced by ignition of said flare surface.

### 3,750,578 EXPELLABLE CARTRIDGE CASE

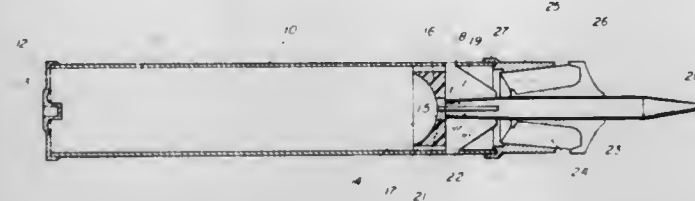
Raymond S. Blajda, Parsippany, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 4, 1972, Ser. No. 215,364

Int. Cl. F42b 13/16

U.S. Cl. 102—38

6 Claims



Novel cartridge, suitable for use with high velocity anti-tank projectiles, possesses an open tube casing adapted to be expelled from the weapon along with the projectile and separated therefrom on muzzle exit, thereby eliminating dangerous residues in the weapon without significantly affecting projectile ballistics. The cartridge has an open ended casing attached by means of an adapter to the rear of a projectile provided with a tracer composition and an obturating band. The casing is closed at its breech end by a ventable cap and the adapter at the other end is open so that the propellant gases can pressurize the breech area and entire gun area behind the obturator band and expel the projectile. The adapter also permits the propellant gases to ignite the tracer composition so as to burn and sever the attachment to the projectile. The attachment remains intact while the cartridge is in the gun barrel but is severed after it leaves the muzzle, whereby the projectile is separated from the adapter and spent casing debris in the area near the front of the weapon and no residue, fragments, etc. are left behind in the weapon.

### 3,750,579 SHOTGUN SHELL WAD

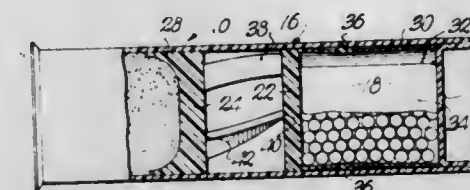
Larry D. Bellington, 4801 Blue Ridge, Kansas City, Mo.

Filed Sept. 9, 1971, Ser. No. 179,106

Int. Cl. F42b 7/08

U.S. Cl. 102—95

8 Claims



A wad for use in shotgun shells or the like presenting a container for carrying shot pellets and having a plurality of inclined, twisted collapsible supports providing only non-central support for the container. Upon firing, the supports collapse in a manner imparting spinning motion to the container and pellets therein, and raised beads on the outer surface of the container cooperate with the barrel of the gun to impart further spinning motion to the wad and pellets, the collapsible supports and raised beads being relatively oppositely inclined so as to compound these spinning motions.

### 3,750,580 WADS FOR CHARGING SHOT OF SHOT GUN

Junichi Nomura, and Takemitsu Andoo, both of Ohita, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 13, 1970, Ser. No. 89,306

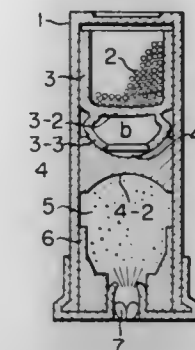
Int. Cl. F42b 7/08

U.S. Cl. 102—42 C

8 Claims

The present invention relates to improvements in shot-cups and cup-wads used for shot gun cartridges, and, more particu-

larly, it relates to a combination of plastic wads for shot gun cartridges comprising a shot-cup for retaining shot pellets provided with a unitarily molded lower cylindrical skirt portion



having a smaller outer diameter than that of the upper cup portion and a cup-wad having identical and symmetric top and bottom concaved portions the top concave portion receiving the curved lower edge of the skirt portion.

### 3,750,581 MISSILE MOTOR IGNITER ASSEMBLY

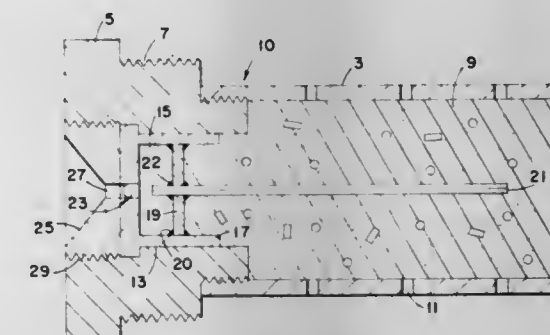
Robert E. Betts, and Nathan P. Williams, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 20, 1971, Ser. No. 181,784

Int. Cl. F42b 15/00; F02k 9/04

U.S. Cl. 102—49.7

2 Claims



An assembly for igniting a missile motor from a percussion primer carried in a cartridge case to an igniter charge located in the missile motor. A detonating cord, having one of its ends positioned in the cartridge case, is used to transfer ignition from the primer to the igniter charge. The end of the detonating cord adjacent the cartridge case is retained in position by a holder mounted in the cartridge case.

### 3,750,582 PROJECTILE WITH DIFFERENTIAL TANDEM SHAPED CHARGES

Irving L. Kintish, and Irwin Marcus, both of Rockaway, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 3, 1971, Ser. No. 177,736

Int. Cl. F42b 13/10

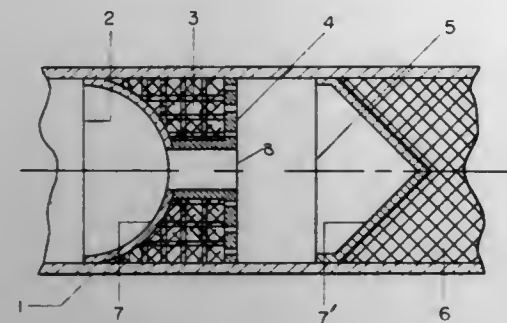
U.S. Cl. 102—56

4 Claims

A projectile utilizing tandem shaped charges is produced,



said projectile having superior armor penetration power than previous shape charge projectiles.



The invention described herein may be manufactured, used and licensed by or for the Government for governmental purposes without the payment to us of any royalties thereon.

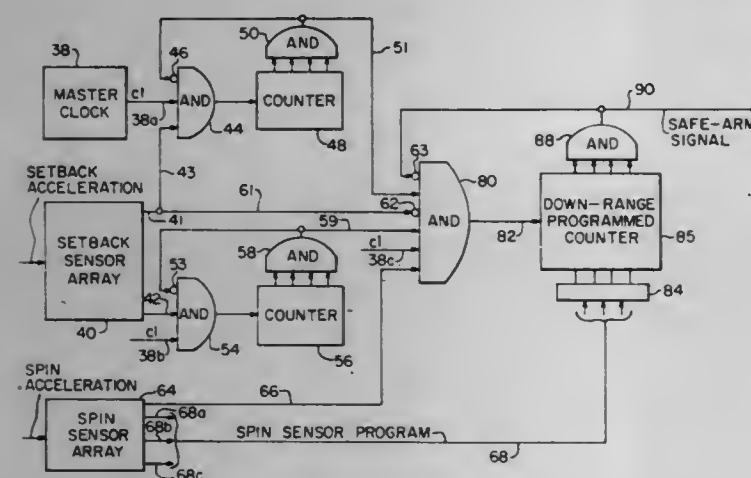
3,750,583

## ELECTRONIC FUZE SYSTEM

Marvin H. White, Laurel; David D. O'Sullivan, Bethesda, both of Md., and Richard G. Hamel, Margate, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed Mar. 4, 1971, Ser. No. 121,040  
Int. Cl. F42c 15/40, 19/12, 11/00

U.S. Cl. 102-70.2 R

5 Claims



An electronic system for providing a safe/arm signal. A number of digital accelerometers are located in various parts of a moving body such as an artillery shell when the shell is fired, accelerometers measure acceleration in the setback acceleration - the acceleration in the direction of travel. Other accelerometers measure spin acceleration. When predetermined levels of both set-back and spin accelerations have been present for predetermined times, a safe/arm signal is provided by logic circuitry.

3,750,584

## READILY MANUFACTURABLE THERMAL CELL UNIT FOR EXPLOSIVE PROJECTILES

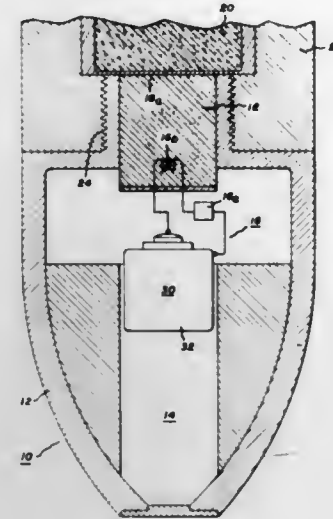
Peter R. Voyentzie, Gainesville, Fla.; Richard T. Ziemba, Burlington, Vt., and Raymond K. Sugalski, Gainesville, Fla., assignors to General Electric Company, Burlington, Vt.  
Filed Mar. 5, 1968, Ser. No. 710,578  
Int. Cl. F42c 15/36, 19/06, 15/40

U.S. Cl. 102-70.2 R

1 Claim

A projectile containing an explosive is provided with a fuse mechanism powered by an acceleration activated thermal cell unit which is constructed to be safely and conveniently manufactured. A terminal assembly is manufactured by positively attaching a terminal pin to a heat cup and then placing an igniting means and thermite material therein. A separately fabricated assembly includes spaced inner and outer shells

which are separated by a thermally fusible electrolyte. During fabrication the electrolyte is fused to decrease internal re-



distances within the cell. First and second electrode materials lie between the shells in contact with the outer and inner shells respectively.

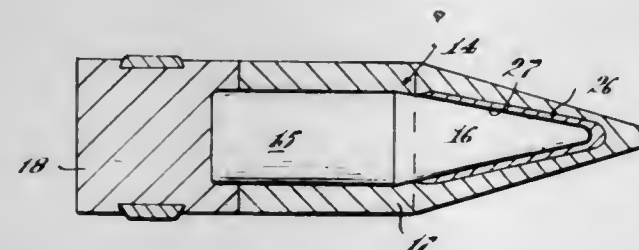
3,750,585

## TRACER PROJECTILES

Fritz K. Feldman, Santa Barbara, Calif., assignor to Pacific Technica Corporation, Santa Barbara, Calif.  
Filed Sept. 23, 1969, Ser. No. 860,230  
Int. Cl. F42b 11/16

U.S. Cl. 102-87

13 Claims



A tracer projectile having an ablative material attached to at least a portion of the exterior surface of the projectile body, such material preferably having a relatively low flash temperature whereby it is ignited by aerodynamic heating effects to produce an illumination during the projectile's flight to a target. The ablative material preferably may be attached by means of a bonding agent having a low coefficient of thermal conductivity to provide a heat barrier between the ablative material and the projectile body.

3,750,586

## FIRING DEVICE

Robert E. Swallow; Darrell A. Bymoen, and Gaylon L. West, all of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 25, 1971, Ser. No. 156,679

Int. Cl. F42b 23/26, 21/38

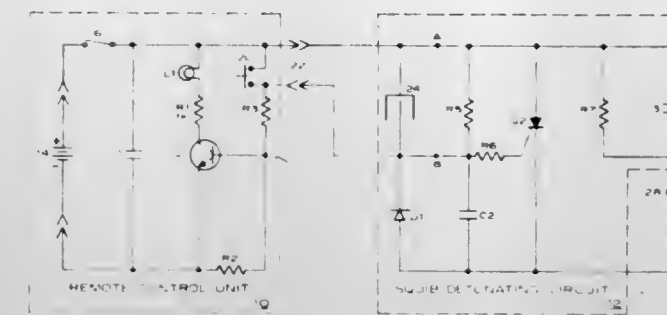
U.S. Cl. 102-16

3 Claims

A firing device having an anti-disturbance firing mechanism; a lead short, shunt, or open circuit firing

mechanism; and an operator actuated switch firing mechanism, wherein each of said firing mechanisms is capable of causing detonation of a squib. The power supply and the

External electrical contacts are provided whereby an external voltage can be applied to the fusible wire to melt same and thereby deactivate the proximity fuse function while maintain-



operator actuated arm/disarm and firing switch and ready lamp are included in a control unit remote from the squib housing.

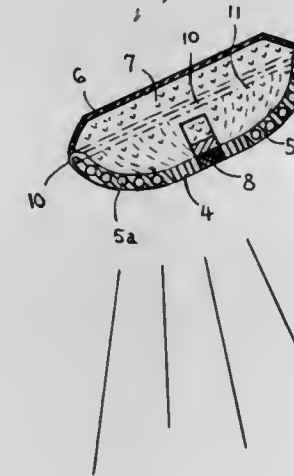
3,750,587

## PROJECTILE HAVING CHANGEABLE OUTER FORM

Erik B. Walde, Eskilstuna, Sweden, assignor to Forenade Fabriksverken, Eskilstuna, Sweden  
Filed Oct. 6, 1971, Ser. No. 186,943  
Int. Cl. F42b 13/48

U.S. Cl. 102-67

8 Claims



An explosive projectile member comprising a flexible explosive enclosed in a flexible envelope or casing that enables the whole projectile to change its size and shape from the condition that it was in before launching to another condition after launch. The projectile member is of such construction that it can be compressed to such an extent as to enable it to be placed in a narrow pocket in a mother projectile and/or can be expelled from a short firing tube. After the projectile member has been expelled it is spread out or developed by means of the air drag and elastic forces assisted by additional resilient means provided in the elastic casing.

3,750,588

## ARRANGEMENT IN AN ELECTRICAL FUZE FOR PROJECTILES

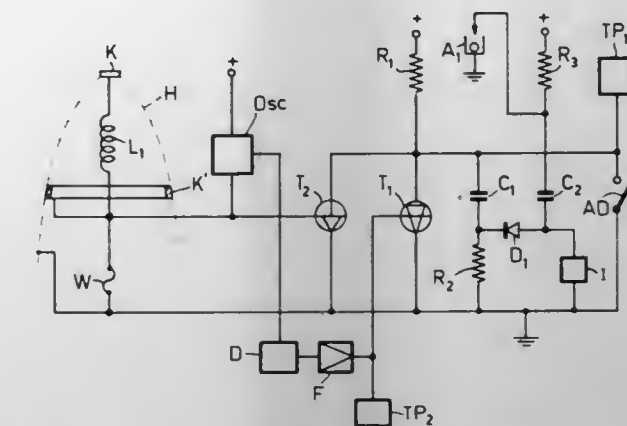
John Lennart Nordgren, Vallingby, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.  
Filed July 14, 1971, Ser. No. 162,506

Claims priority, application Sweden, July 17, 1970, 9947/70  
Int. Cl. F42c 13/00

U.S. Cl. 102-70.2 P

11 Claims

An ordnance fuze for projectiles that includes means for providing both a proximity fuse function and an impact fuse function. A fusible wire is included in the device so that both of said functions are available when the fusible wire is intact.



ing the impact fuse function. The fuze can be used either as a proximity fuze or an impact fuze and provides a very simple means for switching between the two functions.

3,750,589

## CENTRIFUGALLY DRIVEN SPIN DEVICE

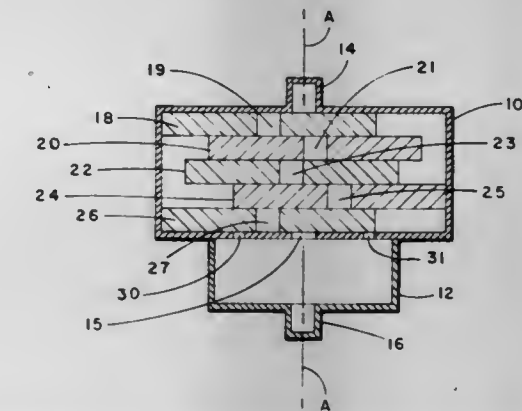
Werner H. Egli, and Asbjorn M. Severson, both of Minneapolis, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 13, 1971, Ser. No. 207,354

Int. Cl. F42c 15/26

U.S. Cl. 102-79

3 Claims



An apparatus for providing a continuous path along an axis in a chamber only when the chamber rotates about the axis. The apparatus includes a plurality of discs or members in the chamber, with each member having a path forming portion in approximately its center of floatation which, if the member is uniform, is the center of the disc. The members are stacked upon each other with the plane of each member being substantially perpendicular to the axis. The chamber has a cross sectional area measured perpendicular to the axis which is of a size to permit the members to align themselves to provide the continuous aperture about the axis when all of the members are in a predetermined position. There is additionally provided a fluid in the chamber so that as the chamber is rotated about the axis, when there is fluid in the chamber, the member move to their predetermined positions, centering the center of floatation to yield the continuous path.

3,750,590

## FLUID SAFETY AND ARMING SYSTEM

Evan D. Fisher, Chevy Chase, Md., assignor to the United States of America as represented by the Secretary of the Army

Filed Oct. 18, 1967, Ser. No. 677,844

Int. Cl. F42c 9/10, 15/30, 15/28

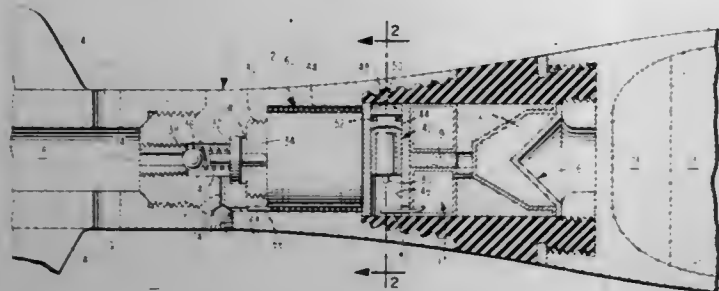
U.S. Cl. 102-81

10 Claims

A combined fluid safety and arming system for a gas propelled projectile including a normally opened arming cir-



cuit having a button-type detonator spaced from a fixed contact, a fluid motor for moving the button-type detonator, a high pressure chamber, a propellant gas inlet to the chamber, a fluid restrictor coupling the high pressure chamber with a



fluid motor and a check valve positioned within the propellant gas inlet. A setback detent is operatively coupled to the fluid motor for restraining movement of the detent-type detonator in the absence of minimum launch acceleration.

3,750,591

**DRIVE MEANS FOR CABLE-MOUNTED VEHICLE**

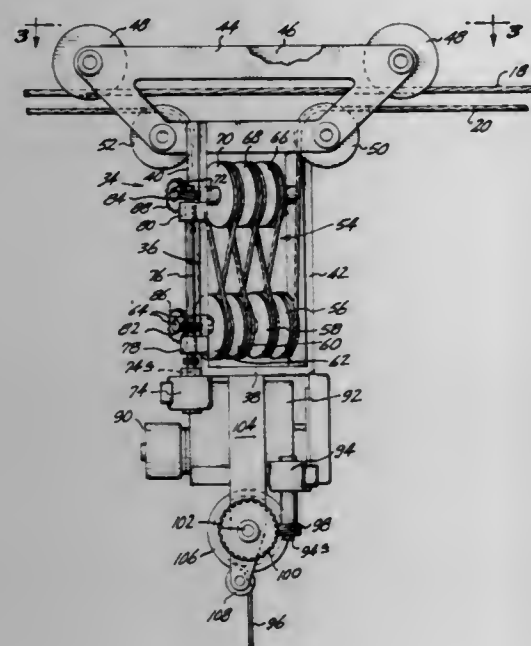
Marshall C. Makinster, Box 177, Grand Ronde, Oreg., and Wayne P. Grippin, Box 418, Willamina, Oreg.

Filed Sept. 30, 1971, Ser. No. 185,264

Int. Cl. B61b 7/02

U.S. Cl. 104—112

6 Claims



Drive means for a cable-supported carriage in a cable-logging system. The drive means include an elongated stationary line that extends along and adjacent the cable which supports the carriage, a plurality of sheaves mounted on the carriage which frictionally engage the line, and a reversible hydraulic motor also mounted on the carriage for driving the sheaves.

3,750,592

**LOCK MECHANISM EMPLOYING BALLOON VALVES FOR VACUUMIZED TUBE TRANSPORTATION SYSTEM**

Byron C. Anderson, El Cajon, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed May 21, 1971, Ser. No. 145,742

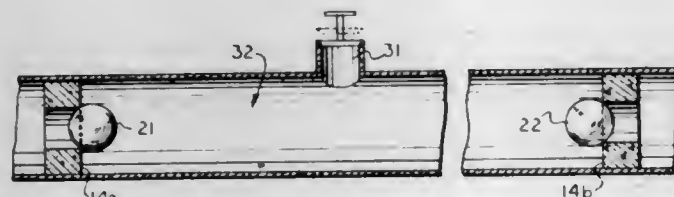
Int. Cl. B61b 13/10; B65g 51/04

U.S. Cl. 104—138

10 Claims

For providing an air lock in a selected portion of a vacuumized tube in which high speed vehicles or trains are operated, a plurality of bulkheads are provided at selected

spaced intervals throughout the length of the tube. Each bulkhead has two openings therein to allow vehicles or trains traveling in opposite directions to pass therethrough. A pair of inflatable balloons, which act as valves, are stowed in deflated condition, one adjacent each end of each bulkhead opening, and each balloon is connected by a valve controlled conduit to a supply of pressurized inflating gas, such as compressed air. When released from their stowed position, the balloons on selected sides of a selected pair of bulkheads drop by gravity into alignment with their respective bulkhead openings, where they are quickly inflated. Vent valve means then admits at



mospheric air into the lock section of tube thus established between the selected bulkheads, and this air tends to flow through the openings in the selected pair of bulkheads into the vacuumized zones of the tube therebeyond. The air currents thus created urge the inflated balloons into seated condition on valve seats provided on the peripheries of their respective bulkhead openings to thereby seal such openings. Atmospheric air continues to be admitted into the lock section between the sealed off bulkheads until the pressure in such lock section is at atmospheric pressure, or at such lesser pressure as may be desired, at which time the vent valve means may be closed.

3,750,593

**TOW VEHICLE WITH ANTI-BACK UP WHEELS**

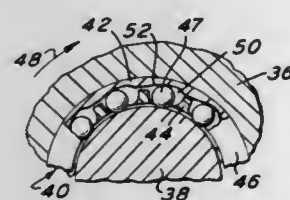
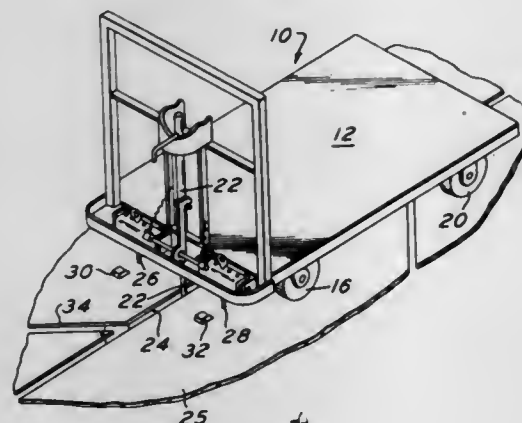
Stanley L. Zetterlund, Easton, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Mar. 8, 1971, Ser. No. 121,637

Int. Cl. B65g 17/42; F16d 63/00

U.S. Cl. 104—172 BT

3 Claims



A tow vehicle adapted to be guided for movement along a slot is provided with swivel castor wheels at the front end of the vehicle. The front castor wheels are provided with roller clutch bearings which act as a brake to prevent the vehicle from being moved in a rearward direction.

3,750,594

**DOLLY SYSTEM**

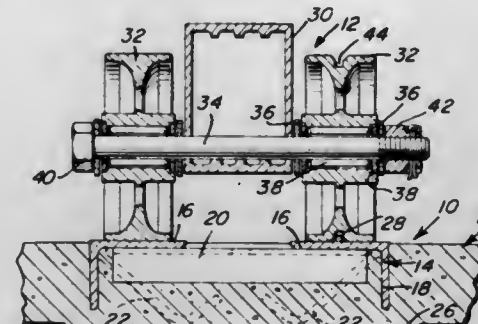
Warren F. Drescher, Vienna, Ohio, assignor to Albee Homes, Inc., Niles, Ohio

Filed Feb. 1, 1971, Ser. No. 111,579

Int. Cl. E01b 5/00

U.S. Cl. 104—243

10 Claims



A dolly system utilized in moving modular units in an assembly plant. The system incorporates a series of parallel floor embedded two-rail tracks, one rail of each track having a guide bar provided longitudinally along the upper surface thereof. A dolly rides on each track, the dolly including an elongated support beam mounted on front and rear wheels, one set of front and rear wheels including annular grooves which receive and guide along the guide bar.

3,750,595

**SHIPPING SYSTEM**

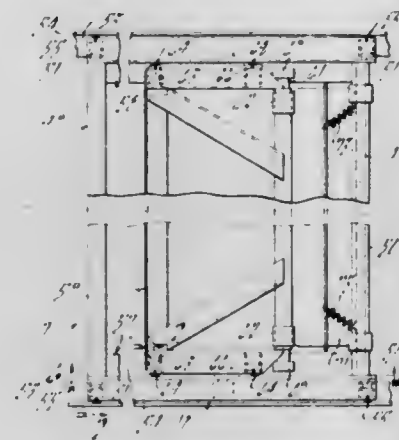
Harvey W. Chapman, Detroit, Mich., assignor to Evans Products Company, Plymouth, Mich.

Filed Oct. 7, 1970, Ser. No. 78,835

Int. Cl. B60p 7/14; B61d 45/00

U.S. Cl. 105—376

7 Claims



A freight bracing system particularly adapted for the transportation of freight in railway cars. The system includes a pair of pneumatically urged bulkheads, each supported adjacent one end wall of the railway car. In addition, a movable bulkhead assembly comprised of two panels adapted to be urged apart pneumatically is supported for movement along the length of the car. In this way, load units positioned between the respective pneumatic devices are braced and are pneumatically cushioned at each end.

3,750,596

**INTERLOCKING STORAGE PALLET**

Theodor M. Box, 1108 Aileen Rd., Brielle, N.J.

Continuation-in-part of Ser. No. 191,932, Oct. 22, 1971. This application Apr. 24, 1972, Ser. No. 246,668

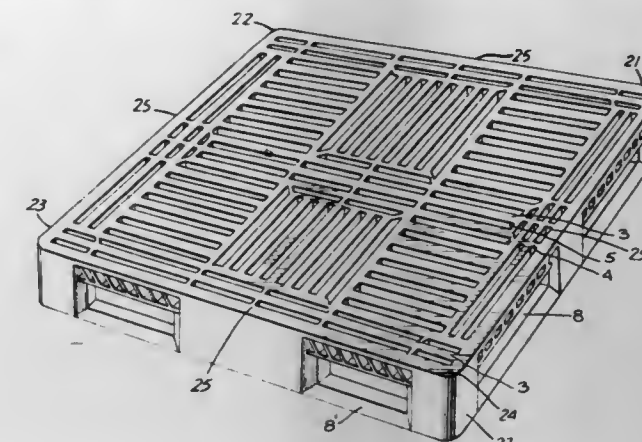
Int. Cl. B65d 19/38

U.S. Cl. 108—43

14 Claims

An interlocking storage pallet is disclosed comprised of two generally planar parallel load bearing surfaces, having

passages for fork lift and pallet trucks between the two surfaces. The two surfaces are separated from but joined to each other by reinforcing columnar portions located at spaced positions therein. To permit vertical stacking of the empty pallets,



3,750,597

**GRAVITY ACTION TIPLESS TRAY WITH VERTICAL CUSHION MEANS**

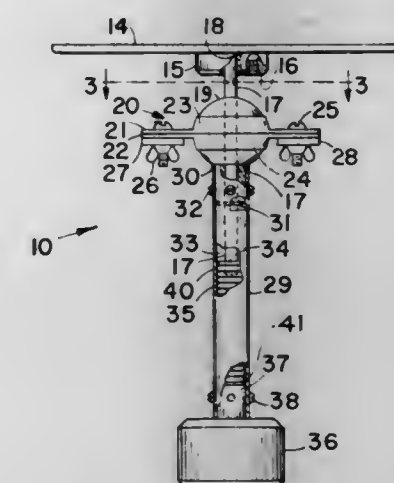
Joseph C. Muns, 1509 State St., Indianapolis, Ind.

Filed Oct. 18, 1971, Ser. No. 190,131

Int. Cl. A47b 23/00; 37/00; B60r 7/06; F16m 11/14

U.S. Cl. 108—45

7 Claims



A tipless tray which is inertially stabilized and which is isolated from vertical shocks. The tray is mounted atop a rod. A pendulum type weight is secured to a tube which is connected to a ball bearingly mounted to a pair of sheets secured together. The ball fits into a pair of spherical sockets positioned in opposing fashion in the pair of sheets. The rod extends freely through the ball and into the tube. A spring is positioned within the tube abutting a plate fixedly fastened to the bottom end of the rod. The spring cushionly supports the rod and tray above the ball.

3,750,598

**IMPACT ABSORBING CORNER STRUCTURE**

Robert H. Campbell, Chicago, Ill., and Harold S. Cloyd, Erie, Pa., assignors to Continental Can Company, Inc., New York, N.Y. and Nesco Plastics, Incorporated, Erie, Pa.

Filed Mar. 24, 1971, Ser. No. 127,606

Int. Cl. B65d 19/00

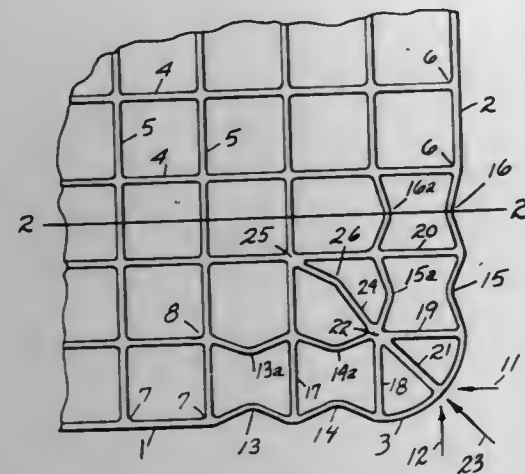
U.S. Cl. 108—51

10 Claims

A self-reforming impact absorbing corner structure for pallets having a corner of lattice section with portions of outer



walls designed to buckle inwardly under impact and thereby prevent bulging outside the normal pallet dimensions, the pal-



let being formed of a thermoplastic material having sufficient memory to be substantially self-reforming.

3,750,599

### CONTAINER FOR MARINE TRANSPORTATION OF A LARGE-SIZED, MASSIVE CARGO

Eisel Tayama, 3155-93, Mutsuracho, Kanazawa-ku, Yokohama-shi, Kanagawa-ken, Japan

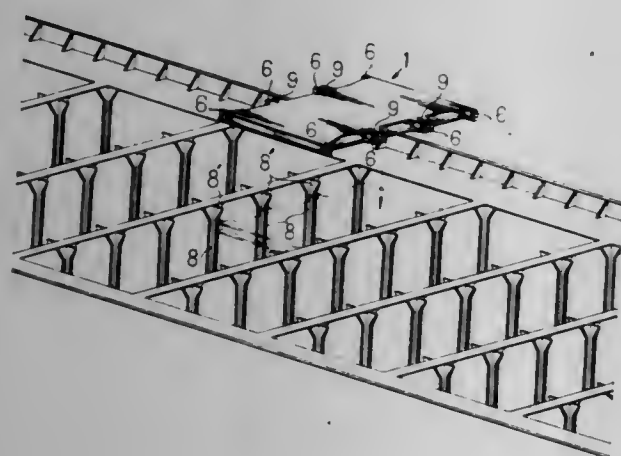
Filed Jan. 10, 1972, Ser. No. 216,485

Claims priority, application Japan, May 14, 1971, 46/38776

Int. Cl. A47b 13/00

U.S. Cl. 108-161

3 Claims



A container for marine transportation of a large-sized, massive cargo is provided for use with a container-destined vessel which has its hold divided by cell guides into unit areas for placement of standard-sized containers therein. The container comprises a plate-like container body having an area corresponding to the total area of more than one standard-sized containers. The body has corner fixtures at its four corners and at positions on both longitudinal sides which correspond to cell guide positions, each fixture having an aperture for engagement with a spreader. The fixtures located on both sides are formed notched recesses to avoid interference with projections on corresponding cell guides. The body includes a floor plate which is formed along the periphery and in the central portion thereof with a number of detent holes for mounting stoppers and attachment holes for fastening ropes. Stoppers mounted in selected detent holes fittingly engage the outer extremities of a wooden frame on the floor plate on which is a cargo is placed. Fastening ropes connected to the cargo are clamped in the attachment holes.

### 3,750,600 DISPOSAL OF THERMOPLASTIC MATERIALS

Ernest Osborne Ohsol, Stamford, Conn., and Arthur Perlmutter, Flushing, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 26, 1972, Ser. No. 247,633

Int. Cl. F23g 7/00

U.S. Cl. 110-1 R

8 Claims

There is provided a method for the disposal of thermoplastic materials utilizing a fuel oil as a solvent for said thermoplastic, by dissolving from about 1 to about 20 percent, by weight, of a thermoplastic material or a mixture of said materials in from 99 to 80 percent, by weight, of a fuel oil, in the presence or absence of a cracking catalyst, usually from 1 to 10 percent, by weight, at elevated temperatures under atmospheric or superatmospheric pressure and, thereafter, burning said fuel oil containing thermoplastic material absent tar residues and other solid, liquid, or gaseous pollutants.

3,750,601

### APPARATUS FOR EDGE FINISHING BODY OPENING IN GARMENTS

Harold Barry Lee, Heidelberg, Victoria, Australia, assignor to Bond's Wear Pty. Limited, Camperdown, New South Wales, Australia

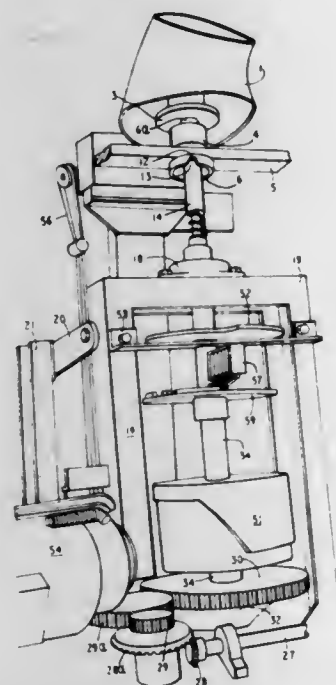
Filed Mar. 28, 1972, Ser. No. 238,802

Claims priority, application Austria, Mar. 30, 1971, PA 4452

Int. Cl. D05b 21/00

U.S. Cl. 112-121.12

6 Claims



An edge finishing machine for an opening in a garment the machine comprising a first frame movable relative to a second fixed frame, a sewing machine on arms pivotally connected to the first frame, cam means to move the first frame and the arms so that the sewing machine needle will follow the edge of the garment opening to be finished and a rotatable garment support located adjacent the machine.

3,750,602

### PROCESS FOR JOINING THE SLEEVE LINING IN SACK COATS AND LIKE GARMENTS TO THE SHOULDER PADS IN THE ARM SOCKET AND CONSTRUCTION FORMED THEREBY

Robert Ottich, Munchen, Germany, assignor to J. Strobel & Sohne, Munchen, Germany

Filed Mar. 20, 1972, Ser. No. 235,904

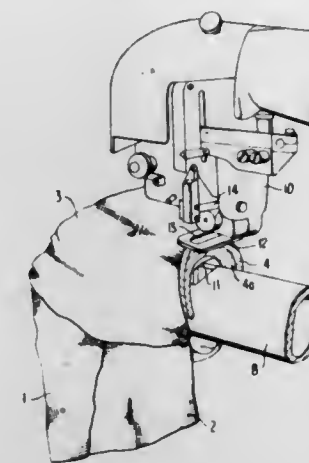
Int. Cl. D05b 1/24; A41d 27/26

U.S. Cl. 112-267

18 Claims

A process for joining the sleeve lining in sack coats and similar garments to the shoulder pads in the arm socket by

means of a backstitch-blindstitch operation. The blindstitches are arranged so as to extend only partially through the shoulder pads so as to avoid stiffening the shoulder pads. The blindstitch operation is done on a backstitch-blindstitch type sewing machine. Prior to placing the lining and shoulder pads



on the machine, the pertinent sleeve and coat structure is pulled through an opening in the sleeve lining. The invention also contemplates the construction of the sleeve lining, arm-hole part and shoulder pads with the blindstitches extending only partially through the shoulder pads.

3,750,603

### APPARATUS FOR CONTROLLING A SEWING MACHINE THREAD CUTTER

Robert A. Martin, Whitman, Mass., assignor to Clevepak Corporation, New York, N.Y.

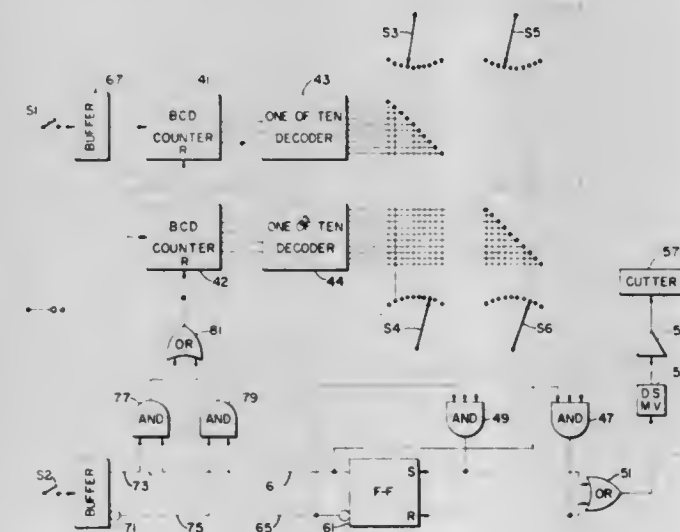
Continuation-in-part of Ser. No. 26,499, April 8, 1970,

abandoned. This application Apr. 5, 1971, Ser. No. 131,294

Int. Cl. D05b 65/02

U.S. Cl. 112-252

8 Claims



An apparatus and method for controlling sewing machine operations and a counting combination whereby a sequence of pulses having a frequency which is a function of machine speed is produced and counted by a counter. Upon a first count, the counter produces a first operation, such as cutting, reversing the machine, changing machine speed, etc., to take place and upon a second count the counter produces a second signal which causes a second operation to take place. In one embodiment the counter operates a counter after a predetermined amount of material or thread has been advanced before the cutter and again after a predetermined number of stitches have been taken after the material has passed the needle. The counting combination includes first and second switches connected to the output of digital counting circuitry for manually

selecting the first and second counts and logic circuitry linking the switches to a flip-flop for providing signals at the two counts.

3,750,604

### SEWING METHOD

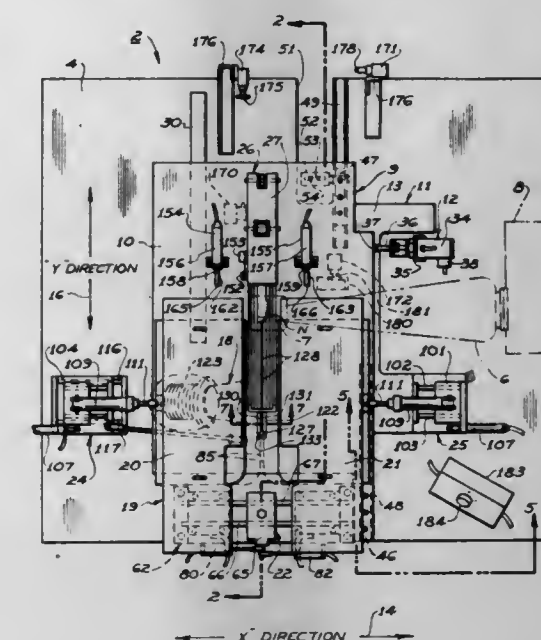
Charles O. Carrel, Vandalia, Mo.; Edward W. Wensell, Parma, and Thaddeus W. Majusick, Cleveland, both of Ohio, assignors to Bobbie Brooks Incorporated, Cleveland, Ohio

Filed Jan. 11, 1971, Ser. No. 105,376

Int. Cl. D05b 3/12

U.S. Cl. 112-265

12 Claims



A sewing apparatus and method for securing a fastener between opposed fabric edge portions which automatically transfers and guides the fabric and fastener, as a unit, relative to a relatively stationary sewing machine and needle to form a predetermined generally linear stitching line pattern for securement to the fastener, and in which each edge portion is held in folded and tensioned condition, and in spaced-upon relation to itself during selective portions of the operation to effect precise, uniform stitching.

3,750,605

### SLIDING CLASP FASTENERS

Geoffrey Warburton, and Ernest Robert Whetter, both of Cardiff, England, assignors to Textron Limited, Edenbridge, Kent, England

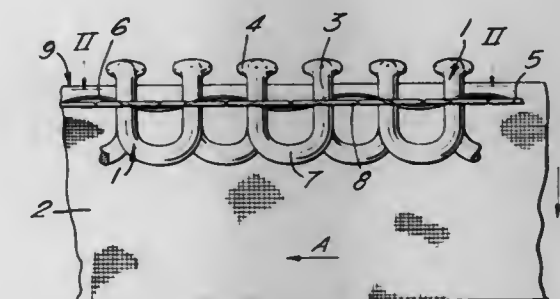
Filed Aug. 4, 1971, Ser. No. 168,881

Claims priority, application Great Britain, Aug. 14, 1970, 39,351/70

Int. Cl. D05b 3/12

U.S. Cl. 112-265

5 Claims



A sliding clasp fastener is disclosed. The fastener comprises fastener strings of interlockable and U-shaped limbed fastener



elements attached to respective fastener tapes by a line of stitching. The loops of the stitching pass over respective fastener elements to attach the fastener string to its fastener tape. Each string is anchored to its fastener tape by a filamentous element, such as a fine gauge cord or twisted textile thread, which meanders through spaces defined between the U-shaped limbs of the respective fastener elements in the longitudinal direction of the string. Also disclosed is a method of attaching a fastener string of U-shaped limbed fastener elements to a longitudinal fastener tape. The fastener tape and the string of fastener elements are fed past a stitching station at which a needle and an attaching machine is located. The needle is used to insert a row of stitches to attach the fastener elements to the tape, and a filamentous element is fed in the longitudinal direction of the tape alternately in front of and behind the stitching needle transversely of the tape. The filamentous element passes through spaces defined between the limbs of the fastener elements to anchor the attaching stitching and hence to the tape.

3,750,606

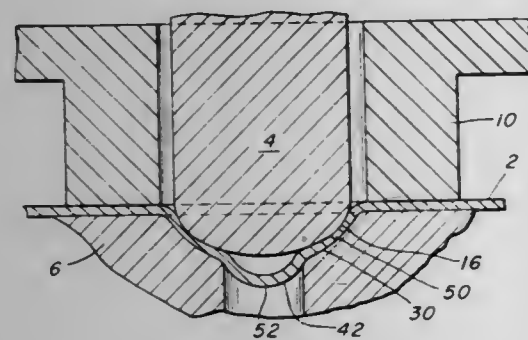
## RIVET FABRICATION

Fred R. Schultz, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 18, 1970, Ser. No. 20,703

Int. Cl. B21d 41/26

U.S. Cl. 113—1 F



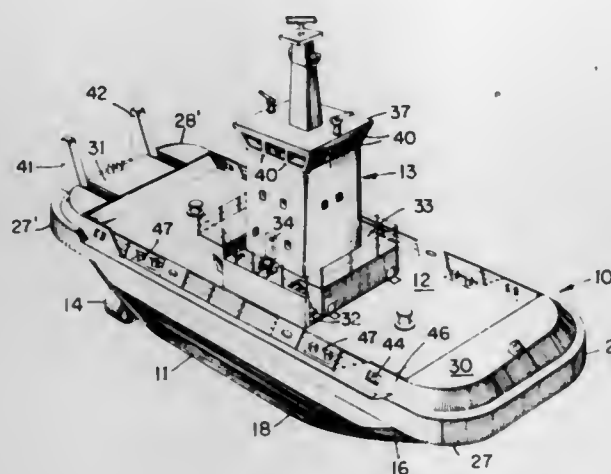
A method of forming an integral rivet in a sheet element including providing cooperating male and female dies and an interposed sheet element, moving the male die toward the female die to draw an outwardly directed hollow boss. Continuing movement of the male die toward the female die to thin an annular region in the lower portion of the hollow boss by compression which establishes metal flow substantially entirely in the direction of the upper portion of the hollow boss. Continuing relative closing movement of the male die with respect to the female die to establish an annular band of thinned material extending upwardly toward the upper portion of the hollow boss, whereby the upper portion of the hollow boss has a thickness substantially equal to the thickness of the remainder of the sheet element. The sheet element may be peripherally restrained around the area in which the boss is formed during boss formation.

Apparatus for fabricating an integral rivet in sheet material including a male die having a convexly curved sheet contacting surface and a rearwardly disposed generally cylindrical surface. A female die having a bore defining wall and a peripheral material supporting surface disposed substantially perpendicular to the bore defining wall. An annular concave transition surface connecting the bore defining wall and the material supporting surface. The radius of curvature of the sheet contacting surface and the radius of curvature of the annular concave transition surface being such that movement of the male die toward the female die establishes relative closing movement between the dies which occurs initially at the outer portion of the annular concave surface of the female die and progresses inwardly along the surface as male die movement continues.

3,750,607  
SHALLOW-DRAFT BOAT  
David J. Seymour, 588 36th Ave., San Francisco, Calif., and David Martin, 127 E. 59th St., New York, N.Y.  
Filed June 23, 1971, Ser. No. 155,764  
Int. Cl. B63b 3/00

U.S. Cl. 114—65 R

20 Claims



9 Claims

A shallow-draft boat that is operated by omni-directional thruster means lying below the flat hull, which is stabilized and protected by one or more skegs. The boat has a high beam-to-length ratio, a low depth-to-length ratio, and a low depth-to-beam ratio. Its hull is double-ended and symmetric along both the longitudinal axis and the transverse axis, and the hull has a fully developable surface enabling construction from flat plates without compound curving. One embodiment, especially useful as a harbor tugboat, has a high, centrally located deckhouse with an entry well above deck level; this deckhouse is water-tight at the deck, and it may be hinged to swing about 90° for open access to the hold; the engines lie below this deckhouse and project up into its lower part. Buoyancy compartments are preferably provided at each end, and in some forms of the invention at least one end has adjustable and retractable pusher knees. Other modified forms are simpler and have different special adaptations.

3,750,608

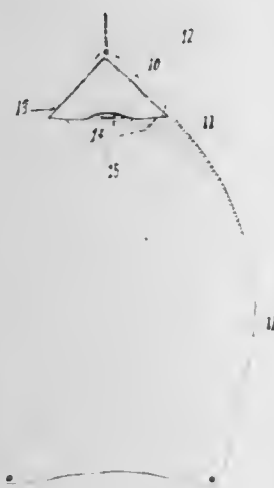
SELF CONTAINED SPINNAKER LAUNCHING POUCH  
Lennie S. Middleton, Jr., Miami, Fla., assignor to Max D. Puyan

Filed Nov. 2, 1971, Ser. No. 194,991

Int. Cl. B63b 9/04

U.S. Cl. 114—103

1 Claim



A pocket sewn into a spinnaker sail with the purpose in mind of creating a self contained receptacle from which the spinnaker may be launched. The pocket once sewn on is used for a place to store the spinnaker as an added benefit. The pri-

mary purpose of the pocket is to have a device from which to launch the sail which does not require devices separate from the sail itself and which eliminates the problems associated with launching this particularly cumbersome sail. The spinnaker is raised while contained in the pocket and while being raised is pulled from the pocket by the use of the lines attached to the feet of the sail.

3,750,609

POWERFUL THRUSTER METHOD AND APPARATUS  
SUITABLE FOR DRIVING A MEMBER SUCH AS AN  
ANCHOR OR PILE INTO THE EARTH, AND ANCHORING  
AND PILE APPARATUS

Stephen V. Chelminski, West Redding, Conn., assignor to Bolt Associates, Inc., Norwalk, Conn.

Division of Ser. No. 799,449, Feb. 14, 1969, Pat. No.

3,604,519. This application Aug. 28, 1970, Ser. No. 67,953

Int. Cl. B63b 21/28

U.S. Cl. 114—206 A

8 Claims



A novel thruster method and apparatus generating a sequence of powerful thrusts suitable for driving an anchor, a pile, or the like into the earth. A novel anchor, anchor placing apparatus and pile driver are described. An acoustic impulse repeater device is located within a reaction barrel to rapidly upwardly impel water therefrom. In the case of the anchor placing apparatus the reaction of the barrel rams an anchor and the anchor chain attached to it into sediment below a body of water. In the pile driver embodiment, the pile has taken the shape of the reaction barrel into which water is placed. Various embodiments are described.

3,750,610

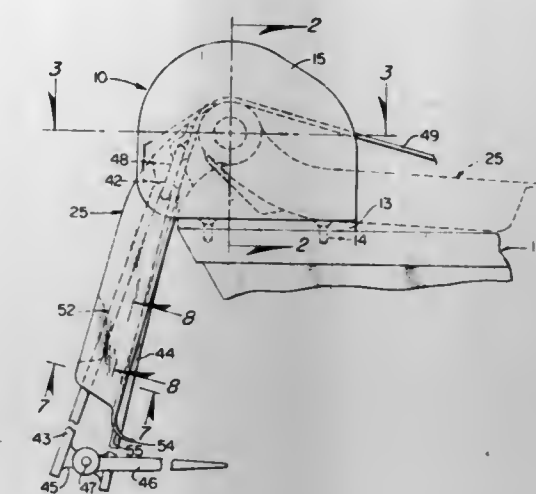
MOTOR-DRIVEN ANCHOR DAVIT  
Charles F. Davis, 711 Bain Station Rd., Kenosha, Wis.  
Filed Sept. 17, 1970, Ser. No. 73,059

Int. Cl. B63b 21/22

U.S. Cl. 114—210

10 Claims

A motor-driven anchor davit mounted on a boat deck includes an anchor socket mounted on a drive shaft to pivot through a vertical plane between inboard and outboard positions. The anchor is guided into alignment with the socket at its entrance opening and slidably received therein by retracting a cable or line attached to the anchor. The socket is keyed to the shaft but has a limited degree of free swing on the shaft in the outboard position and inboard position and resilient means cushions between the shaft key and socket mount. When the anchor is positioned in the socket a motor drive including a gear train which is coupled between a motor shaft and the drive shaft is operative to pivot the socket vertically between said positions. A control circuit includes a power control switch to initiate motor drive movement in



the movement of the anchor socket to automatically stop the motor drive when the anchor socket approaches either of said positions.

3,750,611

## TWO-WAY CAM CLEAT

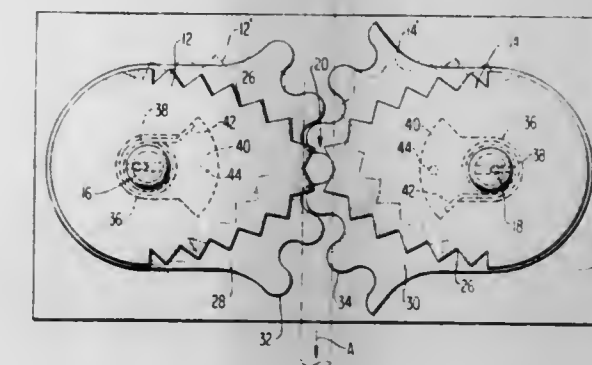
Gregory A. Field, Annapolis, Md., assignor to S and R Associates, Inc., Annapolis, Md.

Filed Sept. 24, 1971, Ser. No. 183,312

Int. Cl. B63b 21/08

U.S. Cl. 114—218

3 Claims



A pair of threadably engaged pivotable cam cleats having oppositely directed camming surfaces are pivotably mounted on a base, spring biased to closed nip position, but permitted to rotate in either direction against the bias of a spring to facilitate the entry of a line between the cam element in either of two opposing directions while preventing retrograde movement by the presence of the line within the nip.

3,750,612

## BOAT DOCKING DEVICE

Joseph D'Agostino, Jr., 30 E. Main St., Hummelstown, Pa.  
Filed June 19, 1972, Ser. No. 263,885

Int. Cl. B63b 21/04

U.S. Cl. 114—221

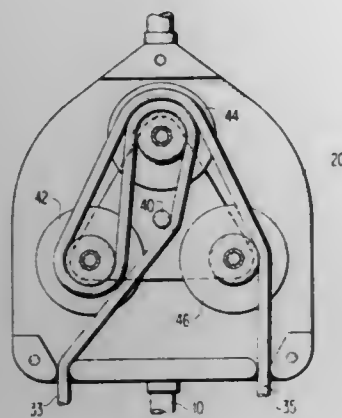
6 Claims

An elongated handle having gripping means at one end and hook means at the opposite end is provided with a locking pulley device adjacent the hook end which may be selectively operated to a first position allowing free passage of a brake therethrough and a second position wherein the rope will be frictionally wrapped upon itself to prevent passage of the rope therethrough. One end of the rope is adapted to be secured to a cleat on a boat and the hook is adapted to be secured to a



dock whereby upon pulling the opposite end of the rope with the locking pulley device in the first position, the slack may be

with engine exhaust gases before travelling downwardly through a second duct to a chamber surrounding the elbow



taken up to draw the boat to the dock and upon operating the pulley device to the second position, the boat will be securely held relative to the dock.

3,750,613

#### DEVICE FOR USE WITH LAND VEHICLES TO MAKE THE SAME AMPHIBIOUS

Uwe Krumsiek, Kassel, and Wilfried Holscher, Vellmar, both of Germany, assignors to Rheinstahl AG, Essen, Germany

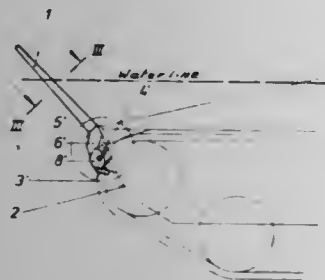
Filed Dec. 3, 1971, Ser. No. 204,531

Claims priority, application Germany, Dec. 17, 1970, G 70 46 610.3

Int. Cl. B60f 3/00

U.S. Cl. 115—.5 R

4 Claims



A device for making land vehicles amphibious, which includes a shield with holding means adapted to be mounted on the front side of the vehicle, said shield being so designed and mounted that in assembled condition it partly protrudes beyond and sticks out of the water through which the vehicle is to pass, while the shield with holding means is of a light-weight construction and preferably has an angle of incidence of 45° with regard to the longitudinal axis of the vehicle.

3,750,614

#### JET PROPULSION UNIT FOR BOATS

Dante Giacosa, Turin, Italy, assignor to Sira Società Industriale Ricerche Automotoristiche, Turin, Italy

Filed Apr. 27, 1972, Ser. No. 248,145

Claims priority, application Italy, May 11, 1971, 68558 A/71

Int. Cl. B63h 21/00

U.S. Cl. 115—17

3 Claims

This invention provides a water jet propulsion unit for boats which has a ducted impeller driven by an internal combustion engine mounted on top of the unit, the impeller having a vertical axis and directing a water jet rearwardly through an elbow duct. Cooling water is bled from the elbow duct upwardly to flow over surfaces at the upper end of the unit which are heated by the engine, this water mixing in an upper chamber

duct, from which the cooling water and exhaust gases escape through apertures facing in the same direction as the jet nozzle.

#### ERRATUM

For Class 115—18 see:  
Patent No. 3,750,621

3,750,615

#### OUTBOARD MOTOR NOISE ISOLATION SYSTEM

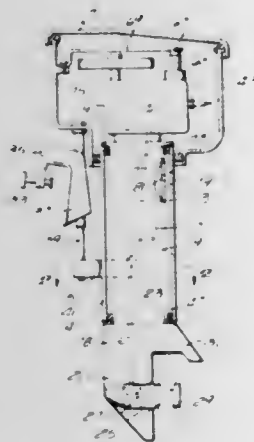
Gerald Haft, Brookfield, and Theodore J. Holtermann, Milwaukee, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Apr. 7, 1971, Ser. No. 131,937

Int. Cl. B63h 21/26

U.S. Cl. 115—18

17 Claims



Disclosed herein is an outboard motor comprising a propulsion unit including a drive shaft housing rigidly connected to and supporting a power head, a gear case rigidly connected to the bottom of the housing, a shell extending in circular relation to the housing upwardly from the gear case, and resilient means including a wall extending between the housing and the shell adjacent to the bottom of the shell for locating the shell in spaced encircling relation to the housing and for enabling retention of water in the space above the wall and between the shell and the housing.

3,750,616

#### POWER TRANSMISSION SYSTEM

Donald F. Nelson, 7560 Kentwood Ct., Gilroy, Calif.

Filed Apr. 5, 1972, Ser. No. 241,361

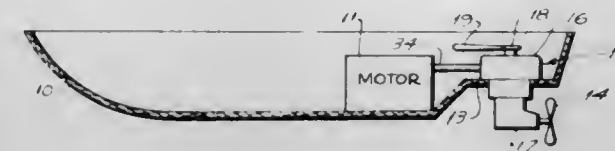
Int. Cl. B63h 25/42

U.S. Cl. 115—35 R

19 Claims

A steerable power transmission system particularly useful for driving and steering a small boat is described. A central

steering shaft, a drive tube, a fixed inner housing, and a rotatable outer housing are coaxial. The propeller shaft extends from the outer housing transverse to the common axis. The steering shaft is connected to the outer housing for pivoting it and the propeller axis. The propeller shaft is connected to a bevel gear that engages a pair of contra-rotating bevel ring gears on opposite sides thereof so that the drive torque is balanced. Means are provided for driving each of the ring



gears from the drive tube and each of these means includes an overrunning clutch that permits its respective ring gear to run relatively faster than the other ring gear so that the outer housing can be pivoted with nominal torque on the steering shaft. The arrangement permits the outer housing and hence propeller axis to be rotated 360° in either direction, thereby giving an inboard motor boat many of the advantages of an outboard motor.

3,750,617

#### LIFTING MECHANISM FOR INBOARD-OUTBOARD BOAT DRIVE

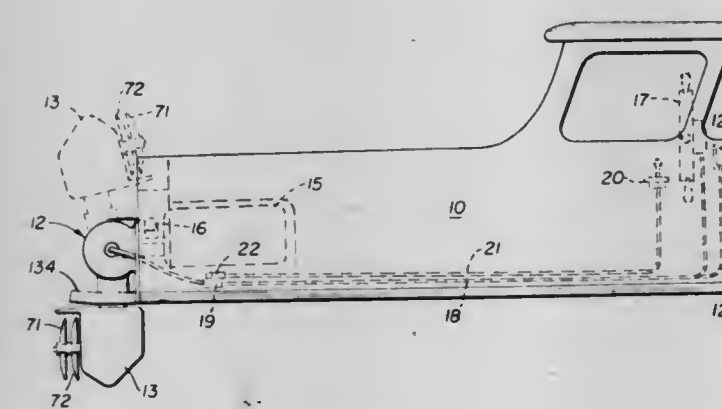
Lyle C. Pinkerton, 9264 Brighton Rd., Henderson, Colo.

Filed Sept. 9, 1971, Ser. No. 179,004

Int. Cl. B63h 5/12

U.S. Cl. 115—41 R

12 Claims



Lifting mechanism for raising the lower propulsion unit of the drive mechanism for a boat approximately 180° from its normal drive position and lowering said unit from its raised position to its normal drive position, comprising a stationary main housing for mounting on the stern of the boat, a rotatable housing in the main housing, a lower propulsion unit rotatable about a vertical axis in the rotatable housing, a worm loosely mounted on a power driven shaft in the main housing adjacent the rotatable housing, and a worm gear meshing with the worm splined into the rotatable housing. The loosely mounted worm is gripped by a dog on the power driven shaft for rotating with the shaft for the lifting operation and is released for free rotation on the shaft when the lower propulsion unit meets an obstruction. An indicator dial indicates the position of the lower propulsion unit relatively to the fixed housing.

3,750,618

#### POSITIONING ARRANGEMENT, ESPECIALLY ADJUSTING THE FEED STROKE OF A TOOL CARRIER IN A MACHINE TOOL

Wolfgang Griebenow, Esslingen, Germany, assignor to Index-Werke K.G. and Hahn & Tessky, Esslingen, Germany

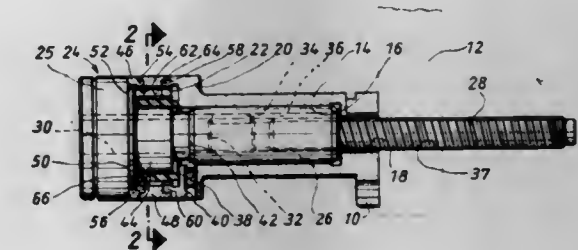
Filed Apr. 28, 1972, Ser. No. 248,519

Claims priority, application Germany, May 7, 1971, P 21 22 691.5

Int. Cl. B23q

U.S. Cl. 116—115.5

9 Claims



A positioning arrangement, especially for adjusting the feed stroke of a tool carrier in a machine tool, in which a scale ring provided with a scale for rough adjustment of the feed stroke cooperates with spindle means turnably mounted in a housing fixed to the tool carrier, provided with a scale for fine adjustment of the feed stroke, and in which a positioning ring provided with a positioning mark is arranged between the two scales. A step down gearing is provided within the rings for driving the scale ring by the spindle means. The step down gearing comprises an internal gear integral with said scale ring and having teeth meshing with the teeth of a gear which is turned by the spindle means.

3,750,619

#### CHANNEL INDICATOR

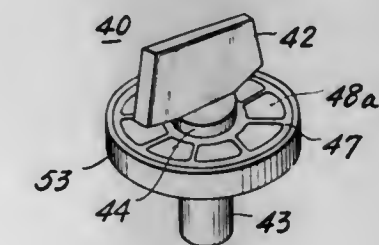
Takashi Yamamura, Ibaraki, Japan, assignor to Victor Company of Japan, Ltd., Yokohama-City, Kanagawa-ken, Japan

Filed Dec. 27, 1971, Ser. No. 212,161

Int. Cl. H03J 1/02

U.S. Cl. 116—124.1

4 Claims



A channel indicator generally comprises a plurality of channel indicating members respectively indicating a channel number, an indicator body which is capable of mounting and accommodating the channel indicating members individually replaceably, and a knob portion which is rotatable integrally with the indicator body. The channel indicator indicates the channel numbers in cooperation with a tuner. The channel indicating members can be individually removed from the indicator body and replaced.



3,750,620

## VAPOR DEPOSITION REACTOR

Franciscus Cornelis Eversteijn, and Hermanus Leonardus Peek, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

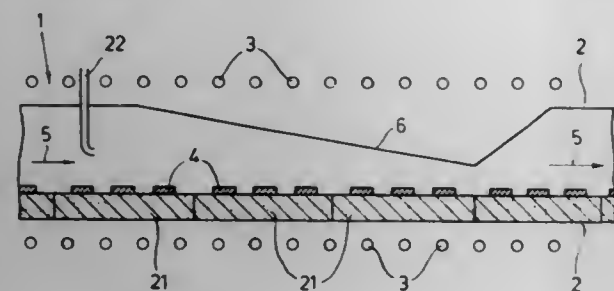
Filed Mar. 4, 1971, Ser. No. 120,983

Claims priority, application Netherlands, Mar. 11, 1970, 7003431

Int. Cl. C23c 13/10

U.S. Cl. 118—48

6 Claims



The invention relates to a reactor in which during operation a susceptor is heated and indirectly also a substrate, for example, of semiconductor material arranged on the susceptor. The heated substrate reacts with a gas stream so that the substrate may be etched or oxidized. As an alternative material may be deposited on the substrate from the gas stream.

It is a drawback that, viewed in the direction of the gas stream, the rate of performance of these processes decreases.

An appreciable improvement is obtained by using a reactor tube having a section which tapers in the direction of the gas stream.

3,750,621

## ELBOW STEERING FORK FOR FISHING MOTORS

Leo C. Hoyt, 321 E. Minnesota, Indianapolis, Ind.

Filed Nov. 1, 1971, Ser. No. 194,157

Int. Cl. B53h 21/26

U.S. Cl. 115—18 R

2 Claims



An attachment secureable to an electric fishing motor so to permit a fisherman to have both hands free for casting or fishing while steering the boat, the device consisting of an adjustable extension attachable to either the electric motor handle end or which is attachable to the vertical shaft of the motor, the adjustable extension supporting a rake like fork having a series of upwardly extending, spaced apart tines between a selective ones of which a fisherman can place his elbow while steering.

3,750,622

## ANTI-POLLUTION VENTILATION SYSTEM FOR SPRAY-TYPE COATING CHAMBERS

Allen B. Repp, 24842 Penn Ave., Dearborn, Mich., and William B. Berk, Jr., 22886 Evergreen Rd., Southfield, Mich.

Filed June 11, 1971, Ser. No. 152,218

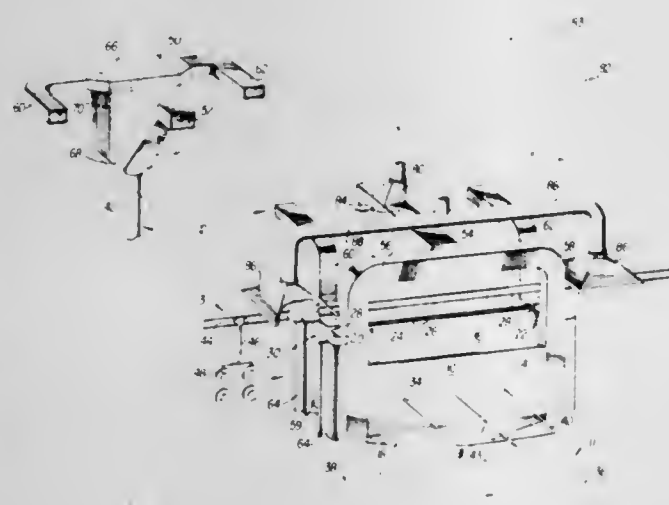
Int. Cl. B05c 11/16

U.S. Cl. 118—326

13 Claims

An anti-pollution ventilation system includes means for circulating a fluid in a closed-loop path outside of a spray-type

coating chamber. The circulating fluid is directed so as to form a fluid curtain across entrance and exit openings of the coating chamber. The system also includes a separator for continuously separating coating material from the circulating fluid. The separator comprises a plurality of side-by-side bores, having helical baffles therein, through which circulating fluid is directed. In one embodiment of the invention, some of the bores can be selectively closed. Means are included for transporting separated coating material from the separator back to the coating chamber for reuse. One refinement of the invention is to provide a bleeding means for bleeding fluid



from the ventilation system, and another refinement is to provide a leakage collecting means for collecting leakage from the fluid curtains; in both cases a vapor-contaminant cleaner is provided to clean drained or leaked fluid before it is released to outside atmosphere. The ventilation system of this invention is further disclosed in combination with an irradiation type coating device wherein a coating chamber and an irradiating oven are located so close to one another that their inner atmospheres can mix. The inner atmospheres comprise mainly inert gases. In this embodiment, inert gas is bled from the ventilation system and fed to the irradiation oven.

3,750,623

## GLOW DISCHARGE COATING APPARATUS

James F. Carpenter, St. Louis; Leon E. McCrary, Bridgeton; Kenneth E. Steube, St. Charles; Albert A. Klein, Jr., St. Louis, and George H. Kesler, Creve Coeur, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 751,499, Aug. 9, 1968, abandoned. This application Feb. 11, 1972, Ser. No. 225,434

Int. Cl. C23c 13/12

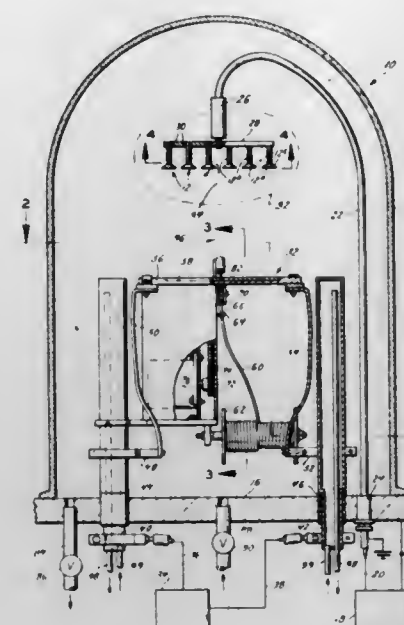
U.S. Cl. 118—49.5

11 Claims

An apparatus for plating workpieces including particularly irregularly shaped workpieces by exposing said workpieces to controlled environmental conditions including an atmosphere of inert gas, ionizing particles of the gas in the presence of a relatively high voltage electric field whereby the ionized particles of inert gas are attracted toward and bombard the workpieces thereby cleaning and preconditioning the workpieces, and simultaneously vaporizing particles of a plating substance into the controlled environment whereby some of said

vaporized particles are ionized, and both neutral and ionized particles are deposited on the surfaces of the workpieces in-

between the electrophotographic material and the fixed developing electrodes or the smaller diameter portions of developing electrode drums along the advancing direction of the electrophotographic material.



cluding surfaces which may be hidden from line-of-sight of the source of vaporized particles.

3,750,624

## APPARATUS FOR DEVELOPING ELECTROPHOTOGRAPHIC CONTINUOUS WEB MATERIAL

Masamichi Sato; Osamu Fukushima, and Seiji Matsumoto, all of Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Minami, Ashigaka-shi Kanagawa, Japan

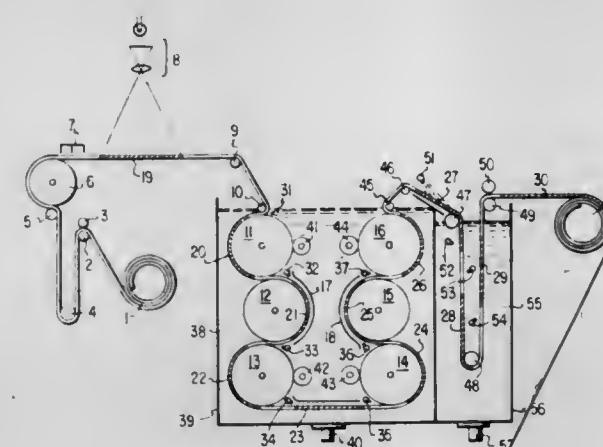
Filed July 21, 1971, Ser. No. 164,741

Claims priority, application Japan, July 21, 1970, 45/63763

Int. Cl. G03g 13/00

U.S. Cl. 118—637

2 Claims



An apparatus for developing electrophotographic continuous web material which comprises developing electrode drums consisting of end portions with larger diameter to hold the edge portions of an electrophotographic continuous web material and an electroconductive middle portion with smaller diameter to face the surface holding electrostatic latent image of the electrophotographic material with a small distance thereto, support drums to be brought into intimate contact with the rear surface of the material, the developing electrode drums and the support drums being alternatively in a container for liquid developer so as that the material can be wound on the drums to form approximately semi-circular contact with each of the drums, fixed developing electrodes curved and provided along the periphery of the support drums, means for driving the electrophotographic material under tension, and means for supplying liquid developer

3,750,625

## INSECT REARING TRAY

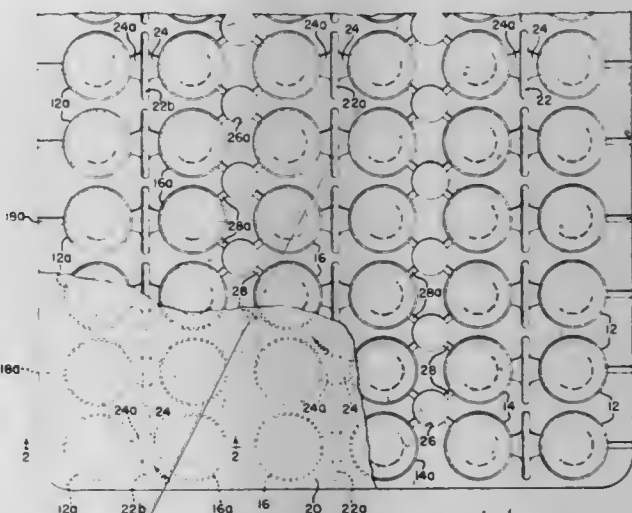
Bryant Edwards, Clarendon Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 10, 1972, Ser. No. 279,407

Int. Cl. A01k 29/00

U.S. Cl. 119—1

10 Claims



A tray for use in mass rearing of insects, particularly beetles such as boll weevils, in an artificial environment from incubation, through hatching and growth; and including a compartmented tray with multiple cup-like compartments arranged in multiple rows with shallow egg receiving recesses between the compartment of pairs of rows and communicating with upper edge portions of the compartments through shallow crawl passages; and with the rows of compartments in communication with shallow air access passages at the upper edge portions thereof peripherally removed from the crawl passages; and the entire compartmented tray being covered by an impermeable sheet of plastic material forming the upper closing walls of the several recesses, passages and compartments.

3,750,626

## FEED CONTROL INSTALLATIONS FOR HERDS OF ANIMALS

Terence Princep Smith, Dudley, England, assignor to Teledictor Limited, Tipton, Staffordshire, England

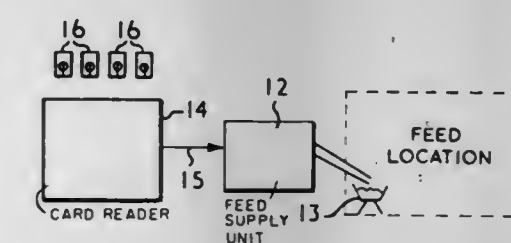
Filed Nov. 5, 1970, Ser. No. 87,285

Claims priority, application Great Britain, Nov. 12, 1969, 55,274/69; Feb. 26, 1970, 9,337/70

Int. Cl. A01k 5/02; G06f 13/00

U.S. Cl. 119—51 R

2 Claims



A feed control installation for a herd of animals, including a feed location, a series of feed indicator elements such as punched cards, each bearing an identity symbol associating it with a specific animal and each carrying feed information representative of a desired quantity of feed for that animal, a card reader or other feed indicator element reader connected



through a control means to a feed supply unit to cause the feed supply unit to supply the feed quantity indicated by the feed indicator element presented to the reader.

3,750,627

## TURNING CONTROL SIGNAL

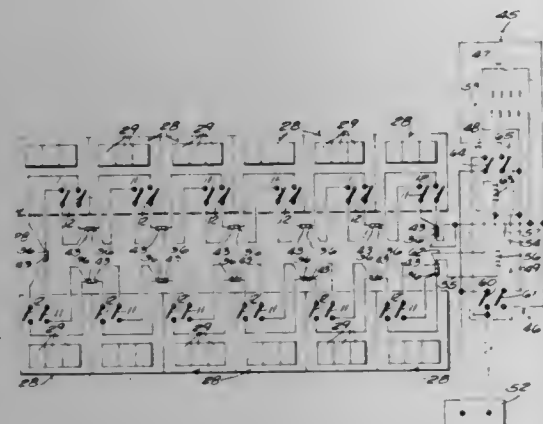
Allan A. MacKinnon, Gloucester, England, assignor to Associated Manufacturers International, S. A., Chicago, Ill.

Filed Nov. 5, 1971, Ser. No. 196,008

Int. Cl. A01k 41/06

U.S. Cl. 119-44

7 Claims U.S. Cl. 122-6 R



Apparatus for signaling a malfunction in the turning motion of egg trays in an incubator. The apparatus includes an egg tray position sensor, an electric circuit and a signal. The turning motion of the tray directly affects the position of the sensor and directly triggers the signal.

3,750,628

# WATERING VALVE FOR SMALL ANIMALS, ESPECIALLY CHICKENS, PREFERABLY WITH DRIP PAN

Egon Schumacher, Rechternesstr. 18, 12847 Barnstorf, Germany

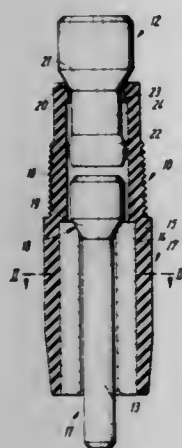
Filed Aug. 20, 1971, Ser. No. 173,611

Claims priority, application Germany, Aug. 20, 1970, G 70 31 233.3; Aug. 20, 1970, G 70 31 234.4

Int. Cl. A01k 7/00

U.S. Cl. 119-72.5

6 Claims



A watering valve and trough for chickens. The valve has a body housing two axially aligned conical valves, the upper one having a plastic seat and the lower one having a metal seat. The valve body is inserted into a water line from the underside and a cup like trough is attached to the protruding body. An actuating lever is pivoted in the trough and opens both valves when struck by a chicken's beak.

# 3,750,629 COOLED FURNACE AND A COOLING SYSTEM THEREFOR

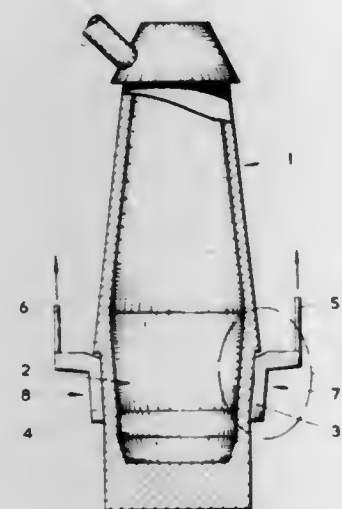
Rudolph E. Cramer, Beverwijk; Cornelis Van Der Villet, Aker-sloot, and Johannes H. W. Ouwerkerk, IJmuiden, all of Netherlands, assignors to Koninklijke Nederlandsche Hoogovens En Staalfabrieken N.V., IJmuiden, Netherlands

Filed Oct. 20, 1971, Ser. No. 190,745

Claims priority, application Netherlands, Oct. 23, 1970, 7015595; June 14, 1971, 7108145

Int. Cl. F22b 37/00

19 Claims



A furnace over at least part of its outer surface is provided with a double wall, the space enclosed by said double wall being part of a circulation system for cooling liquid without pressure, there being a reservoir above the double wall space in which vaporized cooling liquid can be separated from the cooling mixture, which reservoir is in communication with the upper end and the lower end of the double wall space, the reservoir being in direct open communication with the upper end of the double wall space and being positioned immediately on top thereof and the double wall space being divided into two spaces by an intermediary baffle about parallel to the outer surface of the furnace, said two spaces being in open communication with each other at their upper and lower ends. The reservoir may extend from the upper end of the double wall space in upward and widening outward direction with respect to the furnace wall and may have at least one discharge duct for vapour connected thereto in the proximity of the highest and most outward area of this reservoir; may have in the proximity of the upper end of the double wall space, at the outside thereof, as part of the supply system for cooling liquid a liquid reservoir with an overflow which is connected to the space within the double wall through a narrow connecting passage; and may include other structural features.

3,750,630

# ROTARY COMBUSTION ENGINE

David S. Hariman, Djakarta, Indonesia, assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Feb. 23, 1971, Ser. No. 117,961

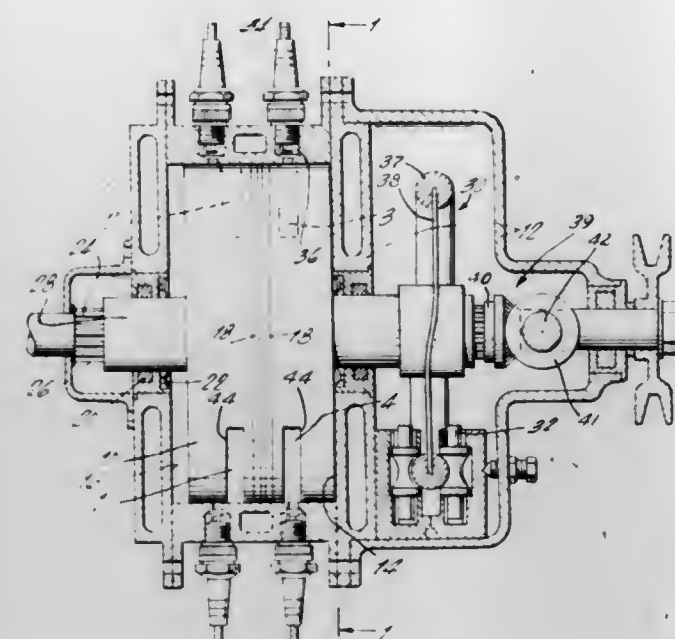
Int. Cl. F02b 53/08

U.S. Cl. 123-8.19

4 Claims

A rotary combustion engine employing a unique system of combustion wherein in one revolution there occurs two intake mixture steps, two compression steps, four combustion steps, four powerstrokes and four exhaust steps. The engine comprises a housing, a cylindrical rotor disposed in the housing, a cylindrical shaft mounted in the housing for supporting the rotor therein, and a rotatable wheel coupled to the rotor having one half thereof displaced and non-planar with respect to the other half for laterally reciprocating the rotor in the housing during rotation of the rotor. Two pairs of combustion

chambers are disposed in the rotor, each disposed opposite the other pair. The combustion chambers have a curved shape



so that they open at one end at the periphery of the rotor and at the other end at the sides thereof.

3,750,631

# FUEL INJECTION SYSTEM CONTROLLED BY THE AMOUNT OF AIR DRAWN IN DURING THE SUCTION STROKE

Hermann Scholl, Stuttgart; Harald Mauch, Korntal; Otto Glockler, Renningen; Norbert Rittmannsberger, Stuttgart, all of Germany; Wolfgang Reichardt, Sevres, France; Peter Werner, Stuttgart, and Ulrich Drews, Schwieberdingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

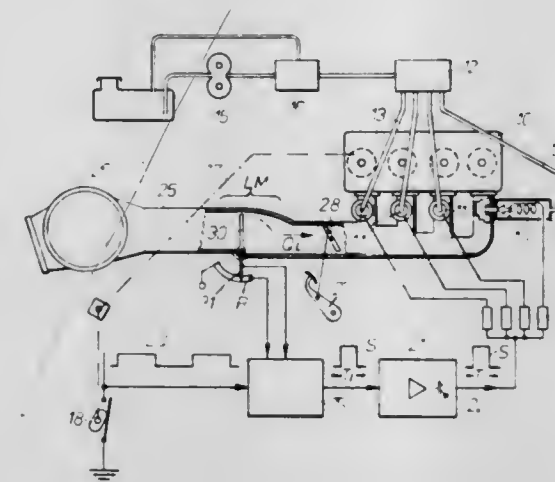
Filed July 9, 1971, Ser. No. 161,192

Claims priority, application Germany, July 11, 1970, P 20 34 497.2

Int. Cl. F02m 51/00; F02d 5/02

U.S. Cl. 123-32 EA

24 Claims



The position of a static plate used to measure the amount of air sucked through the intake manifold controls the wiper of a potentiometer that is connected to control either the rate of charging or of discharging of a capacitor that is charged in synchronism with the rotation of the engine crank shaft. The length of time that the capacitor or inductor takes to discharge determines the length of time that the fuel injection valve is open.

3,750,632

# ELECTRONIC CONTROL FOR THE AIR-FUEL MIXTURE AND FOR THE IGNITION OF AN INTERNAL COMBUSTION ENGINE

Richard Zechall, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

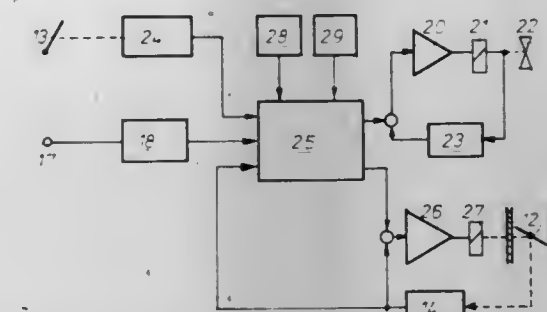
Filed Mar. 25, 1971, Ser. No. 128,617

Claims priority, application Germany, Mar. 26, 1970, P 20 14 633.2; Feb. 5, 1971, P 21 05 353.2

Int. Cl. F02b 3/00; F02p 5/04, 1/00

U.S. Cl. 123-32 EA

18 Claims



A function generator is fed input signals corresponding to at least two different engine operating parameters, such as the position of the accelerator pedal and the engine rpm, the function generator, in dependence on these input signals, controlling the amount of fuel supplied to the cylinder so as to maintain a desired excess air coefficient  $\lambda$  for each operating condition of the engine. In one form of the invention, the function generator controls the fuel and air supplied, as well as the ignition timing.

3,750,633

# ELECTRONIC GOVERNOR FOR FUEL-INJECTION TYPE INTERNAL COMBUSTION ENGINES

Yoshio Ohtani, Higashi-Matsuyama, and Todomu Kakijama, Fukuoka, both of Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan

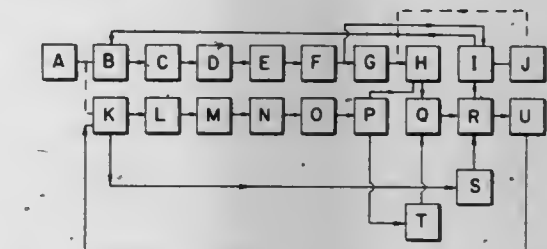
Claims priority, application Japan, Mar. 14, 1970, 45/21215

Filed Mar. 9, 1971, Ser. No. 122,473

Int. Cl. F02d 11/10

U.S. Cl. 123-102

4 Claims



An electronic governor for fuel-injection type internal combustion engines in which the speed regulation and "ungleich" effect may be achieved by means of control circuit and "ungleich" setting circuit, and there may be obtained a stable engine output characteristic for the full range of engine speeds from the low-speed to the high-speed by providing anti-over-run circuit and anti-hunting circuit, so that the possibility of hunting under low-speed operating conditions is completely avoided.

3,750,634

# CRANKCASE VENTILATING SYSTEM FOR FUEL INJECTION TYPE INTERNAL COMBUSTION ENGINE

Yasuo Nakajima, and Yukihiko Etoo, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited Yokohama City, Japan

Filed Oct. 22, 1970, Ser. No. 82,949

Claims priority, application Japan, Oct. 22, 1969 44/84430

Int. Cl. F02f 9/00; F02m 25/06

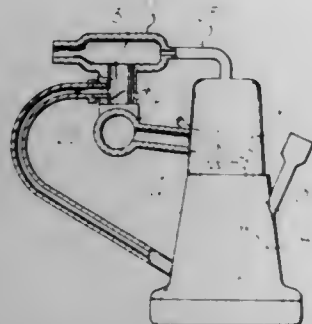
U.S. Cl. 123-119 B

3 Claims

A crankcase ventilating system adapted to effectively reduce the amount of hydrocarbon exhaust during idling and



deceleration. This system has a first conduit through which blow-by gases containing water and gasoline vapors in the crankcase enter the throttle chamber upstream of the throttle valve. The first conduit is provided with an orifice which controls the flow therethrough. A second conduit is provided to introduce fresh air from the air cleaner to the crankcase. During idling and deceleration the throttle valve is held in the fully



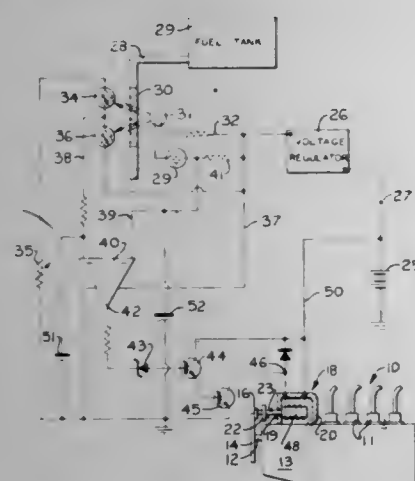
closed position so that the blow-by gases are prevented from entering the engine. Under these conditions, only a small amount of blow-by gases is caused to flow into the air cleaner through the second conduit by an extremely small negative pressure existing in the air cleaner. Thus, the amount of hydrocarbon exhaust during idling and deceleration is remarkably reduced.

3,750,635

**AUTOMATIC ADJUSTMENT FOR FUEL RACK STOP**  
John L. Hoffman, and Gerald E. Whitehurst, both of East Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.  
Filed June 14, 1971, Ser. No. 152,512  
Int. Cl. F02d 1/00

U.S. Cl. 123—140 MC

10 Claims



Control means for adjusting the fuel setting of an internal combustion engine comprises means for measuring the heat value of a fuel by detecting differences in the light transmission characteristics between different fuels, and initiating a signal in response thereto. The signal activates control means for altering the fuel setting in accordance with such heat value.

3,750,636

**APPARATUS FOR THE CONTROL OF FUEL INJECTION FOR AN INTERNAL COMBUSTION ENGINE**  
Takao Okura, Oi-machi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan  
Filed Dec. 29, 1971, Ser. No. 213,267  
Claims priority, application Japan, Dec. 31, 1970, 45/123276

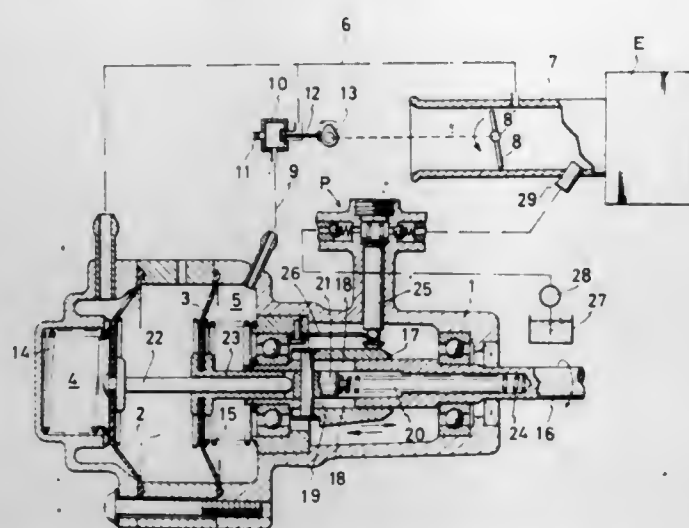
Int. Cl. F02d 1/108, 1/106

U.S. Cl. 123—140 MP

7 Claims

Apparatus for the control of a fuel injection type internal combustion engine comprising a first negative pressure governor

nor arranged to be operated by the negative pressure of the engine to control the amount of fuel injection of a fuel injection pump depending on the negative pressure force. A second



negative pressure governor is arranged to operate the amount of fuel injection of the fuel injection pump to increase the amount of fuel injected according to increase in the engine speed after the throttle valve has been opened wide.

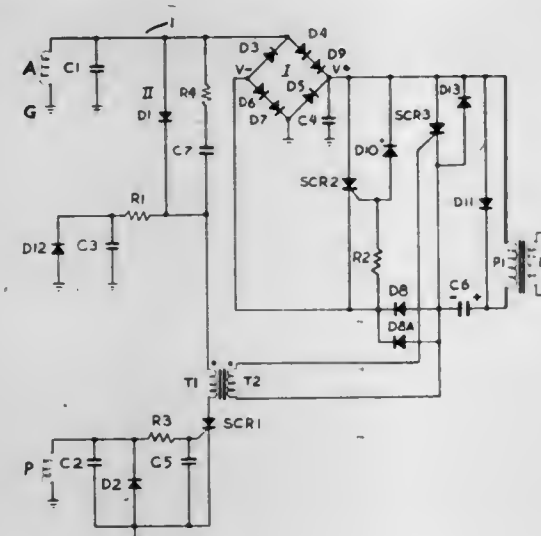
3,750,637

**ALTERNATOR-RECTIFIER ELECTRONIC CHARGING AND DISCHARGING APPARATUS FOR IGNITION SYSTEMS AND THE LIKE**

Floyd M. Minks, Rt. 1 Box 66, Kissimmee, Fla.  
Filed Sept. 7, 1971, Ser. No. 178,323  
Int. Cl. F02p 3/06

U.S. Cl. 123—148 E

13 Claims



This disclosure deals with a novel impulse producing apparatus for ignition systems and the like involving a full-wave rectifier charging circuit discharged by solid-state switching means and controlled by a half-wave rectifying circuit that prevents failure to turn off the switching means.

3,750,638

**TRANSISTORIZED IGNITION DEVICE OF AN INTERNAL COMBUSTION ENGINE**

Matsuo Tanaka, Higashi-Osaka, Japan, assignor to Nippon Denon Co., Ltd., Osaka, Japan  
Filed Mar. 27, 1972, Ser. No. 238,454

Claims priority, application Japan, June 19, 1971, 46/52826

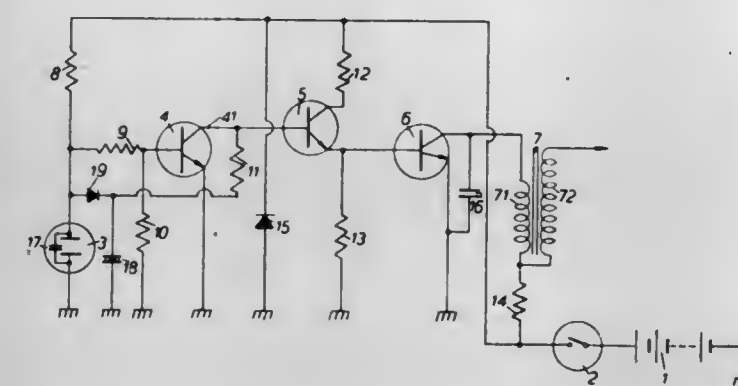
Int. Cl. F02p 3/06

U.S. Cl. 123—148 E

3 Claims

A transistorized ignition device for an internal combustion engine. A dc power source, an engine switch, a grounded contact point, an ignition coil, and an ignition transistor are connected in series for supplying an electric current to a primary winding of said ignition coil from said dc power source when

the circuit is conducting. A controlling transistor is coupled in the circuit for controlling the operation of the ignition transistor, the controlling transistor being switched according to opening and closing of the contact point and holding the ignition transistor in a non-conducting state when the contact point is in an open position. A capacitor is connected in parallel with the contact point and is charged when the contact



point is in the open position. The capacitor is further connected to the output of the controlling transistor, and a diode is connected between the capacitor and the contact point in the forward direction relative to the charging current for the capacitor. Upon the closing of the contact point the ignition transistor is made conductive by means of the charge on the capacitor.

3,750,639

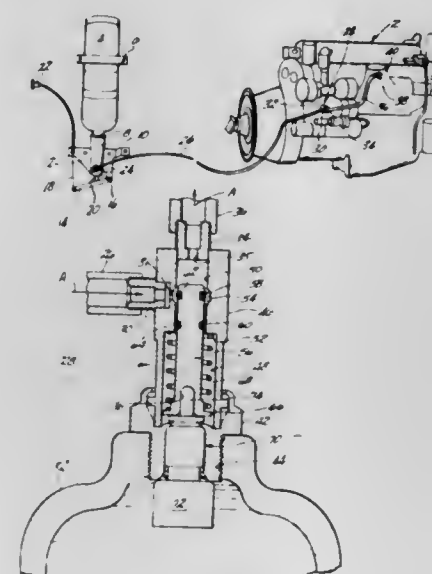
**SYSTEM FOR CONTROLLING ENGINE PRIMING FLUID FLOW**

William J. DiGirolamo, Prospect Heights, Ill., assignor to Olin Corporation, New Haven, Conn.  
Filed Nov. 18, 1971, Ser. No. 199,926

Int. Cl. F02m 1/16

U.S. Cl. 123—187.5

4 Claims



A system is provided for automatically shutting off the flow of diethyl ether to an internal combustion engine after the temperature of the engine cooling system has reached a predetermined point. The diethyl ether is used as a cold weather diesel engine starting aid and is injected in vapor form directly into the air intake manifold and into the engine cylinders for firing by the reduced auto-ignition temperature of diethyl ether with respect to diesel fuel. The engine shut-off temperature is in a range which indicates that the engine is sufficiently warmed-up to be self sustaining through use of its normal fuel. The system prevents unwarranted and harmful excessive use of the starting aid.

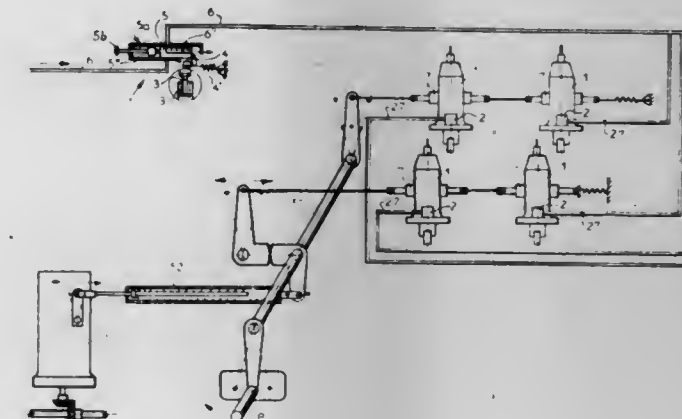
3,750,640

**EMERGENCY STOPPING DEVICE FOR A FUEL-INJECTION INTERNAL COMBUSTION ENGINE**  
Karl Walter Kuhn, Saint-Germain-en-Laye, France, assignor to Societe D'Etudes De Machines Thermiques, Saint-Denis, France

Filed Nov. 22, 1971, Ser. No. 201,004  
Claims priority, application France, Dec. 31, 1970, 7047558  
Int. Cl. F02b 77/00

U.S. Cl. 123—198 D

3 Claims



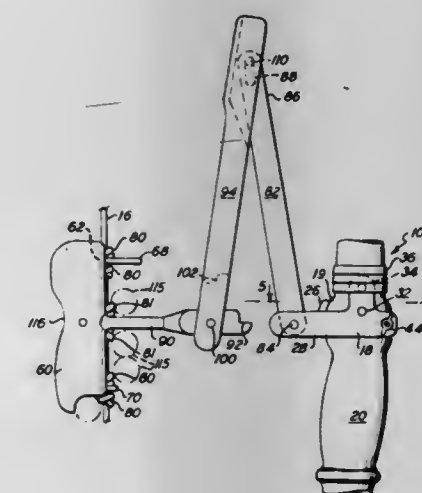
In an internal combustion engine of the fuel-injection type fed with fuel by injection pumps, each pump comprising a piston operated by an actuating mechanism releasably connected thereto and with tripping means adapted to slow down and to stop the engine in case of overspeed, at least one servo-motor operated by said tripping means for acting upon said fuel-injection pumps, an emergency stopping arrangement wherein each one of said pumps is provided with an individual servo-motor acting directly upon the piston of said pump to disconnect said piston from its actuating mechanism.

3,750,641

**COLLAPSIBLE BOW ARM REST**  
James C. Ramsey, P.O. Box 36, Lincoln, N. Mex.  
Filed Mar. 28, 1972, Ser. No. 238,911  
Int. Cl. F41b 5/00

U.S. Cl. 124—23

15 Claims



A collapsible bow arm rest extending between the mid-portion of a bow and a pull handle located rearwardly of the bow mid-portion that is secured to the ends of the bow and extends rearwardly of the bow string mid-portion. The bow arm rest is extended from a folded position, along a straight line, to an extended and locked condition. When in the locked condition the front and back arms are prevented from collapsing.



3,750,642

**ORCHARD HEATING SYSTEM AND BURNER**

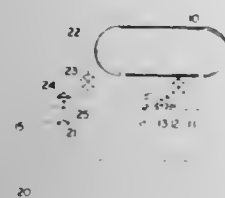
Sigmund H. Machlanski, c/o John E. Wagner, 1041 E. Green St., 202/Pasadena, Calif.

Filed Mar. 17, 1971, Ser. No. 125,053

Int. Cl. A01g 13/06

U.S. Cl. 126—59.5

28 Claims



A system for supplying liquefied petroleum or gaseous fuel to an array of grove heaters including a central gas supply valving distribution system and thermostatic control. The system includes a number of high efficiency heaters, each with a shielded pilot flame burner and assembly and automatic cutoff valve in the event of pilot flame extinguishment. The burner includes a helical flame path in intimate contact with a tubular body member constituting horizontal radiating surface and a top diffuser cover for optimum heat distribution in a horizontal direction. The burner assembly includes a shielded pilot flame with a continuous metal flame attachment member for insuring the expansion of burner flame from pilot to full flame in full operation without flameout. The burner includes a temperature responsive valve which is effective and readily adjustable in the field.

3,750,643

**MULTIPLE POSITION DOOR LATCH MECHANISM**

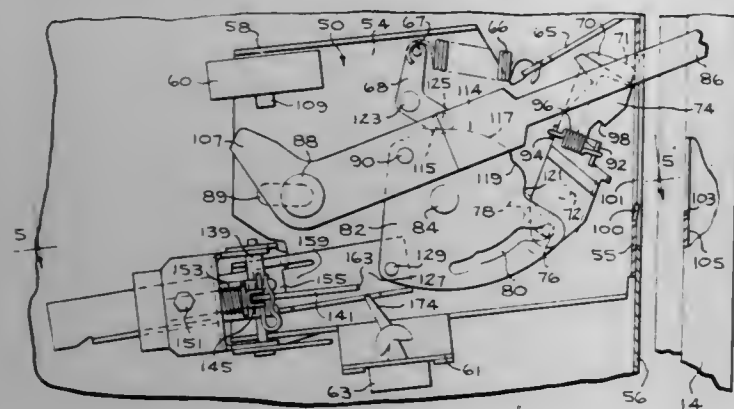
Roland V. Fowler; James A. White, and David C. Cross, all of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed May 23, 1972, Ser. No. 256,093

Int. Cl. F23m 7/00; F24c 15/04

U.S. Cl. 126—197

13 Claims



A three-position, sliding latch mechanism for an appliance door such as an oven door. The mechanism includes a latch handle and a hidden latching bolt for swinging out and engaging the door. The first position of the latch mechanism is an unlocked position, and the second position is a locked position. The third position is also a locked position, although the latching bolt remains stationary in this locked position as the latch handle is moved between the second and third positions. There are separate interlock switch means that are operable in either the first (unlocked) or the second and third (locked)

positions, whereby different oven operations may be performed as a function of the various positions of the latch handle so as to simplify the control circuitry and components.

3,750,644

**CARDIAC PROGRAMMER FOR A CORONARY BLOOD PUMP**

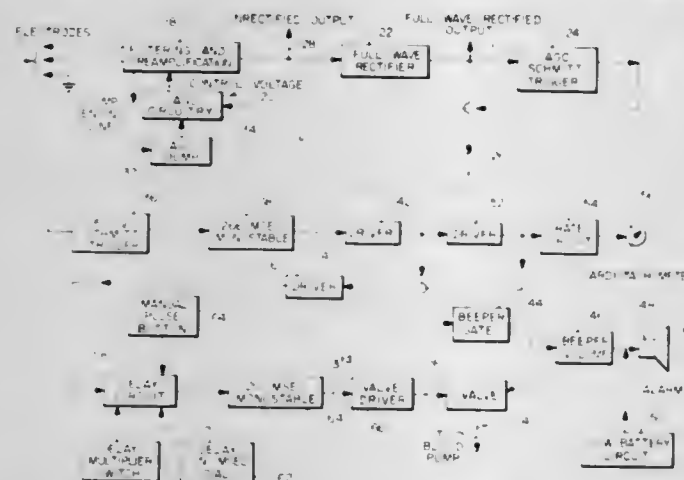
Charles W. Ragsdale, Laramie, Wyo., assignor to the United States of America as represented by the Secretary of the Army

Filed Sept. 9, 1971, Ser. No. 179,122

Int. Cl. A61b 5/04

U.S. Cl. 128—1 D

5 Claims



A programmer system is disclosed for driving a complementary coronary blood pump disposed at a non-thoracic location in delayed synchronism with the electrocardiogram waveform of a subject. Selected characteristics of the electrocardiogram signal are utilized to provide a control pulse, which control pulse actuates a valve mechanism to effect operation of the blood pump. The control pulse is generated by the system after a predetermined time period from the occurrence of the selected electrocardiogram characteristics, the time delay being substantially equal to the propagation time of a coronary ventricular pressure pulse from the thorax region of the subject to the remote blood pump location. In this manner, synchronous cardiac assistance can be effected at any suitable point in the arterial system of the subject.

3,750,645

**METHOD OF COLLECTING BLOOD AND SEPARATING CELLULAR COMPONENTS THEREOF**

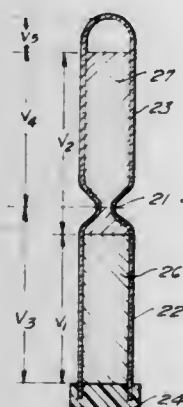
Michael C. Bennett, Warren, and John A. Mattaliano, Secaucus, both of N.J., assignors to Becton, Dickinson and Company, Rutherford, N.J.

Filed Oct. 20, 1970, Ser. No. 82,240

Int. Cl. A61b 19/00

U.S. Cl. 128—2 G

14 Claims



A separator tube which allows the separation of serum or plasma from the cells in blood to avoid contamination of the serum or plasma by the red cells. The tube is divided into two chambers formed by a constriction in the tube, which constriction has an inside diameter sufficient to allow the passage

of serum or plasma, but not so large as to prevent the formation of an "air lock" between the chambers when the tube containing the blood is held horizontally. Blood is introduced into the tube, the tube is centrifuged or allowed to settle so that the cells go to the one end and the serum or plasma goes to the other end, the tube is fractured at the constriction into two containers, leaving only serum or plasma in one container and cells in the other. The container holding the serum or plasma can be closed with a stopper, cap or sealing material for transporting to a laboratory for analysis. Such container may be provided with various features to facilitate dispensing of the fluid portion.

patient may use by herself, without assistance by anyone. Invention is characterized by separating the initial discharge from the midflow stream, and collecting samples of the latter. Various embodiments of the invention are disclosed, (1) based on discovery that initial discharge and midflow stream issue at widely different velocities and follow different trajectories; (2) based on first disposing of the initial discharge and then, after a short interval, directing the stream into a receptacle.

3,750,648

**MEANS FOR COLLECTING SPECIMENS OF URINE**

Donald M. Gleason, 5402 E. Grant Rd. Suite B-4, Tucson, Ariz.; Manfred R. Bottaccini, Rt. 6 Box 326 V, Tucson, Ariz., and Robert J. Reilly, 5402 E. Grant Rd. Suite B-4, Tucson, Ariz.

Continuation-in-part of Ser. No. 31,204, April 23, 1970, abandoned. This application Jan. 22, 1971, Ser. No. 108,766

Int. Cl. A61b 10/00

**TRANSPORT SYSTEM FOR BACTERIA WITH PROVISIONS FOR CARBOGENOPHILIC ORGANISMS**

Charles C. Patterson, 4315 Ridgcrest Dr., El Paso, Colo.

Filed Dec. 16, 1971, Ser. No. 208,620

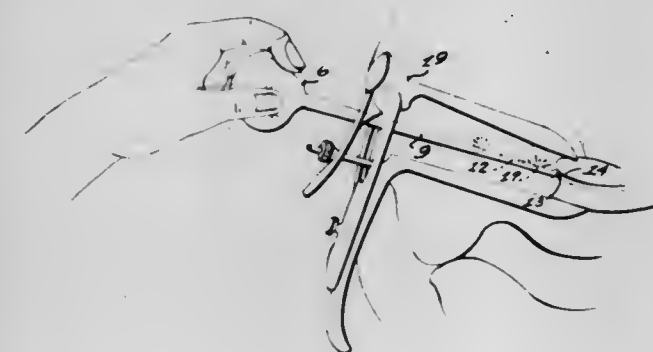
Int. Cl. A61b 10/00

U.S. Cl. 128—2 B

3 Claims

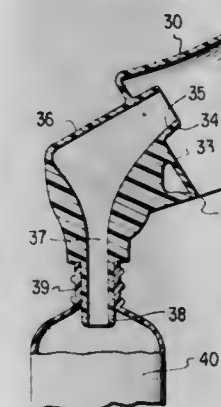
U.S. Cl. 128—2 F

5 Claims



The present invention pertains to instruments for the collection and transport of bacterial specimens and more particularly to means for collection of body secretions, comprising a collapsible bulb filled with a gas, a flexible tubular extension carried by the bulb, wherein the interior of the tubular extension is in communication with the interior of the bulb, and means for carrying a culture medium for bacteria at the free end of said extension, and wherein said extension is extendable upon exhausting the gas from the interior of the bulb.

A device for collecting, from human females, specimens of urine substantially free from external contamination. The device includes a hollow body having a mouth adapted to be placed around the meatus of the female and between the labia, a conduit passing through one wall of the hollow body and having an opening at one end thereof within the hollow body and completely spaced from the walls of the hollow body for receiving the high trajectory uncontaminated portion of the urine flow, a collecting vessel at the other end of the conduit for collecting the uncontaminated urine, and means for separately conducting the urine flow not entering the opening.



3,750,647

**MEANS FOR COLLECTING SPECIMENS OF URINE**

Donald M. Gleason; Manfred R. Bottaccini, and Robert J. Reilly, all of Tucson, Ariz.

Division of Ser. No. 108,766, Jan. 22, 1971, which is a continuation-in-part of Ser. No. 31,204, April 23, 1970, abandoned. This application Apr. 6, 1972, Ser. No. 241,632

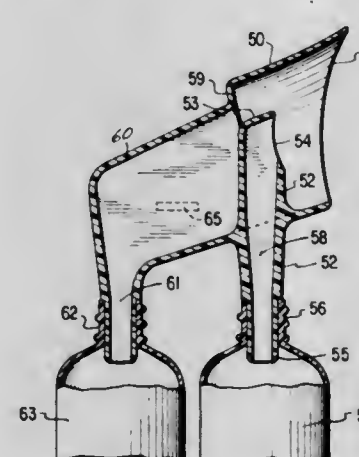
Int. Cl. A61b 10/00

U.S. Cl. 128—2 F

6 Claims

U.S. Cl. 128—2.1 Z

5 Claims



Apparatus for obtaining specimens of urine from a human female uncontaminated by external impurities, and which the

3,750,649

**PULMONARY IMPEDANCE BRIDGE**

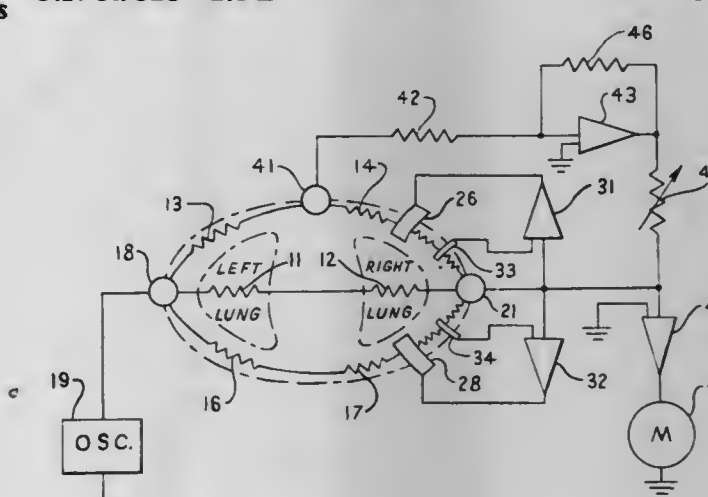
John W. Severinghaus, Ross, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Filed June 25, 1971, Ser. No. 156,667

Int. Cl. A61b 5/05

U.S. Cl. 128—2.1 Z

5 Claims



Apparatus for measurement of lung resistance includes a low voltage and high frequency power supply connected to a



driver electrode contacting one side of a chest with a detector electrode contacting the opposite side of the chest and a pickup electrode engaging the chest therebetween. A variable resistor is connected with other resistors between the detector and pickup electrodes to form a bridge circuit with a portion of the lung resistance and a meter connected to the detector electrode indicates bridge balance whereat the resistance of the variable resistor is equal to the resistance of a portion of the lung. A guard ring about the detector electrode has segments thereof driven by operational amplifiers from the detector electrode to substantially eliminate skin potential gradients laterally of the detector.

3,750,650

**DOUBLE SPIRAL ELECTRODE FOR INTRA-CAVITY ATTACHMENT**

Helge Ruttgers, Heidelberg, Germany, assignor to Hewlett-Packard GmbH, Boblinger, Germany

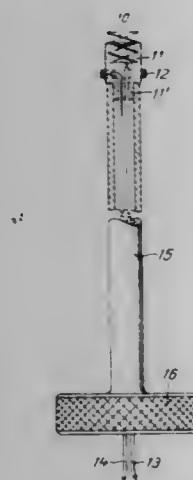
Filed Dec. 13, 1971, Ser. No. 207,421

Claims priority, application Germany, Dec. 15, 1970, P 20 61 593.4; Aug. 10, 1971, P 21 40 065.7

Int. Cl. A61b 5/04

U.S. Cl. 128—2.06 E

4 Claims



An electrode device is configured for mounting at or within parts of the human body, especially for obtaining ECG signals from a fetus. The electrode device includes two spiral pointed catcher elements displaced by 180° which are mounted in an insulating carrier. A counter electrode in the form of a tubular metal guiding element surrounds the carrier and protects the vagina and the fetus when the pointed catcher elements are introduced. A cannula may be provided at the electrode device so that liquid medicine or an electrolyte can be supplied to the fetus simultaneously with measuring ECG signals. The electrode device is introduced into the vagina by means of a guiding element.

3,750,651

**SPECULUM**

Max Brammer, Naestved, Denmark, assignor to Panther Plast A/S, Vordingborg, Denmark

Filed May 6, 1971, Ser. No. 140,823

Claims priority, application Denmark, May 8, 1970, 2367/70

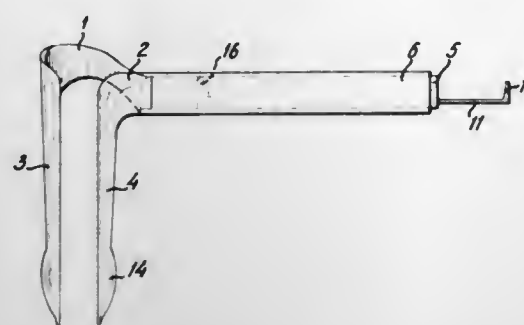
Int. Cl. A61b 1/30, 17/02

U.S. Cl. 128—20

4 Claims

A speculum with an upper spatula and a lower spatula interacting therewith, which spatulas each comprise a spatula part intended for vaginal introduction and a handle part extending essentially perpendicularly thereupon. One handle part surrounds the other handle part in such a way that the two handle parts are displaceable only longitudinally in relation to each other for moving the spatula parts towards and away from each other and the surrounded handle part has at its end facing away from the spatula a longitudinally extending slot for accommodating an arresting body which is adapted, by

being introduced into the slot, to effecting an expansion of the surrounded handle part in order to prevent any movements of



said surrounded handle part in relation to the surrounding handle part.

3,750,652

**KNEE RETRACTOR**

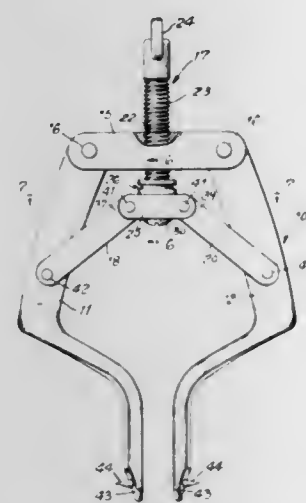
John M. Sherwin, 246 N. Gate Rd., Manchester, N.H.

Filed Mar. 5, 1971, Ser. No. 121,276

Int. Cl. A61b 1/32

U.S. Cl. 128—17

4 Claims



This disclosure relates to a surgical retractor for use by an orthopedic surgeon for a controlled distraction of a knee joint through an anterior incision. This retractor generally consists of a pair of screw actuated retractor arms, the tips of which are operatively embedded in the intercondylar region of the patient's knee.

3,750,653

**IRRADIATORS FOR TREATING THE BODY**

Norman Simon, Scarsdale, N.Y., assignor to Mount Sinai School of Medicine of the City University of New York, New York, N.Y.

Continuation-in-part of Ser. No. 587,335, Oct. 17, 1966,

abandoned. This application Sept. 8, 1970, Ser. No. 70,311

Int. Cl. A61j 1/00

U.S. Cl. 128—1.2

25 Claims

This application discloses apparatus and a technique for the treatment of cancer of the fundus of the uterus and of other portions of the human body. A capsule is provided which comprises a thin-walled narrow tube, on the lead end of which may or may not be provided an elongated and enlarged bulbous body portion. The inner diameter of the lead end of the tube is sufficient to accommodate a source of radioactive material. The tube is arranged so as to permit the insertion of a radioactive source into the lead end of the tube through the trailing portion thereof. The outside diameter of the tube is no greater than 2 mm. so as to permit the tube to be retained within and tolerated by a portion of the human body into which the tube is to be inserted. Furthermore, due to the aforementioned small diameter of the tube, the portion of the human body may

be packed with a number of such capsules. Due to the small internal diameter of the tube, a radioactive source whose

circulation in the skin portions by generating a locally confined opposing pressure. The device comprises massaging components having the form of curved tongs and being positioned opposite each other, one of the components being con-



specific activity is higher than that of radium is implanted in the tube by being introduced through the trailing end thereof.

3,750,654

**PHYSIOTHERAPEUTIC DEVICES AND METHODS**

Desmond K. Shiu, Rystwood, Forest Row, England

Filed May 27, 1971, Ser. No. 147,589

Claims priority, application Great Britain, May 29, 1970, 26,008/70

Int. Cl. A61h 15/00

U.S. Cl. 128—57

9 Claims



A roller of circular cross-section having a length approximately equal to the width of the back of a normal adult man or woman and having two rounded, circumferential projections so spaced as to straddle the spine when the roller is placed on the floor, and the user reclines, back down, on the roller; and a method of stimulating the first lines of bladder meridian in which the roller is caused to course along on the said lines while the user rolls on the roller with his body weight applied thereto.

3,750,655

**VIBRATION MASSAGING METHOD AND DEVICE**

Gert Frederick Kolbel, Hanebuthwinkel 15, 3000 Hannover, Germany

Filed Nov. 8, 1971, Ser. No. 196,653

Claims priority, application Germany, Nov. 10, 1970, P 20 55 119.3

Int. Cl. A61h 7/00

U.S. Cl. 128—59

9 Claims

A vibratory method and device, particularly for the massage of the skin of the face. It achieves an improvement of blood

ected to a vibratory drive and the other component facing it, serving to generate a locally confined counterpressure, of adjustable construction to form any given gap between the ends of the massaging components.

3,750,656

**AGITATOR FOR A THERAPY BATH**

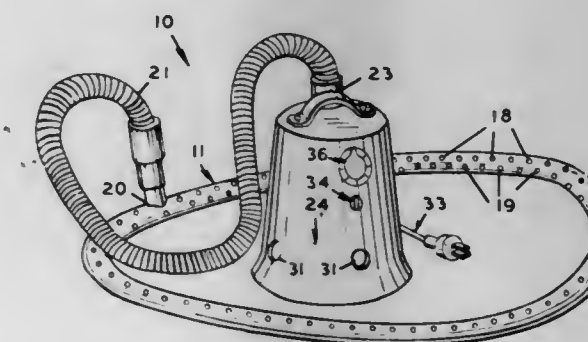
Curtis M. Vaughan, 2021 Harlem, Joplin, Mo.

Continuation-in-part of Ser. No. 861,234, Sept. 26, 1969. This application Apr. 29, 1971, Ser. No. 138,498

Int. Cl. A61h 9/00

U.S. Cl. 128—66

1 Claim



A flexible hose with a sufficiently thick wall that will not collapse under the weight of a person or small radius return bends; having a continuous circular like length; opposite portions of the flexible hose may be bent or manually pulled together having a general length of a person; tie members with hooked shaped end portions for retaining the hose portions in position, rows of outlet holes spaced therein along the normal upward and inward portions of the wall thereof. A motor-blower unit in a plastic like housing for generating air pressure and maintaining a flow of air pressure through an extra flexible hose connected into said flexible hose when submerged in a body of water.

3,750,657

**COMBINATION BATH AERATOR AND HAIR DRYER**

T. Goodwin Lyon, Los Angeles, Calif., assignor to Relaxaway Corporation, West Los Angeles, Calif.

Filed July 22, 1971, Ser. No. 165,000

Int. Cl. A61h 9/00

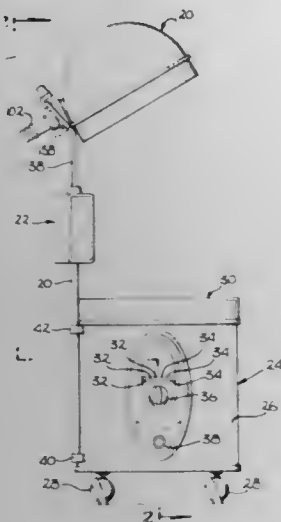
U.S. Cl. 128—66

6 Claims

A combination bath aerator and hair dryer using a single warm air blower unit which further serves as the seat and provides the required support for the hair dryer dome. The warm air blower unit has a lower chamber having an electrically



driven blower and air heater therein, with various controls and an attachment for a flexible hose thereon for connection to the hair dryer unit or the bath aerating unit, and further has a provision for attachment of the hair dryer unit for adjustable



support in functional disposition over the seat. The bath aerating unit is a disassemblable ring which is adapted to fit around the bottom edge of a bathtub and to connect to the flexible hose to direct the warm air into the bath water through a plurality of holes in the ring.

3,750,658

**CERVICAL SPINE TRACTION APPARATUS**

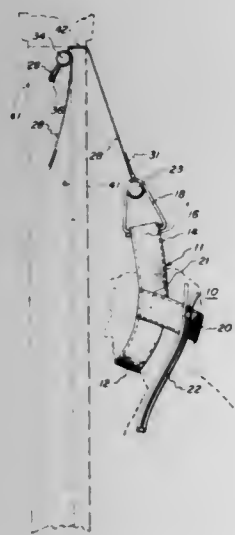
W. John Dawson, Jr., 6543 Golden Valley Rd., Minneapolis; Mary Lou Reyburn, 4530 W. 38th St., Saint Louis Park, and Richard F. Roettger, 10512 Johnson Rd., Bloomington, all of Minn.

Continuation of Ser. No. 875,373, Nov. 10, 1969, abandoned. This application Jan. 19, 1972, Ser. No. 219,143

Int. Cl. A61h 1/02

U.S. Cl. 128-75

1 Claim



A cervical spine traction apparatus is disclosed which is used with a door and its upper frame to provide an anchor point having a harness with a pair of vertically extending load straps and a dorsal member that may be opened to admit the head of the patient with relative ease, the harness being secured to a pair of webbing members lying flat between the upper edge of the door and its mating frame while the door is closed and being laterally spaced by a crossbar secured to the loading straps, the webbing members being releasably secured to a transverse bar adapted to bear against the opposite upper face of the door from that of the harness to anchor the apparatus to the top of the door.

**3,750,659**  
**ORTHOPEDIC APPARATUS FOR LEGS TO ENABLE STANDING**

David C. Loomans, 410 Hawthorn Dr., West Bend, Wis.

Filed May 1, 1972, Ser. No. 249,351

Int. Cl. A61f 3/00

U.S. Cl. 128-80 R

3 Claims



An orthopedic upright leg brace which enables a person to stand in an upright manner and in which the individual can be easily secured. A free standing parallel bar support is also provided and used in conjunction with the leg brace.

3,750,660

**METHOD AND MEANS FOR MAKING A SPLINT**

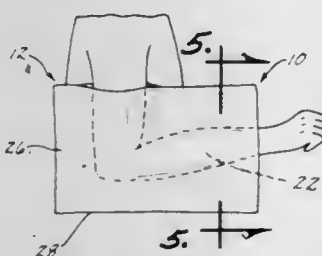
Louis F. Muller, Playa Del Rey, Calif., assignor to Medical Enterprises, Inc., Des Moines, Iowa

Filed Aug. 23, 1971, Ser. No. 173,865

Int. Cl. A61f 5/04

U.S. Cl. 128-89 R

6 Claims



The means for making a splint includes a sheet member having opposite faces and being adapted for folding into two flaps. The flaps embrace the limb therebetween and include marginal portions which are free from engagement with the limb when the limb is between the flaps. The marginal portions are in face-to-face relation when the limb is between the flaps and an adhesive substance is on the flap portions. The adhesive substance is adapted to secure the flaps in face-to-face engagement when the flaps are manually pressed together.

The method for splinting an injured limb includes positioning two flaps on opposite sides of the injured limb and pressing the flaps together into engagement around the limb at a plurality of points so that the adhesive substance on the flaps will secure the flaps together and cause them to confine the limb and hold the limb against flexing movement.

3,750,661

**INTRAUTERINE CONTRACEPTIVE DEVICE**

Max Knoch, Djalan Rangka Malela 15, Bandung, Indonesia

Filed Oct. 13, 1970, Ser. No. 80,313

Claims priority, application Netherlands, Oct. 14, 1969, 6915483

Int. Cl. A61f 5/46

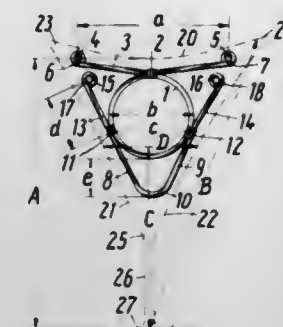
U.S. Cl. 128-130

8 Claims

The present contraceptive intra-uterine device includes a V-shaped member and a cross member both of which are con-

nected to a ring member so that the ring member is located inside a configuration substantially resembling a triangle formed by the V-shaped member and by the cross member. Said trian-

sides of the pockets so that the depth of the pockets is controlled by the length of a central cross strip portion of the



gle having such a size and shape relative to the uterus size that a definite clearance is provided between the lateral sides of the triangle and the respective opposite wall of the uterus, said clearance extending all around the triangle.

3,750,662

**INTRAUTERINE CONTRACEPTIVE DEVICE**

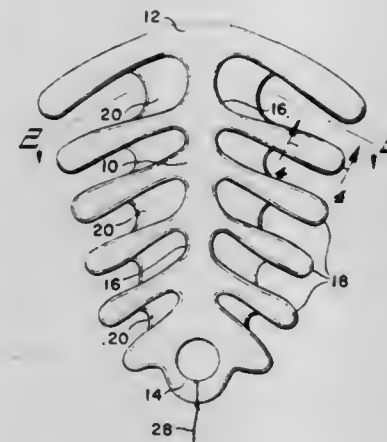
Irwin S. Lerner, Greenwich, Conn., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Filed June 23, 1971, Ser. No. 155,768

Int. Cl. A61t 5/46

U.S. Cl. 128-130

38 Claims



An intrauterine contraceptive device made from plastic and having a central core defining an intrauterine device nose, tail, and a pair of lateral side portions, and including retrograde spurs each having a bulbous contour, the spurs being arranged along the core side portions and of varying length so as to define a generally inverted pear shaped intrauterine device. Thin webs may be formed between adjacent spurs to increase the area of the invention, and multiple rows of spurs may be formed on each core side for better retention of the intrauterine device in the uterine cavity. A talisman and withdrawal cord may be attached to either end of the core.

3,750,663

**LITHOTOMY DRAPE**

Robert F. Collins, Barrington, Ill., assignor to The Kendall Company, Walpole, Mass.

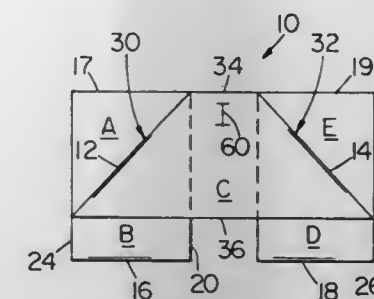
Filed Nov. 24, 1971, Ser. No. 201,736

Int. Cl. A61f 13/00

U.S. Cl. 128-132 D

7 Claims

A surgical lithotomy drape or the like is fabricated by folding flat sheet material to form legging pockets having folds at the bottoms of the pockets and having sealed edges along the



drape and is independent of the width of the remaining portion of the drape.

3,750,664

**FENESTRATED SURGICAL DRAPE**

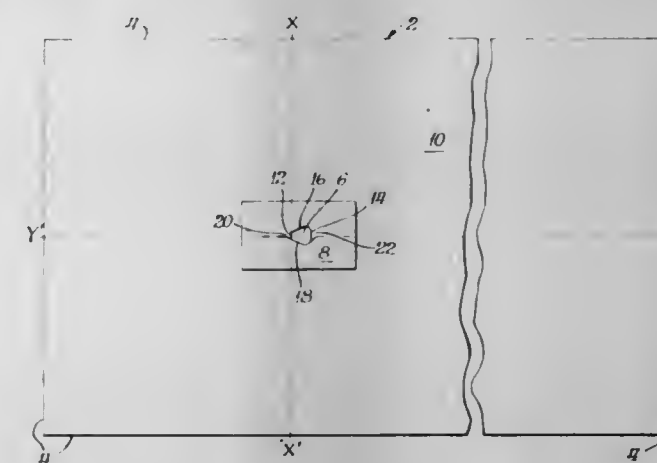
Robert F. Collins, Barrington, Ill., assignor to The Kendall Company, Walpole, Mass.

Filed Apr. 17, 1972, Ser. No. 244,437

Int. Cl. A61f 13/00

U.S. Cl. 128-132 D

19 Claims



A surgical drape including, a sheet of material having a fenestration disposed within an area intermediate the outer peripheral edges of the sheet. The fenestration is positioned over a surgical site on a patient, and is conformable to an irregular contoured surface of the patient's body without excessive bunching, buckling or overlapping of the sheet material adjacent the fenestration. The fenestration thus remains sufficiently open during an operative procedure to provide access to the surgical site.

3,750,665

**FLEXIBLE RESPIRATOR WITH INFLATABLE FRAME**

Fedor Stranicky, 29 Ankdammsgaten, 17143 Solna, Sweden

Filed June 21, 1971, Ser. No. 154,914

Claims priority, application Sweden, Sept. 8, 1970, 12197/70

Int. Cl. A62b 23/00

U.S. Cl. 128-146.6

3 Claims



A respirator, i.e. a face mask provided with a filter for respiratory use, comprising a substantially ring-shaped inflatable frame consisting of tubular foil material supporting a flexible wall having a perforated central portion to which the filter is attached. The central portion of the wall is stretched in a



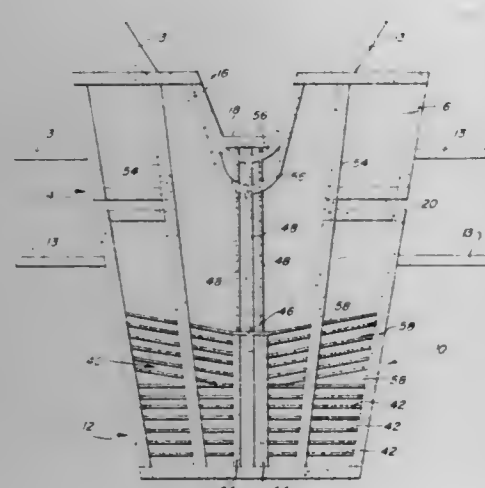
substantially planar state by the inflated frame and the filter is designed as a flexible disc-shaped pad covering the perforated portion of the wall.

### 3,750,666 SURGICAL DRESSING

James F. Graham, 9760 S. Kedzie Ave., Evergreen Park, Ill.  
Filed July 16, 1971, Ser. No. 163,369  
Int. Cl. A61I 15/00

U.S. Cl. 128—156

22 Claims



There is disclosed an improved surgical dressing which is adjustable for size and shape and which may be used as a disposable trauma, transportation, disaster or burn dressing. The surgical dressing comprises a unit of multiple layers of fluid absorbing material and a flexible, non-adhering, fluid permeable inner lining superposed congruently with the absorbent unit arranged such that the inner lining overlaps the edges of the absorbent unit. The edges of the inner lining are fastened to the absorbent unit and the multiple layers of the absorbent unit are fastened together along the plurality of preselected lines to permit selective adjustment of the size and shape of the dressing by cutting.

### 3,750,667 DEVICE FOR INTRAOSSEOUS INJECTION OF LIQUID SUBSTANCES

Nikolai Fedorovich Pshenichny, Khmel'nitskoe 29, kv. 6, and Valentin Dmitrievich Maximov, ulitsa Krasnoznamennaya 9, both of Vinnitsa, U.S.S.R.

Filed Jan. 31, 1972, Ser. No. 221,926  
Int. Cl. A61M 5/00

U.S. Cl. 128—215

4 Claims



A device for intraosseous injection of liquid substances, wherein the outside tube having a male thread on its end is introduced onto osseous tissue and a head at its opposite end, is movably fitted onto the hollow inside tube which has a pointed tip at its end introduci- ble into osseous tissue, oper- end injection holes being provided in a close proximity to said pointed tip. Besides, the outside tube and the tip itself have on their sides facing each other claws or jags directed towards one another and adapted, when the device is being screwed into osseous tissue, to get in engagement with one another so as to close said injection holes and thus prevent them from being clogged with osseous tissue.

### 3,750,668 APPARATUS WITH DISPOSABLE PARTS FOR RAPID SUCCESSIVE ADMINISTRATION OF ENEMAS TO GROUPS OF PATIENTS

Theodore Perl, 58 Ely Dr., Fayetteville, N.Y.  
Filed Dec. 15, 1971, Ser. No. 208,377  
Int. Cl. A61M 3/00

U.S. Cl. 128—227

3 Claims



Apparatus for administering enemas to patients in geriatric wards and nursing homes for the aged includes a wheeled cart having a receptacle for liquids to be administered and a slop jar for liquids excreted by patients during relief pauses in the administration. A disposable tip having a novel clamp for holding it in place is connected through a disposable T-section of tubing to tubing from the supply receptacle and also to tubing to the slop jar. Shut-off valves secured to the cart comprise a first shut-off valve in the tubing leading from the supply to the T-section, a second shut-off valve in the tubing between the T-section and the slop jar, and a third shut-off clamp valve adapted to receive a flexible leg of the T-section therein, the tubing from the supply being adapted to be connected to this flexible section. The tubing to the slop jar is adapted to be connected to another leg of the T-section, and the third leg of the T-section includes flexible tubing adapted to be connected to the disposable tip. The third shut-off clamp valve is always closed before reverse flow from patient to slop jar takes place whereby contamination of the tubing from the supply is prevented, the T-section and tip are disposable, and contamination of the tubing to the slop jar is immaterial.

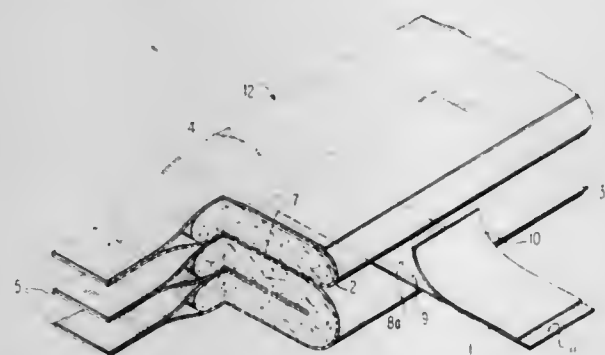
### 3,750,669 DISPOSABLE DIAPERS WITH ADHESIVE FASTENING TAPES

Raymond F. DeLuca, Stamford, Conn., assignor to Georgia-Pacific Corporation, Portland, Oreg.

Filed Apr. 13, 1972, Ser. No. 243,801  
Int. Cl. A61F 13/16

U.S. Cl. 128—287

6 Claims



The disclosure concerns disposable diapers having fastening tapes featuring adhesive end portions extending beyond a release paper covering the remainder of the adhesive face of

the tape, whereby the free end of the tape may be releasably attached, during manufacture or afterwards, to the diaper to hold this otherwise free end in place until it is to be used.

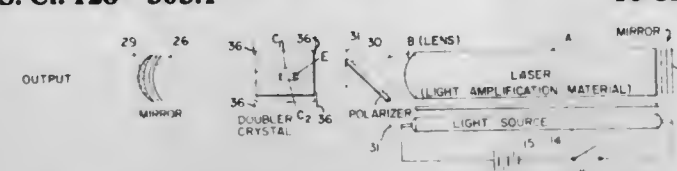
### 3,750,670 LASER CAUTERIZER

Paul N. Palanos, and Fred C. Unterleitner, both of Palo Alto, Calif., assignors to Medoptics, Inc., Palo Alto, Calif.

Filed Aug. 3, 1970, Ser. No. 60,492  
Int. Cl. A61B 17/36

U.S. Cl. 128—303.1

10 Claims



A laser with a light frequency transducer (typically of the frequency doubler type) within a laser cavity. The cavity is mirrored to reflect light at the lased frequency and to transmit light from the cavity at the transduced frequency. The laser is provided with a convex lens at its end adjacent the frequency transducer. Likewise, the cavity mirror adjacent the frequency transducer is provided with a concave reflecting surface. The convex lens in cooperation with the concave cavity mirror provides a necessary light pupil through the light frequency transducer for efficient frequency change and a collimated light path through the laser for efficient light emission. When utilized with a YAG laser and a silicon filter disposable into and out of the optic axis of the laser, a barium-sodium-niobate light frequency transducer can be heat tuned to provide a 6,600 angstrom lasing mode useful for repair of retinal detachment and a 5,320 angstrom mode useful for treating the retinal blood vessels of diabetics.

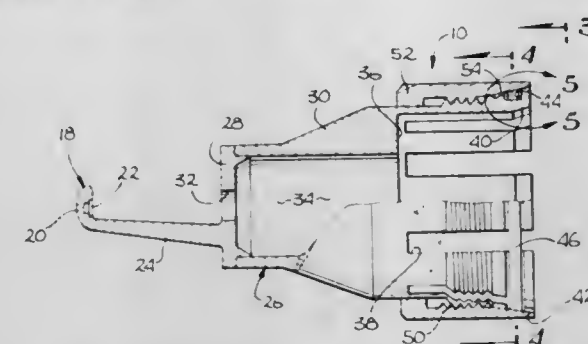
### 3,750,671 SURGICAL CUTTING TOOL ADAPTER APPARATUS

John R. Hedrick, La Crescenta, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 31, 1971, Ser. No. 129,767  
Int. Cl. A61B 17/16, 17/32

U.S. Cl. 128—305

11 Claims



An adapter apparatus for a cutting tool to permit only transverse cutting movement wherein the attaching section of the adapter apparatus includes a plurality of longitudinal slits, a friction washer located about the slits, a wedging sleeve being adjustably movable into contact with the friction washer to vary the diameter of the attaching section.

### 3,750,672 ARRANGEMENT FOR FORMING AN ELECTROSTATIC FIELD IN THE REGION OF A BED

Constantin Graf von Berckheim, Friedrichstr. 9, 694 Weinheim an der Bergstrasse, Germany

Filed May 15, 1970, Ser. No. 37,803  
Claims priority, application Germany, May 20, 1969, P 19 25 522.2

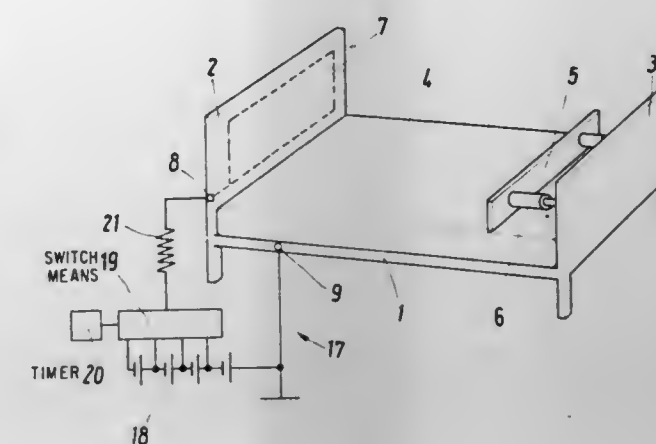
Int. Cl. A61N 1/00

U.S. Cl. 128—376

13 Claims

An arrangement for forming an electrostatic field in the region of a bed in which a pair of electrodes are arranged in the

bed spaced from the head and body portion of a person resting therein, so that a voltage supply of about 200 volts connected



to the electrodes will create an electrostatic field at the region of the head of the person in order of  $10^3$  volts per meter.

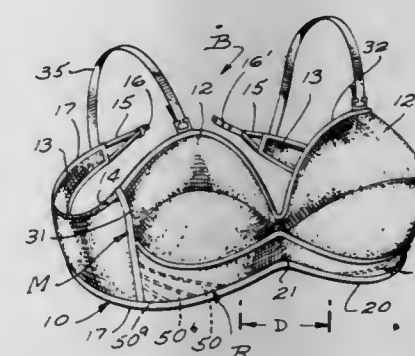
### 3,750,673 BRASSIERE STRUCTURE

William B. Penrock, 4426 Lankershim Blvd., Los Angeles, Calif.

Filed Dec. 27, 1971, Ser. No. 212,518  
Int. Cl. A41C 3/00

U.S. Cl. 128—465

10 Claims



Means adapted to prevent those portions of a flat, vertical, horizontal band of a brassiere which occurs below the breast receiving cups of the brassiere from rolling and/or wrinkling upwardly, said means including vertical stiffening means in the band adjacent the lateral outer side of each cup and laterally inwardly and downwardly inclined, normally straight, flexible and resilient stays extending from the reinforcing means at points spaced above the lower end of the band to the bottom edge of the band at points below the cups.

### 3,750,674 TOBACCO PRODUCT

Charles W. Miller, Winston-Salem, N.C., assignor to R. J. Reynold Tobacco Company, Winston-Salem, N.C.

Filed Aug. 7, 1972, Ser. No. 278,285  
Int. Cl. A24B 03/14, 15/00;

U.S. Cl. 131—17 R

5 Claims

Addition of succinic anhydride compounds to tobacco to enhance the flavor and/or aroma thereof.



**3,750,675**  
**METHOD AND APPARATUS FOR THE PRODUCTION OF TOBACCO RODS**

Kurt Klemme, Hamburg-Bergedorf, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg-Bergedorf, Germany

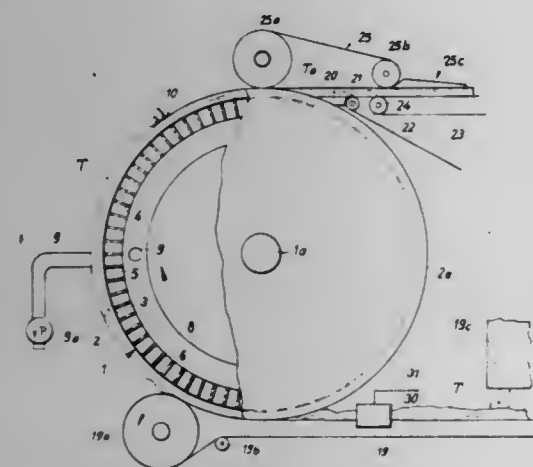
Continuation of Ser. No. 512,127, Dec. 7, 1965, abandoned, which is a continuation-in-part of Ser. No. 100,690, April 4, 1961, abandoned, and a continuation-in-part of Ser. No. 100,699, April 4, 1961, abandoned. This application July 17, 1967, Ser. No. 654,002

Claims priority, application Germany, Apr. 7, 1960, H 39102; Apr. 7, 1960, H 39103

Int. Cl. A24c 5/34

U.S. Cl. 131-21 B

11 Claims



A tobacco filler rod of substantially constant density and cross section is obtained by compressing a moving tobacco stream by an air current, determining the presence or absence of differences between the pressure of the air current after the latter has passed through the stream and a predetermined pressure, measuring the quantity of tobacco per unit length of the stream, adjusting the air pressure when the measured quantity differs from a predetermined quantity and/or when the measured pressure differs from a predetermined pressure, and trimming the stream. The tobacco stream is arranged to be fed into a peripheral groove on a suction wheel and the suction is measured and controlled in a pipe communicating with a suction chamber in the wheel, and with a pump or the like. The predetermined quantity can be adjusted by measuring the quantity of tobacco on a conveyor which feeds the suction wheel and adjusting the same by means of a servo-motor connected to a valve leading into the pipe, or by a motor and gear-operated bellows system which is responsive to pressure in the pipe and which also controls the servo-motor. The servo-motor can be controlled directly by the stream detector.

**3,750,676**  
**METHOD AND MACHINE FOR THE PRODUCTION OF CIGARETTE PACKS OR THE LIKE**

Friedel Kruse, Hamburg; Gunter Wahle, Reinbeck; Otto Erdmann, Hamburg, and Willy Rudschnat, Dassendorf, all of Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed Oct. 28, 1970, Ser. No. 84,857

Claims priority, application Great Britain, Oct. 29, 1969, 53,015/69

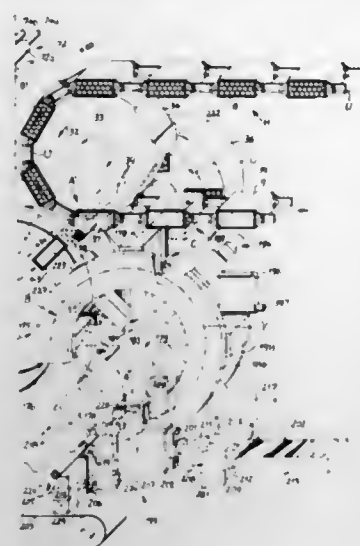
Int. Cl. A24c 1/30, 5/35; B65b 47/00

U.S. Cl. 131-25

30 Claims

A cigarette packing machine wherein empty packs or their component parts are withdrawn from the respective magazines only when a detector determines the presence of a block of cigarettes which are being transported to a pack filling station. The detector then causes the transfer of a prefabricated empty pack from its magazine to the filling station or the conversion of one or more blanks into an empty pack and the transfer of such pack to the filling station. Each

block of cigarettes is introduced into and enclosed in that pack whose transfer from the magazine to the filling station or



whose making from one or more blanks was initiated in response to detection of the particular block.

**3,750,677**  
**SMOKING PIPE AND METHOD OF MANUFACTURE**

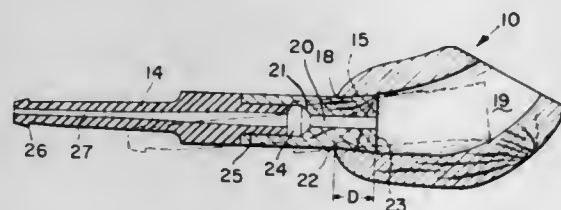
Joseph J. L. Jodoin, 221 Merriam St., Weston, Mass.

Filed Nov. 8, 1971, Ser. No. 196,377

Int. Cl. A24f 05/00

U.S. Cl. 131-172

5 Claims



A smoking pipe has a bowl with a top face opening through which tobacco is positioned and a lower stem receiving bowl opening. An elongated stem is releasably joined to the bowl at a joint arranged for locking the bowl and stem in a smoking position and for permitting sliding of the stem with respect to the bowl to allow ease of removal of burned and unburned tobacco. The top face opening is angularly positioned with respect to the axis of the stem to allow substantial angular movement of the stem toward the top face opening. A bowl tobacco chamber is formed in part by first drilling the stem receiving bowl opening in one direction and then backdrilling said stem receiving bowl opening with a tapered bit.

**3,750,678**  
**CIGARETTE MAKING MACHINES**

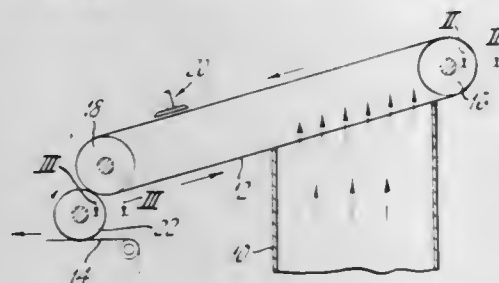
Francis A. M. Labbe, Neuilly-sur-Seine, France, assignor to Mollins Machine Company Limited, London, England

Filed June 16, 1970, Ser. No. 46,596

Int. Cl. A24c 5/18

U.S. Cl. 131-84 C

18 Claims



A cigarette making machine comprises an air-pervious conveyor band having two runs extending around two spaced pul-

leys and arranged to receive a tobacco stream on one of the runs which tobacco stream is retained thereon by suction. After passing around one of the pulleys and while passing along the second run of the band, the tobacco stream is trimmed after which it is transferred by a transfer wheel to a continuous wrapper web in which the tobacco stream is enclosed to form a continuous cigarette rod. At least one pulley has spaced side walls for supporting the opposite longitudinal edges respectively of the band so that suction passing through the foraminous band and spaced between the side walls will retain the filler stream on the band against centrifugal force during passage over the pulley. The rim of the transfer wheel is perforated for retaining the tobacco stream by means of suction and stationary side walls confine the opposite sides of the tobacco stream on the transfer wheel.

**3,750,679**  
**METHOD IN THE UTILIZING OF TOBACCO WASTE**

Erik Arne Wallberg, Jonkoping, Sweden, assignor to Industrielaboratoriet Aktienbolag, Jankoping, Sweden

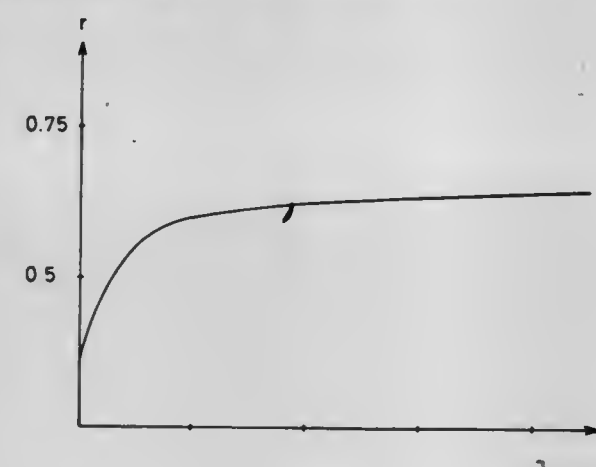
Continuation of Ser. No. 712,158, March 11, 1968,

abandoned. This application Dec. 30, 1970, Ser. No. 102,879

Int. Cl. A24b 3/14

U.S. Cl. 131-140 C

5 Claims



Tobacco waste is mixed with a liquid, such as water in the weight proportions 3:1 - 3:7 between tobacco and liquid, and the mixture is subjected in a preferably closed container to blow, pressure, or shock impulses of a high repetition frequency, for forming substantially water dissoluble lumps. The water dissoluble parts of these lumps are subsequently dissolved in a liquid such as water. The solution thus formed is separated from at least the principal portion of the tobacco material which is indissoluble in water, for forming an adhesive which consists principally of tobacco and water and is particularly intended for the manufacture of artificial tobacco.

**3,750,680**  
**TEASING COMB**

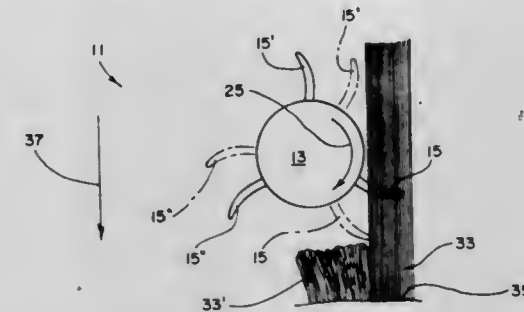
Benjamin L. Miller, 4523 Jamaica, Memphis, Tenn.

Filed June 12, 1972, Ser. No. 262,022

Int. Cl. A45d 24/00

U.S. Cl. 132-11 R

8 Claims



A comb for teasing hair during the preparation of a coiffure. The comb includes a cylinder having at least one row of teeth

projecting radially therefrom. One embodiment includes a motor which is housed in the handle of the comb to rotatably drive the cylinder thereof. Placing the rotating cylinder of the comb adjacent a plurality of strands of hair is effective to cause the teeth to engage the strands of hair and to disengage the strands of hair with each rotation thereof. The teeth have an arcuate profile with the outer ends thereof being directed away from the direction of rotation to assure that the ends of the teeth slip freely from the hair to preclude entanglement therewith, thus minimizing the damage to the hair in the teasing process which normally pulls and breaks many strands of hair. The non-power driven embodiment of the comb includes a handle which facilitates manual turning of the cylinder when desired as the comb is caused to pass through the hair.

**3,750,681**  
**HAIR PROTECTOR**

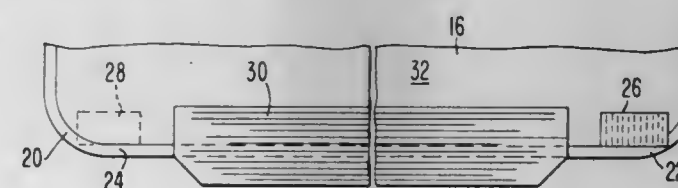
Maxine Clauch, Menlo Park, Calif., assignor to Ralph B. Clauch, Menlo Park, Calif.

Filed Mar. 20, 1972, Ser. No. 236,019

Int. Cl. A45d 8/40

U.S. Cl. 132-49

14 Claims



A hair protector having a first portion for covering the hair and a second portion adapted to fit tightly across the forehead and the sides of the face to secure the hair protector in place on the head. The second portion includes a band of stretch knit material having a smooth surface for engaging and extending across the forehead without forming creases therein yet the band holds the protector from slipping downwardly and forwardly across the face during use. Several embodiments of the hair protector are disclosed including a shower cap adapted for use with a bouffant hairdo.

**3,750,682**  
**HAIR PIECES, WIG AND LIKE PRODUCTS**

Joseph C. Bonafiglia, 124 Ivins Ave., Merchantville, N.J., and Harold Krieger, 61 W. School House Ln., Philadelphia, Pa.

Filed July 22, 1971, Ser. No. 165,372

Int. Cl. A41g 3/00

U.S. Cl. 132-53

3 Claims

Hair pieces, wigs and like products in which the predominant hair-simulating fiber is a blend of nylon-6 and a polyalkyl methacrylate, method of making fiber, and fiber.

**3,750,683**  
**CROWNED ANNULAR HAIRPIECE WITH CENTRAL LOOPS**

Elva Lee Desell, 919 Jamieson Rd., Lutherville, Md.

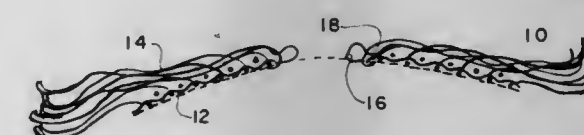
Continuation-in-part of Ser. No. 129,394, March 30, 1971,

abandoned. This application May 16, 1972, Ser. No. 253,838

Int. Cl. A41g 5/00

U.S. Cl. 132-55

5 Claims



A crowned annular-shaped hairpiece having an inner diameter dimensioned to fit around and expose the area in which hair growth radiates from the center of the crown of the human scalp, an outer diameter of skull cap dimension, and a



covering of hair or other stranded material, arranged to radiate away from the center of the annulus, the innermost strands of the hair being fixed in upright loops extended toward the center of the annulus and doubled back to radiate away from it is described; a method of simulating a growth of hair rising from the natural scalp is also disclosed.

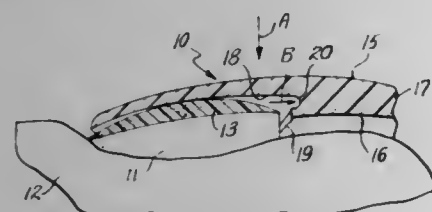
3,750,684

# ARTIFICIAL NAIL AND METHOD OF APPLYING THE SAME

Dolores M. Russell, 1820 Alice St., Merrick, N.Y.  
Filed July 13, 1972, Ser. No. 271,513  
Int. Cl. A45d 40/30

U.S. Cl. 132—88.5

7 Claims



A preformed artificial nail is provided having a convex upper surface and a concave undersurface which, together, define a forwardly extending free end and a recessed trailing end which terminates in an arcuate wall formed intermediate the length of the nail. This wall includes a forwardly extending groove positioned above the undersurface of the free end of the nail. A mass of viscous adhesive material is positioned atop the natural nail and the artificial nail is forced downwardly so that the adhesive fills the space between the natural nail and the undersurface of the artificial nail and a small excess thereof is exuded forwardly into the groove.

3,750,685

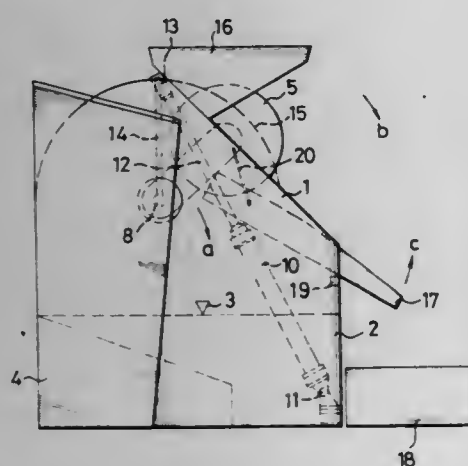
# APPARATUS FOR CLEANING METALLIC ARTICLES

Manfred Brenneisen, Tribberg, and Siegfried Guentert, Villingen, both of Germany, assignors to Schwanog, Schwarzwald Normtelle Siegfried Guentert K.G., Villingen, Schwarzwald, Germany  
Filed Apr. 21, 1970, Ser. No. 30,430  
Claims priority, application Germany, Oct. 27, 1969, G 69 41 681.5

Int. Cl. B08b 3/06

U.S. Cl. 134—57 R

19 Claims



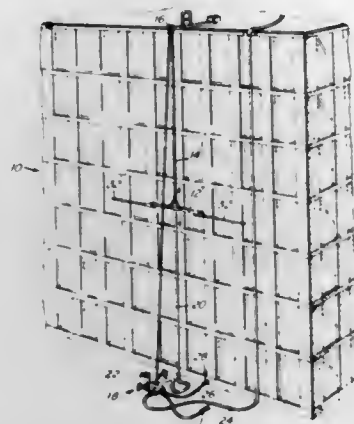
A housing accommodates a body of cleaning liquid. An apertured drum is rotatably mounted above the level of the liquid and provided with an inlet and outlet opening for metallic articles to be cleaned. An actuating arrangement is provided for displacing the drum with reference to the housing to and from a position in which at least a portion of the drum periphery is immersed in the body of cleaning liquid. A drive rotates the drum at least when the same is in the aforementioned position.

# ASSEMBLY FOR WASHING BUILDING WINDOWS

Henry D. Cook, Atlanta, Ga., assignor to K & M Enterprises, Incorporated, Atlanta, Ga.  
Filed Nov. 29, 1971, Ser. No. 202,869  
Int. Cl. A47l 1/02

U.S. Cl. 134—95

10 Claims



A window washing assembly comprising an elongated spray bar suspended from a cable or the like along the side of a building by way of a pulley located at the roof of the building, and a ground control unit including a motorized cable reel for selectively positioning the spray bar by way of the support cable, and controls for selectively controlling the mixture of water and cleaning solution supplied to the spray bar by way of a delivery hose extending between the ground unit and the spray bar.

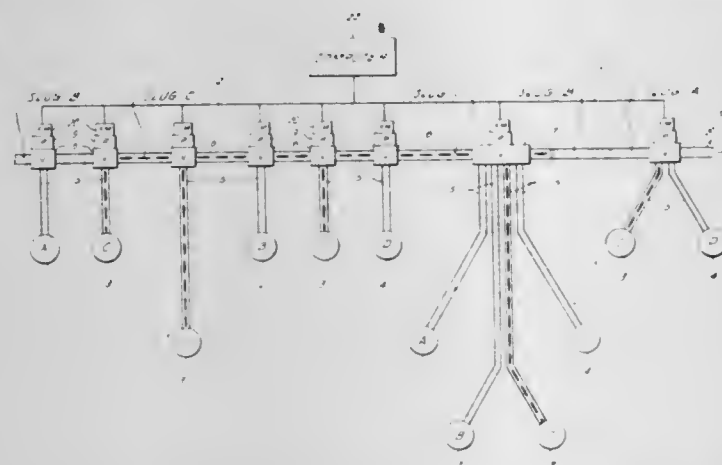
3,750,687

# METHOD AND SYSTEM FOR TRANSPORTING DIFFERENT TYPES OF FLUID IN A PIPELINE

Jack C. Williams, Houston, Tex., assignor to Texaco Inc., New York, N.Y.  
Filed Apr. 28, 1972, Ser. No. 248,411  
Int. Cl. F16k 19/00

U.S. Cl. 137—1

16 Claims



A method comprises (a) monitoring the exact rate of flow of a liquid through a pipeline and (b) injecting slugs of a like type of liquid from different tanks of a like type into the pipeline at the precise rate and time dictated by the pipeline flow rate to form a large slug of liquid in the pipeline for transporting to a distant location.

The second step may include injecting slugs of like type of liquid different from the first type into the pipeline to form a large slug of the different type of liquid immediately behind the first large slug for transporting to the distant location. Likewise, the second step may include forming large slugs of different types of liquids in accordance to the timing and flow rate dictated from the first step for forming one consecutive large slug of like liquids of one type after another consecutive large slug of like liquids of another type in the pipeline for

transporting to the distant location. An apparatus for practicing the method comprises a combination of valves and pumps for each tank and a computer responsive to the rate of liquid flow in the pipeline and distance to travel to the next tank for providing the arrival time.

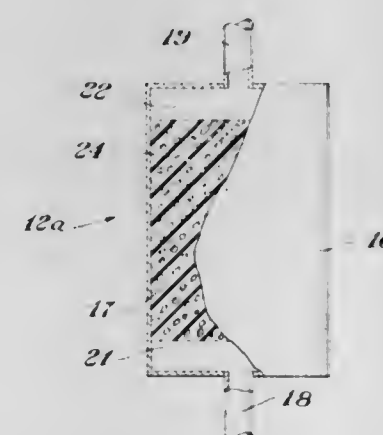
3,750,688

# VALVE AND METHOD FOR AQUEOUS SYSTEMS

Richard H. Hall, Midland; Daniel H. Haigh, Beaverton; Robert L. Derby, and Walter E. Jennings, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.  
Filed June 26, 1972, Ser. No. 266,300  
Int. Cl. B01d 13/00

U.S. Cl. 137—2

12 Claims



A valve is disposed in a line carrying an aqueous stream. The valve is in the form of a permeable bed of particulate swellable polymer particles which imbibe organic materials and on contact therewith will swell to provide a positive shutoff.

3,750,689

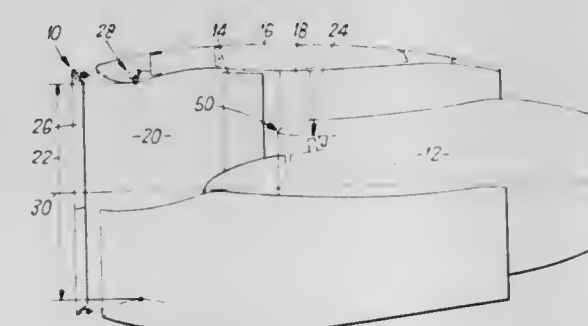
# AIR INTAKE FOR A GAS TURBINE ENGINE

Jack Britt, Ambergate, England, assignor to Rolls-Royce (1971) Limited, London, England  
Filed Sept. 11, 1972, Ser. No. 287,703

Claims priority, application Great Britain, Sept. 15, 1971, 42,900/71  
Int. Cl. F02b 27/02; F02k 11/00

U.S. Cl. 137—15.1

4 Claims



A gas turbine engine air intake cowl has a displaceable lip member which, when cross winds develop, moves forwardly of the cowl to form a slot therebetween through which the cross wind passes and is guided onto that intake wall on the windward side of the intake so avoiding pressure losses and bad air distribution in the intake.

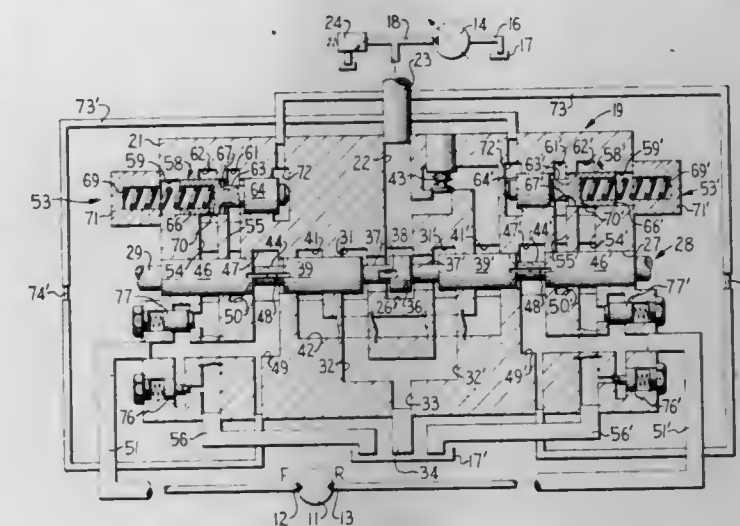
3,750,690

# FLUID MOTOR CONTROL CIRCUIT WITH OVERSPEED LIMITING MEANS

Thomas J. Bubula, and Kenneth R. Lohbauer, both of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.  
Filed Dec. 13, 1971, Ser. No. 207,350  
Int. Cl. F16k 31/12; F15b 11/04

U.S. Cl. 137—106

5 Claims



Pressurized fluid is supplied to a reversible fluid motor through a motor control valve which may be shifted to direct fluid to either port of the motor while communicating the other motor port with an individual exhaust passage for that port thereby providing for motor operation in either direction. A separate overspeed inhibiting valve is disposed in each of the two exhaust passages and each responds to a pressure decrease in the fluid entering the motor by reducing the flow passage for fluid exhausting from the motor thereby maintaining a constant speed determined by the setting of the motor control valve. Disposition of the overspeed valves in the motor control valve exhaust passages rather than between the motor control valve and the motor avoids any need for a bypass check valve at each overspeed valve.

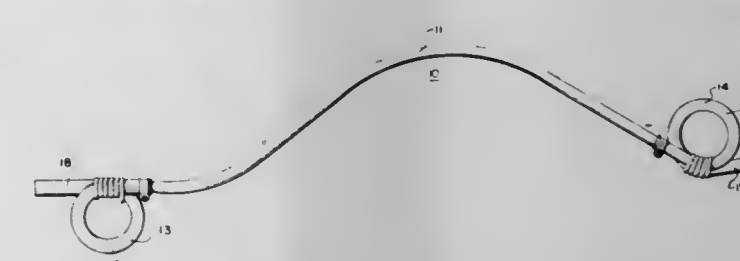
3,750,691

# COMBINED PUMP AND PERMANENT SIPHON TUBE

Ben B. Lidolph, Rt. No. 1, New Plymouth, Idaho  
Filed Nov. 22, 1971, Ser. No. 203,102  
Int. Cl. F04f 10/00; F16l 43/00

U.S. Cl. 137—142

2 Claims



The combined pump and permanent siphon tube of the present invention comprising a substantially inverted U-shaped siphon conduit; a head lock including a conduit having a single-looped spiral portion upstandingly and parallelly disposed at one of the terminal ends of the siphon conduit, and a horizontally disposed tube portion disposed at the end opposite the conduit-receiving end of the spiral portion; and an orifice lock including a conduit having a single-looped spiral portion disposed dependently from the siphon conduit at its end opposite the head lock-engaging end, and a horizontally disposed tube portion disposed at the end opposite the siphon conduit-receiving end of the spiral portion. The combined pump and permanent siphon tube may be provided with a head lock and an orifice lock fabricated of flexible resilient material.



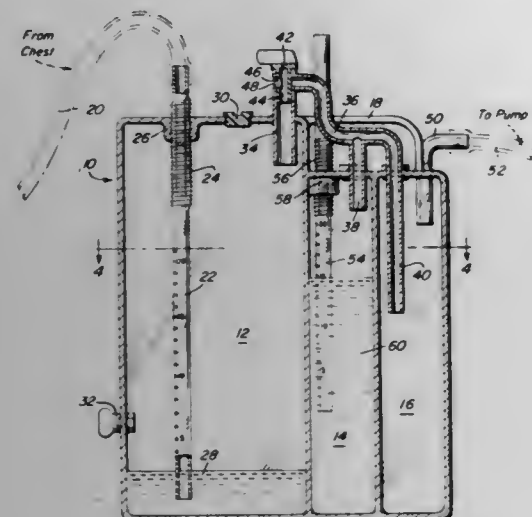
3,750,692

## CHEST DRAINAGE SYSTEM

Eugene E. Tibbs, Hospital Dr., Cleveland, Miss.  
Filed Jan. 11, 1972, Ser. No. 217,055  
Int. Cl. A61m 1/00

U.S. Cl. 137-205

5 Claims



Chest drainage apparatus utilizing three compartments integrally formed within a single container to define a first water-sealed fluid-receiving chamber, a second pressure regulating chamber and a third trap chamber. A control valve is provided to selectively communicate or preclude communication between the first chamber and the remaining chambers. In addition, the first compartment includes a stopcock positioned therein above the level of the water seal for a selective draining of the compartment without requiring a dismantling of the apparatus. The pressure is regulated through a vertically adjustable tube communicated with the interior of the second chamber. All three chambers include stopper closed openings which can be used for the insertion or removal of water as well as a cleaning of the interior of the chambers.

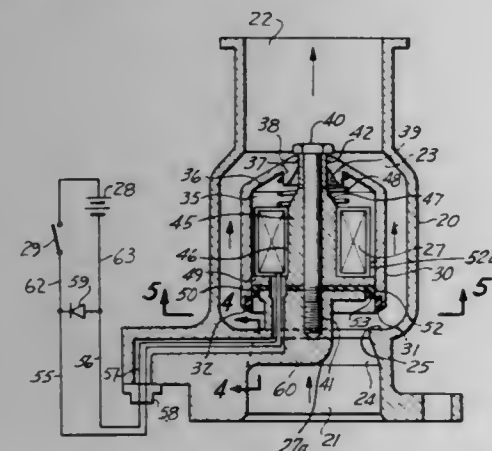
3,750,693

## SOLENOID OPERATED VALVE

Artson P. Hardison, Glendora, Calif., assignor to XAR Industries Incorporated, City of Industry, Calif.  
Filed Oct. 13, 1971, Ser. No. 188,807  
Int. Cl. F16k 31/06

U.S. Cl. 137-219

11 Claims



A solenoid operated valve for use within an aircraft fuel area which permits the air to enter an air intake at a forwardly located point in the aircraft and then to flow through the valve and into the fuel tank to pressurize it for positive expulsion of the fuel from the tank to the engine. The valve is equipped with spring bias means to maintain it in a fail-safe open position, so that only when the solenoid is actuated does the valve close and remove ram air pressure from the fuel in the tank. The valve is balanced so that differential pressures across it do not tend to open it, its operation being a function only of spring bias and energizing of a solenoid winding.

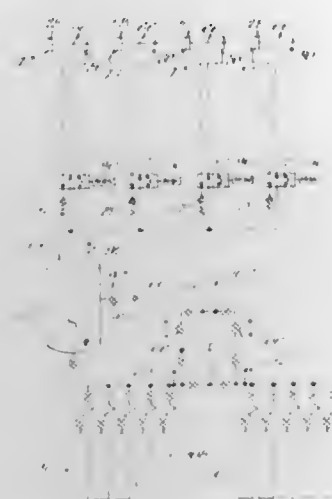
3,750,694

## VALVE OPERATOR

Donald G. Fawkes, Aurora, Ill., assignor to Henry Pratt Company, Aurora, Ill.  
Filed Aug. 9, 1971, Ser. No. 170,236  
Int. Cl. F16k 31/143

U.S. Cl. 137-236

6 Claims



A seepage-resistant valve system employing a pressure operated valve operator. A selectively operated valve position control system may apply gas to a piston in a cylinder associated with a housing to move the same to control valve position. The housing is in fluid communication with the cylinder and a back pressure valve is employed so that a positive gas pressure is maintained in both the cylinder and the housing regardless of the position of piston within the cylinder to preclude seepage of ground water into the valve operator.

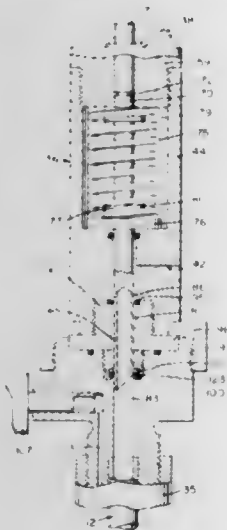
3,750,695

## FIRE CONTROL APPARATUS

George A. Utesch, Jr., Chicago, Ill., assignor to General Fire Extinguisher Corporation, Northbrook, Ill.  
Division of Ser. No. 847,172, Aug. 4, 1969. This application  
Feb. 1, 1971, Ser. No. 111,689  
Int. Cl. B23b 41/08; F16e 41/04

U.S. Cl. 137-318

2 Claims



A fire control apparatus is provided particularly for use in areas where food is prepared using fats or greases. The apparatus automatically activates upon the presence of flame or excessive heat in a control zone whereupon high volume extinguishant is flooded rapidly over the zone to extinguish the flame and rapidly reduce the heat. After a predetermined time interval or after a predetermined volume of extinguishant has been discharged, the rate of flow of extinguishant from the same source will be automatically reduced a substantial amount and will continue to be discharged over the zone for a relatively long period of time to prevent new flames from developing and to further reduce the amount of heat in the zone to below the flame auto-ignition point.

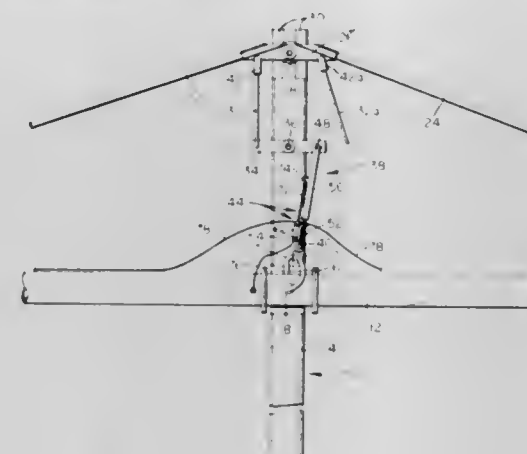
3,750,696

## MAYDAY SAFETY SHUTOFF SYSTEM RESPONSIVE TO ERRANT TOWERS OF AN AUTOMATIC IRRIGATION SYSTEM

Gail Cornelius, Portland, Oreg., assignor to R. M. Wade & Co., Portland, Oreg.  
Continuation of Ser. No. 30,824, April 22, 1970, abandoned.  
This application July 20, 1972, Ser. No. 273,524  
Int. Cl. B05b 9/02; E01h 3/02

U.S. Cl. 137-344

13 Claims



A safety control system for shutting down a self-propelled sprinkling apparatus when any of the towers, and thus the pipeline supported thereby, deviates from a substantially straight line relationship with the rest of the towers. Safety control means on each tower senses when the tower is leading or lagging the adjacent towers by more than a preselected distance, and in turn actuates means which terminates the flow of water to the pipeline and shuts down the entire sprinkling apparatus. Actuation is accomplished via the introduction of pressure, or by a drop in pre-established pressure.

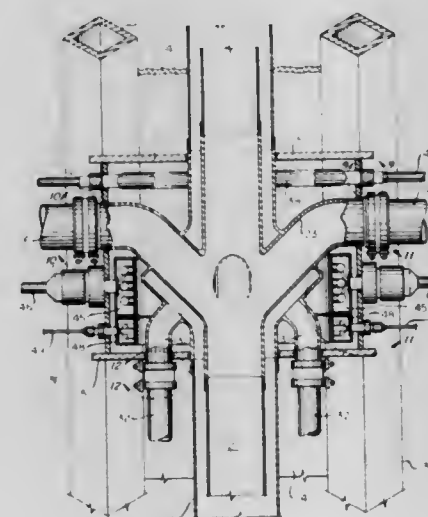
3,750,697

## STRUCTURAL BUILDING FRAME INCORPORATING UTILITIES

Ernest J. Kump, 360 Everett Ave., Palo Alto, Calif.  
Filed May 13, 1971, Ser. No. 143,131  
Int. Cl. E04h 12/00

U.S. Cl. 137-356

15 Claims



A structural building frame in which vertical columns incorporate utilities and provide access to the utilities at each level. The frame is formed of modular components including vertical column sections incorporating utilities. The column sections may also include integral outwardly extending beams for connection with beams of an adjacent column or to interconnecting cross modules. The assembled modular components provide a frame for supporting the floors and walls of a building structure or environmental space modules.

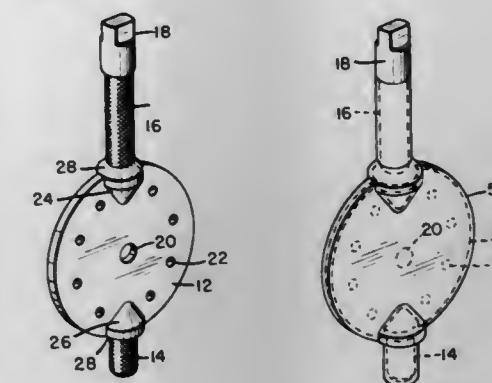
3,750,698

## COATED VALVING MEMBER

David L. Walchle, and Peter J. Schmidt, both of Cincinnati, Ohio, assignors to Xerox Corporation, Cincinnati, Ohio  
Division of Ser. No. 55,370, July 16, 1970, Pat. No. 3,670,071.  
This application Mar. 23, 1972, Ser. No. 237,583  
Int. Cl. F16k 1/22

U.S. Cl. 137-375

5 Claims



All areas of the butterfly type valving member which may be exposed to attach by corrosive substances, are coated with a protective material of the class of tetrafluoroethylene or equivalent substance, by a high-pressure and high-temperature molding process; the process involving withdrawing support from a journal end of the valving member during a critical phase of the molding procedure to ensure adequate coating of said journal end including the customary turning center hole thereof.

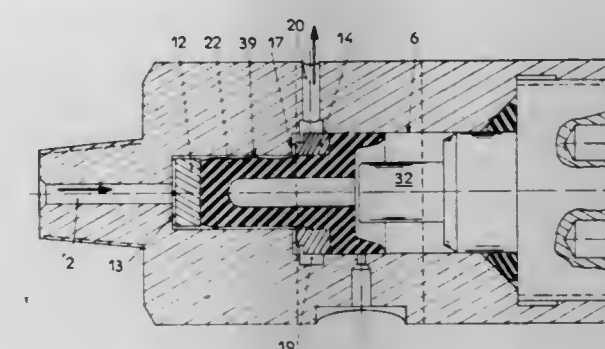
3,750,699

## VALVES

Raymond Bore, Saint Etienne, France, assignor to Benne Marrel, Saint-Etienne (Loire), France  
Filed Oct. 12, 1971, Ser. No. 188,055  
Claims priority, application France, Oct. 9, 1970, 7037344  
Int. Cl. F16k 31/145

U.S. Cl. 137-494

7 Claims



A safety valve for use in the hydraulic system of hydraulic pit props in which the valve has a hollow body mounting inside a cut-off member which is resiliently urged to a sealing position between inlet and outlet pipes. The cut-off member is a deformable member having a blind bore therein. The deformable cut-off member extends through an anti-extrusion ring and passage means are provided between the body of the valve and the anti-extrusion ring.

3,750,700

## MEANS FOR FLOW CONTROLLING HYDRAULIC CHECK VALVE

John H. Ecuier, Lafayette, La., assignor to Amoco Production Company, Tulsa, Okla.  
Filed Apr. 6, 1972, Ser. No. 241,680  
Int. Cl. F16k 17/20

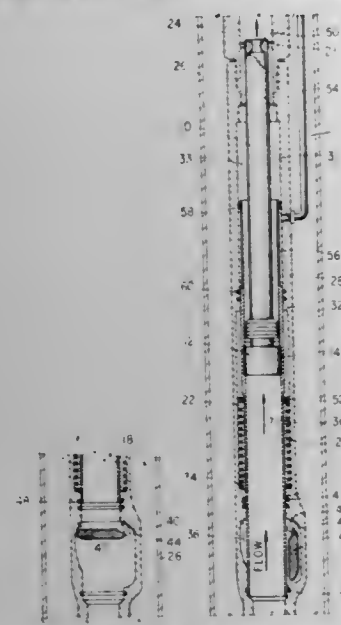
U.S. Cl. 137-498

4 Claims

This valve includes a special tubular section inserted within a tubing string. The lower end of the section has a main flow



control valve which closes upwardly by force of flowing fluid, but is held open by a sleeve mounted in the section which is slideable between an upper and lower position. Inside the sleeve is a wireline retrievable orifice. Hydraulic fluid pressure holds the sleeve in its lower position. The sleeve is urged up-



wardly by combination of a spring and the pressure drop across the orifice. When the sleeve is in its upper position, the flow valve closes. Means are provided such that the valve is responsive to flow rate as well as to changes in the applied hydraulic pressure.

3,750,701

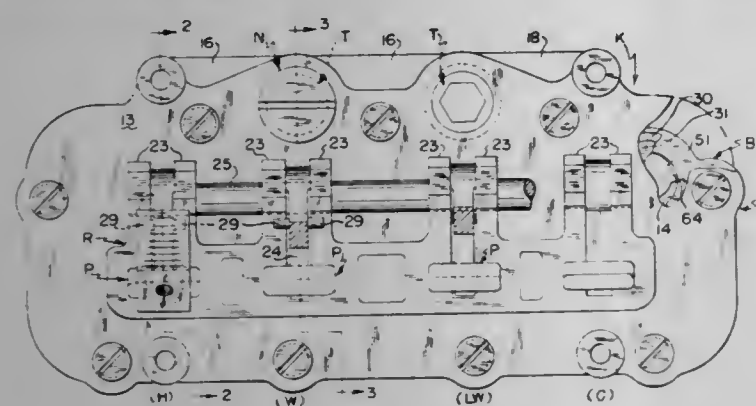
**SELECTABLE TEMPERATURE MIXING VALVE**

Irin Botnick, 3155 Kersdale Rd., Pepper Pike, Ohio  
Filed Aug. 31, 1971, Ser. No. 176,550

Int. Cl. F16k 19/00

U.S. Cl. 137-606

9 Claims



A selectable temperature mixing valve delivering, from hot and cold water supplies, water at hot, cold and one or more intermediate temperatures in volume set by the degree of actuation of respective pushbutton actuated operators controlling displacement of valving members relative to inlet ports in corresponding valving sections, single ported for hot and cold delivery and double ported for mixed water in each section for intermediate temperature delivery; and in which initial intermediate temperature mixed flow is restricted at a point in the mixed flow path to ensure temperature stability with changing flow rate.

3,750,702

**FLUIDIC RESISTANCE-CAPACITANCE DEVICE**

Guy S. Mahan, Rio Rancho Estates, N. Mex., assignor to International Basic Economy Corporation, Akron, Ohio

Filed Oct. 26, 1971, Ser. No. 192,363

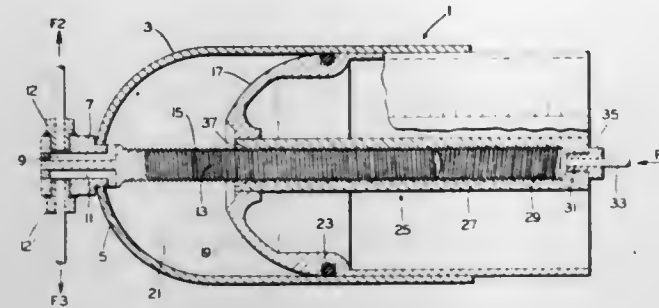
Int. Cl. F17d 1/00

U.S. Cl. 137-608

6 Claims

A device for interposing a variable resistance and variable capacitance function in a fluid flow line wherein the resistance

and capacitance are reciprocal functions of one another. The device comprises a closed cylinder having a piston rod and an adjustable piston within the cylinder defining a capacitive cavity therein and including metering or valve means compris-



ing mating threads between the piston rod and the piston for adjustment of the resistance to fluidic flow through the threads and in reverse function to the capacitance in the device.

3,750,703

**SELF-SEALING COUPLING ASSEMBLY**

Teiji Arita, No. 1-21, Nishitobe-cho, Nishi-ku, Yokohama-shi, Kanagawa-ken, Japan

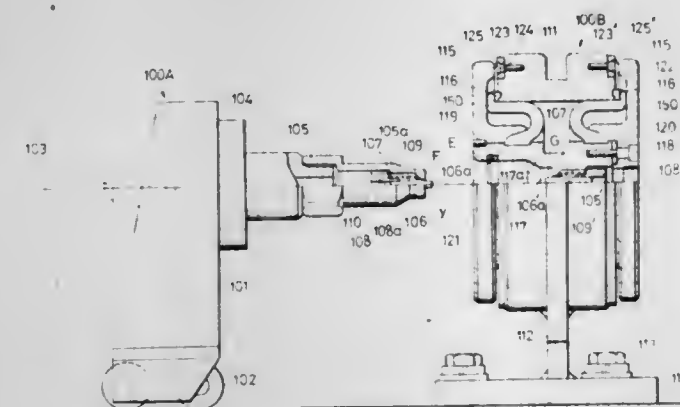
Filed Aug. 8, 1972, Ser. No. 278,754

Claims priority, application Japan, Aug. 9, 1971, 46/59599

Int. Cl. F16l 27/10, 37/00

U.S. Cl. 137-614.04

2 Claims



A self-sealing coupling assembly is disclosed which incorporates a means for absorbing misalignment between the male and female coupling members, said means comprising a resilient member such as of rubber in the form of a bellows having one end connected to a stationary sleeve and the other end to the female coupling member in a manner to support the latter movably in suspension.

3,750,704

**MULTI-WAY VALVE**

George K. Burke, and Kenneth Raines, both of Bethlehem, Pa., assignors to Burron Medical Products, Inc., Bethlehem, Pa.

Filed Oct. 8, 1971, Ser. No. 187,699

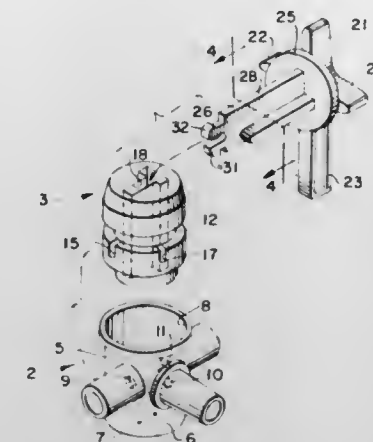
Int. Cl. F16k 11/00

U.S. Cl. 137-625.47

12 Claims

A multi-way valve comprising, a cylindrical valve body made of plastic and having a plurality of ports in the side wall thereof, a cylindrical valve plug made of rubber and rotatably

fitted within said valve body, said valve plug having passage means therein adapted to be brought into registry with the



3,750,705

**HYDRAULIC CONTROL DEVICE**

Armin Blumer, Schwanden, Switzerland, assignor to Maschinenfabrik und Glaser AG, Nafels, Switzerland

Filed Nov. 3, 1971, Ser. No. 195,198

Claims priority, application Switzerland, Nov. 19, 1970, 17195/70

Int. Cl. F16k 11/00

U.S. Cl. 137-625.64

6 Claims



The control device is designed to control a hydraulically operated piston unit, particularly the melting and injection screw unit of an injection molding machine for plastics. The control device includes a main control valve reciprocable in a cylindrical guide or bore formed in a valve body, and controlling the connections between a source of hydraulic fluid under pressure, a pressure consumer and a return flow collector for the fluid, each of which is connected to a respective passage communicating with the guide. The main control valve is subjected to axial pressures, variable in at least one stage, to control the connections between the passages. A reversing valve is mounted on the housing to form a unit therewith, and one or more anticipatory control-pressure valves are also mounted on the housing. The reversing valve is effective to reverse the position of the main control valve, while the anticipatory control-pressure valves act on the main control valve to determine the magnitude of the flow area between chambers, each connected to a respective passage in the housing.

3,750,706

**VALVES FOR CONTROLLING THE SUPPLY OF DRINKING WATER TO POULTRY AND OTHER LIVESTOCK**

Ronald Ingham Mallinson, Marten, Rebroyd, Triangle, near Halifax, Yorkshire, England

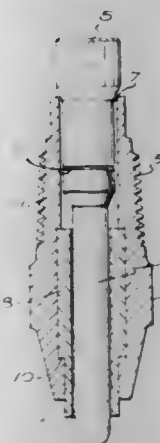
Filed June 24, 1971, Ser. No. 156,395

Claims priority, application Great Britain, July 1, 1970, 31,820/70

Int. Cl. A01k 7/02; F16k 1/00

U.S. Cl. 137-614.18

1 Claim



A valve for controlling the supply of drinking water to poultry having a body of moulded plastic incorporating two valves, one upper and one lower, the lower seat comprising the upper end of a tube moulded in the body and the upper seat being formed by the plastic material of the valve body.

3,750,707

**COMPONENT FOR PNEUMATIC LOGICAL CIRCUITS WITH TWO DISTINCT PERMISSION CONTROLS**

Innocente Dordoni, Strada Paullese Km. 3, Peschiera Borromeo, Italy

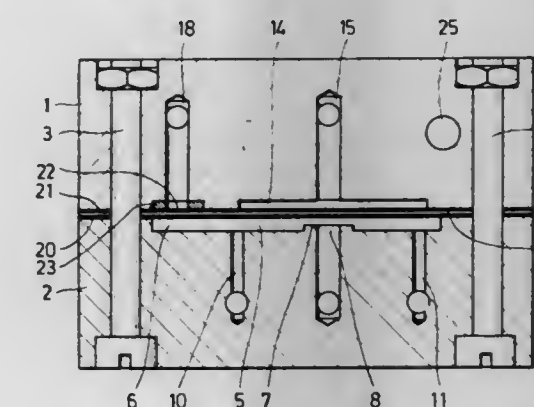
Filed Apr. 12, 1971, Ser. No. 133,037

Claims priority, application Italy, Nov. 25, 1970, 32174 A/70

Int. Cl. F16k 11/02; F15c 3/04

U.S. Cl. 137-625.48

4 Claims



A component for pneumatic logical circuits with two distinct permission controls, working with great reliability even with normal impure workshop compressed air, comprising a block with three inner chambers, wherein the chambers are separated by two elastically deformable membranes, in the first of said chambers being arranged a first passage capable of being alternately opened or closed by the said membranes, a couple of further passages entering said first chamber, all such passages being alternately connected to the feeding source, the discharge to the atmosphere, the use and the control, according to the desired logical Boolean function, and in which the other two adjacent and not communicating chambers (neither between themselves nor with the first one) serve to receive pneumatic signals in the form of input variables and acting on the said membranes, thus causing the closing and opening, respectively, of the said first passage entering the said first chamber.



3,750,708

## MIXING VALVE STRUCTURE

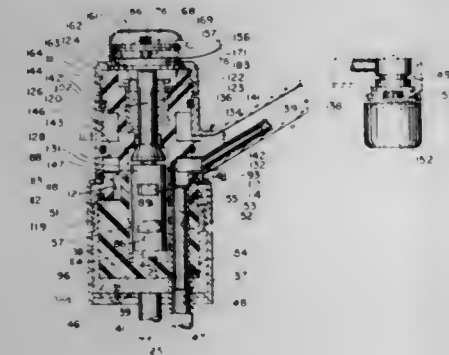
Aaron A. Staat, 82 Dudley Rd., Fort Mitchell, Ky., and Robert A. Staat, 3815 Narrows Rd., Erlanger, Ky.

Division of Ser. No. 797,737, Feb. 10, 1969, Pat. No. 3,647,697, which is a continuation-in-part of Ser. No. 614,098, Feb. 6, 1967, abandoned. This application Oct. 22, 1971, Ser. No. 191,735

Int. Cl. F16k 19/00

U.S. Cl. 137—625.17

12 Claims



A valve including an outer casing having a pair of inlets, an outlet and a cup-shaped recess formed therein. A valve chamber cartridge is removably received in the recess, the cartridge including a body having a pair of end surfaces and a valve chamber formed in the body extending from one of the end surfaces. A pair of inlet passages are formed in the body each of which has one end communicating with the valve chamber and its other end communicating with an exterior surface of the cartridge body. Ports in the casing connect each of the inlet passages with one of the pair of inlets, and a slide valve member is received in the valve chamber for controlling communication between the pair of inlets and the outlet through the inlet passages.

3,750,709

## HEAT-EXCHANGE TUBING AND METHOD OF MAKING IT

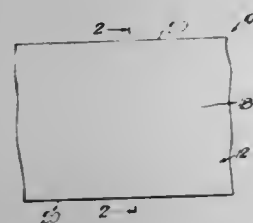
Fred W. French, Deer Island, Conn., assignor to Noranda Metal Industries Inc., Bellingham, Wash.

Division of Ser. No. 38,132, May 18, 1970, Pat. No. 3,662,582. This application Feb. 29, 1972, Ser. No. 230,297

Int. Cl. F28f 1/40

U.S. Cl. 138—38

2 Claims



Heat-exchange tubing with a peripheral wall of oblong cross-section, and inner fins on the wall of which the fins on either of two opposite flat wall sections extend with their tips at least to the level of the tips of the fins on the other flat wall section, and a method of forming the tubing from a round inner-fin tube-blank, involving partially flattening the round blank into the tubing with its peripheral wall of oblong cross-section.

3,750,710

## VARIABLE FLUID ORIFICE

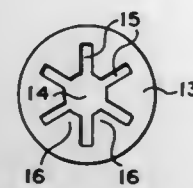
Paul F. Hayner, Lexington, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 12, 1971, Ser. No. 188,284

Int. Cl. F15d 1/02

U.S. Cl. 138—40

9 Claims



A restrictor is described which includes a resilient plate with portions cut to define flexible vanes which deflect with increasing pressure to form an orifice the effective area of which increases with differential pressure in such a way that the differential pressure is a predetermined function of the rate of flow of fluid therethrough.

3,750,711

## METHOD AND APPARATUS FOR TESTING FOR LEAKS IN PIPES

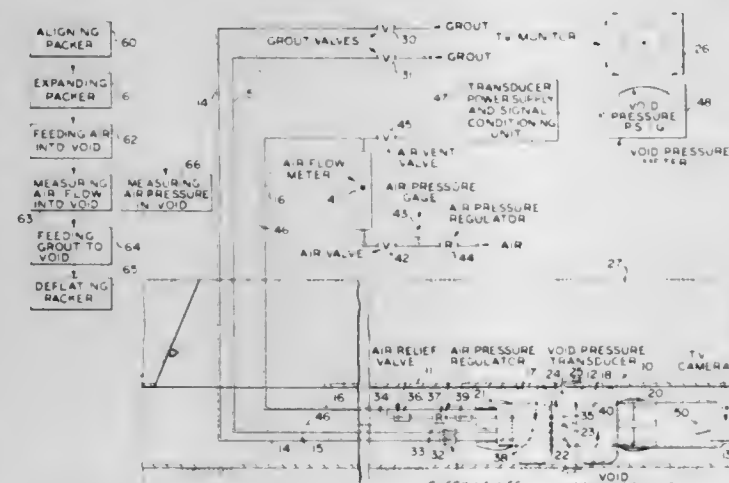
James T. Conklin, and James B. Rogers, both of Orlando, Fla., assignors to Penetryn Systems, Inc., Willoughby, Ohio

Filed Mar. 24, 1971, Ser. No. 127,712

Int. Cl. F16l 55/18

U.S. Cl. 138—97

11 Claims



A method and apparatus for testing for leaks in pipes is provided utilizing a packer apparatus with inflatable end portions to isolate a void area in the pipe and feeding air to the isolated area and measuring the air pressure in the void area, along with the flow of air into the void area to determine the rate of leakage from the area.

3,750,712

## HIGH PRESSURE HOSE

Karl Brand, 8603 Ebern, Friedlandstrasse 6, Germany

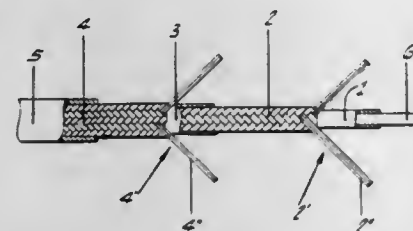
Filed Apr. 19, 1971, Ser. No. 135,136

Claims priority, application Germany, July 16, 1970, P 20 35 399.5

Int. Cl. F16l 1/13

U.S. Cl. 138—124

7 Claims



A high pressure hose is disclosed having at least two braided layers with a smaller number of strands of threads in the inner

braided layer than in the outer braided layer. Thus in making the hose there are a smaller number of spools in the inner braiding head of the braiding apparatus than in the outer braiding head so that the inner head can rotate appreciably faster than the outer head.

3,750,713

## BEATING UP DEVICE FOR TRAVELLING WAVE LOOMS

Dmitry Vladimirovich Titov, 13 Parkovaya, ulitsa 27, 2 korpus, kv. 49, Moscow, U.S.S.R.

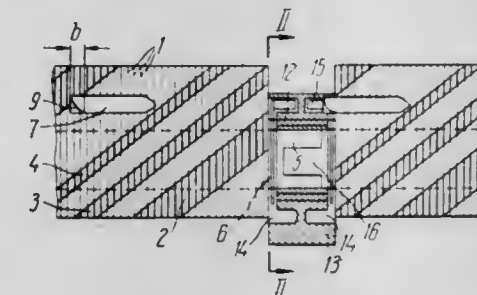
Filed Nov. 11, 1971, Ser. No. 197,669

Claims priority, application U.S.S.R., Nov. 17, 1970, 1491756

Int. Cl. D03d 41/00, 49/60

U.S. Cl. 139—12

2 Claims



The device comprises a reed in the form of disks mounted on a shaft. The shaft is located in bearings, in the housings of which on either side of the shaft and concentrically therewith there are provided slots accommodating a mechanism to move the weft carrier over the bearing, i.e., outside the shed.

3,750,714

## WEAVING MACHINE AND METHOD

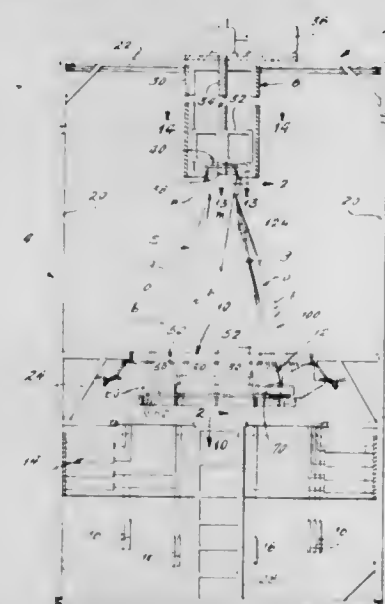
Harry A. Holman, Jr., St. Louis; Albert W. Kallmeyer, Crestwood, and William W. Weaver, St. Louis, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Sept. 27, 1971, Ser. No. 184,082

Int. Cl. D03d 37/00

U.S. Cl. 139—16

7 Claims



A weaving machine for weaving a wrap thread into a multiplicity of longitudinal threads to create a tubular weave of substantial thickness includes means for supporting a mandrel about which the weave is formed and for further anchoring the longitudinal threads so that they extend downwardly along the mandrel in a shed-like configuration. Located below and centered with respect to the mandrel is a transporting mechanism including a plurality of radial slideways, each of which supports a series of individual sliders which confine the longitudinal threads and are capable of shifting independently of one

another to change the radial positions of the various longitudinal threads. The transporting mechanism positions the threads in groups corresponding to the various slideways with the threads in each group being spaced radially from one another due to the radial disposition of the slideways. By manipulating the sliders, any two of the threads of a group can be spaced further apart than the remaining threads to provide a shed opening in the group. An endless track encircles the shed formed by the longitudinal threads, and this track has radial slots for receiving the various groups of longitudinal threads. A feed assembly rides around the track, and this assembly is sized to fit through the shed openings in the various groups of longitudinal threads. The feed assembly carries a bobbin of wrap thread and lays this wrap thread into the portion of the shed opening adjacent to the mandrel as the feed assembly moves along the track, thus forming the tubular weave.

3,750,715

## LET-OFF MECHANISM OF LOOM

Yukio Mizuno, and Takeshi Oguro, both of Tokyo, Japan, assignors to Nissan Motor Company, Yokohama City, Japan

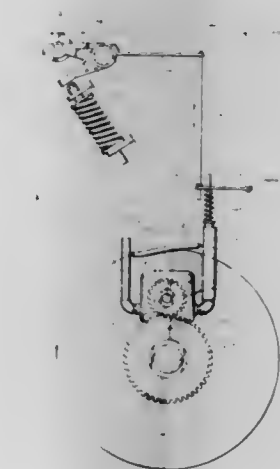
Filed Nov. 10, 1970, Ser. No. 88,266

Claims priority, application Japan, Nov. 12, 1969, 44/90037

Int. Cl. D03c 49/06

U.S. Cl. 139—110

6 Claims



A device for maintaining uniform the tension of yarn being drawn to a weaving loom from a yarn beam by detecting the slackness or tension under which the yarns are at all times and for adjusting the tension to a predetermined desired level by braking and restoring the rotational speed of the yarn beam by a hydraulically operated braking system.

3,750,716

## APPARATUS FOR SUPPLYING WEFT YARNS

Hiroshi Kimura; Heiji Arimoto; Hirohisa Nara; Tsugio Miyamatsu, and Mitsuo Kitajima, all of Kyoto, Japan, assignors to Unitka Ltd., Amagasaki, Japan

Filed July 27, 1970, Ser. No. 58,627

Claims priority, application Japan, July 26, 1969, 44/59272; Apr. 25, 1970, 45/35579; Apr. 27, 1970, 45/36162

Int. Cl. D03d 47/34

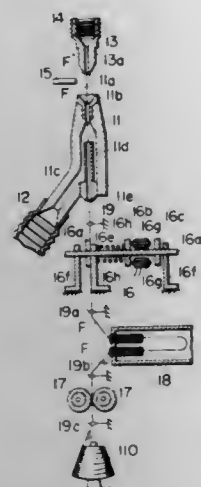
U.S. Cl. 139—122 R

13 Claims

A method of supplying weft yarns includes the steps of holding the free end of a predetermined length of yarn to be used for a weft yarn by suction and a portion of its length near the end along a fluid flow path and supplying the held yarn into the shed by means of a yarn carrier which grips the yarn end and traverses the shed. The apparatus for accomplishing the method includes a reserve pipe into which a predetermined length of yarn is placed from a supply and held for insertion into the shed and a fluid ejector to feed the free end of the



yarn to a suction holding device across the path of the weft yarn carrier. The carrier is provided with a gripper for holding



the free end of the weft yarn as the carrier is flown across the shed with the ejector assisting in the weft yarn feed.

3,750,717

### SHUTTLE WITH IMPROVED MEANS FOR SECURING BOBBIN-RETAINING CLAMP

Jurg Forster, CH-8340 Hinwil, Schweiz, Alpenblickstrasse, Switzerland

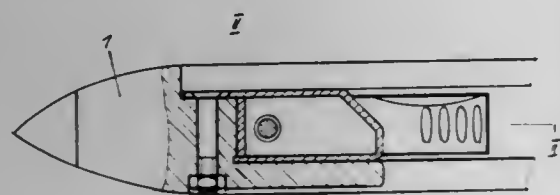
Filed Sept. 15, 1970, Ser. No. 72,344

Claims priority, application Germany, Sept. 16, 1970, P 19 46 884.9

Int. Cl. D03j 5/08

U.S. Cl. 139-207

8 Claims



The disclosure concerns a shuttle for an automatic loom, and more particularly a means for securing the head of a spring clamp for the pirn or cop in an automatic shuttle and of the type in which a bolt passes transversely through a bore in the nose of the shuttle and the head of the clamp.

3,750,718

### METHOD AND APPARATUS FOR WINDING AND INSERTING STATOR COILS

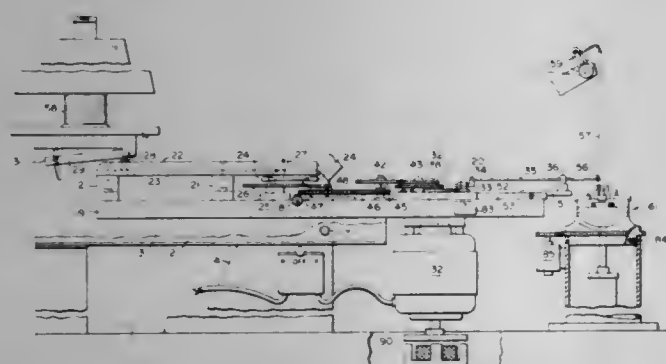
Richard D. Sedgewick, 100 Horne St., Dover, N.H.

Filed Feb. 8, 1971, Ser. No. 113,258

Int. Cl. B21f 3/04

U.S. Cl. 140-92.1

12 Claims



A completed set of stator coils is wound with the respective coils arrayed in horizontal sectors supported on a coil form which determines the length of the turns in each coil and corresponds to the length required by the geometry of the stator.

The coils are distributed vertically to make the general dimensions of the copper cross section suitable for passage through the slot between the teeth on the stator. After the set of coils is wound, the stator is registered with the coils on the coil form such that a central plunger moving through the coil form simultaneously moves all the windings of the set through the central bore of the stator while simultaneously drawing the coil sides through the stator slots thus ultimately to position the set of coils in the proper location distributed on the poles of the stator.

3,750,719

### DEVICE FOR WINDING CONTINUOUS WINDING WITH INTERLAY SECTIONS

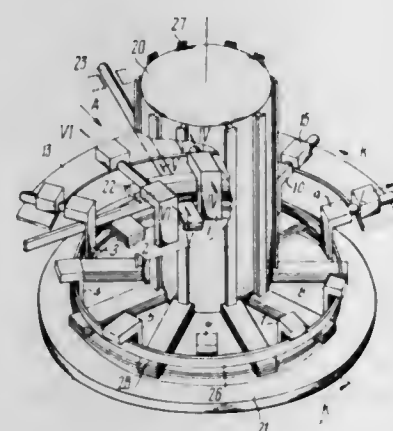
Leonid Semenovich Goldman, Kremlevskaya ulitsa 57a, kv. 37, and Evgeny Lvovich Shteinfaier, ulitsa Scherbakova, 30, kv. 6, both of Zaporozhie, U.S.S.R.

Filed Oct. 15, 1971, Ser. No. 189,590

Int. Cl. B21f 3/08

U.S. Cl. 140-92.2

7 Claims



A device for winding continuous windings with interlay sections mainly for transformers and the like. The device is characterized in that it is provided with a rotatably mounted base adapted to accommodate thereon a circumferential arrangement of bearing members used as a mandrel for laying the wire of the section being wound, and drives for effecting a step-like reciprocation of the bearing members in a radial direction with respect to the base.

3,750,720

### WIRE-TWISTING APPARATUS

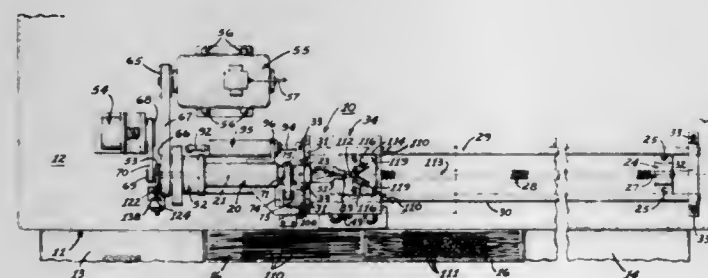
Conrad J. Steigerwald, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 2, 1971, Ser. No. 204,253

Int. Cl. B21f 7/00

U.S. Cl. 140-149

10 Claims



Wire-twisting apparatus adapted for twisting a plurality of individual strands of wire into a single cable comprising a twisting head mounted for rotary movement utilizing actuating means for providing twists in the wire at a given number

per inch and of a predetermined tightness, the number of twists per inch being controlled by a lead screw and the number of twists per desired length being controlled by a counter.

3,750,721

### EXPANDING FILL SPOUT FOR BAG FILLING MACHINE

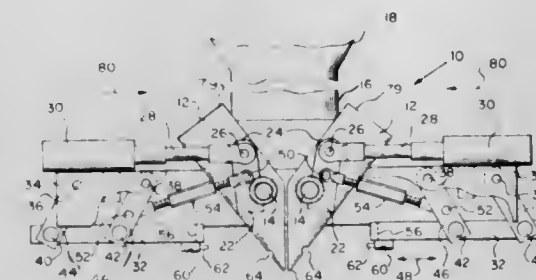
Doyle R. Hudson, West Monroe, La., assignor to Olinkraft, Inc., West Monroe, La.

Filed Aug. 18, 1971, Ser. No. 172,688

Int. Cl. B65b 1/04, 3/04

U.S. Cl. 141-10

8 Claims



An improved filling machine of the type having an expanding fill spout comprising at least two split sleeves pivotally mounted around a circular filling spout. The improved filling machine also contains new and novel automatic means for holding the bag on the fill spout and means for detecting the presence or absence of a bag on the fill spout. The split sleeves and the means for holding the bag on the fill spout are interconnected by means of levers and other mechanical connections for unit operation by at least one power cylinder or other power means.

3,750,722

### FUNNEL

Roger L. Nowak, 262 W. Boylston St., West Boylston, Mass.

Filed May 7, 1971, Ser. No. 141,135

Int. Cl. B65b 39/06

U.S. Cl. 141-332

1 Claim



A funnel having a flange adapted to fit around the periphery of a can and having its small end offset from the large end to assist in pouring.

3,750,723

### SINGLE POINT MOORING SYSTEM

Joseph F. Schirtzinger, Pasadena, Calif., assignor to Air Logistics Corporation, Pasadena, Calif.

Filed Jan. 4, 1971, Ser. No. 103,700

Int. Cl. B65b 3/04

U.S. Cl. 141-388

21 Claims



A floating, rigid, tubular boom, pivotally connected to a submerged piling or buoy, provides self-contained mooring and fluid transport facilities for offshore servicing of cargo vessels in a downstream position.

3,750,724

### PENCIL SHARPENING MACHINE

Gerald W. Dahle, Marienberg 19, D-863 Coburg, Germany

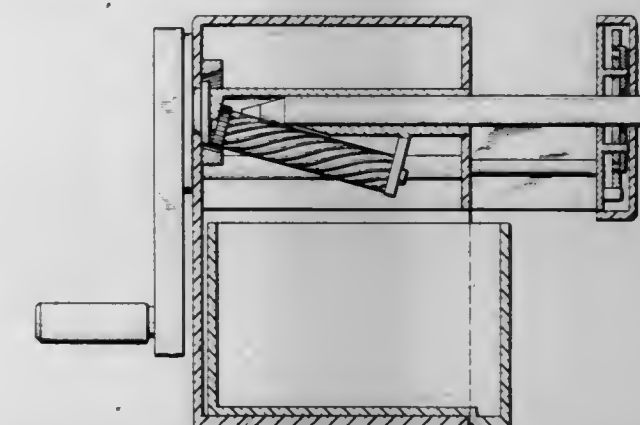
Filed Mar. 31, 1971, Ser. No. 129,862

Claims priority, application Germany, Apr. 2, 1970, P 20 15 683.6

Int. Cl. B43i 23/00

U.S. Cl. 144-28.1

8 Claims



A pencil sharpening machine having a chuck for gripping the pencil or lead holder on the outside of the machine housing and movable in its axial direction against spring action away from the housing, and an actuating member which is mounted at least partly within the housing and which, when an outer end is depressed with one finger, is adapted to open the chuck and also to shift the same in the axial direction.

3,750,725

### VENEER SLICER MACHINE

Angelo Cremona, Viale Lombardia 275, 20052 Monza, Italy

Continuation-in-part of Ser. No. 106,646, Jan. 15, 1971, abandoned. This application Nov. 24, 1971, Ser. No. 201,846

Int. Cl. B27c 1/00

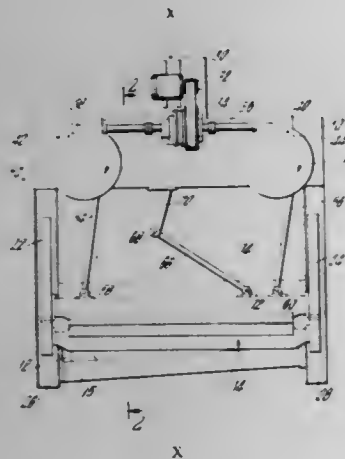
U.S. Cl. 144-178

5 Claims

A veneer slicing machine or wood shearing machine includes a supporting table for receiving the wood stock to be

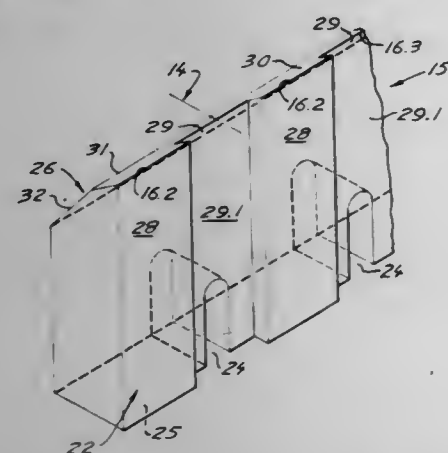


cut which is indexed upwardly at a predetermined rate in dependence upon the wood sheets or veneer which is to be formed. The block is cut by a movable knife blade assembly which is mounted at each end on slide members which move backwardly and forwardly on defined trackways on each side of a machine frame. A smaller stroke and less stress operation of the machine is obtained by driving the knife assembly through a drive motor connected to separate rotatable fly wheels. The fly wheels are connected through respective connecting rods which are articulated to their periphery and to the blade assembly at their respective opposite ends at locations adjacent each end of the assembly. A third connecting



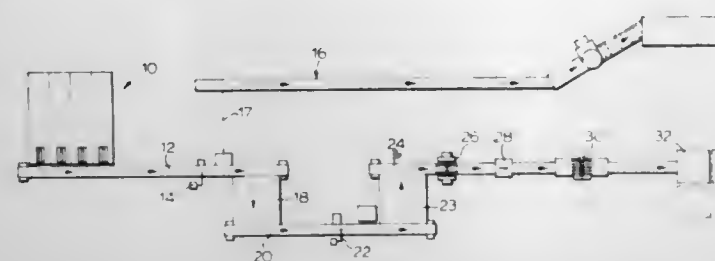
rod is pivoted at its one end to the frame of the machine and pivoted at its opposite end to the blade assembly adjacent one of the pivot rod connections. Its end which is connected to the blade assembly moves through an arc, and the combined motion is such that the blade approaches the wood stock when it is angled transversely by an angle of 5° and this angle will vary, until it reaches the end of the shearing operation, to a value of about 20°. In an alternate arrangement the table, or bed carrying the wood stock, is connected to the fly wheels for movement backwardly and forwardly along with the shearing knife to provide a divided stroke system which will have smaller dynamic stresses than the fixed system.

**3,750,726**  
**CHIPPING KNIVES FOR CHIPPING HEAD ASSEMBLIES**  
Ernest Robert Buchacher, Langley, British Columbia, Canada, assignor to Hawker Siddeley Canada Ltd., Ontario, Canada  
Filed Aug. 3, 1971, Ser. No. 168,626  
Claims priority, application Great Britain, May 11, 1971, 14,355/71  
Int. Cl. B27g 13/00  
U.S. Cl. 144—240



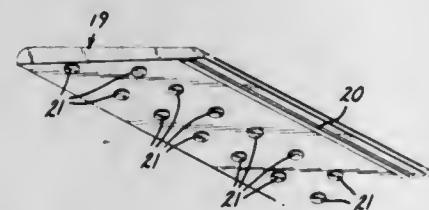
A chipping knife mountable on a head rotatable about an axis at right angles to a longitudinal axis of a log to be chipped, the knife having flat bottomed grooves formed in an advance face which open into a bevelled surface so as to provide advance and trailing cutting edges, so as to reduce production of cards.

**3,750,727**  
**SMALL WOOD SAWMILL**  
Lewis R. Ord, Port Loring, Ontario, Canada  
Filed Sept. 7, 1971, Ser. No. 178,090  
Int. Cl. B27b 1/00  
U.S. Cl. 144—312



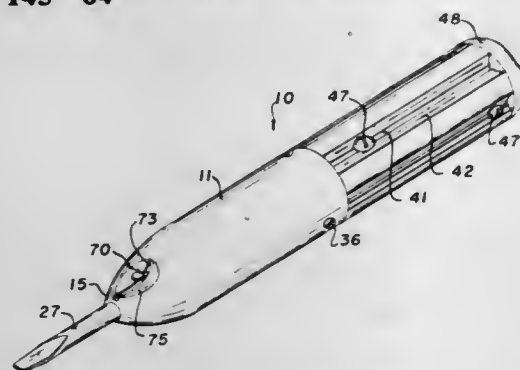
A method and apparatus for converting small-diameter logs into dimensional lumber in which defects and imperfections such as knots and rot are removed by severing and removing full-diameter sections containing said defects. The remaining clear wood is cut into suitable lengths for dimensional lumber and sawn into boards of desired proportions.

**3,750,728**  
**INSTALLATION OF WOOD MILLWORK WITH PRE-APPLIED ADHESIVE**  
Joseph L. Stark, Minneapolis, Minn., assignor to Chippewa Lumber Industries, Inc., Gildden, Wis.  
Filed May 28, 1971, Ser. No. 148,013  
Int. Cl. B27d 1/00  
U.S. Cl. 144—315



Wood millwork (e.g., wood trim molding for use around door openings) is installed by means of pre-applied adhesive (e.g., pressure sensitive adhesive strips) which is bonded to the generally planar underside of the moulding and activated at the time of use (e.g., activated by removing protective films or with solvents). Preferably, the adhesive is bonded to the millwork at the time of manufacture. Such millwork can be installed on site with the use of substantially fewer nails than now used commercially.

**3,750,729**  
**MULTIPLE DRIVER TOOL**  
Roland G. Lemieux, 7655 Kelly Rd., Prince George, British Columbia, Canada  
Filed Sept. 13, 1971, Ser. No. 179,840  
Int. Cl. B25g 1/08; B43k 27/14  
U.S. Cl. 145—64



A multiple driver tool having a chamber for holding a plurality of drivers for screws and the like, and a guided slide con-

ducted to each driver by means of which the driver can be selectively moved to a passage extending away from an end of the chamber. Guide means in the chamber directs each driver towards and into the passage during movement of that driver, each driver being long enough when in the passage to project beyond the end of the multiple tool.

**3,750,730**  
**REINFORCING ELEMENT AND FITTING FOR A FLEXIBLE WALLED CONTAINER**  
Robert E. Dorsch, South Bend, Ind., assignor to Unlroyal, Inc., New York, N.Y.  
Filed Sept. 10, 1971, Ser. No. 179,290  
Int. Cl. F16l 5/00  
U.S. Cl. 150—8

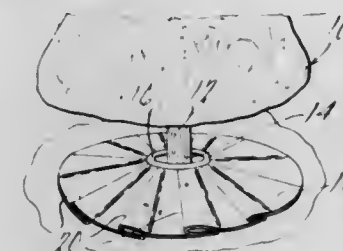


Fittings of markedly superior crashworthiness for flexible walled liquid containers, particularly fuel tanks for aircraft such as airplanes and helicopters, are made by reinforcing the container wall around such fittings with a plurality of substantially concentric annular turns, such as rings or other shapes utilizing parallel peripheral cords, of substantially inextensible reinforcing material, such as metal wire or textile cords, especially glass fiber cord, of the type commonly used for reinforcing rubber articles.

For use in so reinforcing the container, wall reinforcing doilies are provided which comprise an annular sheet of curable but uncured polymeric material embodying (as by attachment to one face of said sheet or by embedment in said sheet or between two such sheets) substantially inextensible reinforcing material disposed as concentric annular turns, such as rings or other shapes utilizing parallel peripheral cords, in a plane generally parallel to the plane of the sheet.

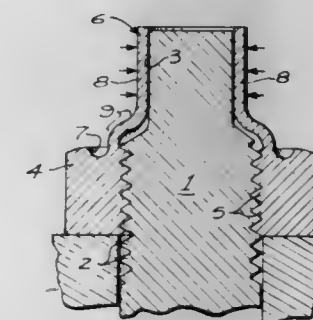
Preferably the reinforcing material is wound spirally about the aperture with the adjacent spiral turns in actual physical contact over at least 80 percent of the spiral length.

**3,750,731**  
**CHRISTMAS TREE PACKAGING MEANS**  
Ronald Harry Brimmell, 2776 Charter Blvd., Troy, Mich.  
Filed Aug. 2, 1971, Ser. No. 167,894  
Int. Cl. B65d 81/00  
U.S. Cl. 150—52 R



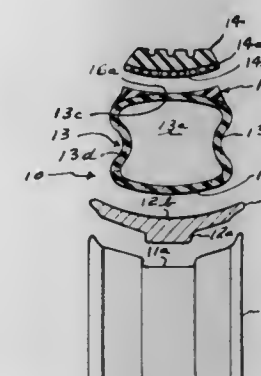
A specially constructed Christmas tree package or bagging means for enclosing the tree after usage thereof.

**3,750,732**  
**LOCKING NUT**  
Kurt O. Moebius, P.O. Box 2339, Palos Verdes, Calif.  
Continuation-in-part of Ser. Nos. 793,009, Jan. 22, 1969, abandoned, and Ser. No. 14,773, Feb. 26, 1970, abandoned, said Ser. No. 14,773, is a continuation of Ser. No. 771,780, Oct. 30, 1968, abandoned. This application Jan. 29, 1971, Ser. No. 111,002  
Int. Cl. F16b 39/02  
U.S. Cl. 151—2 A



A locking nut intended for engagement with a screw-threaded bolt shank having diametrically disposed flat sides, the nut being provided with a malleable cylindrical extension clearing the screwthreads of the bolt; the extension being capable of being squeezed inwardly from opposite sides into conformity with the flat sides of the bolt, and in doing so, causing the formation of an essentially S-shaped transition zone. A modification includes a transition of reduced thickness. A further modification includes a weakened portion in the transition zone for later severance to permit removal of the nut from the bolt.

**3,750,733**  
**QUICK CHANGE-REPLACEABLE TREAD PNEUMATIC TIRE**  
Howell K. Brewer, 1921 N. Longview St., Dayton, Ohio, and Aivars V. Petersons, 1925 Little York Rd., Dayton, Ohio  
Filed Dec. 14, 1971, Ser. No. 207,850  
Int. Cl. B60c 7/24  
U.S. Cl. 152—175



A vehicular wheel and pneumatic tire assembly including a wheel portion, a tire-carass portion and a separate tread band portion installed over the uninflated carcass-periphery, and in which the carcass portion is molded into a convoluted shape, when uninflated, that provides its easy stretching over the outside diameter of the wheel and, on application of an inflation pressure, simultaneously ensures both the outward expansion of the carcass-periphery and the inward contraction of the carcass-inside diameter for respective tight-fitting engagement with, and assembly to, the tread band and wheel portions.

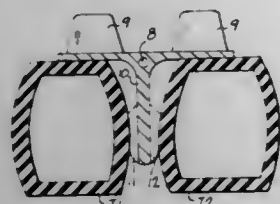


# 3,750,734 VEHICLE TRACTION DEVICE AND METHOD OF MOUNTING

Jimmy C. McCord, Rt. 4, Box 20, Roanoke, Ala.  
Filed Mar. 17, 1972, Ser. No. 235,668  
Int. Cl. B60c 27/22

U.S. Cl. 152-220

2 Claims



To improve traction of a vehicle having dual type wheels and pneumatic tires, an elongated flexible traction device including a plurality of traction blocks having tread surfaces are threadedly mounted on a flexible cable and each block is provided with a radial flange which extends inwardly between the tires of the dual wheel. Flexible coupling means is secured to one end of the traction means and is inserted between the tires and through an aperture in one part of the wheel and is then secured to the wheel. The vehicle is first driven over the flexible traction device after having been coupled at one end to the wheel. After the other end of the traction device reaches a position atop the wheel, a flexible anchoring chain is inserted between the tires and outwardly through an aperture in one of the wheel parts and is then anchored by over-center adjustable toggle means which itself is secured at one end in an aperture formed in the wheel part and at the other end to a selected length of the anchoring chain.

# 3,750,735 REMOVAL OF WATER FROM LIQUID MIXTURES CONTAINING FORMALDEHYDE USING A POROUS POLYMERIC MEMBRANE

Robert Chiang, and Eli Perry, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 46,800, June 16, 1970, abandoned. This application Jan. 19, 1972, Ser. No. 219,155  
Int. Cl. B01d 1/22, 3/00, 13/00; C08f 15/12

U.S. Cl. 159-49

6 Claims

Process for the separation of water from mixtures of water and organic or inorganic compounds, soluble in water, by contacting the mixtures against a nitrogen-containing polymeric membrane, and withdrawing at the other side of the membrane a mixture having a higher concentration of water.

# 3,750,736 APPARATUS FOR THE ISOLATION OF $\alpha$ -OLEFIN HYDROCARBON COPOLYMERS FROM SOLUTION

Richard S. W. Batt, Wilmington, Del., and Louis A. De Frate, Kennett Square, Pa., assignors to E. J. du Pont de Nemours and Company, Wilmington, Del.

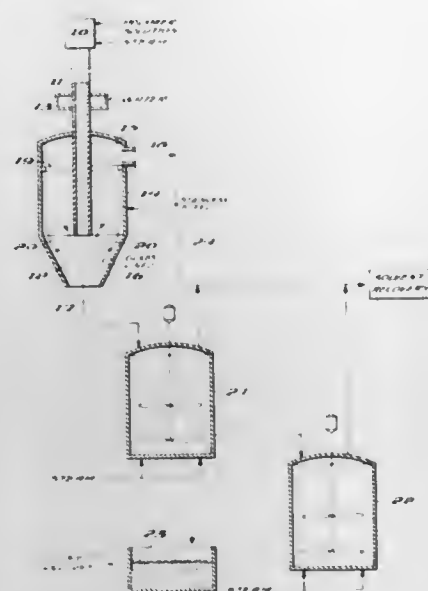
Continuation-in-part of Ser. No. 782,821, Dec. 11, 1968, abandoned. This application Dec. 28, 1970, Ser. No. 102,117  
Int. Cl. B01d 1/14, 3/34, 3/38

U.S. Cl. 159-16 S

6 Claims

Apparatus and process for the steam isolation of elastomeric  $\alpha$ -olefin polymers from organic solvent solution by atomizing the solution with steam in an atomizing nozzle; passing the effluent from the nozzle through a stripping tube operated in the spray-flow regime and having inner walls essentially parallel throughout the length of the tube, and from the stripping tube into a flash chamber; whereby solvent-swollen polymer crumb can be collected and removed from the flash chamber.

Means are disclosed whereby agglomeration of polymer on the inner walls of the stripping tube and flash chamber is



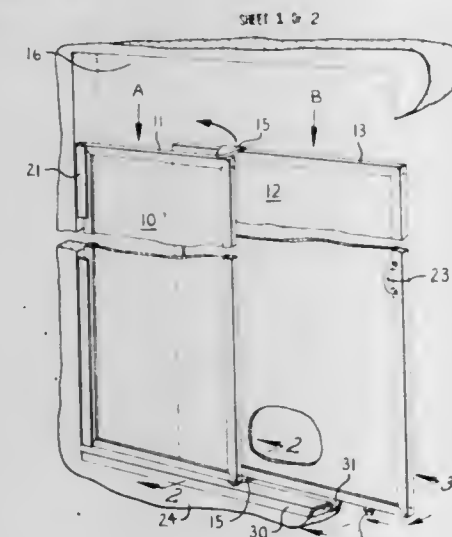
prevented, and whereby entrainment of polymer crumb and undue pressurization by jet pumping are avoided.

# 3,750,737 ADJUSTABLE WIDTH FOLDING DOOR

Roger V. Woodward, 11721 S.E. Taylor St., Portland, Oreg.  
Filed May 1, 1972, Ser. No. 248,926  
Int. Cl. E05d 15/26

U.S. Cl. 160-206

6 Claims



This is a two-panel folding door having one panel hinged to a door jamb and a second panel pivotally connected to the swinging side of the first panel. Special pivot brackets on the upper and lower ends of the second panel have adjustable clamp means to vary the overlap of the two panels according to the width of the doorway opening. Different width adjustments may be made in the top and bottom pivot brackets to fit an opening which is wider at the top or bottom.

# 3,750,738 DRAPERY SUPPORT SYSTEM

Samuel Doston Powers, Anaheim, Calif., assignor to La Verne Jane Powers and Bruce Wayne Powers

Filed Sept. 21, 1971, Ser. No. 182,444

Int. Cl. A47h 5/04

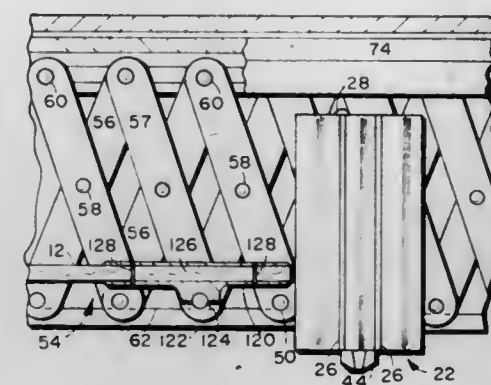
U.S. Cl. 160-342

6 Claims

A drapery support system comprising a substantially enclosed rod with U-shaped members extending from the bottom thereof with the exposed uprights of said members providing support for a drapery pleater, having a plurality of slots therein for the placement of a drape to be pleated and

supported. The U-shaped members are supported and controlled by lazy tongs having guide elements in the form of projecting pins and an overriding channel member for control thereof so that said lazy tongs can be driven by pull cords mov-

is constructed to resist the corrosive effects of steam, petroleum and acids and is also highly resistant to scuffing and chaf-



ing within said rod in a uniform manner to provide even spacing of the pleaters and the drapes attendantly connected therewith. A further embodiment incorporates lazy tongs having pin shaped extensions which fit into disc shaped guides having eyelets depending therefrom.

# 3,750,739 FLEXIBLE TRAFFIC DOOR

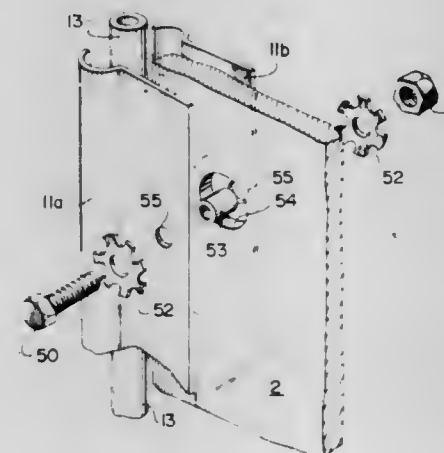
Winston B. McGuire, Plattsburgh, N.Y., assignor to W. B. McGuire Co., Inc., Plattsburgh, N.Y.

Filed Feb. 7, 1972, Ser. No. 224,077

Int. Cl. E06b 3/80

U.S. Cl. 160-354

3 Claims



A flexible traffic door comprising a rigid frame by which said door is hingedly mounted in a door frame and a sheet of flexible material mounted in said frame and forming a panel of said door, said sheet being attached to said frame by a connecting means which allows a relative movement between said sheet and said frame.

# 3,750,740 FLEXIBLE CLOSURE FOR LOG STEAMING VAT

Vernon E. Newman, Yakima, Wash., assignor to Yakima Tent and Awning Co., Ltd., Yakima, Wash.

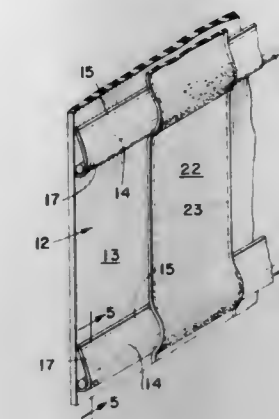
Filed Nov. 2, 1971, Ser. No. 194,889

Int. Cl. A47h 23/00

U.S. Cl. 160-354

1 Claim

A free-hanging flexible closure for the discharge end of a log steaming vat retains steam in the vat while permitting logs to roll from the vat without damage to the closure. The closure



ing caused by contact with the rolling logs. It is weighted so that it will normally and automatically assume a vat-sealing position.

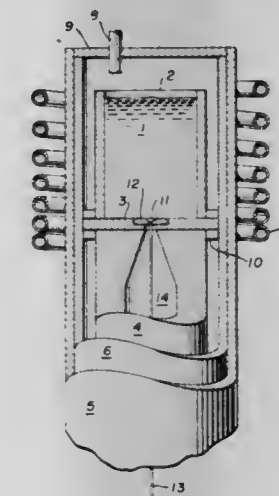
# 3,750,741 METHOD FOR IMPROVED EXTRUSION OF ESSENTIALLY INVISCID JETS

Lawrence F. Rakestraw, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 845,336, July 28, 1969, Pat. No. 3,584,678. This application Jan. 11, 1971, Ser. No. 105,719  
Int. Cl. B22d 11/00; B22c 1/00

U.S. Cl. 164-82

4 Claims



High density, high purity polycrystalline and single crystal beryllium oxide orifice plates have been successfully employed in wire manufacturing processes which comprise spinning molten metals through fine diameter orifices as molten metallic jets.

# 3,750,742 CONTINUOUS STEEL CASTING APPARATUS

Ugo Brusa, Via Borgnis, Domodossola, Italy  
Continuation-in-part of Ser. No. 796,120, Feb. 3, 1969, abandoned. This application Jan. 3, 1972, Ser. No. 214,828  
Claims priority, application Italy, Feb. 6, 1968, 50417 A/68; July 30, 1968, 52642 A/68

Int. Cl. B22d 11/06

U.S. Cl. 164-276

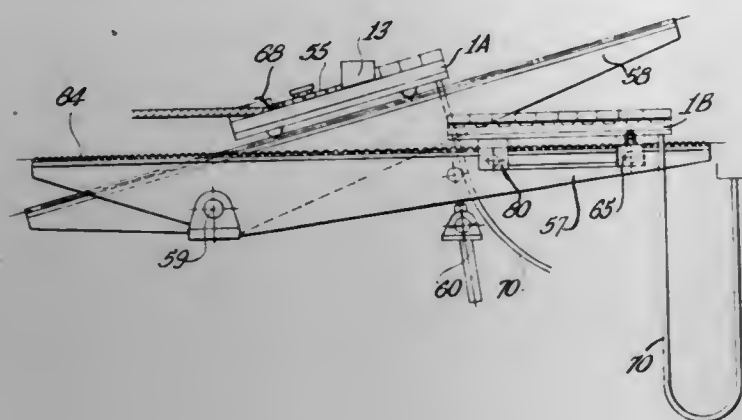
4 Claims

In a method of casting of steel by pouring it in the molten state from an oblique spout onto a parallel, oblique mold which has two sections, individually moving along a path which, after separating from the path of the solidified billet, return to the original point, an apparatus is provided which includes a cooled ingot mold longitudinally divided into two sec-



tions, a container to feed molten steel from a lower curved spout and means for moving forward a first section of the mold

passing through the radiator by inducing uniform cross flow between the manifolds and the tubes. The manifolds may be



on a preestablished path to lower it and to carry it back again behind a second section of the mold and in alignment therewith.

3,750,743

## CONTINUOUS CASTING MOLD

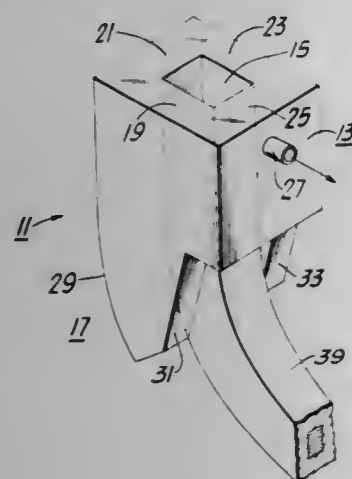
Sherman H. Barber, Pittsburgh, Pa., assignor to Koppers Company, Pittsburgh, Pa.

Filed Apr. 5, 1971, Ser. No. 131,134

Int. Cl. B22d 11/12

U.S. Cl. 164—283

8 Claims



A vertical mold for receiving molten metal and forming therein a continuous billet or slab has a lower portion comprised of a single curved wall and three conjunctive planar walls; whereby the billet or slab is drawn continuously from an upper rectangular portion of the mold wherein it is formed and is curved by the lower portion of the mold toward the horizontal.

3,750,744

## COOLING RADIATOR

Sam Bouras, 13057 S. Carondelet, Chicago, Ill.

Filed May 30, 1972, Ser. No. 257,935

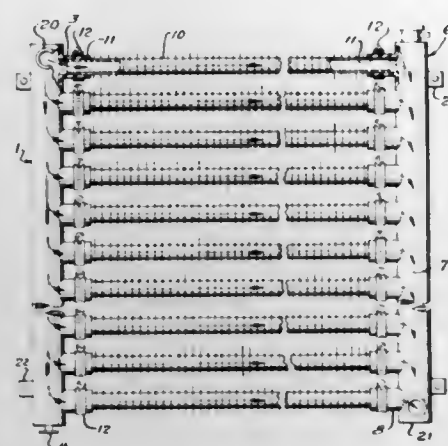
Int. Cl. F28f 9/12

U.S. Cl. 165—76

3 Claims

An improved radiator for use in the cooling system of a vehicle including a plurality of cooling conduits interconnecting an inlet manifold and an outlet manifold. The tubes are horizontally disposed creating efficient cooling of the fluid

An improved heat pipe capable of conveying a greater heat flux than a conventional heat pipe is provided in practice of this invention. A heat pipe transfers heat from a heat source to a heat sink in the form of latent heat of vaporization of a fluid within the heat pipe. Hot vapor transfers heat from the heat source to the heat sink. Condensed liquid is returned from heat sink to the heat source through porous capillary material due to surface tension forces. The heat flux obtainable is limited by the available flow of returning liquid. In the improved heat pipe, the flow paths for liquid and vapor are serially segmented by impermeable barriers transverse to the direction of heat flow so that the distance of liquid flow in each segment is minimized. In zero gravity the heat flux obtainable is approximately proportional to the number of serial segments  $N$  into which the heat pipe is divided, that is, if the heat is transferred serially through  $N$  segments approximately  $N$  times the heat flux is possible as compared with a conventional heat pipe of the same overall dimensions. When operating against a gravity head, the maximum heat flux is about  $N^2$  times the heat flux of a conventional heat pipe. Thus a heat pipe segmented into 10 serial segments has approximately 10 to 100 times the maximum heat flux capacity of an unsegmented heat pipe of the same cross section and total length.



3,750,745

## HIGH HEAT FLUX HEAT PIPE

Robert David Moore, Jr., 817 West Camino Real, Arcadia, Calif.

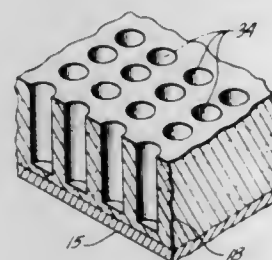
Division of Ser. No. 52,249, July 6, 1970, Pat. No. 3,666,005.

This application Apr. 21, 1971, Ser. No. 135,895

Int. Cl. F28d 15/00

U.S. Cl. 165—105

38 Claims



3,750,746

## METHOD OF HEATING ADHESIVE APPLICATOR ROLL

Charles R. Norman, Willingboro, N.J., assignor to Harris-Intertype Corporation, Cleveland, Ohio

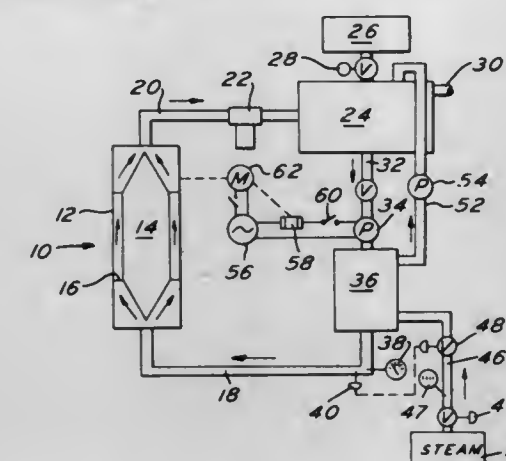
Division of Ser. No. 38,950, May 20, 1970, Pat. No. 3,706,278.

This application Apr. 24, 1972, Ser. No. 247,075

Int. Cl. B31f 5/04; B05c 1/08

U.S. Cl. 117—111 R

7 Claims



The adhesive roll of a single facer machine and/or the adhesive rolls of a glue machine at a double facer are heated to a surface temperature of between 130°F and 150°F by circulating water to heat the starch adhesive to a temperature just below its gelatinization temperature so long as the rolls are rotating.

3,750,747

## HEAT EXCHANGER ASSEMBLY

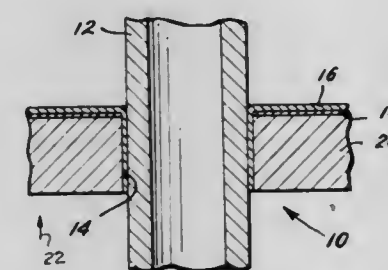
Ashok Hingorany, Pawtucket, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1968, Ser. No. 787,718

Int. Cl. F28b 9/04

U.S. Cl. 165—178

7 Claims



A heat-exchanger end plate assembly is shown to comprise a metal plate member embodying a heat-conductive layer and a surface layer of solder, the plate having a plurality of apertures in which metal tubes are disposed. The solder layer is adhered to the tubes completely around the tube peripheries for sealing the apertures around the tubes. Where the heat-conductive layer material is formed of a material which is incompatible with the solder material at the melting temperature of the solder material, as where the heat-conductive layer is formed of copper and the solder has a copper constituent, an intermediate metal layer of steel or the like is metallurgically bonded to the heat-conductive layer and is adhered to the solder layer. A method for making the heat exchanger assembly is also shown.

3,750,748

## LINER SEPARATION APPARATUS

John C. Kinley, 5815 Royalton; Charles W. Agee, both of Houston, Tex., and Charles N. Fowler, New Orleans, La., assignors to said Kinley, by said Agee and Fowler

Filed Dec. 27, 1971, Ser. No. 212,222

Int. Cl. E21b 29/00

U.S. Cl. 166—55

14 Claims

Apparatus for separating an upper portion of a metallic liner from the inside wall of oil well production tubing to

prepare said liner for removal therefrom. The apparatus includes a plurality of fingers which are pivotally mounted on a central body and are movable outwardly to an expanded position by an actuating sleeve. In the expanded position, the fingers are inserted between the liner and the tubing whereby the upper portion of the liner is separated from the tubing.



3,750,749

## SWIVEL CONTROL HEAD AND METHOD OF CONTROL

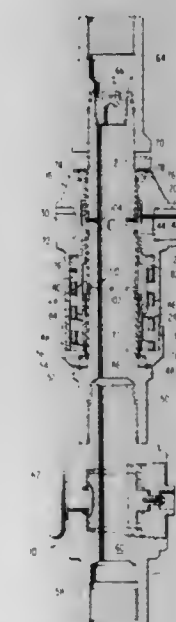
Richard Lee Giroux, Duncan, Okla., assignor to Halliburton Services, Duncan, Okla.

Filed Apr. 19, 1971, Ser. No. 135,219

Int. Cl. E21b 33/00; F16l 5/00; 285 190

U.S. Cl. 166—95

17 Claims



A method and apparatus for providing flow control at a wellhead, characterized by the integration of a remotely operated control valve with a swivel assembly.

The mode of operation and structure of the control valve are such as to enable the valve to be opened in response to the imposition of a biasing force and enable a valve to be maintained open in response to the imposition of a relatively lower biasing force.

The valve may be opened and closed in response to the operation of a remote control mechanism or alternately may be opened and/or closed in response to the application of pump pressure to a conduit communicating with an interior passage of the swivel assembly.



3,750,750

**APPARATUS FOR PLUGGING WELL BORES WITH HARDENABLE FLUENT SUBSTANCES**

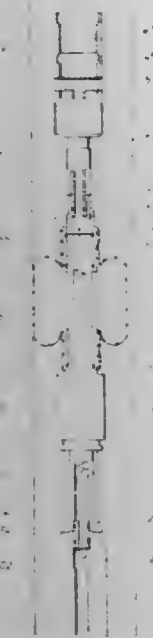
Harold J. Urbanosky, Pearland, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 5, 1972, Ser. No. 241,154

Int. Cl. E21b 33/127

U.S. Cl. 166—187

22 Claims



As a preferred embodiment of the apparatus of the present invention disclosed herein, a tubular bag mounted around an elongated tool body is operatively arranged to be expanded into engagement with a well bore wall by filling the bag with a hardenable fluent substance initially contained in a selectively-operable displacement assembly releasably coupled to the body. Biasing means are operatively arranged for imposing opposed axial forces against the ends of the expanded bag to securely anchor the tool until the fluent substance has solidified. Once sufficient time has elapsed for the fluent substance to solidify, a uniquely-arranged valve member is moved into seating engagement within a bypass passage provided in the body for blocking further fluid communication between the well bore intervals above and below the tool. One or more pressure-responsive metallic sealing elements are cooperatively arranged on the valve member to effect a permanent seal between the valve member and its associated valve seat.

3,750,751

**SUBSURFACE SAFETY VALVE**

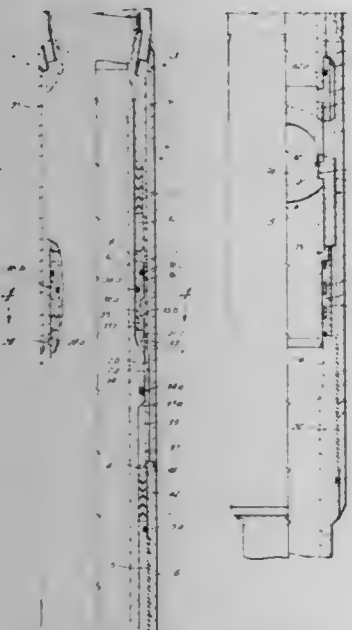
James D. Mott, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Filed Apr. 6, 1971, Ser. No. 131,710

Int. Cl. E21b 33/00

U.S. Cl. 166—224 S

35 Claims



A pressure operated safety valve adapted to be mounted in a well tubing, which may be moved to open or closed positions

independently of pressure in the tubing and locked in and unlocked from the open position using control fluid pressure.

3,750,752

**COMPLETION AND KILL VALVE**

James D. Mott, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Filed Apr. 30, 1971, Ser. No. 138,947

Int. Cl. E21b 43/00

U.S. Cl. 166—224 R

25 Claims



A completion and kill valve adapted to be placed immediately above a packer in the well production tubing including a tubular member having an inner bore and a circulation channel therein permitting communication between the inner bore and the well annulus area adjacent the exterior of the tubular member. A movable sleeve closes or opens communication through the circulation channel in response to various pressures and a spring bias acting on the sleeve. Provisions for locking the sleeve in the open position and subsequently unlocking the sleeve in response to inner bore pressure are provided.

3,750,753

**METHOD OF PLACING A WELL ON PRODUCTION**

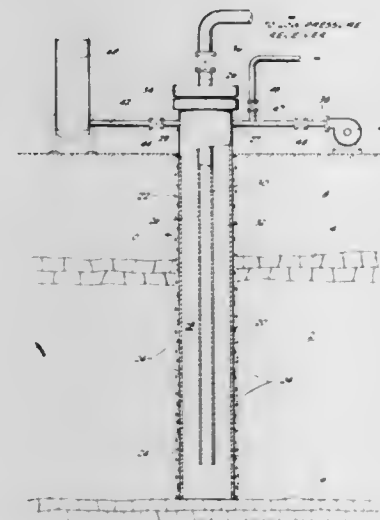
George G. Bernard, La Mirada, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed May 3, 1972, Ser. No. 249,820

Int. Cl. E21b 43/00

U.S. Cl. 166—309

10 Claims



A method for removing liquid from a natural-flow well so as to reduce the hydrostatic pressure in the well below the formation

tion pressure so that formation fluids will flow from the formation into the well and through the well to the surface. At least one slug of compressed gas is injected into the well annulus thereby displacing some of the liquid in the annulus into the tubing and forcing liquid in the tubing upward and out of the tubing. A volume of foaming agent solution is then injected into the annulus, displacing more liquid from the annulus into the tubing and forcing liquid in the tubing upward. Pressure on the annulus is then released, causing foam to form in the well. In this manner the hydrostatic pressure of liquid in the well is reduced below the formation pressure so that fluid can flow from the formation into the well.

3,750,754

**FOAM FIRE EXTINGUISHING SYSTEM**

Howard C. Stults, 7630 S. Bright, Whittier, Calif.

Continuation-in-part of Ser. No. 160,810, July 8, 1971, Pat.

No. 3,709,302, which is a continuation-in-part of Ser. No.

782,343, Dec. 9, 1968, Pat. No. 3,592,269. This application

May 2, 1972, Ser. No. 249,724

Int. Cl. A62c 35/46

U.S. Cl. 169—9

16 Claims



A high expansion foam fire extinguishing system to be coupled to independent sources of water and foam concentrate. A single, common pressurized source urges the water and foam concentrate into a non-vented pressure reducing valve to proportion the mixture of water and foam concentrate for delivery to a foam generator having a plurality of nozzle members and a stratified screen to produce high expansion foam upon activation of the system by a fire detecting sensor.

3,750,755

**FIRE PROTECTION SYSTEM**

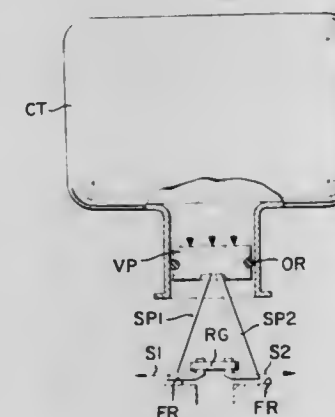
Jack M. Kramer, Los Angeles; Abdul N. Dittabkhan, El Monte, and Carlo Pavone, Los Angeles, all of Calif., assignors to HTL Industries, Inc., Monrovia, Calif.

Filed July 27, 1971, Ser. No. 166,529

Int. Cl. A62c 35/12

U.S. Cl. 169—26

17 Claims



Covers mechanism for releasing the pressurized fluid contents of a container, the mechanism employing a collapsible

split bushing and a removable ring or other retainer for holding the members of the bushing together. The container is closed by means of a plug which is supported by the split bushing and held in place to seal the plug to the container. A solenoid valve may be coupled by its piston structure to the ring so that, in response to current supplied to the solenoid valve, the retaining ring will be displaced to collapse or disengage the split bushing and allow the plug to be separated from the container under the influence of the fluid pressure, thereby to discharge the fluid within the container.

3,750,756

**MECHANICAL GRADE CONTROL**

James M. Livingston, Orangeburg, S.C., assignor to Herman E. Jackson; H. M. Mims, Jr. and George S. Hill, part interest to each

Filed Feb. 10, 1972, Ser. No. 225,199

Int. Cl. E02f 3/76

U.S. Cl. 172—4.5

25 Claims



A mechanical device is disclosed for attachment to the mold board of a motor grader, which automatically controls the slope and depth of the grade to conform with a pre-determined slope and depth.

3,750,757

**CONTROL DEVICES FOR AGRICULTURAL TRACTOR IMPLEMENTS**

Renato Saetti, Turin, Italy, assignor to FIAT Societa per Azioni, Turin, Italy

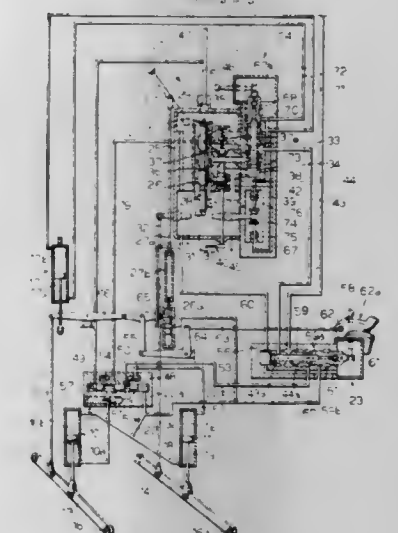
Filed May 18, 1972, Ser. No. 254,671

Claims priority, application Italy, May 27, 1971, 68781 A/71

Int. Cl. A01b 63/112

U.S. Cl. 172—9

16 Claims



A control arrangement for a three point coupling of the type provided on the rear of tractors for the connection of agricultural implements is disclosed. The control arrangement com-



prises independent hydraulic actuators for each of the three points of the three point coupling. The hydraulic actuators are independently operable and the control arrangement includes means interconnecting two of the actuators to control the transverse inclination of an implement connected to the coupling, both automatically and under the control of a selector device for selecting a desired inclination. The control device can also adjust the height of the implement and the longitudinal inclination in addition to being operable to allow the implement to 'float' with no vertical or transverse control, to follow the surface of the ground over which it is drawn.

3,750,758

**FARMING IMPLEMENT FOR RIDGING**

Joseph Emmanuel Bancel, Les Premices, Bourg-Argental, France

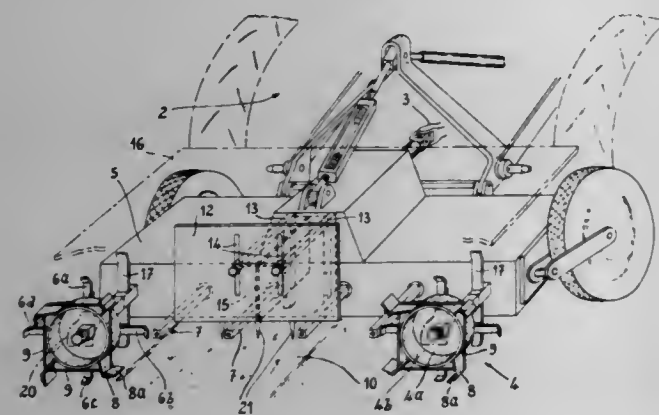
Filed June 7, 1971, Ser. No. 150,396

Claims priority, application France, Nov. 13, 1970, 7041638

Int. Cl. A01b 33/00

U.S. Cl. 172-58

7 Claims



This tractor-hauled implement is intended essentially for forming a pair of parallel trenches and at the same time, between these trenches, a ridge, notably for cultivating asparagus, and comprises to this end non-adjacent or outermost longitudinal shafts emerging from a casing and carrying rotary tools revolving in opposite directions and comprising each a plurality of cutters and a plurality of shovel-forming blades so as to cut the soil and throw the clods towards the centre of the implement; a pair of ploughshares or coulter are disposed ahead of each tool for loosening the soil before said tools; a vertically adjustable transverse plate permits breaking the apex of the ridge thus formed and a longitudinal vertical plate is disposed between the tools for acting as a double-faced deflector.

3,750,759

**HITCH CONSTRUCTION**

Cletus J. Geurts, 530 N. Melvin, Gibson City, Ill.

Continuation-in-part of Ser. No. 666,047, Sept. 7, 1967, Pat.

No. 3,642,073. This application Sept. 15, 1971, Ser. No.

180,559

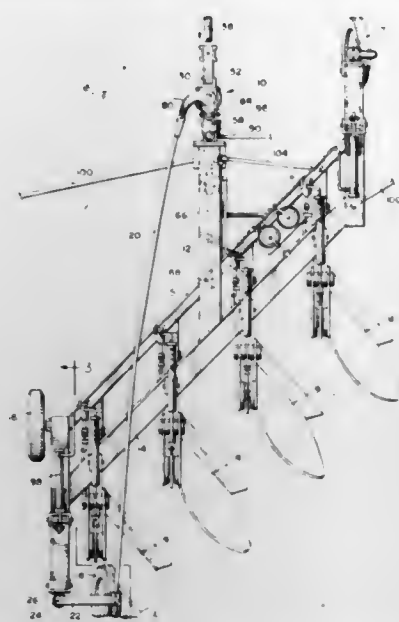
Int. Cl. A01b 59/00

U.S. Cl. 172-285

17 Claims

A multi-bottom trailing plow is attached to the draw bar of a tractor. The hitch assembly of the plow includes a pair of vertical rods which are connected between a hitch plate fastened to the tractor draw bar and the plow frame. An expansion cylinder drives the frame relative to the hitch plate to adjust the vertical separation of the frame from the hitch plate and ground level. This arrangement also controls the depth which the plow bottoms penetrate the soil. A lever arm linkage extends from one of the vertical rods and to a tail wheel of the

plow to provide for desired turning operation of the tail wheel of the plow. The hydraulic system for the expansion cylinder is



3,750,760

**DUAL ACTION GARDENING IMPLEMENT**

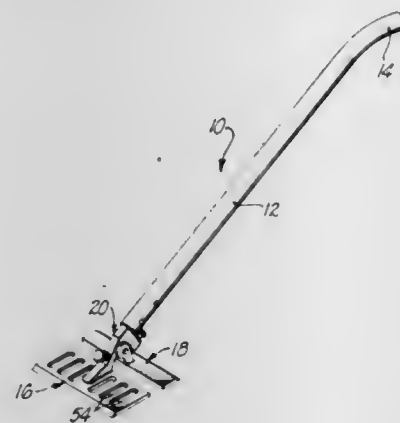
Phillip B. Shockley, 1765 N. Puente Ave. - Sp. 39, Baldwin Park, Calif.

Filed Nov. 29, 1971, Ser. No. 202,830

Int. Cl. A01b 1/00

U.S. Cl. 172-374

11 Claims



A gardening implement comprising a handle mounting at its lower end front and rear blades with front and rear cutting edges. At least the rear blade is hinged to rock up and down and is provided with adjustment screws to adjustably limit the rocking angle of the rear blade and secure the rear blade against rocking in a selected angular position, in a manner such that the blades may be moved back and forth across the ground surface to cut weeds and the like during both the front and back strokes, and the rear blade may swing down to dig into the ground during the back strokes.

3,750,761

**RIPPER WITH TOP-MOUNTED EXTENDIBLE TIP**

Roger M. Smith, Joliet, Ill., and Loyal O. Watts, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 27, 1971, Ser. No. 183,952

Int. Cl. A01b 23/02, 13/08

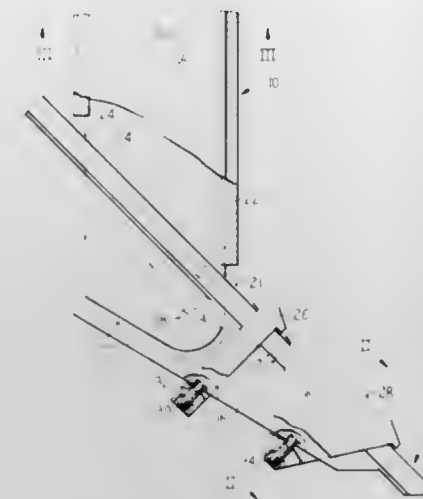
U.S. Cl. 172-719

6 Claims

A ripper having a ground-engaging tip which may be progressively extended from its holder member to compensate for wear during use. The tip is externally mounted upon the

top surface of a lower portion of the ripper shank and is held rigidly in place by means of ripper shank protectors which serve as frictional engagement members which clamp and

formations. The upper and lower portions are connected by a threaded connection and a spring maintains a constant rotary



hold the tip. The tip member is cut from common bar stock and has no apertures, detents, or other specially-machined and costly connector means.

3,750,762

**SPEED CONTROL SYSTEM FOR VEHICLE MOUNTING A WORK PERFORMING DEVICE**

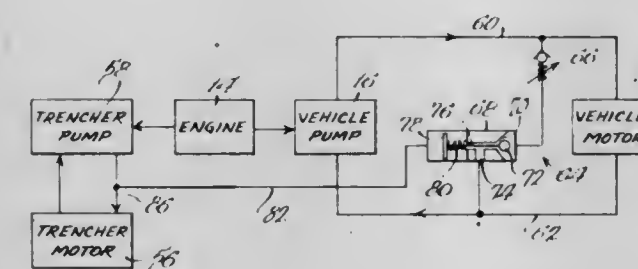
William C. Eaton, Omaha, Nebr., assignor to Omsteel Industries, Inc., Omaha, Nebr.

Filed Aug. 19, 1971, Ser. No. 173,025

Int. Cl. E02f 5/06

U.S. Cl. 173-8

5 Claims



A speed control system for a vehicle mounting a work performing device such as a trencher for controlling the speed of the vehicle inversely to the amount of work being performed by the work performing device. The vehicle includes a hydraulic drive motor and apparatus is provided for sensing the amount of work to be performed by the work performing device and for selectively controlling the flow of hydraulic fluid in a bypass for the hydraulic drive motor to thereby control the speed of the vehicle.

3,750,763

**REACTION POST FOR AN EARTH BORING MACHINE**

James W. Young, Irving, Tex.; George A. Cason, Dallas, Tex., and Ernest O. Kunkel, Nevada, Mo., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 7,923, Feb. 2, 1970, Pat. No. 3,659,661.

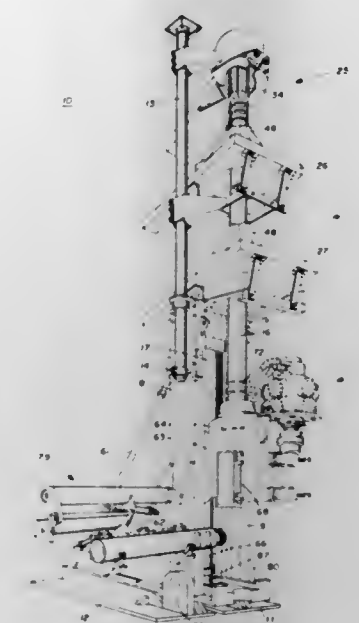
This application Oct. 29, 1971, Ser. No. 193,811

Int. Cl. E21c 11/00

U.S. Cl. 173-34

1 Claim

An apparatus for supporting the earth formations above an earth boring machine. The lower portion of a reaction post is connected to the support columns of the earth boring machine and the upper portion of the reaction post contacts the earth



3,750,764

**POWER HAMMER WITH REACTION FORCE ABSORBING MEANS**

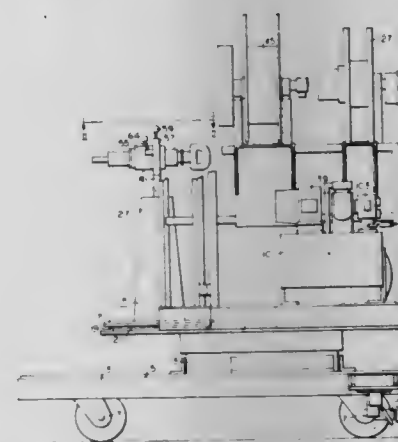
John P. Voegeler, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 29, 1971, Ser. No. 184,677

Int. Cl. E21c 11/02

U.S. Cl. 173-43

12 Claims



A pneumatic hammer is disposed in a pneumatic recoil device and positioned by a pair of hydraulic cylinders so that by operating a control lever an operator can position the pneumatic hammer and by depressing a foot pedal he can control the striking force delivered by the pneumatic hammer.

3,750,765

**REDUCING OF NOISE FROM PILING RIGS AND THE LIKE**

Hugh C. Shelbourne, Ongar, and Albert E. J. Selfe, Thunderley, both of England, assignors to Morrison & Morrison Limited

Filed Nov. 4, 1971, Ser. No. 195,565

Claims priority, application Great Britain, Nov. 17, 1970, 54,551/70

Int. Cl. E02d 7/06

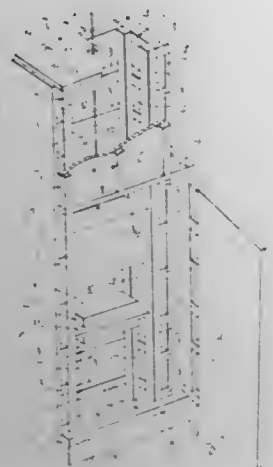
U.S. Cl. 173-46

17 Claims

A pile driving rig mounted on a free standing transportable frame. A sound reducing casing is provided on the frame which comprises a chamber for enclosing a pile driving means



and all of a pile above ground. An aperture is provided in the top of the casing for the passage of control means for the pile



driving means. There is also provided a door in an upstanding side wall of the casing for lateral insertion therein of a pile to be driven.

3,750,766

### CONTROLLING SUBSURFACE PRESSURES WHILE DRILLING WITH OIL BASE MUDS

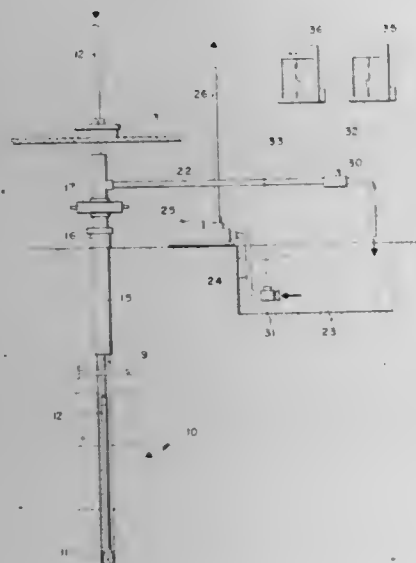
Gene D. Thompson, and Louis A. Carlton, both of New Orleans, La., assignors to Esso Production Research Company, Houston, Tex.

Filed Oct. 28, 1971, Ser. No. 193,322

Int. Cl. E21b 47/10

U.S. Cl. 175—50

17 Claims



The water percents by volume of input and output circulating oil muds are measured and compared during well drilling operations. When the water percent measurements are made at the surface, the output measurements lag the input measurements so that the same portions of drilling mud are compared. The measurements are made continually (at frequent intervals) or continuously. Accurate measurement of the liquid volume of the water phase emulsified in the oil mud, positive or negative differentials of in and out water percents and overall changes in water percents will determine whether the formation pore pressure is exceeding the hydrostatic pressure imposed by the drilling mud. When formation pressure exceeds the hydrostatic pressure, water from the wet subsurface formations being penetrated enters the well bore and is imbibed (mixed and probably emulsified) in the oil mud. Control of the well is maintained by adjusting drilling mud weight.

### 3,750,767 ROLLING CUTTER MOUNTING IN BIG HOLE REAMING BIT

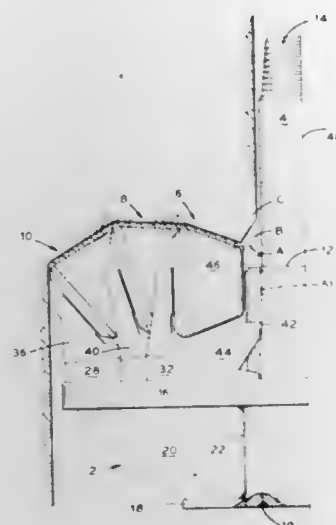
Rudolf Carl Otto Pessier, Houston, Tex., assignor to Hughes Tool Company, Houston, Tex.

Filed May 24, 1971, Ser. No. 146,403

Int. Cl. E21c 23/00

U.S. Cl. 175—53

5 Claims



A reaming type rock boring drill having an innermost cutter, rotatably supported as a beam. A sleeve or other support member disposed close to, but spaced apart from, the drill stem that forms a portion of the bit body serves as a trunnion or journal for the inner end of the load pin of the cutter bearing assembly. Drilling with such an assembly results in an uncontacted kerf of rock contiguous with the pilot hole. This kerf is disintegrated by mounting the innermost cutter so that the forces applied to the borehole bottom by this cutter act along a line directed into the formation and inwardly toward the pilot hole. As a result, a much higher cutting efficiency is achieved, when contrasted with earlier dispositions in which the innermost cutter acted directly on the bottom of the bore hole immediately adjacent the pilot hole.

3,750,768

### OIL BASE DRILLING FLUID FILTRATE-EFFECTED SAND CONSOLIDATION

George O. Suman, Jr., Edwin A. Richardson, both of Houston, and Ronald F. Scheuerman, Bellaire, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 27, 1972, Ser. No. 221,402

Int. Cl. E21b 21/04, 33/138

U.S. Cl. 175—72

4 Claims

A permeable water-containing earth formation is consolidated while a borehole is being drilled into that formation by circulating as a drilling fluid an oil solvent solution containing a mixture of an epoxide and imine that forms an epoxy resin when mixed with water and a suspension of finely divided solid particles that forms a filter-cake permitting a selected amount of filtrate invasion into a permeable earth formation.

3,750,769

### DRILL PIPE POSITIONER FOR EARTH BORING MACHINE

James W. Young, Irving; George A. Cason, Dallas, both of Tex., and Ernest O. Kunkel, Nevada, Mo., assignors to Dresser Industries Inc., Dallas, Tex.

Division of Ser. No. 7,923, Feb. 2, 1970, Pat. No. 3,659,661.

This application Oct. 29, 1971, Ser. No. 193,896

Int. Cl. E21b 19/00

U.S. Cl. 175—85

1 Claim

A drill pipe positioner that will lift, position and release a section of drill pipe in proper relation to the drill head and other elements of an earth boring machine and by reversing

the action will attach to a section of drill pipe, lift and release it for removal and stacking. A first arm pivots on the support



columns and a second arm unit pivots on the first arm. Grippers are attached to the second arm unit for gripping and holding a section of drill pipe.

3,750,770

### APPARATUS FOR EXCAVATING DEEP HOLES AND TRENCHES

Giuseppe Botto, Via Della Rovere 7, Segrate, Italy

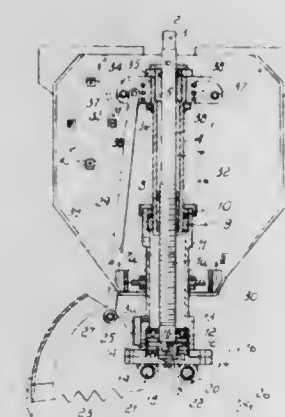
Continuation-in-part of Ser. No. 791,701, Jan. 16, 1969, Pat. No. 3,640,353. This application Nov. 15, 1971, Ser. No. 198,665

Claims priority, application Italy, Mar. 1, 1971, 21195 A/71

Int. Cl. E21b 27/00, 41/00

U.S. Cl. 175—173

8 Claims



An apparatus for excavating holes and trenches, including a multi-jaw grab bucket with a driving rod having a screw-threaded section. The jaws are articulated at one point through connecting arms to a nut screwed on said screw-threaded section and at another point to an articulation member idle on the extremity of said driving rod. The nut screw has a sleeve extending at least over a portion of the driving rod beyond said screw-threaded section and defining therebetween an interspace for a lubricant. A counter sleeve member telescopically engages the sleeve and surrounds at least said screw-threaded section of said driving rod and defining therebetween a further interspace for lubricant. The counter sleeve member is connected with said articulation member. One of the interspaces is connected to an external reservoir with at least one expandable wall.

3,750,771

### UNDERREAMER HAVING VARIABLE ARM EXTENSION

Edward T. Cugini, Brea, Calif., assignor to Grant Oil Tool Company, Los Angeles, Calif.

Filed May 8, 1972, Ser. No. 251,394

Int. Cl. E21b 9/26

U.S. Cl. 175—269

3 Claims



An underreamer for enlarging a well bore wherein a plurality of cutter cones are rotatably supported on pivoted cutter arms which pivot outwardly from the body of the tool in response to fluid pressure. The amount of outward pivotal movement is adjustable without the removal and replacement of the cutter arms. This permits the same tool body and pivotable arms to be used for bore enlargements to different diameters relative to the contracted diameter of the tool.

3,750,772

### ROTARY CUTTERS

Pieter Lawrence Venter, Johannesburg, Transvaal Province, Republic of South Africa, assignor to Paddy McDonnell (Proprietary) Limited, Johannesburg, Transvaal Province, Republic of South Africa

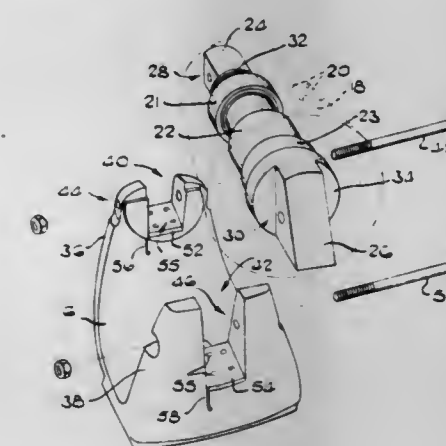
Filed Dec. 27, 1971, Ser. No. 212,502

Claims priority, application Republic of South Africa, June 28, 1971, 4204

Int. Cl. E21c 13/00, 23/00; E21b 9/12

U.S. Cl. 175—364

4 Claims



The invention provides for means for mounting a rotary cutter so that the cutter is reclaimable or more easily reclaimable than hitherto known to the applicant. By this means the journal and load pin rotatably supporting the cutter is made in one. Furthermore there is provided in a saddle supporting the journal, an angular notch to restrain the journal against rotation. Still further, there is provided a saddle to support the journal, the saddle having a detachable limb having an angular notch to restrain the journal against rotation.



3,750,773

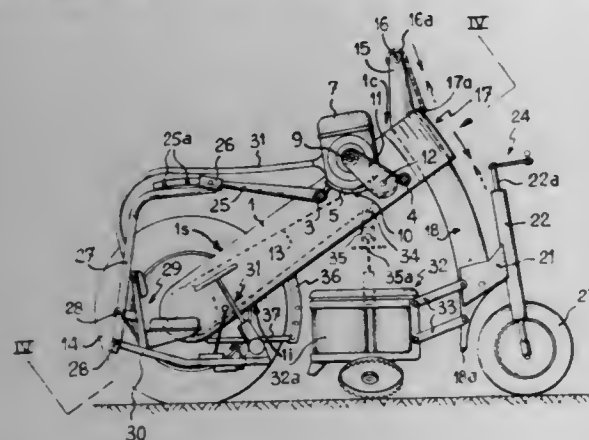
**STRADDLE TRACTOR INCLUDING AN IMPROVED TRACTOR FRAME**

Emile Bobard, Beaune, Cote D'Or, France, assignor to Nathan Gilbert, Sherman Oaks, Calif.

Continuation-in-part of Ser. No. 709,756, March 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 549,711, May 12, 1966, abandoned. This application Mar. 4, 1970, Ser. No. 16,523  
Int. Cl. B62d 49/00

U.S. Cl. 180—1 F

14 Claims



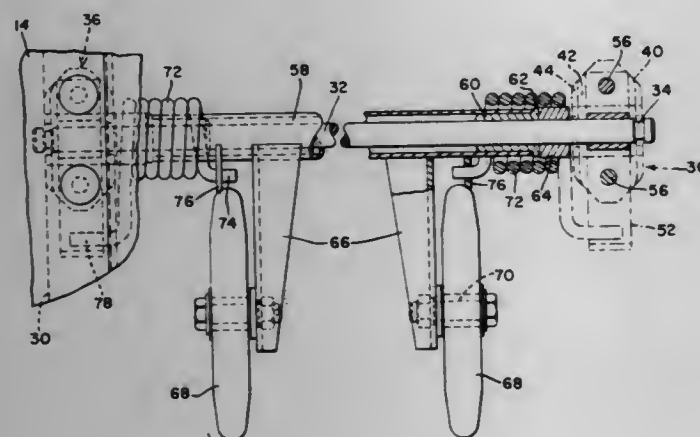
Improvements in tractors of the straddle type, comprising a relatively simple deformable frame of low cost, and means for adjusting the straddle height according to the use of the tractor. The frame sides are of inverted V-shape, providing a free space at their lower portions permitting convenient coupling to implements with large transverse dimensions. The frame is formed by a rigid hoop of inverted U-structure which may be inclined, the tractor power unit being mounted on the transverse portion of the hoop. The power of the driving unit is transmitted to driving wheels respectively mounted on the extremities of the arms of said hoop.

3,750,774

**SNOWMOBILE BOGIE WHEEL ASSEMBLY**  
Robert Lee Trapp, Horicon, Wis., assignor to Deere & Company, Moline, Ill.Filed Nov. 11, 1971, Ser. No. 197,720  
Int. Cl. B62d 55/16

U.S. Cl. 180—5 R

4 Claims



A snowmobile has a fore-and-aft channel-like main frame with footrests extending outwardly from the opposite sides of the main frame and an endless track mounted within and connected to the main frame by a plurality of bogie wheel assemblies, the wheels of which engage the inner surface of the lower ground-engaging run of the track. Each bogie wheel assembly includes a transverse shaft having its opposite ends attached to the underside of the opposite footrest by bracket means, which include a pair of members bolted to the underside of the footrest, one of the members having a transverse bore journaling the shaft and an abutment for limiting the

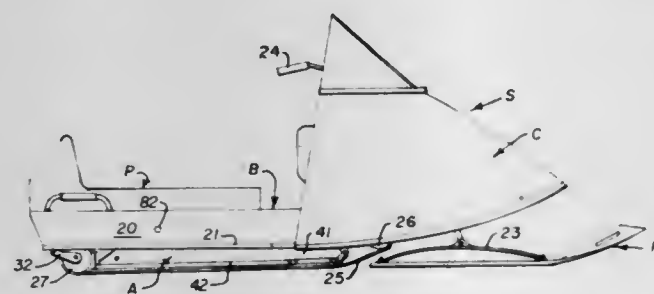
axial shifting of the shaft, while the other member includes a U-shaped recess which receives the shaft and clamps it to the first member. A sleeve is rotatably mounted on each shaft and includes a pair of trailing arms respectively journaling axially transverse bogie wheels, the wheels being biased downwardly against the track by a pair of torsion springs around the sleeve.

3,750,775

**PNEUMATIC SUSPENSION FOR A SNOWMOBILE**  
Louis A. Valentine, Aurora, Colo., assignor to Henry L. Valentine, Boulder, Colo.Filed Dec. 27, 1971, Ser. No. 212,116  
Int. Cl. B62m 27/02

U.S. Cl. 180—5 R

10 Claims



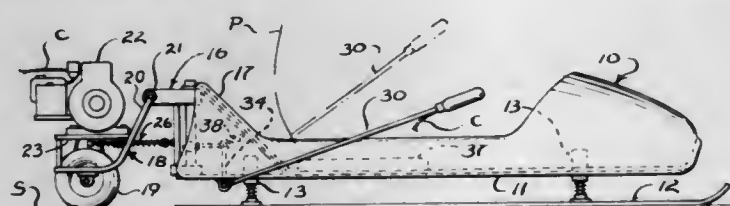
Herein disclosed is a pneumatic suspension for the drive track of a snowmobile, mounted between the forward drive wheels and the rearward idler wheels of the snowmobile drive track. This suspension includes an upper framework attached to the snowmobile body between the upper and lower reaches of the drive track, an elongated, resilient, pneumatic bag underneath the framework and longitudinally-extending, articulated track slides underneath the bag supporting the lower reach of the drive track. Each track slide is connected to the forward end of the framework, is turned downwardly from this connection to reach underneath the bag and is connected at its rearward end to the shaft of the idler wheels. The track and bag will yield to provide a smooth ride as the snowmobile travels over uneven terrain.

3,750,776

**MOTORIZED SLED TYPE VEHICLE**  
William J. Stevenson, 416 E. Park Ave., Barberton, Ohio  
Filed Sept. 2, 1970, Ser. No. 68,826  
Int. Cl. B62m 27/02

U.S. Cl. 180—6 R

8 Claims



Motorized sled-type vehicle has power-driven traction wheel carried by motor mount depending from a swivel at the rear of vehicle body supported on laterally spaced skii-type runners. Motor mount controlled by operator, seated in vehicle body, to propel vehicle according to tractional power applied to wheel, and to steer conveyance by turning of motor mount on the swivel. With variable tractional operation of traction wheel against riding surface motor mount pivots toward and from rear of vehicle body according to traction power applied by motor, while runners adjust with respect to body to remain flatwise on riding surface, independently of vertical movement of rear of conveyance body incident to pivotal movement of the motor mount.

3,750,777

**PROPULSION UNIT FOR SKIER**

Richard G. Thompson, 312 County Rd. 5, Stillwater, Minn.

Filed Apr. 7, 1972, Ser. No. 241,960

Int. Cl. B62m 27/02

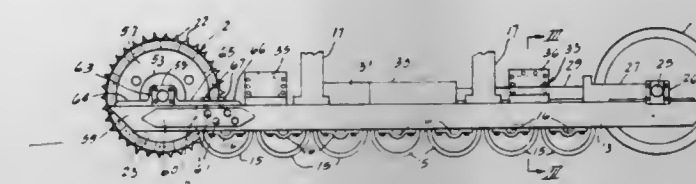
U.S. Cl. 180—6 R

11 Claims



A cleated roller is provided including an internal combustion engine mounted on a frame connected through the roller hub to one of two handles. The handles are connected in parallel relation and extend on opposite sides of the roller. Means extending between the handles near the free ends thereof are adapted to engage the posterior of a skier to push him over the snow covered surface.

axial pulling movement thereon. The bearing carrier forms an extension of the tread frame for the continuous traction tread device of the excavator, and is detachably mounted thereon to



be readily removed from the frame and end of the drive sprocket, to enable the drive sprocket to be pulled off, without jacking up the tread frame.

3,750,778

**TRACTION DEVICES**

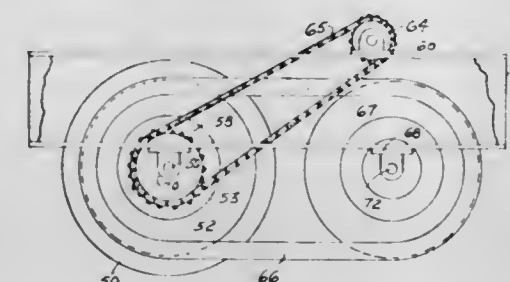
Thomas Arthur Watts Knott, Watson, 2720 Guyer, Apt. 24, Montreal 2me, Quebec, Canada

Continuation-in-part of Ser. No. 26,037, April 6, 1970, abandoned. This application Jan. 18, 1971, Ser. No. 107,171

Int. Cl. B62d 55/02

U.S. Cl. 180—9.36

6 Claims



A vehicular traction system may comprise high pressure large outer diameter tires rotatably mounted about a horizontal axis and substantially smaller outer diameter lower pressure tires, also rotatably mounted about a horizontal axis.

In the more generalized case, however, the lower pressure tire need not necessarily be smaller in outer diameter than the high pressure tire. It may be the same size or even larger in diameter. The basic requirement is for the high pressure tire's outer peripheral surface to extend lower than the lowest point of the low pressure tire. The high pressure tire will then always be in surface contact on all surfaces, whereas the low pressure tire will only make surface contact on uneven ground or soft surfaces. A track may also be placed over the low pressure tires.

3,750,779

**TREAD FRAME AND DETACHABLE DRIVE SPROCKET SUPPORT**

Francis R. Huseman, 1110 Wood St., Griffith, Ind.

Filed Nov. 9, 1971, Ser. No. 197,091

Int. Cl. B62d 55/12

U.S. Cl. 180—9.62

8 Claims

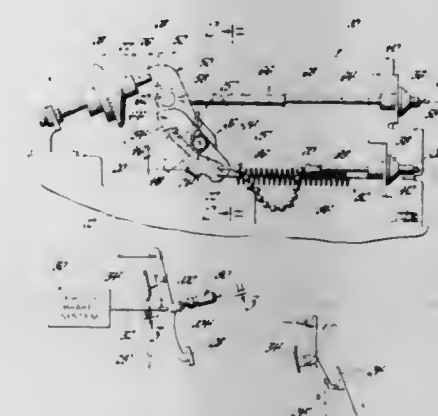
Detachable bearing carrier for the drive sprocket of a track type excavator accommodating replacement of the drive sprocket seals and bearings by removal of the sprocket by

**3,750,780  
BRAKE OPERATED THROTTLE OVERRIDE DEVICE**  
Michael J. Danek, Laingsburg, N.J., assignor to General Motors Corporation, Detroit, Mich.

Int. Cl. B60k 29/00

U.S. Cl. 192—3 R

2 Claims



A throttle override cable, a beaded chain, and a cable length self-adjusting device are connected in series between the vehicle brake pedal and a first throttle lever that is fixed to a throttle shaft carrying a throttle valve. The first lever is coupled by a spring to normally move conjointly with a second throttle lever that is connected to the vehicle throttle pedal to normally transmit throttle pedal motion to the throttle valve. The first throttle lever is pivotable relative to the second throttle lever so that, with the second lever restrained from movement in a throttle closing direction, the brake pedal may pivot the first lever in that direction after overcoming the bias of the coupling spring. The beaded chain provides sufficient slack to permit normal control of the throttle valve by the vehicle throttle pedal with the brake pedal released and the cable length adjuster adjusts the effective length of the override cable to prevent attempted movement of the throttle valve past its idle position.

**ERRATA**

For Classes 180—79.1 thru 188—345 see:  
Patents Nos. 3,750,833 thru 3,750,857



3,750,781

# **ELECTRIC-MOTOR WITH BUILT-IN ELECTROMAGNETIC DISK CLUTCH AND BRAKE**

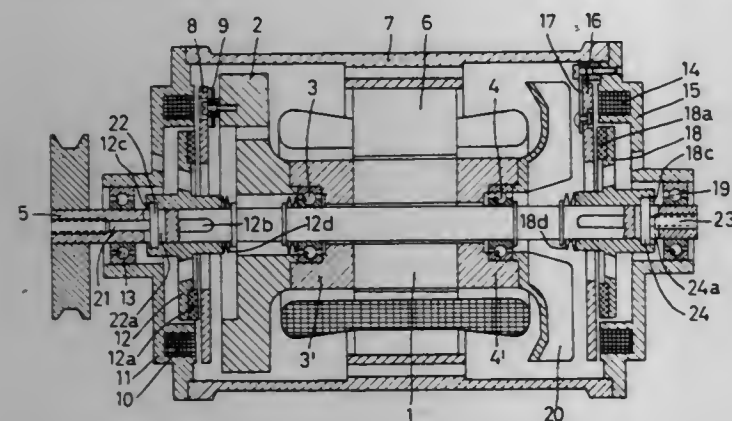
Karl Lengsfeld, Paul Bonnerstr. 15, Plankstadt, Germany  
Filed June 24, 1971, Ser. No. 156,453

Claims priority, application Germany, June 26, 1970, P 20  
31 834.7

Int. Cl. F16d 67/06

U.S. Cl. 192—18 B

3 Claims



An electric-motor controlled variable speed drive with built-in electro-magnetic disk clutch and brake especially for industrial sewing machine is disclosed having a rotor, flywheel and clutch magnetic armature ring mounted as a remit on the driven shaft, and a combined clutch and brake axle disk is mounted on the shaft externally adjustable axially thereon.

3,750,782

# **HIGH SPEED OVERRUNNING CLUTCH**

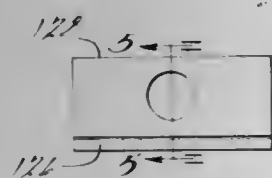
Siro J. Costantini, Dearborn Heights, and Thomas R. Stockton,  
Ann Arbor, both of Mich., assignors to Ford Motor Com-  
pany, Dearborn, Mich.

Filed Oct. 8, 1971, Ser. No. 187,722

Int. Cl. F16d 15/00

U.S. Cl. 192—45

4 Claims



An overrunning clutch adapted especially for use in an engine starter motor drive for a high speed gas turbine engine comprising a driving inner race, a cammed outer race adapted to be connected drivably to a gas turbine gasifier, clutch rollers disposed in cam recesses between said races, friction blocks situated between the individual rollers and adjacent reaction walls on the outer race and springs enclosed within the reaction blocks, the latter limiting the degree of tangential movement of the rollers and retarding their rate of displacement while controlling the orientation of the rollers with respect to the outer race.

3,750,783

# **OVERRUNNING CLUTCH FOR USE IN AN AUTOMOTIVE POWER TRANSMISSION**

Kunio Ohtsuka, Naka-ku, Yokohama, and Wataru Ishimaru,  
Ashahi-ku, Yokohama, both of Japan, assignors to Nissan  
Motor Company Limited, Yokohama, Japan

Filed Apr. 12, 1972, Ser. No. 243,381

Claims priority, application Japan, Aug. 20, 1971,  
46/74290; Aug. 23, 1971, 46/74892

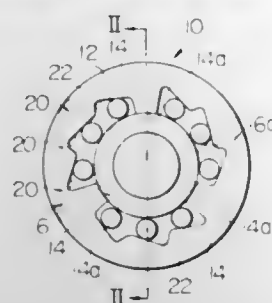
Int. Cl. F16d 41/06

U.S. Cl. 192—45

5 Claims

An overrunning clutch adapted to permit free rotation of the inner and outer wheels with respect to each other when

one of the inner and outer wheels rotates in one direction. Either one of the inner and outer wheels is formed with at least three radially extending projecting portions at circumferentially equally spaced positions, which projecting portions engage with the opposing peripheral wall of another one of the



inner and outer wheels to prevent deflection of the inner and outer wheels with respect to each other, and at least two cam surfaces at circumferentially equally divided positions between the adjacent projecting portions. At least two rollers are disposed about the cam surfaces between the inner and outer wheels so that the smooth operation is obtained.

3,750,784

# **MULTIPLE BAND SPRING CLUTCH**

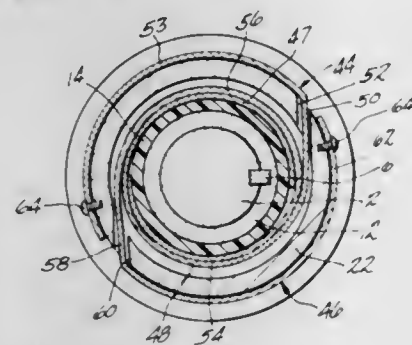
John Shum, Jr., Valley Station, Ky., assignor to Olin Corpo-  
ration, New Haven, Conn.

Filed Dec. 28, 1970, Ser. No. 101,821

Int. Cl. F16d 41/20

U.S. Cl. 192—81 C

9 Claims



A multiple band spring clutch including a rotatable driving member and a rotatable driven member. Two or more band spring members are provided between the driving and driven members of each spring having one end attached to the driven member and its free end coiled about a portion of the outer surface of said driving member.

3,750,785

# **BAND SPRING CLUTCH**

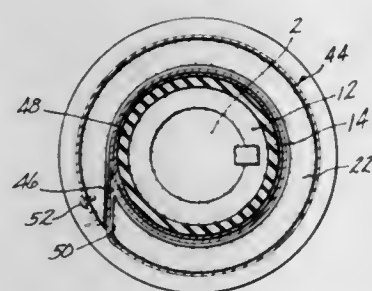
Lester E. Smith, Herrin, and Chao H. Lin, Marion, both of  
Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 28, 1970, Ser. No. 101,820

Int. Cl. F16d 41/20

U.S. Cl. 192—81 C

10 Claims



Band spring clutch assembly including a rotatable driving member and a rotatable driven member. The driving member has its outer surface formed of elastomeric material with which the band spring is in engagement when the driving member is driving the driven member.

3,750,786

# **DEVICE AND METHOD FOR STOPPING A POWER DRIVEN UNIT AT A PREDETERMINED POSITION**

Yukio Toyohama, Kawasaki-shi, and Kiyoshi Kobari, Ota-ku,  
Tokyo, both of Japan, assignor to Fuji Denki Srizo Kabu-  
shiki Kaisha, Kanagawa-ken, Japan

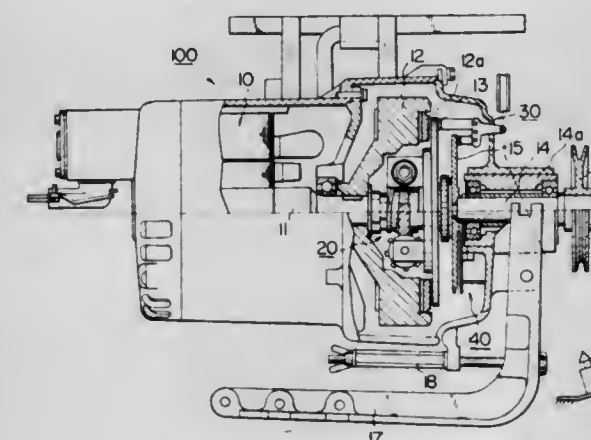
Filed Dec. 3, 1971, Ser. No. 204,557

Claims priority, application Japan, Dec. 11, 1970,  
45/110730

Int. Cl. F16d 71/04; D05b 69/26

U.S. Cl. 192—146

4 Claims



There is disclosed in connection with a device adapted to stop a driven unit at a predetermined position, said device comprising a driving clutch plate attached to rotor shaft of a motor, a driven clutch plate capable of being engaged with or separated from said driving clutch plate, at least one planetary gear, an intermediate disk, a reduction gear mechanism, and a brake mechanism adapted to cause braking of said driven clutch plate and intermediate disk. Furthermore a method adapted to cause effective operation of the above-mentioned device has been disclosed.

3,750,787

# **HYDRAULICALLY OPERATED FRICTION CLUTCH**

Helmut Link, Schanbach, Germany, assignor to Index-Werke  
K G Hahn & Tëssky, Esslingen, Germany

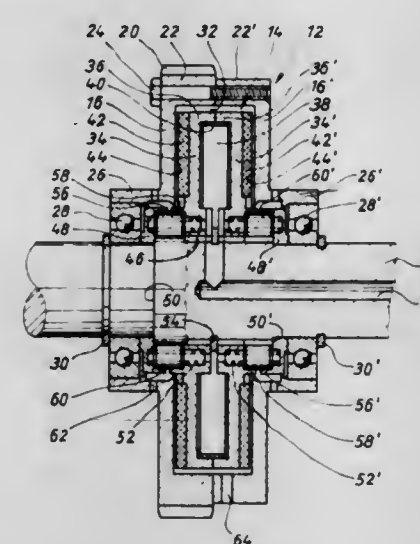
Filed Dec. 30, 1971, Ser. No. 214,294

Claims priority, application Germany, Jan. 7, 1971, P 21 00  
572.1

Int. Cl. F16d 25/00

U.S. Cl. 192—85 AB

8 Claims



An inner clutch half including two axially movable clutch parts with lateral outer friction faces, is mounted within an outer clutch half which has inner friction faces cooperating with the outer friction faces of the inner clutch half. Fluid pressure in a chamber bounded by the clutch parts of the inner

clutch half, forces the clutch part away from each other against the action of springs so that the outer and inner friction faces engage each other and the axial forces in the clutch balance each other.

3,750,788

# **CLUTCH OR BRAKE**

Rolf Heinemann, Fraubronnstrasse 28, 7000 Stuttgart 70  
(Plieningen), Germany

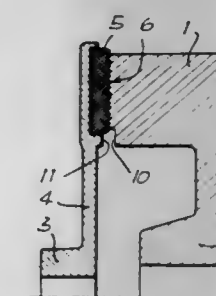
Filed Nov. 8, 1971, Ser. No. 196,546

Claims priority, application Germany, Nov. 12, 1970, P 20  
55 678.0

Int. Cl. F16d 11/00

U.S. Cl. 192—107 R

12 Claims



A friction brake or friction clutch in which the wear-resistant brake or clutch surface or surfaces and the associated brake or clutch lining or linings which are adapted to be worn consist of equal sets of directly adjacent teeth of an isosceles triangular shape which fully interengage with each other when the brake or clutch is engaged.

3,750,789

# **CENTRIFUGAL HYDRAULIC OPERATED CLUTCH**

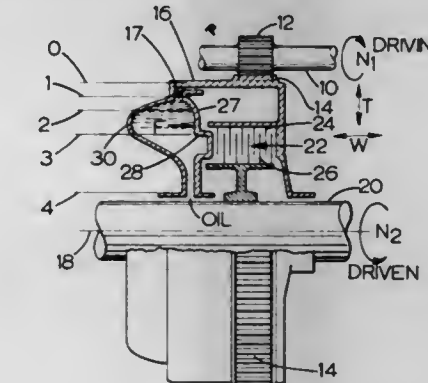
Benno E. Buchelt, Klagfurt, Austria, assignor to Avco  
Corporation, Stratford, Conn.

Filed Nov. 9, 1971, Ser. No. 197,099

Int. Cl. F16d 43/284

U.S. Cl. 192—105 A

2 Claims



A hydraulic actuated disc clutch particularly suitable for helicopter use has a built in torque control function varying with time resulting in a scheduled slipping time satisfying start requirements. The structure makes use of centrifugal force generated oil pressure operating with an oil ring generated in a rotating cylinder so that the integrated force resulting from local oil pressure times the radial area increment of the oil ring fed during engagement time acts on an engagement piston for the clutch. An oil ring width defining end wall accomplishes a time variation of filling time by speed up or delay in filling time and thus in formation of radial area of the oil ring. This results from a change in the shape of the end wall controlling the width of the oil ring; and hence, controlling the timing of the variation in clutch engaging force to a desired time programmed variation.



3,750,790

## TICKET VENDING MACHINE

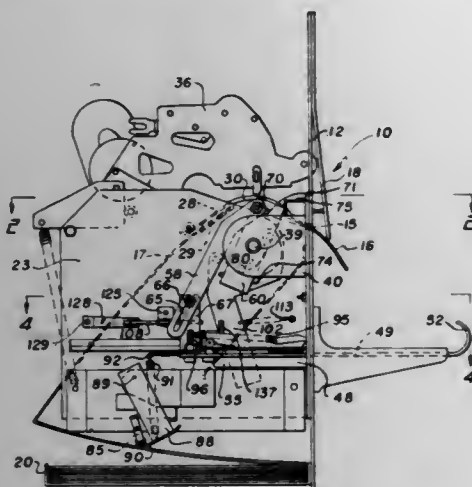
Derrick Cresswell-Clough, 786 Goldstream Dr., Richmond, B.C., Canada

Filed Nov. 5, 1971, Ser. No. 195,998

Int. Cl. B65h 17/00

U.S. Cl. 194—2

21 Claims



A coin-released vending machine for tickets having means for dispensing a ticket each time the machine is operated, means for preventing more than one ticket from being dispensed during each operation, and means for preventing a ticket from being drawn out of the machine if it is not released by the desired coin or coins.

3,750,791

## LARGE CHARACTER SIGN APPARATUS

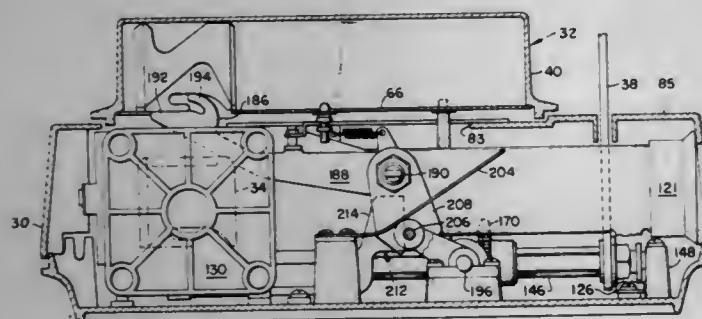
Boone K. McReynolds, Concord, and Fritz Haas, Walnut Creek, both of Calif., assignors to Dymo Industries, Inc., Everyville, Calif.

Filed Nov. 23, 1970, Ser. No. 92,002

Int. Cl. B41j 1/16, 1/22

U.S. Cl. 197—6.7

24 Claims



A machine for printing, embossing or die cutting characters or indicia on a longitudinally extending strip of material to produce a sign or label. The strip is fed into the machine sub-jacent a carousel or drum in which a plurality of circumferentially spaced slugs are carried, each slug being adapted for producing a printed, embossed or die cut character on the strip upon proper actuation. The carousel is rotatably mounted to permit a selected slug to be appropriately positioned at the station whereat the character is produced on the strip. Actuation of a handle moves the selected slug downwardly and adjacent to the strip, and further handle movement forces the slug against the strip to perform the character producing operation thereon. Release of the handle frees the slug from the strip, incrementally advances the strip into position to receive a succeeding character, and raises the slug back into the carousel so that the latter may be rotated to position the next required slug character for operation.

3,750,792

## AUTOMATIC MEDIA THICKNESS COMPENSATOR FOR A PRINTER

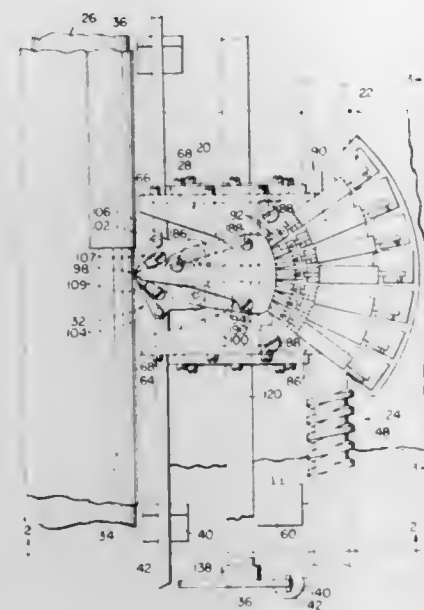
George N. Liles, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Aug. 4, 1972, Ser. No. 278,174

Int. Cl. B41j 3/50

U.S. Cl. 197—1 R

4 Claims



A carriage having a print head thereon is traversed along a platen to enable the print head to print along a line of printing in a serial-type printer. The print head moves with the carriage and is also mounted thereon for independent movement towards and away from the platen. A leaf spring biases the print head towards the platen, and a sensing finger, secured to the print head, contacts and glides along a thin, self-supportable, flexible tape which overlies media of various thickness mounted on the platen to maintain the print head (like a wire matrix) a predetermined distance from the media enabling the print head to print on various thicknesses of media automatically.

3,750,793

## OPERATIONAL INPUT CONTROL MECHANISM

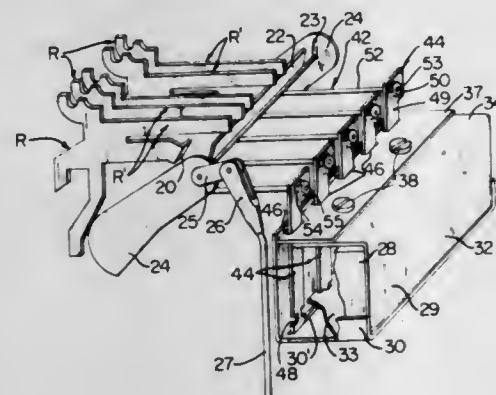
Harold D. Becker, Riverton, Wyo., assignor to Datel Corporation, McLean, Va.

Filed Oct. 22, 1970, Ser. No. 82,896

Int. Cl. B41j 5/30

U.S. Cl. 197—19

4 Claims



An electromagnetic actuating device controls functional operations in a keyboard printer. In the printer, movement of each operational interposer is controlled by a lightweight armature plate having an adjustable actuating rod which when the electromagnetic means for each armature plate is energized will operate upon the end of an interposer to release the interposer to perform a selected functional operation in the

printer, such as, "tab," "backspace," "space," "index" or "return"; and, when deenergized, the armature plate will follow the return movement of the interposer to its original disposition in preparation for the next functional operation without the aid of a special return mechanism.

3,750,794

## HIGH SPEED PRINT DRUM WITH TRAVELING PRINT HAMMER

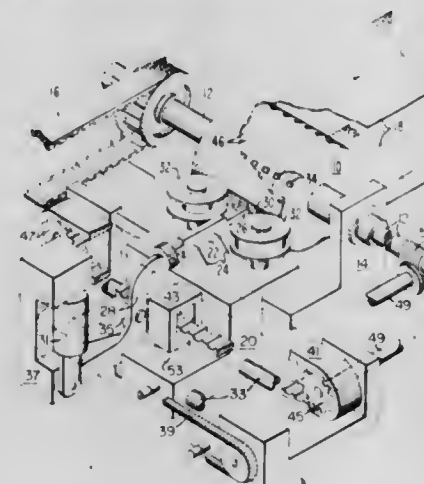
John O. Griggs, Jr., Exton, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 1, 1970, Ser. No. 94,111

Int. Cl. B41j 1/52, 9/04

U.S. Cl. 197—49

5 Claims



A high speed serial printing device which employs a rotatable type drum having a plurality of adjacent circumferential columns each containing a row of type characters extending over a sector of its associated column, the rows of characters of the odd and even numbered columns of the drum being alternately staggered and aligned in different sectors of the drum. A single hammer is moved in a direction parallel to the axis of the drum at such a substantially constant velocity as to cover two adjacent circumferential columns of the drum and the rows of type characters contained therein during each revolution of the drum.

3,750,795

## CONSTANT FORCE SPRING CARRIER RETURN MECHANISM

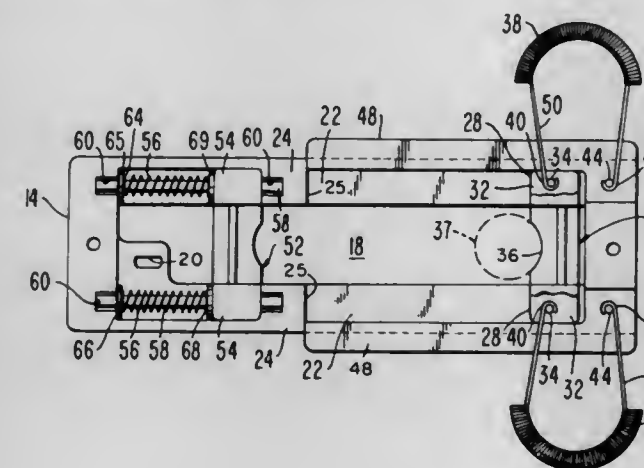
Harry L. Wallace, Garden City, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 2, 1970, Ser. No. 86,120

Int. Cl. B41j 19/72

U.S. Cl. 197—68

9 Claims



Mechanism for biasing a carrier of a printing apparatus for yielding resisting movement thereof along a defined track extending parallel to a print line from a starting position and for

returning the displaced carrier back to the starting position. A frame in the mechanism forms an elongated opening which serves as the track and guides an extension of the carrier for to and fro motion parallel to the print line. Carried by the frame is a pair of biasing members in the form of bowed coiled springs which engage the extension of the carrier and resiliently yield to tabulation of the carrier in one direction parallel to a print line and urge return of the carrier in the other direction to its starting position. A shock absorber is positioned in the track at the starting position for absorbing the inertia of the return movement of the carrier and permitting the carrier to overshoot the starting position as its inertia is absorbed.

3,750,796

## SELF-INTERLOCKING KEYBOARD

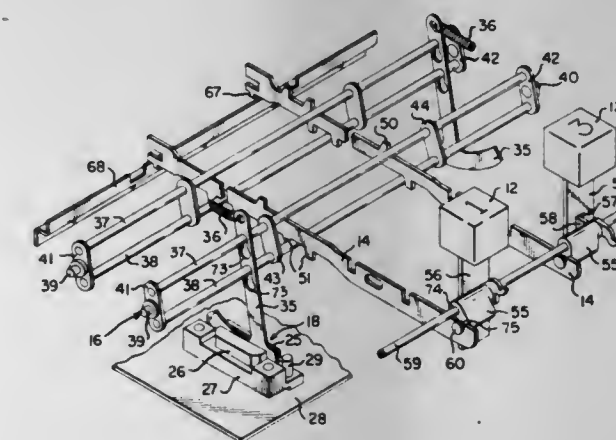
Peter H. DeGraff, Newfield, and James W. Lee, Ithaca, N.Y., assignors to The National Cash Register Company, Dayton, Ohio

Filed Feb. 8, 1971, Ser. No. 113,430

Int. Cl. B41j 5/22

U.S. Cl. 197—107

2 Claims



A keyboard having magnetically actuated reed switches and interposers swingable between the switches and adjacent magnets for opening and closing the switches in response to key-operated mechanism. Each interposer is supported from a pair of spaced shafts which constitute a bail assembly, the spaced shafts being operable in rotary fashion about a common center, and toothed racks are carried between the shafts and engageable therewith to provide interlocking means for the keyboard. This interlocking means is of the "non-entering" type realizable by cooperation of the shafts with the racks being slidable therebetween, wherein, with one key depressed, depression of another key tends to restore the first-mentioned key.

3,750,797

## CARRIER POSITIONING AND TABULATION APPARATUS

Ronald E. Hunt, Austin, Tex., and Joseph S. Morgan, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,703

Int. Cl. B41j 25/18

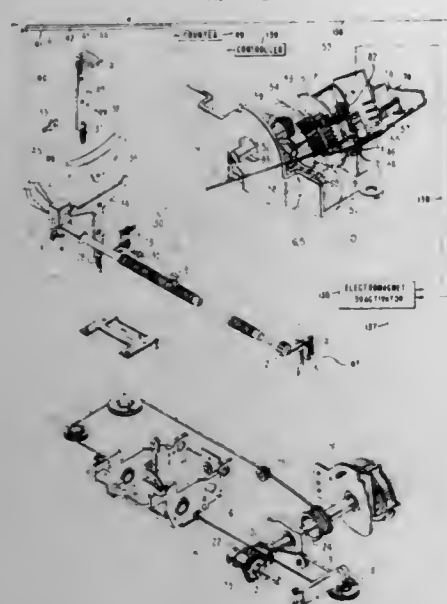
U.S. Cl. 197—176

5 Claims

A carrier positioning and tabulation apparatus including a carrier, a leadscrew for controlling carrier advancement, an emitter wheel associated with the leadscrew having emitter spokes and a home emitter spoke, a stop device associated with the leadscrew for stopping rotation of the leadscrew and



advancement of the carrier, and a pin wheel rotatable mechanism operating in conjunction with fixed and movable synchronously with advancement of the carrier and having



settable pins for indicating the approach of a tabulation position which is defined by a signal generated upon the sensing of the home emitter spoke.

3,750,798

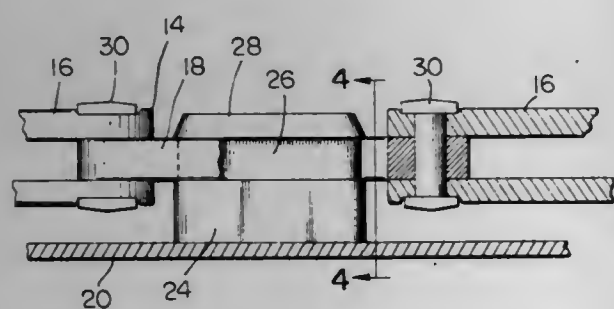
**SUPPORT PAD FOR CONVEYOR CHAIN AND COMBINATION THEREOF WITH CONVEYOR CHAIN**  
Niels S. Hansen, Fort Wayne, Ind., assignor to Foundation and Bridge Corp., Fort Wayne, Ind.

Filed May 12, 1971, Ser. No. 142,640

Int. Cl. B65g 15/00

U.S. Cl. 198-1

3 Claims



The specification discloses a conveyor chain running in a horizontal direction adjacent a stationary surface and a pad adapted for connection with the conveyor chain and slidable on the surface so as to hold the conveyor chain in spaced relation to the surface and eliminating wearing of the chain and surface.

3,750,799

**MATERIAL HANDLING APPARATUS**

William J. Hill, Holden, and Kenneth L. Klusmier, Worcester, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

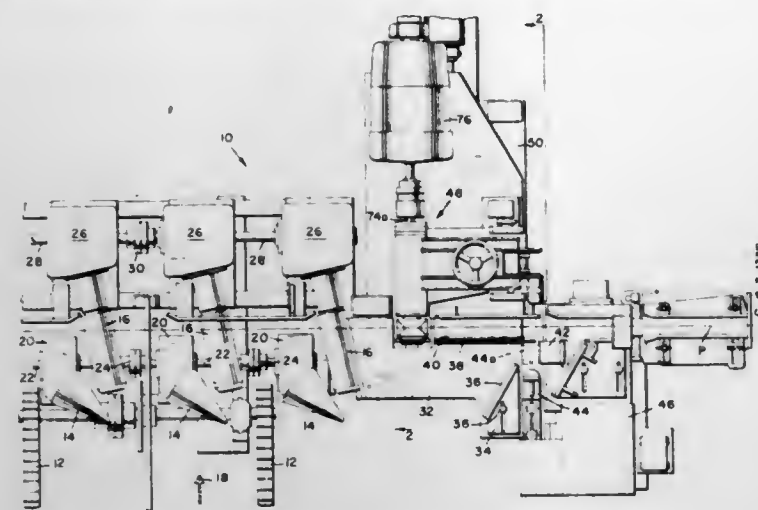
Filed May 1, 1972, Ser. No. 249,691

Int. Cl. B65g 47/04

U.S. Cl. 198-20 R

7 Claims

A material handling apparatus which includes a pusher



stops to individually separate elongated elements from a batch and to laterally feed each separated element into a given path.

3,750,800

**ARTICLE ORIENTING MACHINE**

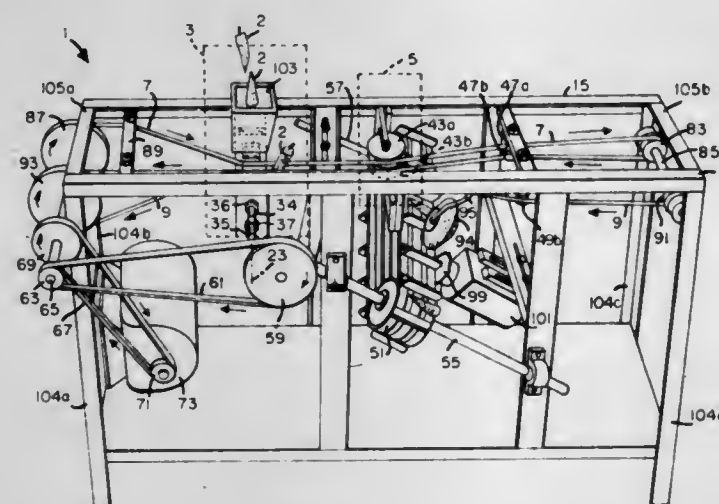
Pieter A. Sluis, 600 Cotton St., Menlo Park, Calif.

Filed July 12, 1971, Ser. No. 161,535

Int. Cl. B65g 47/24

U.S. Cl. 198-33 AA

3 Claims



A machine for orienting tapered objects at a receiving station; carrier means for transporting said objects from said receiving station in proper oriented position to a discharge station; said receiving station including a first pair of laterally opposite surfaces and a second pair of laterally opposite surfaces, said first and second surfaces being vertically displaced relative to one another, the lateral spacing between said first pair of surfaces being greater than the lateral spacing between said second pair of surfaces, and the first pair of surfaces being movable relative to the second pair of surfaces whereby said object may be transported from the receiving station to the discharge station.

3,750,801

**CONVEYING DEVICE**

Hans-Joachim Karass, Dortmund-Berghofen, and Heinz Kroger, Dortmund-Asseln, both of Germany, assignors to Holstein & Kappert Maschinenfabrik Phoenix GmbH, Dortmund, Germany

Filed Sept. 13, 1971, Ser. No. 176,401

Claims priority, application Germany, May 23, 1971, P 21 26 313.8

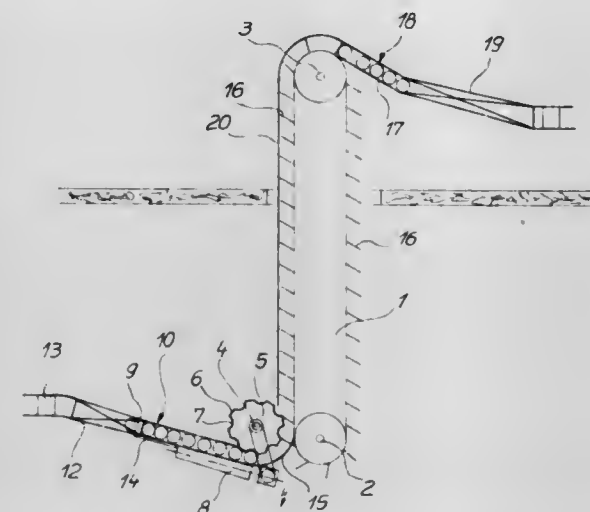
Int. Cl. B65g 47/00

U.S. Cl. 198-43

8 Claims

A receiving station for articles which are to be conveyed in a horizontal orientation is located at an upper level, and a sup-

plying station for these articles is located at a lower level. The supplying station comprises an element rotating about a horizontal axis provided in its periphery with equiangularly spaced article-receiving pockets each of which extends longitudinally of the axis of rotation. An article-feeding screw is located beneath the element extending normal to the horizontal axis and having a discharge end beneath the element for



discharging articles into the respective pockets thereof. An endless belt-conveyor moves in vertical path between the supplying station and the receiving station and is provided with outwardly extending members spaced longitudinally from one another and inclined forwardly and upwardly in the direction of movement of the belt, so positioned as to each engage an article accommodated in one of the pockets and to lift it out and convey it to the receiving station.

## ERRATA

For Classes 198-115 thru 211-119.2 see:  
Patents Nos. 3,750,858 thru 3,750,878, 3,750,880 thru 3,750,904

3,750,802

**MATERIAL DELIVERY SYSTEM**

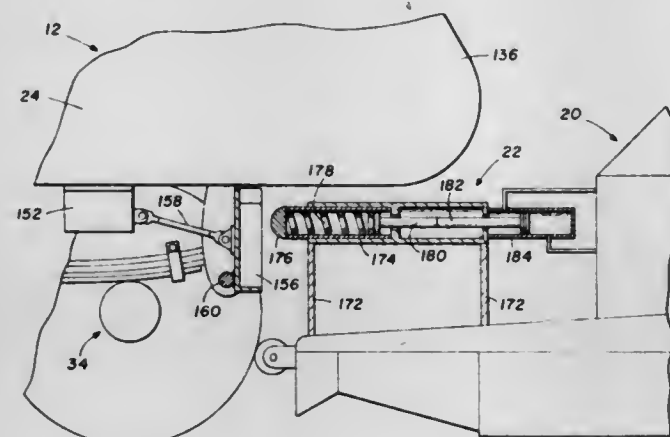
John H. Holland, Norma, Okla., assignor to Arkansas Rock and Gravel Co., Murfreesboro, Ark.

Division of Ser. No. 852,345, Aug. 22, 1969. This application Dec. 10, 1971, Ser. No. 206,738

Int. Cl. B65g 67/02

U.S. Cl. 214-38 R

11 Claims



A delivery system for hot asphalt includes a plurality of semi-trailers. Each trailer includes a V-shaped hopper having an asphalt supporting beam extending longitudinally through it. A tube extends around the hopper for use in spraying lubricating oil into the hopper prior to the loading of asphalt. Each trailer further includes a conveyor for unloading asphalt

from the hopper into a paving machine. The conveyor is driven by a hydraulic motor that is controlled by a valve. The valve is mounted in the trailer for activation by a prod mounted on the paving machine so that the operation of the conveyor is controlled from the paving machine.

3,750,803

**RAPID TRANSPORTATION SYSTEM**

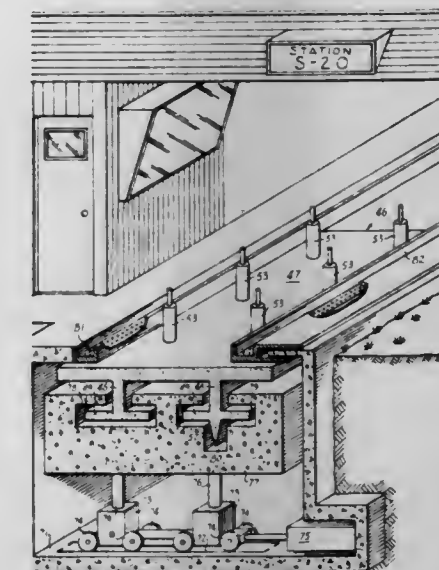
Lee C. Paxton, 5016 Bremner Ct. No. 4, Sacramento, Calif.

Filed Nov. 11, 1971, Ser. No. 197,651

Int. Cl. B601 13/00; B65g 67/02

U.S. Cl. 214-38 CC

13 Claims



A rapid transportation system which includes a channel trackway with electromagnets positioned therealong. The magnets are individually energizable and are arranged to support and propel the pallets associated therewith. The pallets are arranged to support a motor vehicle, a passenger pod, a freight pod, or a work pod. The magnets of the trackway are used to divert a pallet from the main trackway to adjacent trackways such as a station or depot through a switch having no moving parts. A mechanical diverter is provided for preventing a pallet from becoming lodged in a partially switched condition to thereby tie-up the system.

3,750,804

**LOAD HANDLING MECHANISM AND AUTOMATIC STORAGE SYSTEM**

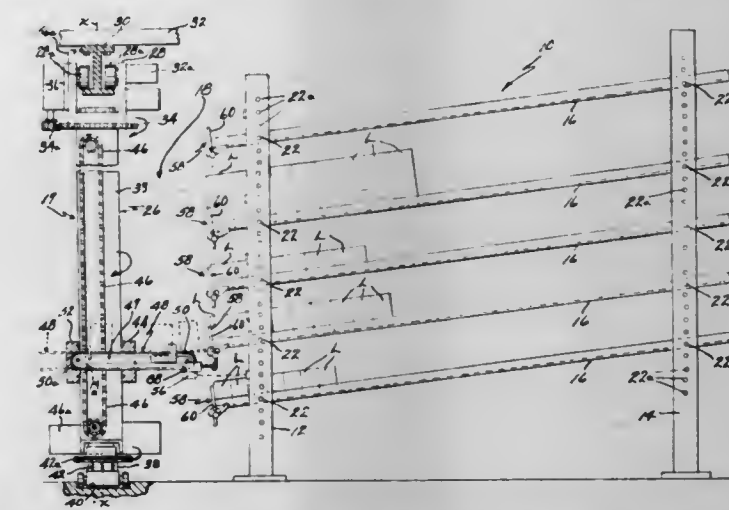
Jerome H. Lemelson, Metuchen, N.J., assignor to The Triax Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 805,315, March 7, 1969, Pat. No. 3,674,159. This application Mar. 22, 1972, Ser. No. 237,188

Int. Cl. B65g 1/06

U.S. Cl. 214-16.4 A

24 Claims



A warehousing system comprising a storage rack for storing loads thereon and a stacker crane movable alongside of the



rack for depositing loads into and removing loads from selected storage locations in the storage rack. The stacker crane includes a load handling portion comprising a conveyor including power means for operating the conveyor. The conveyor may move a load from a selected storage location in the storage rack onto one end thereof, and then by powered operation of the conveyor, the load can be moved lengthwise of the load handling portion to a storage position on the latter, and then the conveyor can operate to pickup another load from a selected storage location and move it along the load handling portion and so on. In certain embodiments, transfer means mounted on the storage rack coact between the load handling portion and the storage rack for aiding in transferring loads between the latter. Certain embodiments of the disclosed warehousing systems include a powered load manipulator mechanism for transferring a load between the load handling portion and the storage rack.

3,750,805

# BOAT LOADING AND LAUNCHING TRAILER AND METHOD OF LOADING A BOAT THEREON

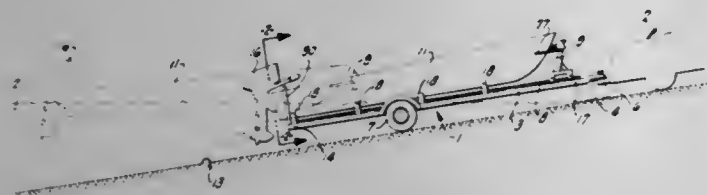
Kelly D. Finney, Chico, Calif., assignor to Louis G. Chrysler, Jr., Chico, Calif., a part interest

Filed Apr. 23, 1971, Ser. No. 136,828

Int. Cl. B60p 3/10

U.S. Cl. 214-84

9 Claims



A trailer for transporting a boat, and a method utilizing the motive power of the boat to effect loading thereof on the trailer when the trailer is positioned in the body of water in which the boat is afloat. The trailer comprises a track structure having a dolly movable thereon. Catch structure engageable by a hook member on the bow of the boat is provided to secure the boat to the dolly. When the boat and dolly are interengaged, the motive power of the boat is activated to drive the dolly and the boat therewith longitudinally of the trailer. Guide structure is provided in conjunction with the catch structure to facilitate automatic interengagement of the hook member on the boat with the catch structure on the dolly. Latching means is provided between the dolly and the track structure for automatically locking the dolly adjacent one end of the trailer. Roller means are provided on the trailer for supporting the boat during the loading operation.

3,750,806

# FEED MECHANISM FOR PRESSES

Leslie John Bartlett, Walsall, England, assignor to Unisoc Machine Tools Limited, Brownhills, Walsall, England

Filed Oct. 5, 1971, Ser. No. 186,722

Claims priority, application Great Britain, Oct. 7, 1970, 47,630/70

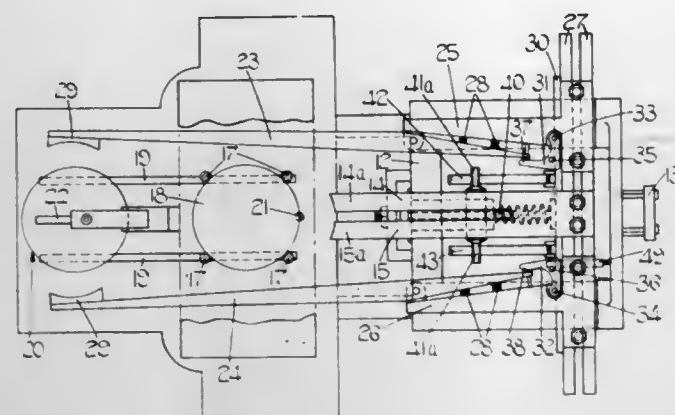
Int. Cl. B65g 59/06

U.S. Cl. 214-8.5 F

4 Claims

A feed mechanism for feeding workpieces separately to a press comprising a base and a reciprocable feeding assembly. The feeding assembly embodies pusher means arranged to engage the lowermost workpiece in a stack of workpieces situated in a hopper on the base so that on reciprocation of said assembly, the pusher means pushes said lowermost workpiece forwardly to an intermediate station on the base. The feeding assembly also includes a pair of calipers adapted at their leading ends to move between open and closed positions so that in the closed position a workpiece previously deposited at said

intermediate station will be gripped by the calipers and moved forwardly to the press in which it is to be deposited. Means are provided to open the calipers when the feeding assembly is at the end of its forward stroke in order that the workpiece car-



ried by the calipers will be dropped into the press. The feeding assembly then returns to its rearward position so that the calipers can again pick up from said intermediate station another workpiece deposited there by said pusher means on the previous stroke of the feeding assembly.

3,750,807

# UNLOADER FOR STORAGE BINS

William J. Jackson, P.O. Box 266, Mendota, Ill.

Division of Ser. No. 77,263, Oct. 1, 1970, Pat. No. 3,647,094.

This application Nov. 8, 1971, Ser. No. 196,469

Int. Cl. B65g 65/46

U.S. Cl. 214-152

4 Claims



The unloader uses a combination of a plurality of auger and casing units arranged end to end and separably coupled together in a circular bin which has a floor provided with a center outlet sump leading to any means to carry loose granular material from the sump. A power unit connected to the first auger, is mounted in the sump so it can be rotated on a vertical axis that is on the central axis of the bin. The power unit also includes a hydraulic pump. The casings have openings in one side with manually removable doors for them so that grain may be received by or blocked out of the augers. The first casing carries a tank for hydraulic fluid near the pump. Near the end of the casing remote from the sump, a drive and support unit carries the casing and is hydraulically driven. The second auger and casing unit is separably coupled to the first auger and casing unit and extends axially beyond it. It also has near its outer end a drive support unit essentially like the one on the first auger. The hydraulic drive coupling to the pump is such that when the first auger and casing unit is separated from the second auger and casing unit, this will limit the supply of fluid to the hydraulic motor of the first drive and support unit so it can be used to cause the first casing unit to travel around the sump and remove the material from the

center of the bin while the second unit remains buried in the pile of material in the outer portion of the bin. Unloading a bin by this method keeps the outward pressure on the entire circumference of the bin wall until center annular areas of the bin floor have been cleared and the outward pressure is lowered to a safe level.

## ERRATUM

For Class 214-11 see:  
Patent No. 3,750,879

3,750,808

# GARAGE FOR THE STORAGE OF VEHICLES

Kaspar Klaus, Schlachthofstrasse 46, 894 Memmingen/Bavaria, Germany

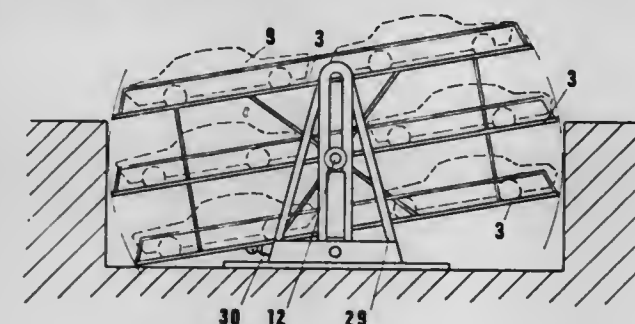
Division of Ser. No. 883,903, Dec. 10, 1969, Pat. No.

3,688,922. This application June 21, 1972, Ser. No. 264,843

Int. Cl. E04h 6/06

U.S. Cl. 214-16.1 ED

1 Claim



The garage comprises at least two tilting platforms, each capable of accommodating at least two vehicles end-to-end superposed in spaced relation and linked for tilting in unison to place one end of one platform and the other end of the other platform in communication with fixed run-in and run-off areas of the garage, in one tilted position, and vice versa in the other tilted position. Provision is also made for raising and lowering the interlinked platform structure where there are more than two platforms in a stack.

3,750,809

# GYRATORY CRUSHER HAVING CRUSHER HEAD RESTRAINER

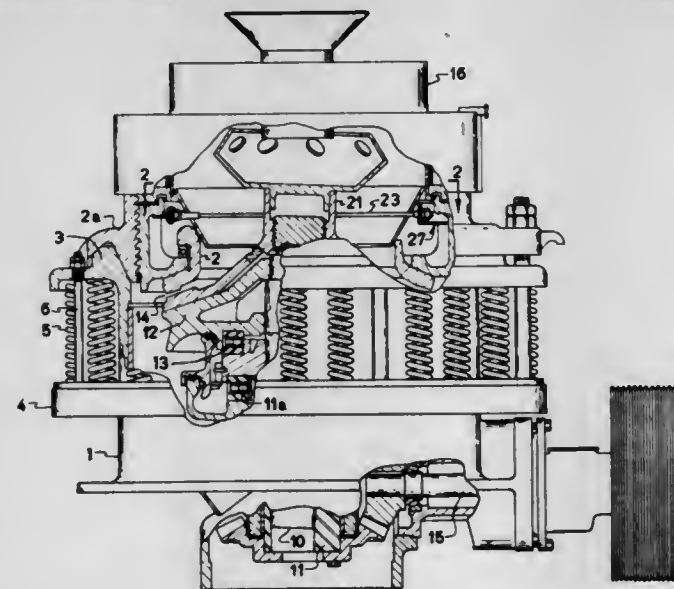
Ronald B. DeDlemar, Brown Deer, and Fred Curtis Archer, Whitefish Bay, both of Wis., assignors to Barber-Greene Company, Aurora, Ill.

Filed Dec. 27, 1971, Ser. No. 212,824

Int. Cl. B02c 2/04

U.S. Cl. 241-209

2 Claims



A gyratory type crusher having a crushing head rotatably mounted on an upright eccentric wherein the head gyrates in

respect to a cooperating concave and thereby effects a crushing action when material is in the annular crushing chamber which is formed between the head and the concave. The head is rotatably mounted on a rotating eccentric which imparts a gyratory movement to the head relative to the concave. Means are provided for restraining the rotation of the head relative to the concave when the crushing chamber is empty or when the material is initially being introduced into the crushing chamber. The construction of the restrainer is such that the head is permitted to rotate backwards during the crushing operation and which backward rotation is due to the crushing action.

3,750,810

# REFUSE CONTAINER HANDLING DEVICE

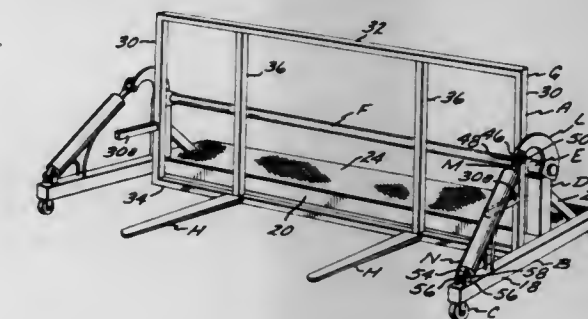
Gary L. Stanfill, Bakersfield, Calif., assignor to Midway Fishing Tool Company, Long Beach, Calif.

Filed Feb. 1, 1971, Ser. No. 111,554

Int. Cl. B65g 65/30

U.S. Cl. 214-314

4 Claims



A movable, power operated, sanitation container handling device that includes pair of forks that may removably engage the container, and pivot the engaged container to any one of a number of elevated positions where the container may be steam cleaned, painted or other maintenance work performed thereon. The handling device is also capable of pivoting the container to a position where water or steam condensate that may have accumulated therein may drain from the container due to gravity.

3,750,811

# CARPET UNLOADING AND TRANSPORTING ASSEMBLY

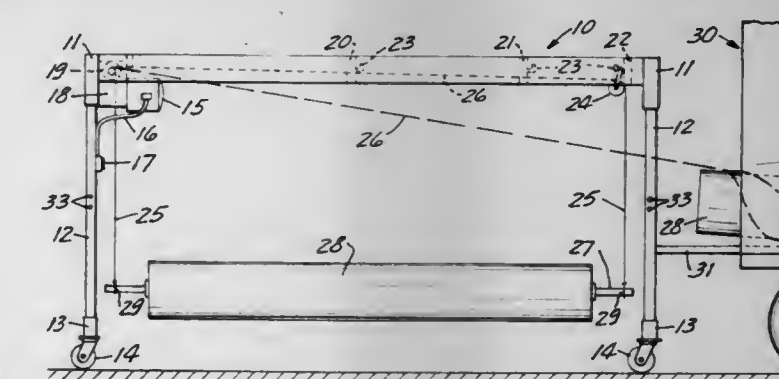
Lloyd E. Anderson, 3123 Upton Ave. North, Minneapolis, Minn.; Gilbert L. Alinder, 5312 Shoreview Ave. South, Minneapolis, Minn., and Donlin Thompson, Minneapolis, Minn.

Filed Sept. 4, 1970, Ser. No. 69,789

Int. Cl. B65g 67/24; B60p 3/00

U.S. Cl. 214-394

5 Claims



A carpet roll unloading and transporting assembly is provided comprising an elongated rectangular frame with legs extending downwardly from the corners and terminating in castors. An electrically driven drum is provided at one end of the assembly which winds and unwinds a pair of cable members to raise and lower rolls of carpeting for transporting or cutting off of portions for use. One of the cables is used in the assembly for unloading of rolls of carpeting from a truck.



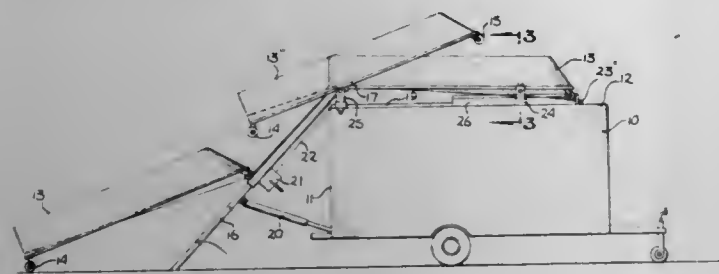
### 3,750,812 BOAT LOADER FOR VEHICLE

Jack L. Evans, 10241 La Tuna Canyon Rd., Sun Valley, Calif.  
Filed June 11, 1971, Ser. No. 152,287

Int. Cl. B60r 9/00

U.S. Cl. 214-450

4 Claims



A mechanism for raising, positioning and securing a boat on the top of a recreational vehicle is disclosed herein having a rail for slidably carrying an inverted boat from the ground surface to the top of the vehicle. A pulley arrangement including a hand winch operably couples the boat to the vehicle for moving the boat on the rail while forward and rearward holding devices selectively engage the bow and stern of the boat as the boat is moved across the vehicle top. Automatic means are provided for registering the selected portions of the boat with the holding devices so that releasable securement therebetween can be maintained.

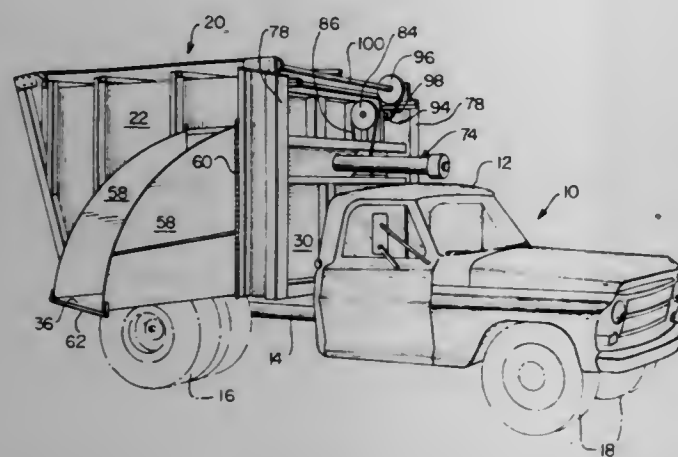
### 3,750,813 REFUSE TRUCK

Francis B. Fishburne, 24 Summit Dr., Asheville, N.C.  
Filed Mar. 31, 1972, Ser. No. 239,924

Int. Cl. B60p 1/00

U.S. Cl. 214-518

8 Claims



A refuse collection and packing truck is disclosed which has a hollow horizontally disposed body mounted thereon for the storage of collected refuse. Within the hollow body is a movable press plate attached to a first drive means for moving the press plate both in a forwardly and in a rearwardly direction within the hollow body. A second and more powerful drive means is provided for moving the press plate in a rearward direction only. The hollow body has a side mounted chute-like door arrangement for receiving refuse therein. The door arrangement is mechanically movable and transfers refuse to within the hollow body. The first drive means is then employed to move the press plate in a rearward direction in order to create a pile of loosely packed refuse. The second drive means is of greater power than the first drive means and is operative only to drive the press plate in a rearward direction for compressing the collected refuse against the rear gate of the hollow body.

### 3,750,814 EXPANDABLE TOP-HANDLING CONTAINER ATTACHMENT

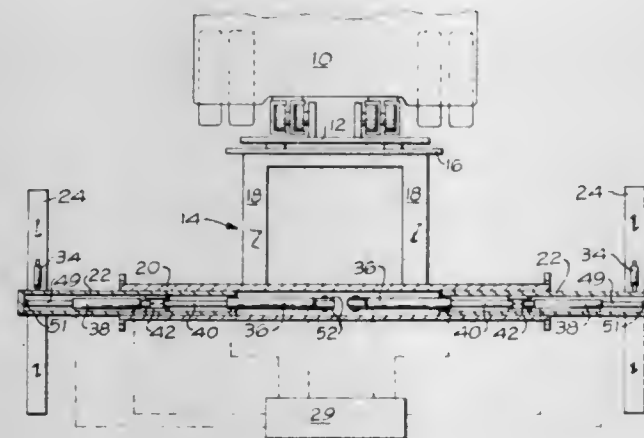
Theodore Henry Allegri, Peoria, Ill.; Charles R. Chelin, Dallas, Ore.; Dafydd W. Evans, Cleveland Heights, Ohio, and Norman D. Thompson, Dallas, Ore., assignors to Towmotor Corporation, Cleveland, Ohio

Filed Oct. 1, 1971, Ser. No. 185,698

Int. Cl. B66f 9/18

U.S. Cl. 214-621

12 Claims



An expandable, top-handling container, lift frame attachment for lifting and moving large cargo containers of varying lengths is provided. The lift frame attachment is adapted for easy attachment to, or detachment from a carriage of a large-size fork-lift truck, and includes telescoping, transverse beam members that can be extended or retracted in length to fit intermixed containers of various lengths.

### 3,750,815 CONVEYOR SYSTEM LIFT ASSEMBLY

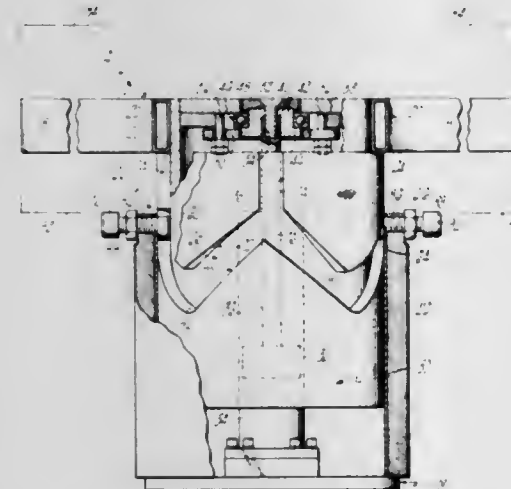
Robert Lee Haven, New Britain, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Dec. 3, 1971, Ser. No. 204,455

Int. Cl. B65g 7/00

U.S. Cl. 214-730

14 Claims



An article handling apparatus usable with a conveyor including a lift and a drive which has a single fluid actuated motor to reciprocate the lift, between a rest position in line with the conveyor and an elevated position. The drive includes a disengageable one-way rotary operator which rotates the lift a predetermined angular amount upon its being raised and lowered between an intermediate elevated position and its extended position.

### 3,750,816 LOADER BUCKET WITH POSITIVE ENDWARD EJECTOR

Gene J. Becker, Walthill, Nebr.

Continuation of Ser. No. 865,463, Oct. 10, 1969, abandoned.

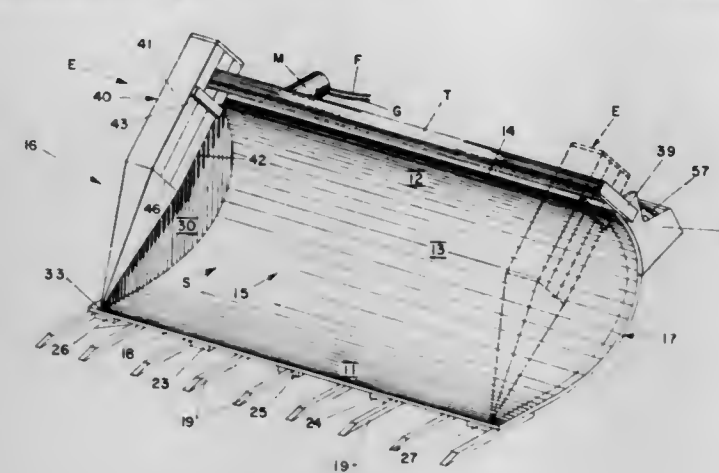
This application Oct. 4, 1971, Ser. No. 188,682

Int. Cl. E02f 3/00, 3/40

U.S. Cl. 214-767

4 Claims

U.S. Cl. 211-95



A loader bucket mountable on a tractor or similar movable vehicle, the loader bucket comprising an elongate scoop without end-walls and an ejector-assembly having a finite degree of longitudinally movable relationship with the scoop. The ejector-assembly includes an upright ejector-plate within the scoop and adapted to positively eject a load of grain, snow, or the like, from one of the open endward terminii of the scoop, the ejector-assembly being longitudinally motivatable through an annular chain connected to sprockets at the respective scoop terminii, at least one of the sprockets being actuatable hydraulically.

### 3,750,817 CHILDPROOF SAFETY CLOSURE

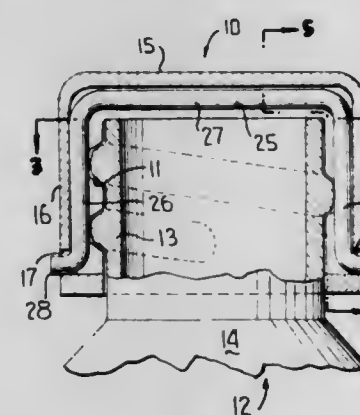
John S. Bozek, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,217

Int. Cl. B65d 55/02

U.S. Cl. 215-9

16 Claims



This disclosure relates to a safety closure associated with a container having a threaded finish, the closure including a closure body having an end panel and a peripheral skirt with inwardly opening diametrically opposed recesses having surfaces for camming a gripping element against the container finish automatically upon rotation of the closure in an unthreading direction. The gripping element is an inverted generally U-shaped member having ends exposed through apertures in the peripheral skirt which can be gripped to move the member toward the widest portion of the recesses thereby releasing the gripping element to permit the unthreading of the closure from its associated container finish.

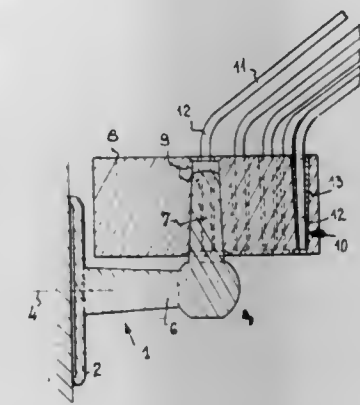
### 3,750,818 DEVICE FOR HANGING A SHOWER-BATH CURTAIN

Georges Samuel Borstcher, 25, rue de Chazelles, Paris, France  
Filed May 11, 1971, Ser. No. 142,297

Claims priority, application France, Mar. 18, 1971, 7117668

Int. Cl. A47l 5/08

3 Claims



The device for hanging a shower-bath curtain comprises an element having an upwardly tapered spindle for supporting a disk-plate which is moreover provided with housings for receiving rods on the free ends of which are fixed hooks for hanging said shower-bath curtain.

### 3,750,819

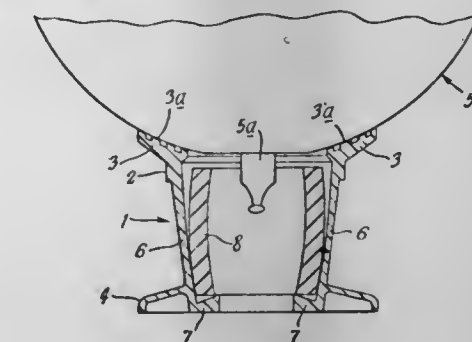
BASE SUPPORT ASSEMBLY FOR VACUUM VESSELS  
John Edwin Wilson, Byeways, Cory Dr., Hutton Burses, near Brentwood, England

Filed Dec. 4, 1970, Ser. No. 95,198

Int. Cl. A47j 41/00

U.S. Cl. 215-13 R

12 Claims



A base support assembly for bottles or fillers in vacuum vessels comprising a tubular axially extending support member of resilient material having its upper end shaped to form a seating to accommodate the base of the fillers, and a resilient reinforcing member housed in the support member, the reinforcing member extending axially and substantially symmetrically within the support member and having an axial length less than and an axial compression resistance greater than those of the support member, the arrangement being such that when an axial compression force is applied to the assembly such force is initially resisted by the support member and subsequently it is resisted both by the support member and the reinforcing member.

### 3,750,820 STOPPER

Maurice Labarre, 5 Avenue Pierre Grenier, 92 Boulogne S/S, France

Filed Apr. 26, 1971, Ser. No. 137,364

Claims priority, application France, Apr. 29, 1970, 7015785; Mar. 4, 1970, 7007411

Int. Cl. B65d 41/20

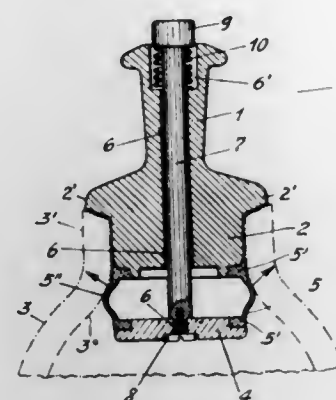
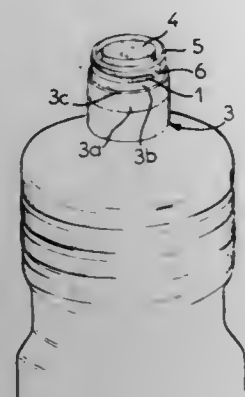
U.S. Cl. 215-42

3 Claims

A stopper having a circular body surmounted by a substantially cylindrical boss having a diameter distinctly less than



that of said body, said stopper comprising a gripping ring accommodated within the annular space thus formed above said body and around said boss, this ring being attached to the body by at least one non-detachable tab.



body and around said boss, this ring being attached to the body by at least one non-detachable tab.

produced and relieved, thereby making possible a quick operation of the closure.

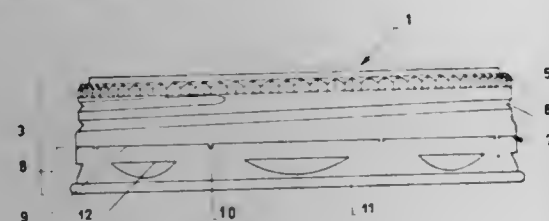
3,750,821

## PILFER-PROOF CLOSURE

Claude Pierre Sourbet, 159, rue Blomet, Paris, and Rene Simon Devylder, 33-Saint Seurin sur l'Isle, both of France  
Filed Apr. 28, 1972, Ser. No. 248,440  
Claims priority, application France, Apr. 29, 1971, 7115396  
Int. Cl. B65d 41/20

U.S. Cl. 215-42

7 Claims



A pilfer-proof metal closure for containers having a wide mouth and an external screw thread, which includes a top portion covering the mouth of the container and a skirt portion defining a screw thread and having a rupture line to define a locking ring below the rupture line, the locking ring being provided with a plurality of resilient locking members which define an annular surface having a diameter less than the diameter of a locking ring on the container, with the locking members being adapted to be displaced from the container when the closure is set in position without changing the diameter of the locking ring.

3,750,822

## CLOSURE FOR CONTAINERS, AND MORE PARTICULARLY FOR JARS, BOTTLES CANS AND THE LIKE

Werner Dubach, CH 8484 Weisslingen, Switzerland  
Filed Aug. 10, 1971, Ser. No. 170,540  
Claims priority, application Switzerland, Aug. 13, 1970, 12177/70

Int. Cl. B65d 39/12

U.S. Cl. 215-52

3 Claims

The invention provides a closure for containers, and more particularly for jars, bottles, can and the like. The closure in-

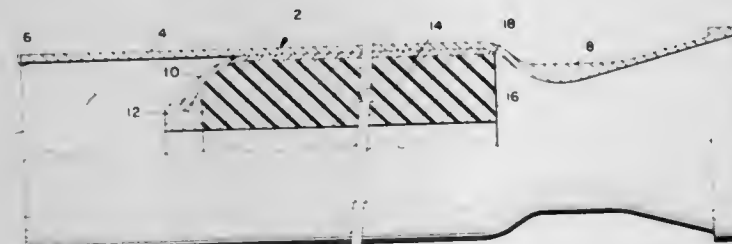
3,750,823  
FILAMENT WOUND VESSEL AND METHOD OF MANUFACTURE

Richard P. Carter, and Frederick J. Policelli, both of Cumberland, Md., assignors to Hercules Incorporated, Wilmington, Del.

Filed Apr. 15, 1970, Ser. No. 28,819  
Int. Cl. B65d 25/00, 7/42; B29c 27/10

U.S. Cl. 220-3

5 Claims



A filament wound cylindrical vessel adapted to withstand internal pressure having an outer shell and an inner shell slidably disposed within the outer shell, said inner shell having a hoop strength to axial strength ratio lower than said outer shell whereby the said inner shell expands more than the outer shell upon application of internal pressure to form a strong frictional bond between the shells. Also includes method of forming shells and combining them to form the vessel.

3,750,824  
ASHTRAY

George W. Walton, 8903 Devonshire Dr. at Farquhar Ln., Dallas, Tex.

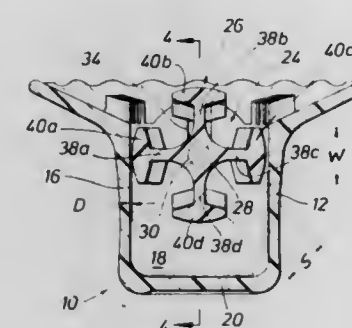
Filed Feb. 19, 1971, Ser. No. 116,979  
Int. Cl. B65d 7/00

6 Claims

U.S. Cl. 220-20.5

The ashtray disclosed has a receptacle with a bottom, side walls, and an opening in the top through which ashes,

cigarettes, and the like can pass into the receptacle. A roller is located in the opening and supported for rotation by the receptacle around an axis transverse the opening. The roller has a plurality of arms extending radially from the center portion of the roller. Each arm has a lobe attached to the end thereof, each lobe being wider than the arm to which it is attached so that each two adjacent arms with their associated lobes form a pocket having an opening between the lobes through which ashes, cigarettes, and the like can be deposited



in the pockets when the openings are facing upwardly and from which the ashes, cigarettes, and the like will fall into the receptacle when the roller is rotated. Each lobe has an outer arcuate surface that just clears the side walls of the receptacle and each lobe is wider than the distance between the lobes so that the roller will close the opening to the receptacle sufficiently at any position of the roller to keep ashes from being blown from the receptacle by the wind and to smother burning ashes deposited in the receptacle.

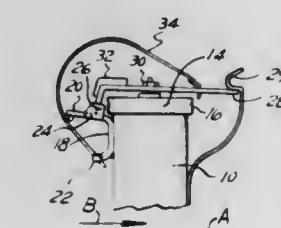
3,750,825

## SELF-CLOSING CAP

Carle F. Bachle, Grosse Pointe Farms, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.  
Filed Jan. 25, 1971, Ser. No. 109,500  
Int. Cl. B65b 3/00; B65d 43/16, 51/00

U.S. Cl. 220-35

5 Claims



A cap for closing a filler tube or the like having a spring hinge mechanism designed to maintain the cap in an open position when the cap is on one side of an over-center position and to snap the cap closed when the cap is pivoted to the other side of the over-center position. Means are provided to reduce the likelihood that the cap will remain in the opened position when the machinery to which the filler tube is attached is put into operation. In one embodiment, this is achieved by mounting the tube and the cap so that vibrations of the tube upon operation of the machinery will shake the cap past the over-center position to cause it to snap shut. In another embodiment, a cover is provided which is movable away from the tube to permit access to the cap and to move against the cap when closed to move the cap past the over-center position and to snap the cap closed.

3,750,826

## LATCHING APPARATUS FOR REMOVABLE ROOF OF TRANSPORT CONTAINERS, PARTICULARLY I. S. O. CONTAINERS

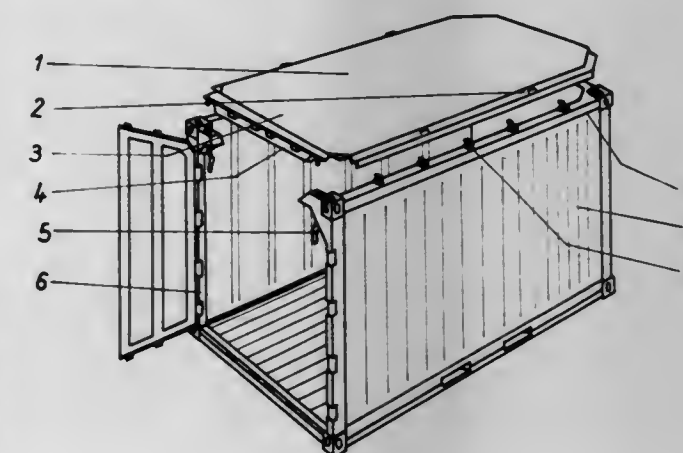
Hans Donath, Zwickau; Hans Peter Beier, Wilkau-Hasslau; Gottfried Otto, Gains-Dorf; Erich Franke, Zwickau; Gunter Kornetzky, Berlin; Eberhard Dietz, Niederlungwitz, and Klaus Wenzel, Zwickau, all of Germany, assignors to Ministerium Fur Verkehrswesen, Berlin, Germany  
Filed June 9, 1971, Ser. No. 151,333

Claims priority, application Germany, July 27, 1970, WP 81 149 099

Int. Cl. B65d 45/02; E05c 1/12

U.S. Cl. 220-55 G

6 Claims



A push rod extends along an edge of the framework of the roof. The rod has a plurality of wedge-like recesses. Corresponding projections are provided on or at the upper edge of the sidewall, for latching purposes.

3,750,827  
CONTAINERS

Helmut Wick, Lubeck, Germany, assignor to Nordischer Maschinenbau Rud Baader, Lubeck, Germany  
Filed Mar. 15, 1971, Ser. No. 124,410  
Int. Cl. B65d 7/42

U.S. Cl. 220-74

1 Claim



The invention relates to a deep-drawn sterilisable metal container for foodstuffs. The container is of thin wall construction from metal foils, e.g. aluminium foil, coated at least on its inside with a thermo plastics layer. It is provided around its lower or base edge with an edge bead of double wall configuration which is folded or rolled either inwardly beneath the bottom wall or outwardly adjacent the side wall.

3,750,828

## ACCESS-CONTROL EQUIPMENT AND ITEM DISPENSING SYSTEMS INCLUDING SUCH EQUIPMENT

Geoffrey Ernest Patrick Constable, Cheltenham, England, assignor to Smiths Industries Limited, London, England  
Filed Aug. 24, 1970, Ser. No. 66,181

Claims priority, application Great Britain, Aug. 25, 1969, 42,263/69

Int. Cl. G06k 5/02

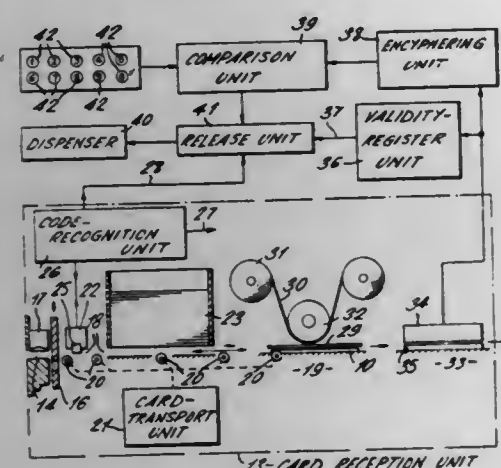
U.S. Cl. 221-2

22 Claims

A money-dispensing system is operative to dispense money in response to a bank customer's credit card and keyed-entry



of his personal-identification number, only if this number accords with the customer's account number on the card and the card carries a magnetic recording having a crooked pattern of magnetization. The recording is detected by a magnetic head having a sensing gap of zigzag configuration, and contains data



relating to the rate of permissible use of the token. The sensing gap may alternatively be of V configuration and may be defined by two obliquely set straight-gap heads. Recorded data relating to the extent of permissible use of the token may be detected using another crooked gap, and up-dated by erasure using a straight gap.

3,750,829

### ARTICLE VENDING MACHINE HAVING BONUS DISPENSING MEANS

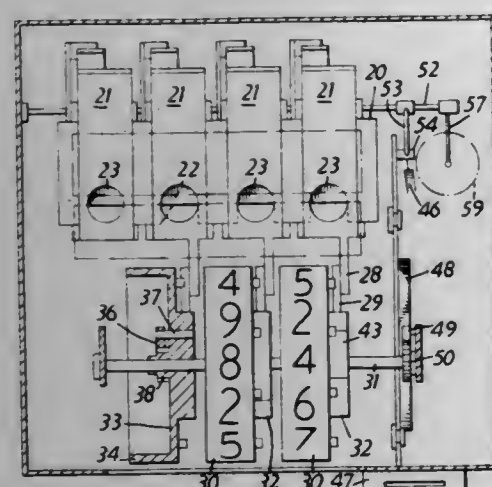
Henry George Frederick Jennings, 3 Helena Close, Hertfordshire, Hadley Wood, England

Filed July 24, 1972, Ser. No. 274,633

Int. Cl. G071 1/44

U.S. Cl. 221-8

7 Claims

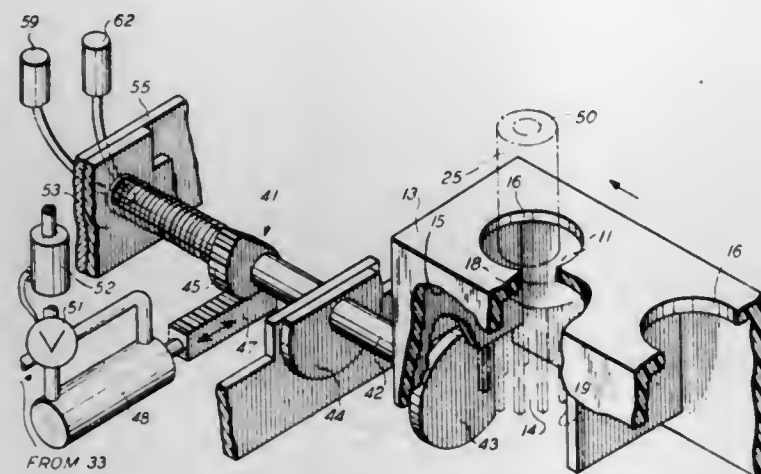


An article vending machine comprises several dispensing units each operable by a spring to dispense an article from a magazine, rotatable indicator wheels registrable at random in any one of several index positions, coin-free drive means operable to energize the springs and rotate the indicator wheels, a dashpot arranged to delay operation of the dispensing units by the springs until after commencement of rotation of the indicator wheels, and a locking member movable into locking engagement with the wheels to lock them in random index position, at least one of the dispensing units being arranged to dispense an article in each operational cycle of the machine, and the operation of each remaining dispensing unit being blocked by an associated indicator wheel except when the wheel is registered in a selected index position.

3,750,830  
DISPENSING CONTROL MECHANISM  
William D. Bohannon, Jr., Rt. 3, Box 669, Graham, N.C.  
Filed Sept. 13, 1971, Ser. No. 179,849  
Int. Cl. G071 1/48

U.S. Cl. 221-81

2 Claims



A plurality of components are selectively and sequentially discharged from a magazine by a dispensing control mechanism. The mechanism includes a piston arrangement upon which a tube is rigidly mounted within a piston. The piston, in turn, is slidably mounted within an air cylinder. One of a plurality of successive components to be ejected from the magazine is situated beneath the tube. Air under pressure is introduced into the cylinder and the air forces the piston downward so that the tube enters into an opening in the magazine and ejects the component therefrom. After ejecting the component from the magazine, the tube returns to its initial position and a cam controlled advance mechanism indexes the magazine to a position where a second component is situated beneath the tube.

3,750,831

### ARTICLE DISPENSING MECHANISM FOR A VENDING MACHINE

George Souza, Hayward, and Clyde D. Pool, Oakland, both of Calif., assignors to Gain Manufacturing Corporation, Oakland, Calif.

Filed June 20, 1972, Ser. No. 264,632

Int. Cl. B65g 59/06

U.S. Cl. 221-188

3 Claims



A mechanism for vending articles from a coin operated machine including an elongated article storage bin displaceable from a storage position to a discharging position, a splitter bar for holding the balance of the articles in the storage bin during the discharging of an article, and means for returning the bin to the storage position.

3,750,832  
SOWING MACHINE FOR DISPENSING SEEDS UNTO SEED BEDS

Bengt Gustav Lennart Ovarnstrom, Baltargatan 27, Borlange, Sweden

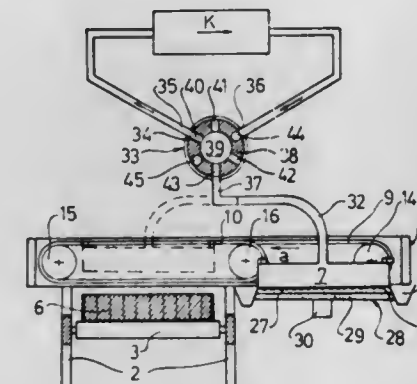
Filed Feb. 12, 1971, Ser. No. 114,807

Claims priority, application Sweden, Feb. 16, 1970, 1967/70

Int. Cl. B65g 47/91; A01c 5/00

U.S. Cl. 221-211

3 Claims



The present disclosure has to do with the construction of seed lifters which are utilized in a device used in the mechanical sowing of a number of seeds which are distributed to a predetermined number of sowing places with a predetermined number of seeds per sowing place. Each of the seed lifters includes a suction nozzle having a plurality of spaced openings and each of the openings are operatively connected alternately to the suction side and the pressure side of an air compressor. The diameter of the openings is considerably less than the size of the seed to be planted and around the mouth of each one of the openings is provided an essentially plane field bounded by and forming angles to the adjacent plane or curved surfaces which slope away from the field. The largest dimension of the plane fields does not essentially surpass the size of the seed type in question. Other specific structural relationships of the suction nozzle are set forth in the disclosure.

3,750,833

### AUTOMATICALLY STEERED SELF-PROPELLED VEHICLE

Eberhard Kahl, Hemmingen, Germany, assignor to Bosch, Robert, GmbH, Stuttgart, Germany

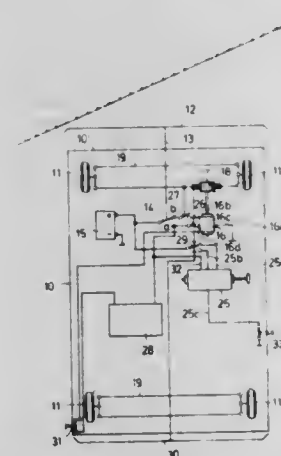
Filed Oct. 8, 1971, Ser. No. 187,759

Claims priority, application Germany, Oct. 9, 1970, P 20 49 676.8

Int. Cl. B62d 5/04

U.S. Cl. 180-79.1

9 Claims



An automatically steered self-propelled vehicle for movement over the unobstructed portions of an area having obstructions includes a vehicle frame having wheels mounted thereon and a sensing rail mounted on the frame. The sensing rail is displaceable relative to the frame between a normally extended position and a retracted position upon being urged

against an obstruction by the vehicle. A reversible driving motor is connected to the wheels for rotating the wheels in a forward and a reverse direction. A reversible steering motor is connected to the wheels for displacing the same between a normally straight and a sideward position oriented 90° from the straight position. A storage device for monitoring the distance travelled by the vehicle in the lateral direction is connected to the steering motor and to the driving motor for regulating the operation of these two motors. The steering motor is rotatable in one direction to cause the wheels to be displaced to the sideward position in response to the sensing rail achieving the retracted position and the steering motor is rotatable in the other direction to cause the wheels to return to the straight position in response to the sensing rail achieving the extended position. The driving motor is rotatable in one direction to cause the vehicle to move in the forward direction when the wheels are in the straight position and the steering motor is rotatable in the other direction in response to the regulation by the control device and to the wheel positions. The steering motor is adapted to rotate either in the forward or in the reverse directions in response to the wheels returning to the straight position from the lateral position. Upon meeting an obstruction, the vehicle moves laterally and substantially along the surface of the obstruction, up to a maximum of the width of the vehicle, the wheels straightening out either in response to the sensing rail again achieving the fully extended position or the vehicle having moved laterally the maximum amount corresponding to the width of the vehicle.

3,750,834

### STEERING SYSTEM

Robert G. Luft, Wildwood, Ill., assignor to International Harvester Company, Chicago, Ill.

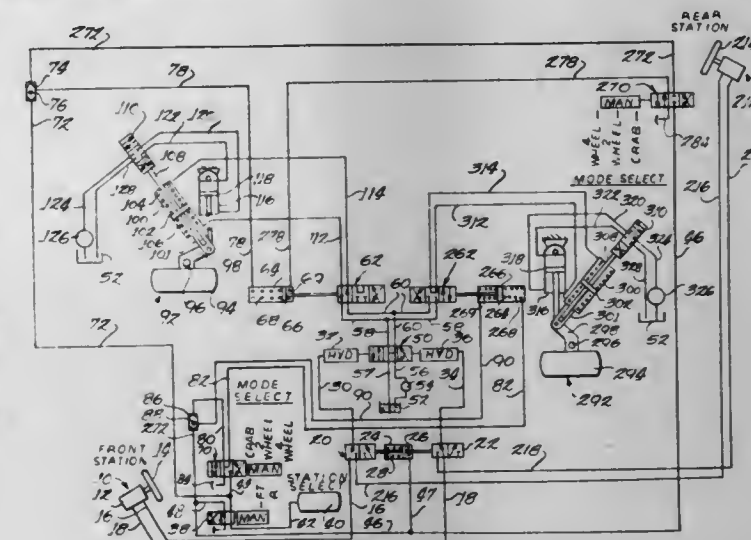
Continuation-in-part of Ser. No. 52,940, July 7, 1970,

abandoned. This application Dec. 22, 1971, Ser. No. 210,662

Int. Cl. B62d 5/06

U.S. Cl. 180-79.2 C

16 Claims



A steering system for a vehicle having a pair of steerable axles and an operator's station at each end. The system provides a means for steering the vehicle from either station and provides a means for selectively steering the vehicle in any one of three different modes.

3,750,835

### STEERING ARRANGEMENTS FOR MOTOR VEHICLES

Leslie Richard Jenvey, Reading, and Barry John Millard, Earley, near Reading, both of England, assignors to Adwest Engineering Limited, Berkshire, England

Filed Oct. 26, 1971, Ser. No. 192,503

Claims priority, application Great Britain, Oct. 28, 1970, 51,322/70

Int. Cl. B62d 5/06

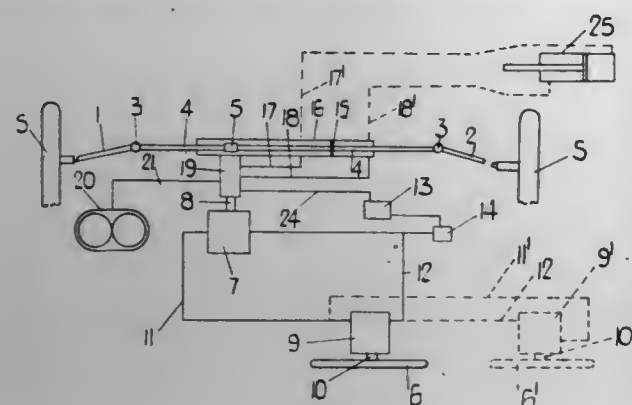
U.S. Cl. 180-79.2 R

5 Claims

In a motor vehicle having steerable road wheels, a steering arrangement comprising a steering wheel or like control, a



first positive displacement pump motor operatively connected to the steering control for actuation thereby, a second positive displacement pump motor operatively connected to said steerable road wheels for imparting steering thereto, and



means connecting the output of each positive displacement pump motor with the input of the other and forming with the positive displacement pump motors a closed hydrostatic circuit.

3,750,836

**POWER STEERING SYSTEM**

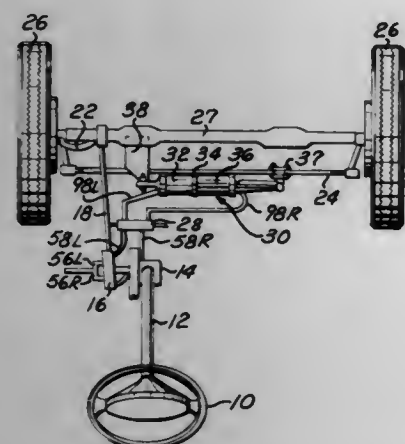
John J. Kristof, Marion, Ohio, assignor to Apco Manufacturing Corporation and Air-O-Matic Power Steer Corporation, both of Cleveland, Ohio, part interest to each

Filed Nov. 15, 1971, Ser. No. 198,757

Int. Cl. B62d 5/08

U.S. Cl. 180—79.2 R

10 Claims



The power steering system employs a drag link valve adjustably threaded on the end of the drag link. In one embodiment, the drag link valve controls operation of a relay valve which, in turn, controls operation of a power cylinder. In other embodiments, the drag link valve directly controls the operation of the power cylinder. The disclosed valves each comprise a pair of valves selectively operable for right and left turning movements of the vehicle. Each valve includes a reciprocable valve stem supporting inlet and outlet face valves operable in sequence to open and close the inlet and outlet ports in a predetermined sequence.

3,750,837

**EXPLOSIVE SEISMIC ENERGY SOURCE WITH QUICK RELEASE VALVE**

Charles D. Wood, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Feb. 8, 1972, Ser. No. 224,522

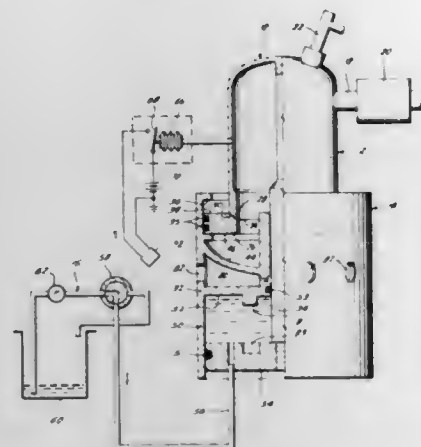
Int. Cl. G01v 1/02; H04b 13/00

U.S. Cl. 181—5 H

8 Claims

An apparatus for generating acoustical pulses in water by burning a fuel and air in a combustion chamber and releasing the explosive gases through an improved fast-acting valve to

produce a seismic shock. A valve block opening and closing the combustion chamber with an actuator holding the valve block closed against the combustion chamber pressure by pressurized hydraulic fluid which when released allows the actuator to move away from the valve block and suddenly strike and move the valve seat block off of the combustion chamber outlet. The inertia of the actuator being larger than the valve



block to provide quick opening. The hydraulic control fluid being spaced from the combustion chamber to avoid heating and fouling. Providing metal to metal seal contact means between the valve seat block and the chamber outlet and with the actuator providing an improved ignition by inserting hot compressed air at a temperature of about 750°F into the chamber and thereafter spraying fuel therein thereby eliminating the need for a spark or glow plug ignition source.

3,750,838

**CONCRETE RESONANT CONE SPEAKER SYSTEM**

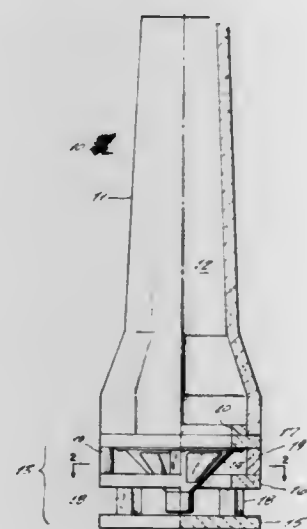
John David Pyle, Jr., 311 N. 2nd East St., Soda Springs, Idaho

Filed Nov. 29, 1971, Ser. No. 202,821

Int. Cl. G10k 13/00; H04r 1/28

U.S. Cl. 181—31 B

1 Claim



A speaker system for use in conjunction with a high fidelity system, the speaker system being placed within a room, and including a vertically upstanding truncated cone of hollow character and which tapers upwardly toward a top opening, the lower end of the concrete cone being mounted upon a wood base that supports a speaker, the wood base including a top ring, intermediate ring and flat bottom piece surrounding the speaker, the top ring, intermediate ring and bottom piece being spaced apart by means of the support separators.

3,750,839

**AIR DISTRIBUTION APPARATUS**

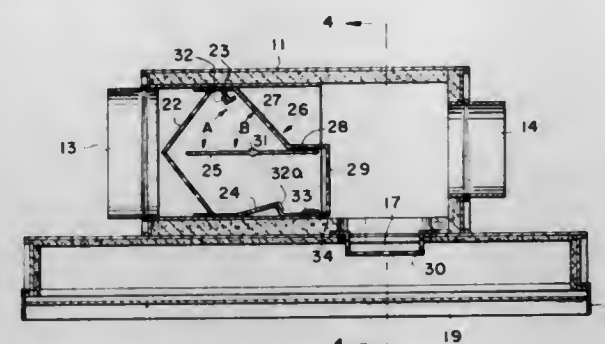
John C. McNabney, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Nov. 1, 1971, Ser. No. 194,281

Int. Cl. F24f 13/10; F16l 55/02

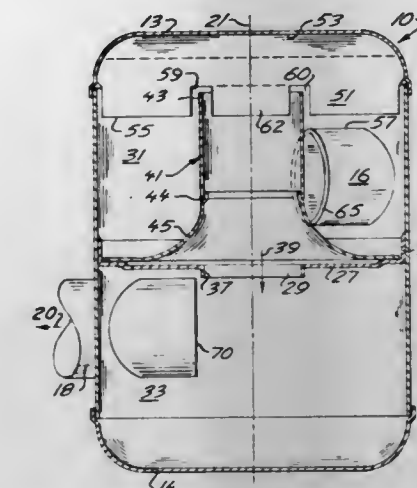
U.S. Cl. 181—50

13 Claims



Apparatus for controlling and distributing the flow of air to one or more zones. The apparatus includes a sound-dampening baffle to aid in delivering air with a minimum of perceptible noise.

plate divides body into inlet and outlet chambers which communicate with inlet and outlet pipes respectively, conduit connecting inlet and outlet chambers. Splitter plate in inlet



chamber restricts rotation of gas in inlet chamber induced by tangential entry of gas. Splitter plate is essentially flat sheet disposed in diametrical plane of cylindrical body and parallel to direction of gas entry.

3,750,840

**SOUND ABSORBER FOR COMPRESSORS**

Bent Melchior Karlson Holme, Humbaek Pr. Skovby, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Continuation of Ser. No. 859,545, Sept. 19, 1969. This

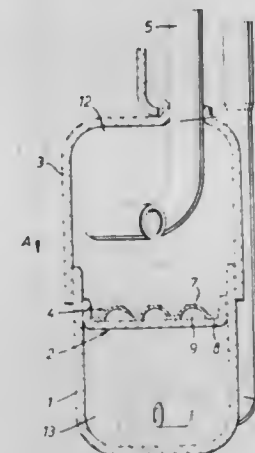
application Sept. 27, 1971, Ser. No. 184,301

Claims priority, application Germany, Oct. 8, 1968, P 18 01 721.5

Int. Cl. F01n 1/08; F04b 21/00

U.S. Cl. 181—57

1 Claim



The invention relates to a sound absorber assembly for enclosed refrigeration compressors. Two cup-shaped members are slidably and telescopically joined to form a main chamber of selectively variable size. A partition in one of the cup elements divides the main chamber into two sub-chambers and the partition is movable to allow any desired volume ratio between the sub-chambers to be selected. A throttle passage having the opposite ends thereof in respective fluid communication with the sub-chambers is incorporated into or connected to the partition.

3,750,842

**HOUSING FOR AN AIR COOLED ENGINE**

Horace McCaffrey, Jr., 9920 West Edgerton Ave., Milwaukee, Wis.

Continuation-in-part of Ser. No. 21,149, March 19, 1970,

abandoned, which is a continuation-in-part of Ser. No.

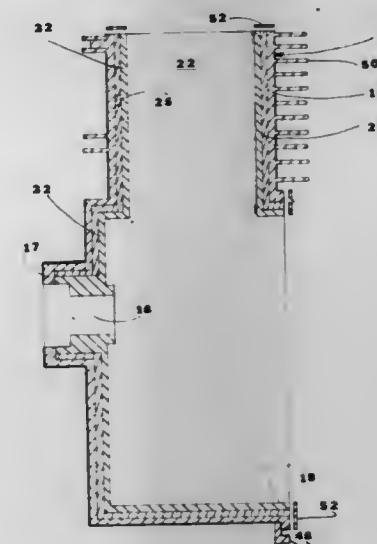
878,304, Nov. 20, 1969, Pat. No. 3,545,565. This application

Dec. 4, 1970, Ser. No. 95,263

Int. Cl. G10k 11/00

U.S. Cl. 181—33 R

11 Claims



An air cooled internal combustion engine housing having an inner wall, an outer wall spaced from said inner wall to form a cavity therebetween, and a high density metallic material substantially completely filling the cavity between the two walls. Cooling fins are provided on the outer wall to dissipate heat from the engine and a hood having a laminated layer of high density material and an outer protective layer thereon surrounds a portion of the housing.

3,750,841

**MUFFLING DEVICE FOR GAS DISCHARGE**

Geoffrey Phillip Brown, 212-1286 W. 14th, Vancouver, British Columbia, Canada

Filed Oct. 30, 1972, Ser. No. 301,835

Int. Cl. F01n

U.S. Cl. 181—58

10 Claims

Gas discharge muffling device having generally cylindrical body with closed ends, inlet pipe directing gas tangentially into body and outlet pipe exhausting gas from device. Baffle

3,750,843

**FIRE ESCAPES**

John Raymond Wilhelm, 11605 Split Rail Ct., Rockville, Md.

Filed Nov. 26, 1971, Ser. No. 202,159

Int. Cl. A62b 1/06

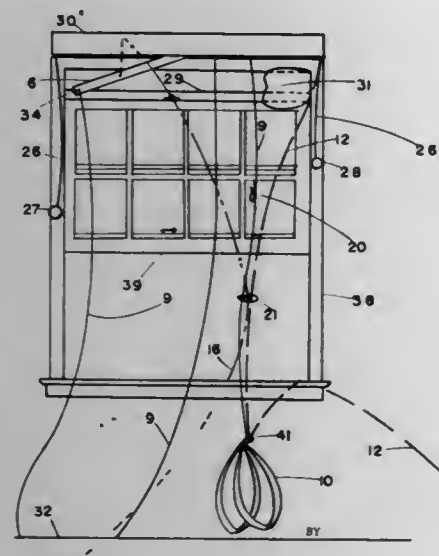
U.S. Cl. 182—72

4 Claims

A fire escape which is inexpensively constructed, esthetically acceptable for an interior installation above an upper



floor window, rapidly deployable, and easily operated. It consists of a rope with two leg loops which is loosely wrapped around a small circular spool whose axis is perpendicular to the wall above the window. The descent is controlled by varying the friction of the rope on the spool surface using a gravity actuated jam cleat. Unsupported, gravitational forces rotate the jam cleat to the closed position, i.e., a fail safe mode. The



descent is initiated and controlled by the escapee with a lanyard which counteracts the gravitational forces. The device features a hook appropriately placed on the rope to assist in holding a blanket during descent as a measure of protection against flame from lower levels. It also includes a diverting rope which allows a ground observer to alter the downward path if necessary to avoid such flames.

3,750,844

## LADDER ASSEMBLY

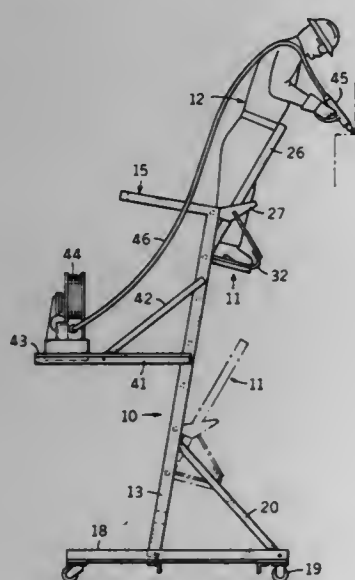
Anthony K. Pandjiris, St. Louis, and Cleveland N. Cooper, Kirkwood, both of Mo., assignors to The Pandjiris Weldment Co., St. Louis, Mo.

Filed Sept. 7, 1972, Ser. No. 287,029

Int. Cl. E06c 5/02, 7/14

U.S. Cl. 182-121

13 Claims



A ladder assembly in which the rungs are selectively and detachably retained in transversely aligned pairs of socket means carried by laterally spaced side posts, and a platform unit is mounted on the side posts at selectively predetermined elevations. The platform unit includes two pair of detents selectively and detachably seating in two pair of longitudinally spaced socket means, after removal of their associated rungs, to provide a force couple supporting the platform unit on the

side posts. Rungs, otherwise located in socket means above the detents, are selectively removed for unobstructed access to the platform unit. Preferably, the socket means are top-open, substantially U-shaped stirrups mounted on the inside of the side posts, and the platform unit is located between the side posts, the platform detents extending laterally outward for selective insertion into the top-open stirrups. The stand member of the platform unit extends forwardly from a line interconnecting the first and second pairs of detents, and extends forwardly of the side posts when the detents are located in the stirrups. The stirrups have one leg longer than the other to facilitate location and insertion of the rungs and platform detents. A third pair of detents are provided in laterally spaced relation to one of the other pairs, the third pair of detents being selectively and detachably seated in the stirrups to effect a change in the inclination of the platform stand member. Welding equipment including a wire feeder, with its attendant torch and feeder conduit, is mounted to the ladder for elevation above the floor and at a height for location of the torch at a working level determined by the highest position of the platform unit.

The method of adjusting a platform unit on a ladder which includes the steps of removing the rungs from the socket means at which the platform unit is to be located, raising the platform unit and seating the detents in the vacated socket means to locate the stand member between the side posts, and removing other rungs from their associated socket means above those socket means in which the platform detents are seated, to provide unobstructed access to the stand member of the platform unit.

3,750,845

## SUPPORT MOUNTING ASSEMBLY

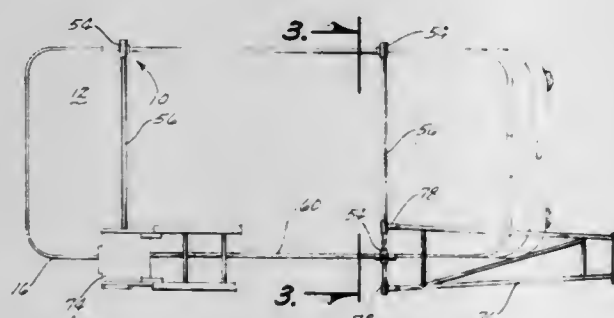
Eugene W. Faulstich, 209 S. Main St., Algona, Iowa

Filed July 1, 1971, Ser. No. 158,878

Int. Cl. E06c 5/34

U.S. Cl. 182-127

4 Claims



A support mounting assembly for a truck to support an aerial tower, the support including a combination of two brackets one of which has an L-shaped portion and a threaded sleeve element integrally connected to one leg for receiving a threaded pipe or the threaded end of the leg of the other bracket which is L-shaped and includes a sleeve as the other leg of the L. Oppositely disposed L-shaped brackets may receive horizontally arranged conventional pipe to provide a support structure. Reinforcement members may be connected to the vertical leg of the L-shaped bracket as a pair of threaded bosses are provided. Conventional extension pipe may be inserted between the vertical leg of the L-shaped bracket and the threaded sleeve of the first bracket to give the desired height to the support structure. The L-shaped portion of the first bracket is adapted to be connected to any surface including the rain gutter around the top of a vehicle or the corners of the cabinets on a utility-type truck or the flat bed of a truck.

3,750,846

## LAZY TONG TYPE BOOM STRUCTURE WITH EXTENSION AID

Thomas C. Huxley, III, Camari 110, Calif., assignor to Del Mar Engineering Laboratories, Los Angeles, Calif.

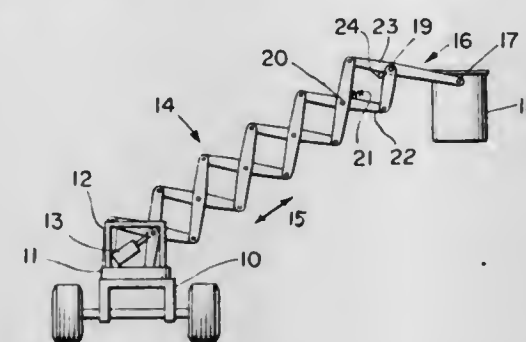
Continuation of Ser. No. 57,477, July 23, 1970. This

application Dec. 1, 1971, Ser. No. 203,872

Int. Cl. E04g 1/22, 3/10

U.S. Cl. 182-141

10 Claims



A boom structure including a plurality of crossed links having their centers and ends pivotally connected to define a lazy tong structure includes a compression spring positioned to exert a force between the next to last and last links making up the lazy tong structure when the structure is in collapsed position to aid extension of the structure. The spring has one end secured close to the central point of the next to last link and its other end is free. The opposing last link portion includes a guiding cone for receiving the free end of the compression spring when the structure is collapsed. When the lazy tong structure is extended, the compression spring effects initial extension of the next to last and last links while the initial crossed links at the base of the boom are separated by the driving force for extending the structure. A smooth unfolding of the respective links can thus be realized.

3,750,847

## METHOD OF SUPPLYING AN AQUEOUS CUTTING FLUID TO MACHINE TOOLS

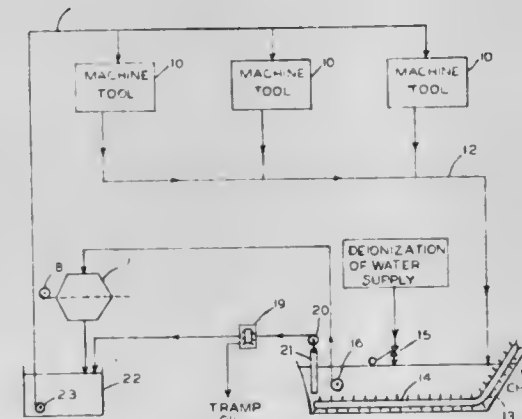
Clyde A. Sluhan, Perrysburg, Ohio, assignor to Master Chemical Corporation, Perrysburg, Ohio

Filed May 3, 1972, Ser. No. 249,930

Int. Cl. F01m 9/02

U.S. Cl. 184-1 E

1 Claim



An aqueous cutting or grinding fluid is fed to at least one machine tool having at least one cutting tool, and the used fluid is collected. Solids are removed from the used fluid to produce a supply of clarified fluid. A pH of 8 to 9.5 is maintained in the clarified fluid by addition of a base. Deionized water is supplied to the system to replace water losses, and a water-miscible lubricant is supplied to maintain a lubricant concentration in the system from 1 to 25 percent. Tramp oil is removed from the clarified fluid by passing a portion of the clarified fluid through a centrifuge, to maintain a tramp oil

content of not more than 2 percent in the clarified fluid, and the resulting clarified fluid is reused.

3,750,848

## APPARATUS FOR LUBRICATING A ROTARY SWASH PLATE TYPE COMPRESSOR

Shozo Nakayama, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda, Jidoshokki Seisakusho, Aichi-ken, Japan

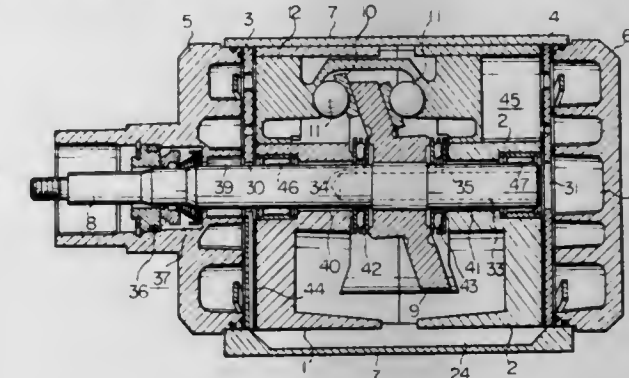
Filed Oct. 13, 1971, Ser. No. 188,911

Claims priority, application Japan, Oct. 15, 1970, 45/102605; Apr. 6, 1971, 46/25594

Int. Cl. F16n 13/20

U.S. Cl. 184-6.16

16 Claims



An apparatus for lubricating a rotary swash plate type compressor characterized by an improved and simplified internal arrangement for distributing the lubricating oil separated from the refrigerant being returned continuously from a refrigerating circuit, into the slidably moving sections and elements of the compressor to give a smooth motion in addition to preventing the burning phenomenon of the sliding sections of the compressor, elimination of the oil pump, and the entire compressor-size being extremely compact.

3,750,849

## DUPLEX COUNTERWEIGHTLESS SHUTTLE ELEVATOR SYSTEM

Harry Berkovitz, Glenrock, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

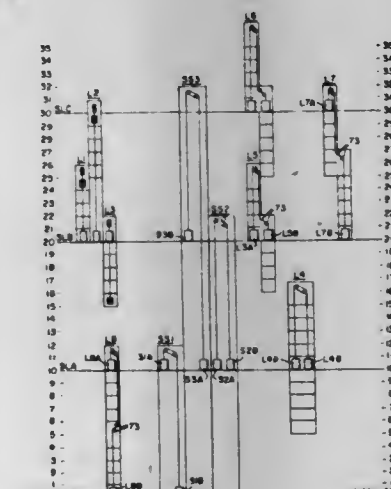
Division of Ser. No. 30,375, April 21, 1970, Pat. No.

3,651,893. This application Dec. 29, 1971, Ser. No. 213,587

Int. Cl. B66b 9/00

U.S. Cl. 187-16

4 Claims



Elevator cars suspended from opposite ends of a traction driven hoist cable counterbalance each other and provide ideal spacing between cars serving two terminal floors such as a main floor and a sky lobby. A leveling device on one or both cars provides for adjustment of the position of the associated car relative to the hoist cable to accommodate for cable stretch and settling of the building so that each car can be brought into exact registry with the adjacent landing. The cars can be arranged to stop at pairs of intermediate floors located equal distances from the two terminal floors and can be



further arranged to distribute load in opposite directions from a third terminal located halfway between the first and second terminals. The counterbalanced cars can be combined with a second elevator system, either a conventional system or a counterbalanced system, for sky lobby operation with the counterbalanced car system providing either the shuttle service, the local service or both.

3,750,850

**FLOOR SELECTOR FOR AN ELEVATOR CAR**

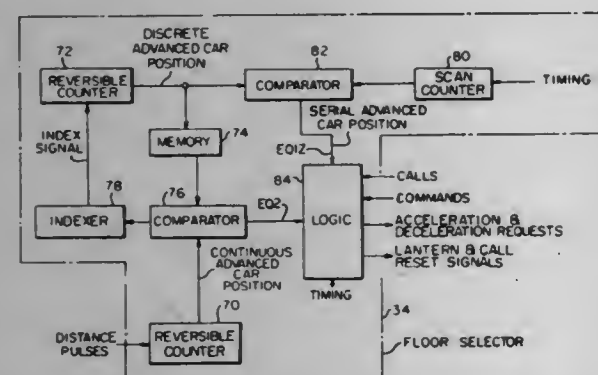
Charles L. Winkler, Pittsburgh, Pa., and Andre Wavre, Bevaix, Switzerland, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 17, 1972, Ser. No. 254,007

Int. Cl. B66b 1/20

U.S. Cl. 187-29 R

16 Claims



A floor selector adaptable for use in an elevator system which uses binary counters and comparators to provide a continuous, a discrete, and a serial advanced car position signal. The continuous and discrete advanced car position signals are used to generate an equality signal when the car must initiate deceleration in order to stop at a floor with a predetermined deceleration pattern, and the serial advanced car position signal is used to determine a coincidence of a call for service for that floor. A coincidence registered by the time the equality signal is generated initiates a request for deceleration.

3,750,851

**POWER MECHANISM**

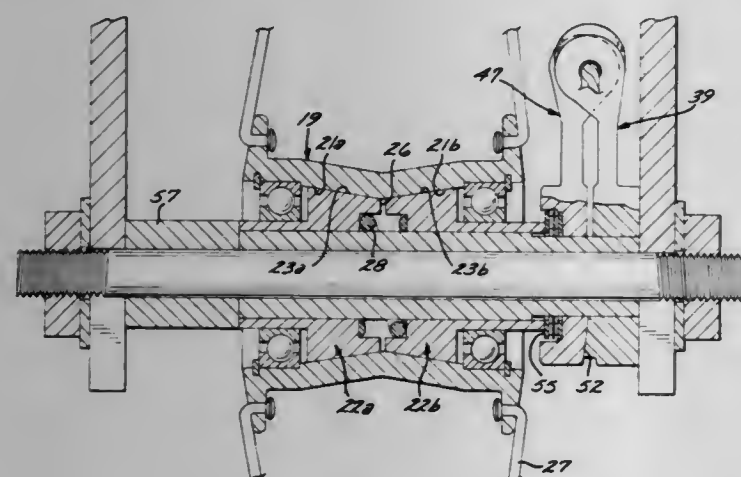
Clarence E. Ruther, Norwalk, and Patrick D. Sullivan, 8321 Oakmont, Buena Park, both of Calif., assignors to said Sullivan, by said Ruther

Filed Dec. 20, 1971, Ser. No. 209,816

Int. Cl. B621 5/02

U.S. Cl. 188-26

8 Claims



The present invention is directed to a power mechanism that may be used for either absorbing or transmitting power; the invention being explained in terms of a motorcycle brake.

It discloses a wheel structure in which the wheel-hub acts as a brake-drum, and a pair of separable conical members is positioned internally of the hub, and acts as a continuous peripheral brake-lining.

3,750,852

**DUAL BRAKING SYSTEM FOR A MINING LOCOMOTIVE**

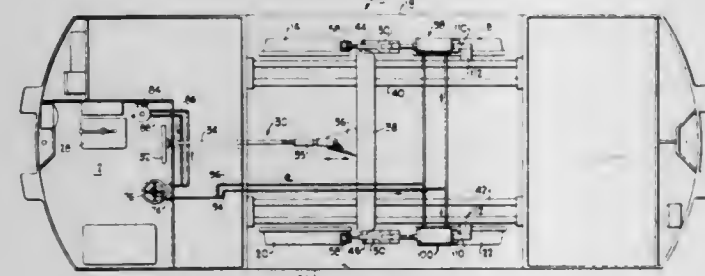
Leon H. Shoemaker, Russell, Ky., assignor to National Mine Service Company, Pittsburgh, Pa.

Filed Oct. 29, 1971, Ser. No. 193,655

Int. Cl. B61h 13/20

U.S. Cl. 188-107

9 Claims



The braking system includes mechanically actuated apparatus to move the brake shoes into frictional engagement with the locomotive wheels. The mechanically actuated apparatus has a hand wheel suitably mounted in the operator's compartment. The hand wheel is connected to one end of a rotatable screw device. The other end of the rotatable screw device is threadedly secured in a threaded bore of a bracket member. The bracket member is secured to a transversely extending equalizer bar. The equalizer bar is connected by a pair of link members to vertically extending brake levers through a lost motion connection. The vertically extending brake levers are pivotally secured to wheel brake assemblies that include a pair of depending hanger levers to which brake shoes are pivotally connected. The brake assembly includes a wear adjustment device to adjust the position of the brake shoes due to wear. Rotation of the hand wheel moves the bracket and equalizer bar longitudinally and through the link members pivots the vertically extending brake levers. The brake levers, in turn, move the brake shoes into frictional engagement with the wheels of the locomotive and apply a braking force thereto. The fluid actuated auxiliary braking apparatus includes a manually operated hydraulic pump in the operator's compartment connected to a source of hydraulic fluid. The actuating shaft of the pump has a hand wheel connected thereto. One or more piston cylinder servomechanisms are mounted on the locomotive adjacent the equalizer bar with the piston rod connected thereto through suitable overtravel linkages. The ports of the hydraulic pumps are connected by conduits to the cylinder on opposite sides of the piston within the cylinder. Rotation of the hand wheel connected to the hydraulic pump in one direction supplies fluid to the piston cylinder assembly to extend the piston rod and move the equalizer bar. Movement of the equalizer bar moves the brake shoes into frictional engagement with the locomotive wheels through the same linkages associated with the mechanically actuated apparatus. The rotation of the hand wheel connected to the pump in the opposite direction moves the brake shoes out of frictional engagement with the locomotive wheels. The amount of frictional force exerted by the brake shoes when actuated by the fluid actuated auxiliary braking system may be easily, accurately and positively controlled.

3,750,853

**LOAD TRANSMITTING STRUTS**

Glyn Phillip Reginald Farr, Birmingham, England, assignor to Girling Limited, Birmingham, England

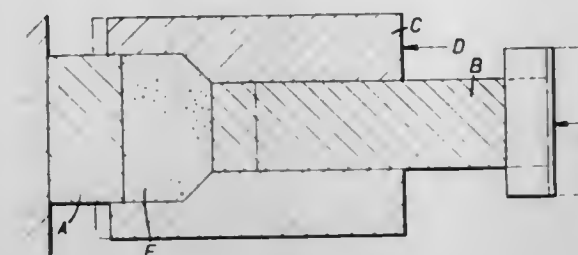
Filed Aug. 23, 1971, Ser. No. 173,953

Claims priority, application Great Britain, Aug. 21, 1970, 40,422/70; Mar. 17, 1971, 7,071/71

Int. Cl. F16d 65/54

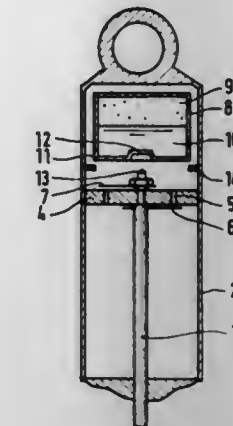
U.S. Cl. 188-196 R

22 Claims



An adjustable length strut includes a pair of relatively movable members defining a pair of load bearing faces which in part define a closed chamber containing fluent material, the fluent material spacing the faces and means is provided movable relative to the faces to vary the configuration of the chamber and therefore of the fluent material to vary the relative position of the faces. The members and movable means may be variously pistons, cylinders or sleeves slidable on pistons or in cylinders. Such a strut has particular, but not exclusive, application to vehicle wheel brakes as the adjustable element of a wear compensating auto-adjustor or a lock actuator.

takes the form of a cartridge which contains a pressurised gas and which has at one end a sealing disc, the device being also provided with a punch which is arranged to pierce the sealing disc when in use the cartridge is assembled to the cylinder and



3,750,856

**ADJUSTABLE, PRESSURE COMPENSATING SHOCK ABSORBER/BUFFER**

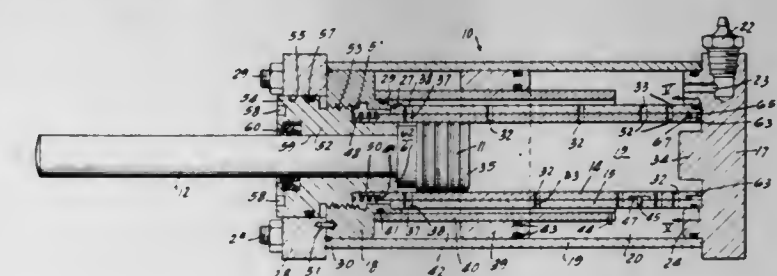
Grant F. Kenworthy, 1688 Chestnut, Des Plaines, Ill.

Filed Dec. 9, 1971, Ser. No. 206,429

Int. Cl. F16f 9/50

U.S. Cl. 188-287

7 Claims



A rectilinear piston and cylinder shock absorber has an inner cylinder sleeve responsive to overload against the piston and/or excessive piston velocity to throttle hydraulic fluid displacement from the piston chamber through a metering system including a cooperating fixed cylinder member. The kinetic energy range of the shock absorber may be readily adjusted.

3,750,857

**PISTON ASSEMBLY FOR DUAL-NETWORK DISK-BRAKE SYSTEM**

Helmut Marschall, Frankfurt/Main; Wolfgang Kammmermayer, Frankfurt/Fechenheim; Hans Albert Beller, Bad Wilbel; Heinz Hahn, Frankfurt/Main, and Juan Belart, Wall-dorf/Hessen, all of Germany, assignors to Alfred Teves GmbH, Frankfurt/Main, Germany

Division of Ser. No. 99,407, Dec. 18, 1970, Pat. No. 3,669,226, which is a division of Ser. No. 831,400, June 9, 1969, Pat. No. 3,601,233, which is a division of Ser. No. 681,330, Nov. 8, 1967, Pat. No. 3,490,565. This application Feb. 18, 1972, Ser. No. 227,346

Claims priority, application Germany, Nov. 16, 1966, T 32523; Dec. 16, 1966, T 32765; Dec. 16, 1966, T 32766; Dec. 16, 1966, T 32768; Dec. 16, 1966, T 32769; Dec. 17, 1966, T 32784; Dec. 17, 1966, T 32785; Feb. 7, 1967, T 33161

Int. Cl. B60t 11/20

U.S. Cl. 188-345

A vehicle-brake system having a tandem or twin master cylinder for delivering the brake fluid to independent trans-

**HYDRO-PNEUMATIC PISTON AND CYLINDER DAMPING DEVICE**

Carl Ullrich Peddinghaus, Obere Lichtenplatzer Strasse 276, 56 Wuppertal-Barmen, Germany

Filed Dec. 2, 1971, Ser. No. 204,034

Claims priority, application Germany, Mar. 12, 1971, P 21 11 967.5

Int. Cl. F16f 9/06

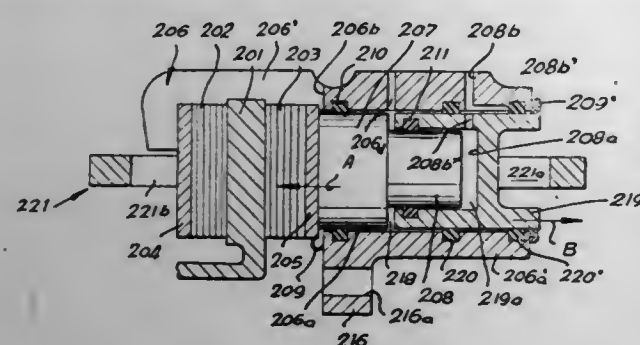
U.S. Cl. 188-269

11 Claims

A piston and cylinder damping device wherein the cylinder is provided with a compensating chamber for the fluid displaced by the piston rod, wherein the compensating chamber



mission networks each connected with one compartment of a disk brake whose actuating cylinder is located on one side of the brake disk and receives at least one piston defining its working compartments or chambers therein. A pair of pistons



are provided, so that the chambers are disposed to one side of the direct-acting piston while the other piston applies pressure to the brake housing or to a force-transmission frame extending around the disk.

3,750,858

## LOADING CONVEYOR FOR HARVESTERS

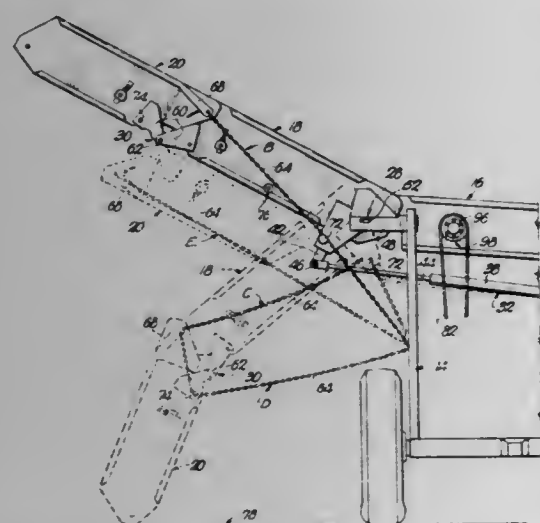
Allen A. White, Peabody, Kans., assignor to Hesston Corporation, Hesston, Kans.

Filed Oct. 14, 1971, Ser. No. 189,204

Int. Cl. B65g 21/12

U.S. Cl. 198—115

15 Claims



A potato harvester has a vertically swingable, potato-unloading conveyor segment, extensible laterally therefrom, and provided with a pair of articulated sections adapted to not only discharge the potatoes gently into the bottom of a container, but to be gradually raised as the potatoes pile up and are heaped above the top of the container. A special, combination hip joint and power lift connection for the sectional conveyor segment causes it to rise automatically so as to prevent damage thereto when accidentally bumped by the potato-receiving container of a trailer, truck or the like. The effective width of the harvester may be reduced for storage and over-the-road travel by tucking or folding the outer section in, under and between the harvester and the inner section.

3,750,859

## HELICAL PATH CONVEYOR

Rulo Wayne Smith, Auburn, Ind., assignor to Rieke Corporation, Auburn, Ind.

Continuation-in-part of Ser. No. 85,150, Oct. 29, 1970, abandoned. This application Oct. 26, 1971, Ser. No. 192,174

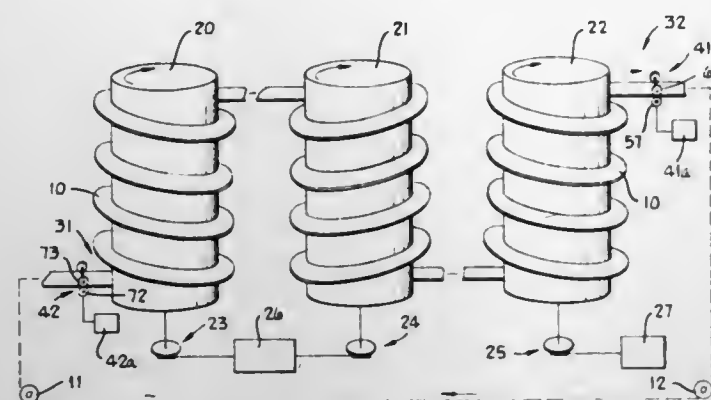
Int. Cl. B65g 15/28, 23/04

U.S. Cl. 198—136

4 Claims

Disclosed is a power driven booster assembly and a power driven conveyor belt tensioner assembly which assist in driv-

ing with minimum wear, a travelling conveyor belt which



moves in a path formed by helically wrapping the conveyor belt on a series of rotating drums or cages.

3,750,860

## AUTOMATIC DISCHARGE TRAYS

Felicien Jaffre, S.A.M.A. Zone Industrielle de Keryado, Lorient, France

Filed July 2, 1971, Ser. No. 159,283

Claims priority, application France, July 3, 1970, 7024904

Int. Cl. B65g 17/12

U.S. Cl. 198—144

7 Claims



A conveyor system consisting of a plurality of material carrying sheaths or containers pivotally supported about a horizontal axis on a support frame carried by two chains operatively connected to a power source. The material carrying sheaths are open at the bottom and are caused to pivot outwardly away from the support frame by a cam carried by the sheath which engages an arrester actuated by a station selecting pushbutton on the frame, whereby the load is discharged from the open bottom of the sheath as it is pivoted away from the support frame.

3,750,861

## SELECTIVE DISCHARGE FEED CONVEYOR

Robert G. Holtsclaw, and Jerrell D. Holtsclaw, both of Switz City, Ind.

Filed Dec. 13, 1971, Ser. No. 207,201

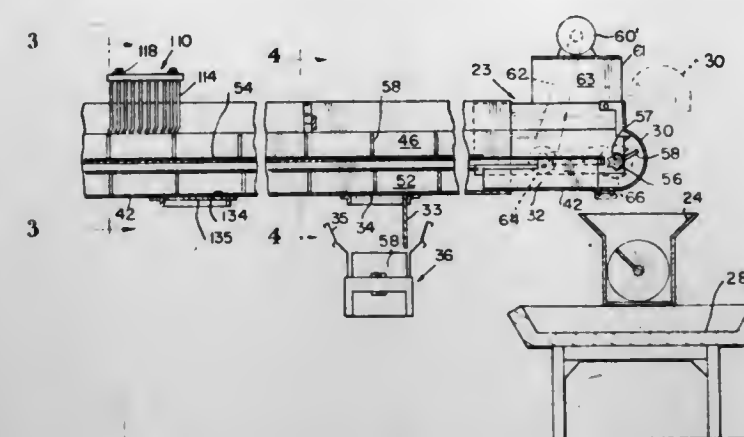
Int. Cl. B65g 15/04

U.S. Cl. 198—159

15 Claims

A single-chain feed conveyor having a series of flights on a central bottom chain, which normally discharges at its forward end, is modified to provide discharge at intermediate points. A shroud at the forward discharge end has an open condition in which it permits normal forward-end discharge, and has a closed condition in which it forms a return bend channel to guide the conveyed material to the return trough containing the return stretch of the conveyor chain. The returning flights then convey the material along the return trough to an opening in any desired point therein. Leveling means over the for-

ward-conveying trough levels any large clumps of conveyed material, such as silage, to prevent overloading the return bend shroud, and such shroud is shaped with wide clearance at



the top and close clearance at the bottom with respect to the conveyor flights as they swing about the sprocket at the discharge end.

3,750,862

## FEED DOG LINK ASSEMBLY FOR SPROCKET CHAIN

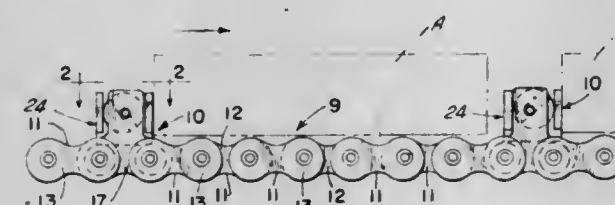
Leonard E. Knipe, Longview, Tex., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Apr. 7, 1971, Ser. No. 132,034

Int. Cl. B65g 17/00

U.S. Cl. 198—189

5 Claims



A feed dog link assembly for a sprocket chain including a feed dog member mounted for lengthwise movement of the link. The feed dog member is selectively positioned by eccentric means carried by the link.

3,750,863

## SEGMENTAL SELF-SUPPORTING BEAMS CONVEYOR AND COMBINATION BED AND CONVEYOR

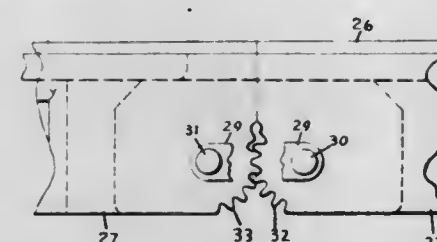
Karol T. Dyczynski, Erie, Pa., assignor to Hanley Development Corporation, Erie, Pa.

Filed Mar. 22, 1972, Ser. No. 237,119

Int. Cl. A61g 7/08; B65g 15/30

U.S. Cl. 198—189

6 Claims



A conveyor and a conveyor in combination with an invalid bed. The conveyor is made up of a continuous belt supported on two spaced pulleys. The pulleys have an outside periphery in the shape of a polygon, rotatable about a central axis and having flattened surfaces around the periphery, each flattened surface being equal in length to one side of the polygon. The belt is made up of hinged sections, hinged together by links. Each link is pivoted at its ends to the ends of two adjacent sections and each section has teeth arranged in a circle having a

center at the pivot point of the links. The teeth mesh with each other as the sections pass around the pulleys so that the sections are held in positive alignment with each other. The links are arranged to form a continuous belt that passes around the pulleys and each section is equal to one side of the polygonal surfaces of the pulleys. Each section has a pad on it that forms a bed mattress to support an invalid and the pulleys are supported on the head and foot of the bed.

3,750,864

## MATERIAL CONVEYORS

Gunther Nolte, 111-115 Obere Riedstrasse, Mannheim, Germany

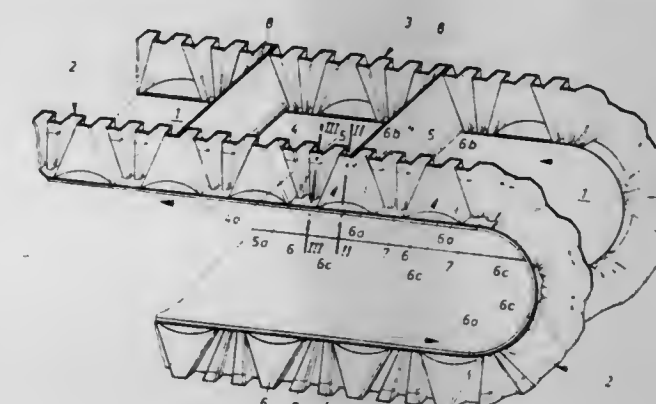
Filed Jan. 4, 1972, Ser. No. 215,323

Claims priority, application Germany, Jan. 7, 1971, P 21 00 364.5

Int. Cl. B65g 15.40

U.S. Cl. 198—201

5 Claims



Conveyors having deep side walls secured to a base belt, the side walls and the base belt all being flexible and made, for example, from rubber or plastic materials. The side walls are corrugated and the corrugations are substantially rectangular in cross-section. Furthermore, the corrugations are divided into a set comprising, for example, two fan-shaped corrugations that are joined together and onto which are connected a further interconnecting corrugation, the latter also being fan-shaped but in an opposite orientation to the fan shape of the first-mentioned corrugations. The interconnecting corrugation has at least an approximately constant height (referring to its cross-section) on its outer surface up to an edge strip that connects each side wall to the base belt and also has a base merging curvilinearly to the outside. The curvature of this base flattens out to zero with respect to the edge strip from its outer to the inner edge.

3,750,865

## CROP DIRECTING DISC AND/OR ASSEMBLY

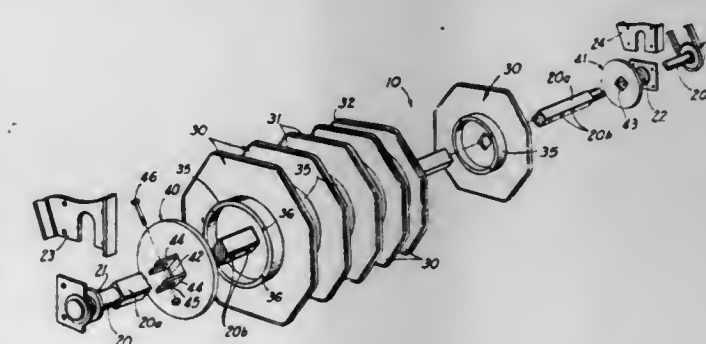
Larry D. Harrell, Albany, Ga., assignor to Lilliston Corporation, Albany, Ga.

Filed June 3, 1971, Ser. No. 149,604

Int. Cl. B65g 29/00

U.S. Cl. 198—211

1 Claim



A crop directing disc and/or assembly for use in transferring crops along a predetermined path in a harvesting operation. A



crop directing assembly is constructed of a plurality of crop directing discs supported in axially spaced relationship and coaxially aligned relative to each other. Each of the crop directing discs are constructed of an integral piece of synthetic material in the form of a multi-sided figure, with the intersecting points between adjacent sides of the disc rounded to present a substantially smooth surface detailed for contacting crops in a transferring operation. The crop directing discs are provided with collar means extending axially outward from opposite surfaces of the discs, with alignment means in the form of a plurality of axially extendant male lugs and a plurality of axially formed female openings detailed for effecting an angular alignment between adjacent discs. The crop directing discs are supported in an assembled relationship by a rotatable support shaft detailed for effecting a driving of the discs in response to rotary movement of the support shaft.

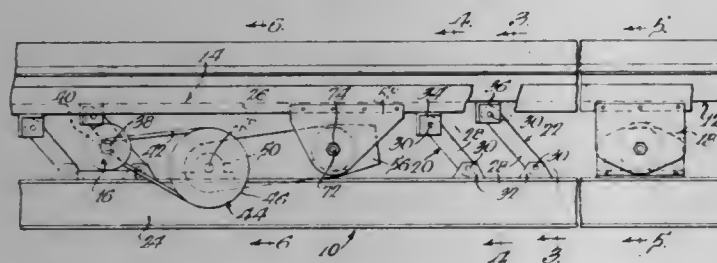
3,750,866

**VIBRATORY CONVEYOR WITH COUNTERPOISE**  
Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Filed June 15, 1971, Ser. No. 153,375  
Int. Cl. B65g 27/30

U.S. Cl. 198—220 CB

5 Claims



A balanced vibratory conveyor system including a base resiliently mounting a trough-like conveying structure. A driving mechanism for reciprocating the conveyor is provided and in addition, counterpoise elements are mounted on the base for reciprocation relative thereto and are driven by the drive mechanism 180° out of phase with the reciprocation of the conveyor so as to balance out the vibratory forces generated through reciprocation of the conveyor.

3,750,867

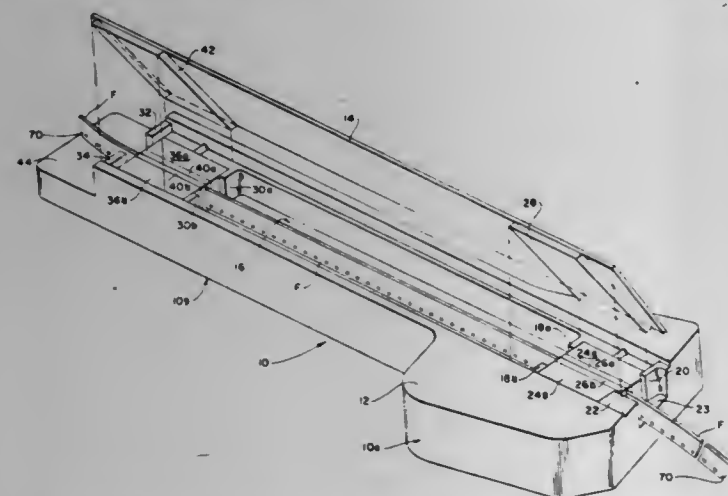
**CONTROL STRIP HOLDER**

George T. Negus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

A continuation-in-part of Ser. No. 820,379, April 30, 1969, abandoned. This application Apr. 26, 1971, Ser. No. 137,347  
Int. Cl. B65d 85/67

U.S. Cl. 206—1 R

6 Claims



A holder for a control strip of film to be fed to a film processor includes a body portion in which the control strip is placed in a dark room and a cover that cooperates with the body portion

tion to insure exclusion of light from the portions of the control strip located within the body portion. The end portions of the control strip project from opposite ends of the holder to permit splicing of the control strip to other film strips or leaders. One end of the holder is in the shape of a conventional film cartridge to facilitate feeding the control strip to a processor that is adapted to receive such cartridges and process film the processor removes from such cartridges.

3,750,868

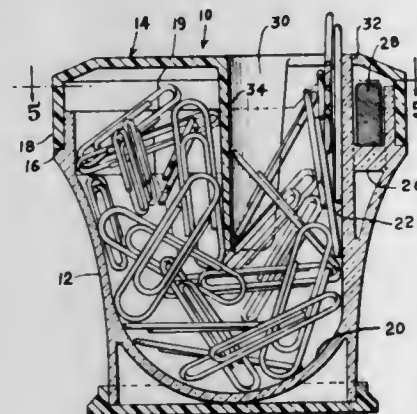
**DISPENSER FOR PAPER CLIPS AND THE LIKE**

Joseph Cooper, Westport, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Dec. 16, 1971, Ser. No. 208,655  
Int. Cl. B65d 83/02

U.S. Cl. 206—1 R

4 Claims



Paper clip dispenser has downward baffle to limit access of clip reserve to discharge opening. Few clips are held in opening by magnet. Side wall of opening is smooth to promote easy dispensing.

3,750,869

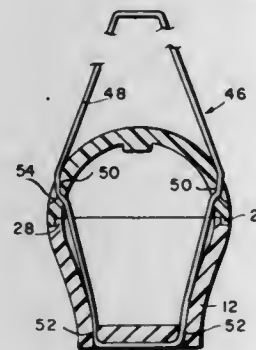
**COMBINATION CARRYING CASE AND WIG STAND**

Norman Kartiganer, Worcester, Mass., assignor to Norman Kartiganer Inc., Manchaug, Mass.

Filed June 9, 1971, Ser. No. 151,358  
Int. Cl. B65d 85/18

U.S. Cl. 206—8

6 Claims



A hollow structure having an exterior crown-shaped portion for supporting a wig in its natural shape for display and/or dressing and a neck-shaped portion for holding the structure upright. The crown-shaped portion is preferably comprised of a material which permits pins to be inserted into it to enable fastening the wig thereto and has applied to its surface flock. The neck may be provided with a suction cup to fix it to a supporting structure. The interior provides a storage space for holding a wig or other article or articles and the structure is divided to provide access to the storage space. The entire structure is of such size and shape as to be imitative of a pouch and is adapted to be suspended on a sling so that it may be carried about as would a woman's handbag.

3,750,870

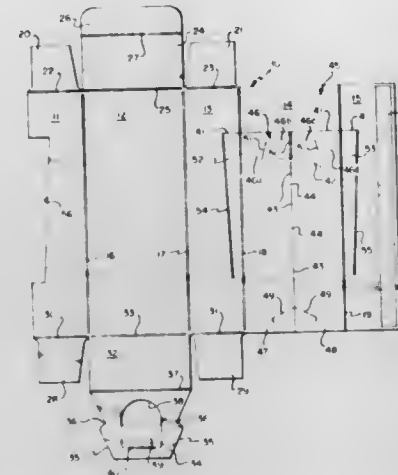
**SHADOW BOX CARTON**

Raymond A. Cote, Charlotte, N.C., assignor to Rexham Corporation, New York, N.Y.

Filed June 9, 1971, Ser. No. 151,300  
Int. Cl. B65d 5/50

U.S. Cl. 206—45.14

8 Claims



A shadow box structure in which an article supporting strap extends completely across the front of the carton is disclosed herein. The article strap itself is of greater than full carton width being derived in part from the front wall panel and of the two carton side wall panels.

3,750,871

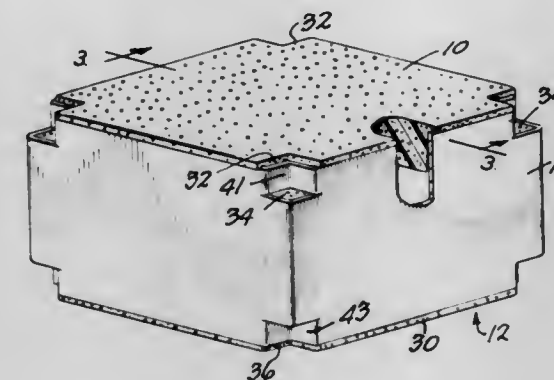
**SHIPPING CONTAINER**

John R. Cook, Middlebury, Ind., assignor to Engineered Foam Plastics, Inc., Elkhart, Ind.

Filed Feb. 14, 1972, Ser. No. 226,166  
Int. Cl. B65d 81/16

U.S. Cl. 206—46 FC

9 Claims



A shipping container in which a pair of rigid foam plastic panels are secured in opposite ends of a paperboard tube and have shallow recesses in their inner faces receiving and positioning spaced parts of contained articles.

3,750,872

**CHAIR PACK**

Paul D. Bobb, High Point, N.C., assignor to Armstrong Cork Company, Lancaster, Pa.

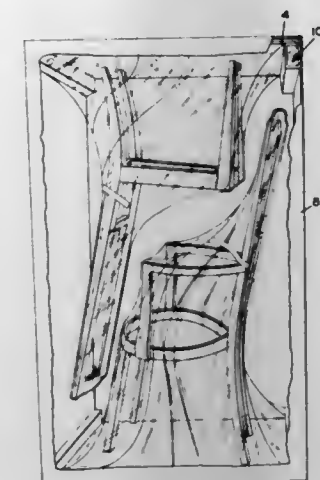
Division of Ser. No. 886,531, Dec. 19, 1969, Pat. No. 3,642,127. This application June 25, 1971, Ser. No. 157,014  
Int. Cl. B65d 85/00

U.S. Cl. 206—46 FN

1 Claim

A chair pack is provided for the shipping of two chairs within one carton. Each individual chair is fastened by a heat-shrinkable film to a piece of rigid corrugated fiberboard. The

fiberboard is then fastened to the end of a carton to hold the fiberboard and chair in place. The fastening of a chair at each



end of the carton with the proper orientation of the chair backs provides a chair pack with two chairs therein.

3,750,873

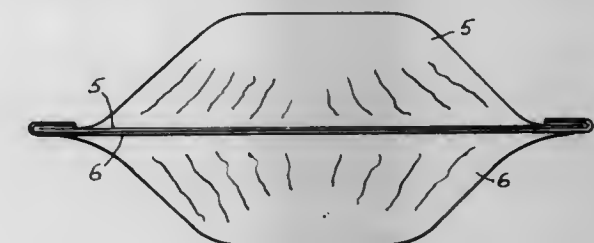
**COOKING AND STERILIZING BAG AND A BAG ROLL**

Robert R. Roman, South Hackensack, N.J., assignor to Gravure-flex Packing Corp., South Hackensack, N.J.

Filed Jan. 6, 1972, Ser. No. 215,772  
Int. Cl. B65d 79/00, 85/67, 85/72

U.S. Cl. 206—59 R

4 Claims



A bag and a bag roll is disclosed in which a food product is cooked or items sterilized. The bag is made of a plastic film which is resistant to the temperatures used in cooking secured along at least two opposite edges to a sheet of metallic foil. An adhesive is used to secure the edges together which adhesive is resistant to cooking temperatures so that the secured edges do not open up. Preferably the bag is open at both ends and closed when in use by folding over the open ends. The invention includes a bag roll which comprises a long film of plastic which is heat resistant to cooking temperatures and a corresponding length of foil secured at their longitudinal edges by a heat resistant adhesive. The attached films are rolled up for storage such as in a box having a cutting edge so that bags of desired length may be cut from the roll.

3,750,874

**CARRIER PACKS**

Josef Detzel, Weiltan/Allgau, and Walter Schragle, Kempten, both of Germany, assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 27, 1971, Ser. No. 137,930  
Claims priority, application Germany, May 2, 1970, G 70 16 625.5

Int. Cl. B65d 5/46, 71/00

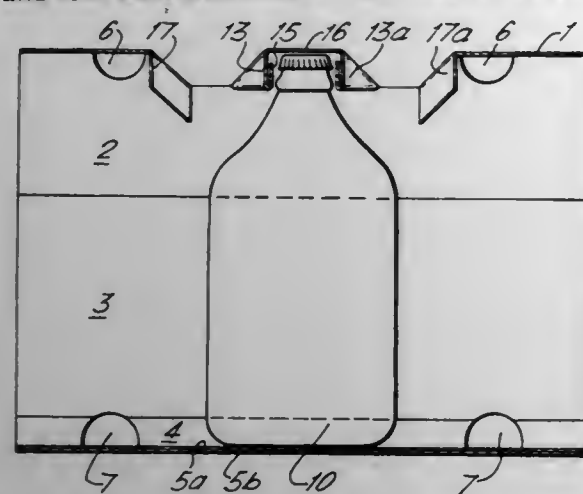
2 Claims

U.S. Cl. 206—65 E

A carrier of thin sheet material for carrying two rows of symmetrically disposed containers such as bottles and having



slits and fold lines transverse to the rows of bottles to form a



centrally disposed carrying handle.

3,750,875

### PACKAGED CATHETER ARRANGEMENT

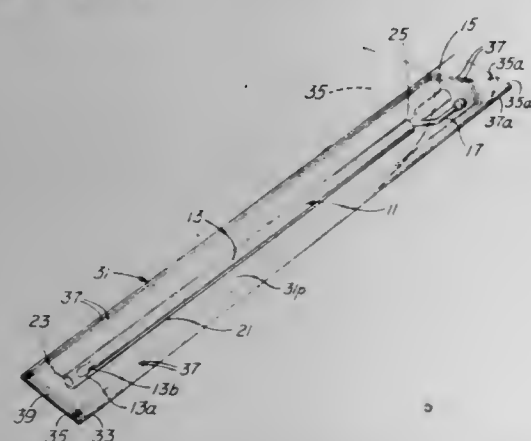
Robert W. Juster, St. Louis, Mo., assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.

Filed June 4, 1971, Ser. No. 150,068

Int. Cl. A61b 19/00; B65d 85/20

U.S. Cl. 206—63.2 R

10 Claims



A packaged catheter arrangement having a soft and pliable latex rubber catheter for body orifice use and having its shaft slidably removably disposed within a relatively rigid tube sheath of plastic to form a catheter handling assembly which is enclosed as a unit within a peripherally sealed peel-apart dual sheet overpackage.

3,750,876

### COLLECTIVE PACKAGE FOR PACKAGING CONTAINERS

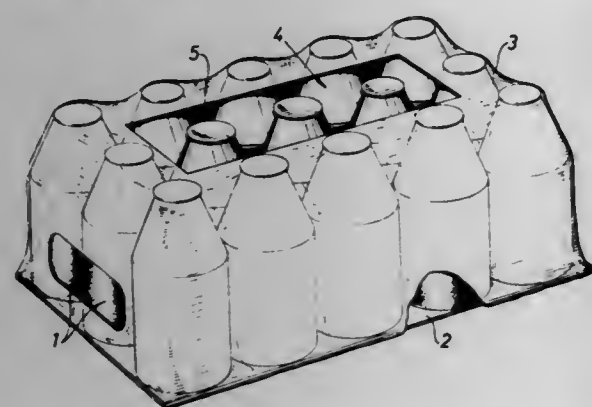
Kaj Stellan Throberg, Malmo, Sweden, assignor to Sobrefina SA, Fribourg, Switzerland

Filed Aug. 16, 1971, Ser. No. 171,913

Int. Cl. B65d 65/16, 71/00, 85/62

U.S. Cl. 206—65 S

5 Claims



A collective package having a plurality of packages mounted on a support therefor and a shrink plastic film

wrapping thereabout, the wrapping being provided with an upper opening to expose the top of at least one of the centrally located packages to permit easy withdrawal thereof from the collective package, and the method of forming the opening.

3,750,877

### APPARATUS FOR AND METHOD OF INSPECTING CONTAINER MEANS

Daniel S. Dvacho, Chesterfield, and Patrick A. Fastabend, Bon Air, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

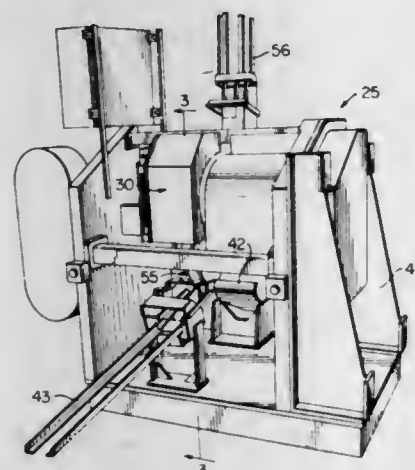
Continuation of Ser. No. 774,776, Nov. 12, 1968, abandoned.

This application Nov. 23, 1970, Ser. No. 92,291

Int. Cl. B07c 5/342

U.S. Cl. 209—73

42 Claims



An apparatus for and method of inspecting wall means of containers utilizing a light-emitting device, a photosensitive device and a high speed rotatable carrier for serially moving each of the containers between such devices to enable any opening in the walls of the containers to be detected by light passing therethrough to energize the photosensitive device which in turn actuates a mechanism to reject the particular defective container.

3,750,878

### ELECTRICAL COMPONENT TESTING APPARATUS

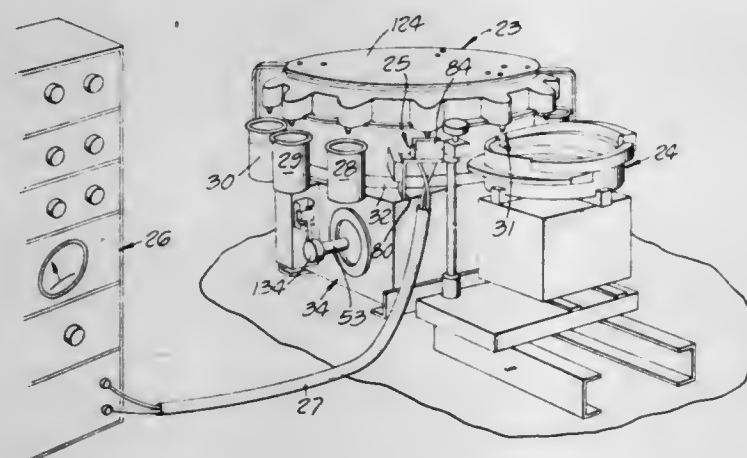
Raymond D. Atchley; John B. Pegram, both of Los Angeles, and Kenneth K. Dixon, Camarillo, all of Calif., assignors to K. Dixon Corporation, Tarzana, Calif.

Filed Nov. 15, 1971, Ser. No. 198,580

Int. Cl. B07c

U.S. Cl. 209—73

7 Claims



A quantity of generally rectangular chiplike devices, having electrodes on a pair of edges, are supplied to an unloading platform by a vibratory feeder. A cylindrical conveyor mounted adjacent the feeder includes on its outer periphery a set of vacuum conveying heads arranged at equal angles

thereabout. The conveyor is indexed about its central axis in angular increments, bringing each conveyor head in succession into operative relation with a device at the loading station. As the conveyor head comes into proximity of a device at the loading station it is connected to a vacuum pump whereby the device is retained to move along the circular path. In another station farther along the path of movement of the conveyor an appropriately dimensioned set of electrical contact plates is arranged so that the device picked up by a preceding conveyor head is connected with the set of contact plates for accomplishing electrical test. As the conveyor indexes farther, mechanical memory elements shut off the supply of reduced air pressure to the conveyor heads, allowing the tested device to fall into a selected receptacle.

3,750,879

### SORTING CONVEYORS

Christopher Hawthorn Luckett, Backwell, Bristol; John Travers Cosgrove, and Gordon Christopher Holland, both of London, all of England, assignors to British Railways Board, London, England a Public Authority & Sorting Systems Limited, Bristol, England

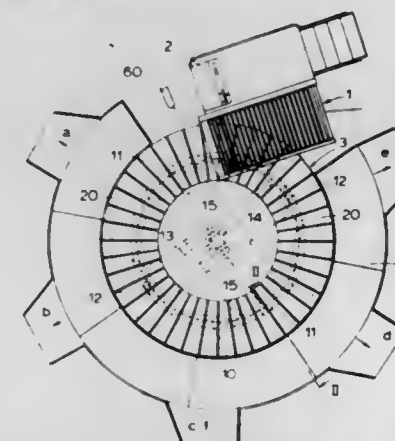
Continuation-in-part of Ser. No. 70,948, Sept. 10, 1970, abandoned. This application Mar. 6, 1972, Ser. No. 231,920

Claims priority, application Great Britain, Sept. 18, 1969, 46,101/69

Int. Cl. B65g 47/38

U.S. Cl. 214—11 R

14 Claims



The invention provides a compact and economical construction of sorting device including a circular carousel comprising a ring with radial segmental panels, which ring is caused to rotate, each segmental panel being pivotally mounted on the ring so as to be tiltable about a generally horizontal axis lying at right angles to the radius of the ring on which that respective segmental panel is aligned, the tilting axis of each panel being located at such distance below the load bearing surface of the panel that when the panel is tilted from the horizontal, all parts of the load bearing surface of the panel are moved radially outwardly of the carousel, there being also conveyor feed means arranged to feed articles on to the carousel, there being disposed about the periphery of said carousel a plurality of chutes and wherein means are provided for selectively tilting individual segmental panels, or groups of segmental panels while these selected segmental panels are adjacent a selected chute to cause an article carried on such tilted segmental panel or panels to leave the carousel and enter the respective chute.

3,750,880

### DISTRIBUTOR FOR RECTANGULAR FLAT ITEMS

Peter Petrovsky, Konstanz, and Max Bohm, Markelfingen, both of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed June 27, 1972, Ser. No. 266,743

Claims priority, application Germany, June 30, 1971, P 21 32 400.5

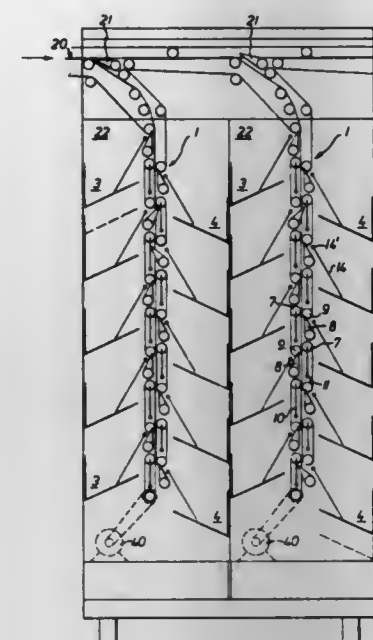
Int. Cl. B07c 5/02

U.S. Cl. 209—74 R

9 Claims

An item distributor having a horizontally disposed main conveying path with a plurality of vertically disposed distributing

paths branching downwardly from the main path through switches and distributing items to stacking compartments associated with the distributing paths. The stacking compartments



ments are disposed on both sides of each distributing path so that there are two rows of stacking compartments between two adjacent distributing paths.

3,750,881

### COLOR SORTER

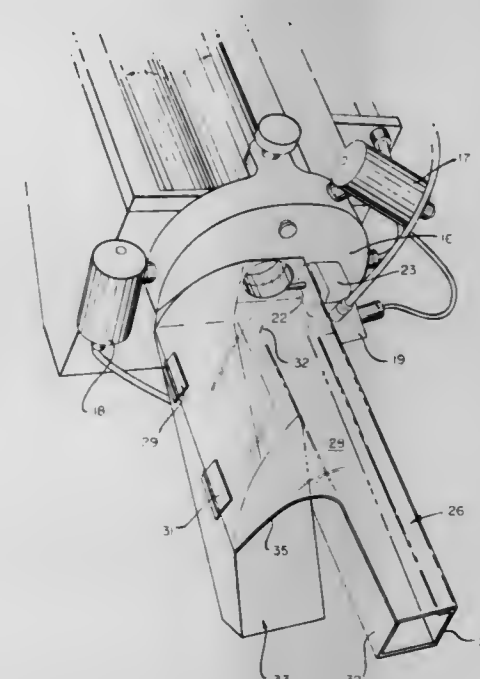
Robert G. Husome, Saratoga, and John R. Sweet, III, Sunnyvale, both of Calif., assignors to Aerotherm Corporation, Mountain View, Calif.

Filed Sept. 30, 1971, Ser. No. 185,292

Int. Cl. B07c 5/342

U.S. Cl. 209—74 R

5 Claims



A color sorter which sorts products delivered in single file to a photoelectric scanning head by directing acceptable products into an accept chute and diverting products which do not match the color standard for the product into a reject chute designed and shaped to deflect the rejected products into reject bins and minimize reentry of deflected products into the accept chute.



### 3,750,882 AUTOMATIC GRADER

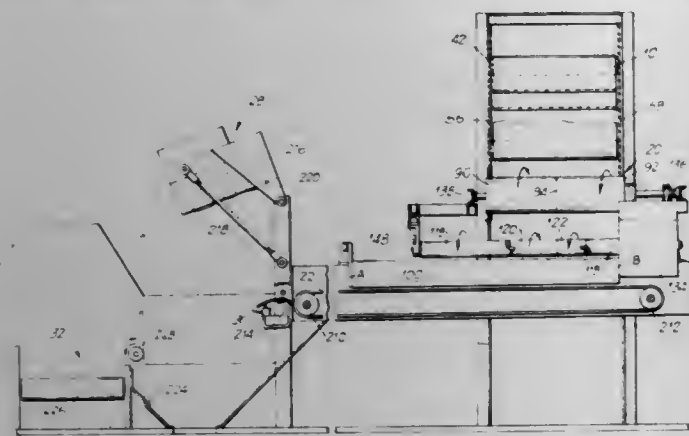
Gordon W. Hays, Midlothian, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed May 20, 1971, Ser. No. 145,243

Int. Cl. B07c 5/342

U.S. Cl. 209—111.6

18 Claims



Apparatus for inspecting tobacco leaves, which comprises means for arranging a group of tobacco leaves into a stream, means for propelling each leaf of said stream in a ballistic path, a background plate mounted adjacent said ballistic path for establishing a predetermined color criteria, optical means mounted in spaced relationship with said ballistic path and said background plate for comparing each tobacco leaf while it is above background plate to the color criteria established by said background plate, and means for sorting the leaves in accordance with the results of the comparison thereof with said color criteria.

### 3,750,883 CIRCUITRY FOR SORTING FRUIT ACCORDING TO COLOR

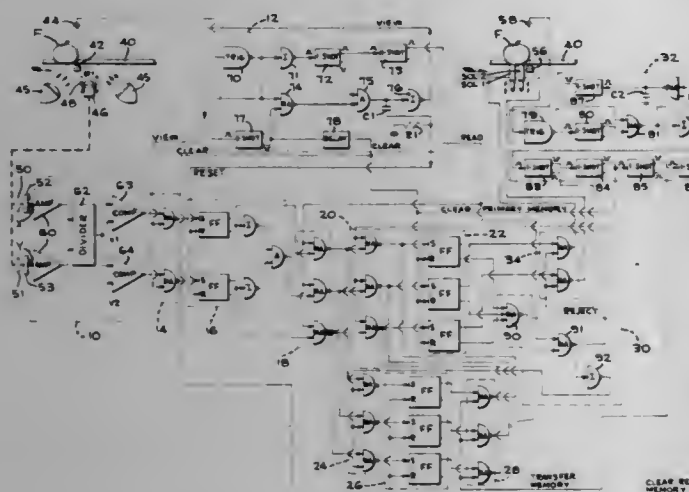
Donald W. Irving, San Jose, and Charles S. Greenwood, Santa Clara, both of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed May 3, 1972, Ser. No. 249,974

Int. Cl. B07c 5/342

U.S. Cl. 209—111.6

14 Claims



A circuit for detecting the color of a fruit on a conveyor by measuring the light reflected from the surface of the fruit at a viewing station and for providing an appropriate discharge signal so that the fruit will be discharged to a particular discharge location at a position spaced downstream from the viewing station. The circuit includes means for separately measuring the amount of light reflected within two distinct bands of wavelengths of light, continuously computing the ratio of the same to derive an analog ratio signal, and comparing the ratio signal with a plurality of predetermined ratio

signals in order to obtain said appropriate discharge signal. A memory circuit is included so that discharge signals for a plurality of fruit can be stored for an indeterminate period of time before any one of such fruit is directed to its discharge location.

### 3,750,884 ROTARY AND FLOW TYPE RICE GRAIN SORTER

Toshihiko Satake, 2-38, Saijyo-cho Kamo-gun, Hiroshima-ken,, Nishihon-Machi, Japan

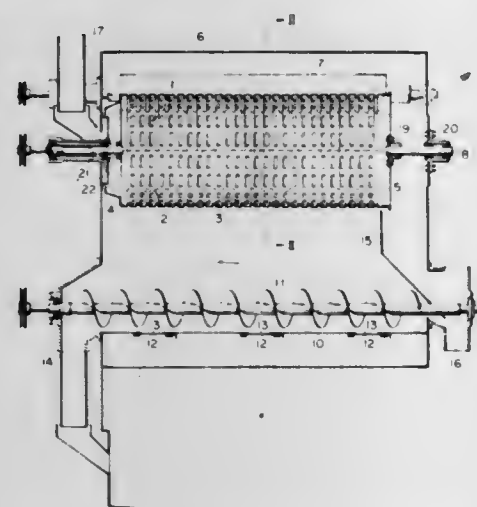
Filed Dec. 23, 1971, Ser. No. 211,297

Claims priority, application Japan, May 21, 1971, 46/41720

Int. Cl. B07b 1/22

U.S. Cl. 209—284

10 Claims



A rotary and flow type grain sorter provided with a plurality of polygonal cylinders each formed by bending a corrugated perforated plate with a number of sorting openings, in which grains of uniform size is obtainable without a inclusion of crushed grains on account of said corrugated perforated plate and in which operational efficiency is greatly improved by means of cylinders which are polygonal.

### 3,750,885 STRAINER APPARATUS WITH POWER ASSISTED CLEANING MEANS

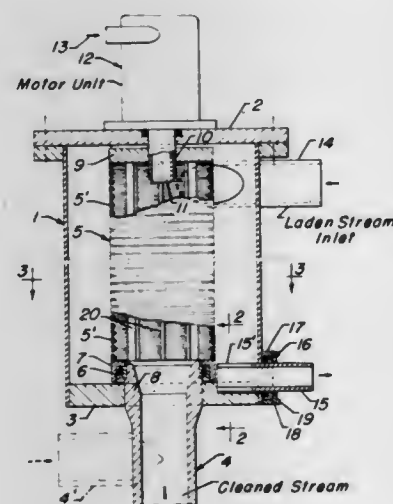
Paul W. Fournier, Saint Paul, Minn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 28, 1971, Ser. No. 157,563

Int. Cl. B01d 27/02

U.S. Cl. 210—107

10 Claims



An improved strainer device is constructed so as to have rotatability of a cylinder-form screen filter by motor means such that flow blocking particles can be more readily washed off and removed from the outside of the screen by "shear" action and by a back-washing flow. A preferred design uses a

wedge-form of self-cleaning screen and peripherally spaced internal vertical bar means to enhance an outward radial flow which may be continuous, or periodically operated, to effect the removal of clogging material.

### 3,750,886 APPARATUS FOR MAINTAINING THE POTABILITY OF CISTERN WATER

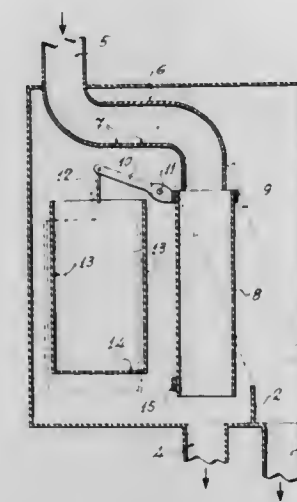
Gerlof Berthy Salm, 10 rue Grenus, 1201 Geneva, Switzerland

Filed June 30, 1971, Ser. No. 158,296

Int. Cl. B01d 21/24

U.S. Cl. 210—111

3 Claims



The present invention relates to an apparatus for maintaining the potability of cistern water operating automatically by means of the falling rain itself and having means for diverting the initial rainfall, which contains accumulated dirt, leaves, bird droppings, etc., to a sewer, drainage ditch, irrigation reservoir or the like, for a pre-determined period of time, after which the apparatus switches and conducts the rain water, now clean, to an underground cistern in the form of potable water.

### 3,750,887 FILTER MEDIA FOR LIQUID WASTES TREATMENT AND METHOD OF FORMING THE SAME

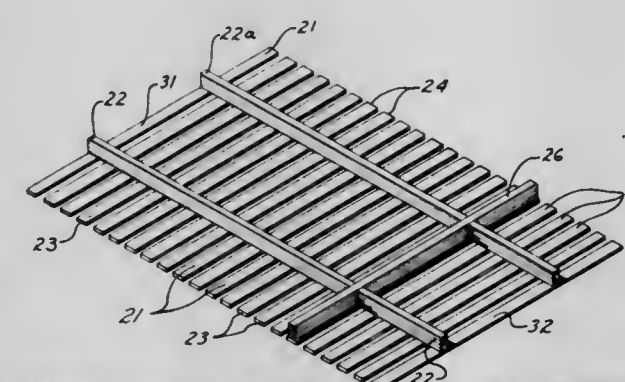
Edwin R. Carlson, Eureka, Calif., assignor to Del-Pak Media Corporation, Oakland, Calif.

Filed Sept. 15, 1971, Ser. No. 180,549

Int. Cl. B01d 39/14

U.S. Cl. 210—150

8 Claims



A pallet-like unit for use with a plurality of similarly formed units in the formation of a biological filter media for the treatment of liquid waste and the array of such units is disclosed. The unit includes a plurality of elongated growth supporting surfaces, preferably redwood laths, which are secured to supporting members positioned inwardly of the periphery of the unit and preferably in mutually perpendicular relation to form a self supporting stackable structure. The positioning of the supporting members enables stacking of the units in vertically superimposed horizontally extending layers with selected

layers being horizontally staggered or displaced so that units overlap each other to even out dimensional variances and provide greater stability in the filter array.

### 3,750,888 FILTER ASSEMBLY

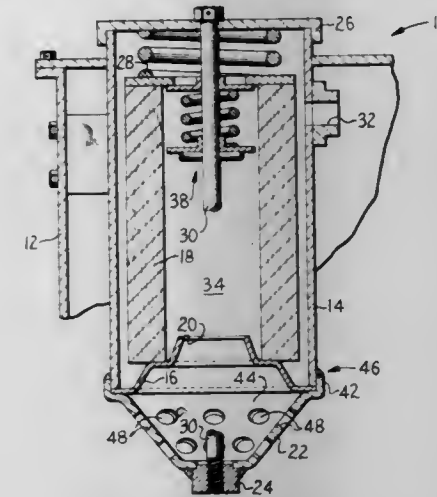
James D. Rinaldo, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 13, 1971, Ser. No. 179,658

Int. Cl. E03b 11/00; B01d 27/08

U.S. Cl. 210—172

9 Claims



A filter assembly for filtering fluid returning to a reservoir including a filter housing, a base closing one end of the housing, an outlet port in the base, and a perforated fluid-diffusing member enclosing said base together with the housing in an axially stacked arrangement therewith to disperse the discharge of fluid from the outlet port in a relatively wide flow pattern in order to minimize surface turbulence and resultant aeration of the fluid within the reservoir.

### 3,750,889 FILTER TUBE

William A. Acosta, 4101 Laurel Dr., Lafayette Hill, Pa.

Filed June 17, 1971, Ser. No. 154,107

Int. Cl. B01d 29/10

U.S. Cl. 210—497

6 Claims



A filter tube comprising a perforated core, a connector at one end of the core, a plug at the other end of the core and a filter sleeve overlying the core. A core support or stabilizer is placed within the core, and comprises a rigid helical member. A channeled perforated drain screen is positioned between the filter sleeve and the core. The filter sleeve is removable and replaceable. The drain screen directs the filtered fluid passing through the filter sleeve into and through the core in laminar flow.



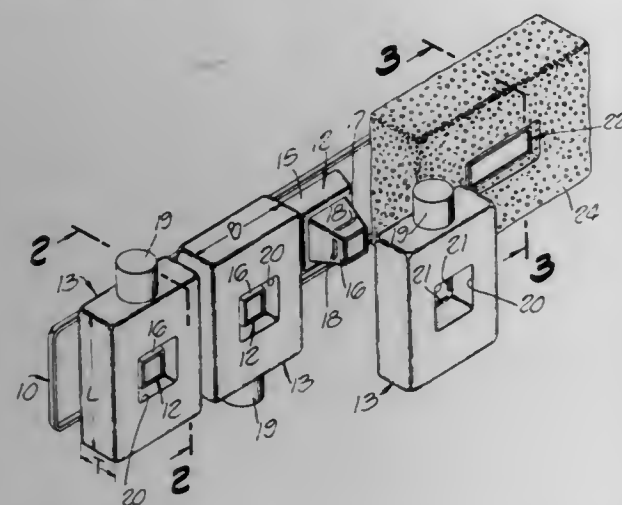
3,750,890

## ARTICLE MOUNTING ARRANGEMENT

Dale D. Smith, Irvine, and James P. Sullivan, Tustin, both of Calif., assignors to Design West Incorporated, Irvine, Calif.  
Filed Mar. 1, 1972, Ser. No. 230,602  
Int. Cl. A47g 73/00

U.S. Cl. 211-75

5 Claims



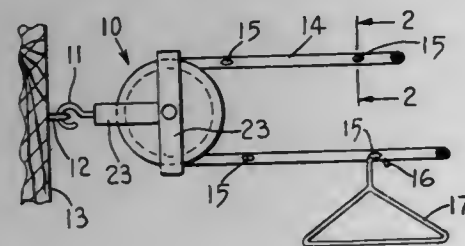
A racklike mounting plate is adapted for securement onto a generally vertical wall surface and provided on its outwardly directed surface with one or more protruding mounting pegs or studs, each of which studs has a keyed cross-section and is tapered toward its outermost end. One or more of the sides of a mounting stud has an elongated slot, all of which slots lie in the same general vertical plane. A container has an opening passing completely through its body portion of dimensions generally suitable for accommodating receipt onto the stud. The internal walls defining the container opening taper from both opposite outer surfaces to a maximum located substantially midway through the container forming protruding ridges or keys of such geometry as to permit fitting receipt within the slot on the mounting studs.

3,750,891  
CLOTHES LINE

Frank Decorato, 32 Hillcrest Rd., Warren, N.J.  
Filed Aug. 2, 1971, Ser. No. 168,160  
Int. Cl. D06f 53/00

U.S. Cl. 211-119.02

9 Claims



A clothesline adapted to be reeved and drawn around a conventional clothesline pulley and designed to accommodate the hooks of clothes hangers so as to carry them in spaced relation, comprises a narrow strip of flexible non-metallic material having spaced holes penetrating the strip, of size adequate to accommodate the hooks of clothes hangers. The strip has an overall width small enough to enable it to be reeved and drawn around a clothesline pulley. The holes may be lined with metal or plastic firmly attached to the body of the strip.

3,750,892

## STACKABLE TRAY FOR TEMPORARILY STORING DOCUMENTS OR OTHER ITEMS

Wolfgang C. F. Grosse, Seestrasse CH-8804, Au bei Zurich, Switzerland

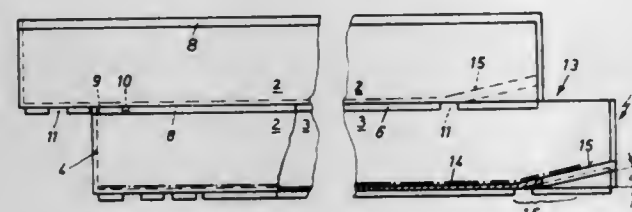
Filed Nov. 19, 1971, Ser. No. 200,490

Claims priority, application Germany, Dec. 5, 1970, P 20 59 960.4

Int. Cl. B65d 21/02

U.S. Cl. 211-128

6 Claims



A letter or like tray stackable with other similar trays in various upright or stair-like or cross-wise stack arrangements, the tray having bottom runners with recesses for interlocking engagement with the walls of a similar tray thereunder in a stack, said recesses allowing the building of cross-wise stack arrangements of such trays with front access openings facing in two or three or four different directions.

3,750,893

## SMALL ARTICLE DISPLAY RACK

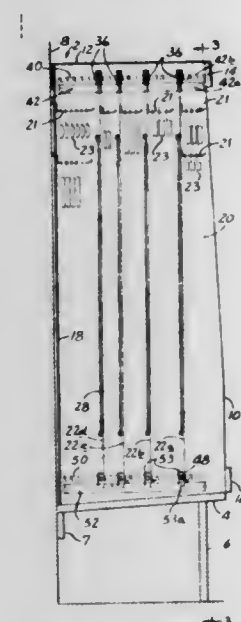
Ernest Kempler, 6621 N. Washtenau, Chicago, Ill.

Filed Aug. 16, 1971, Ser. No. 172,045

Int. Cl. A47f 5/10

U.S. Cl. 211-162

16 Claims



A frame open at least at the front thereof to expose a display space therein includes track support means at opposite sides of the rack frame having corresponding track-receiving means for selectively supporting a variable number of slide tracks extending parallel to the front of the rack and with a selection of spacings therebetween in the direction between the front and rear of the cabinet. A number of tracks much less than the number than can be accommodated by said track-receiving means are supported to adjustable spacing from track-receiving means. Vertically extending small article display and support units having small article holding means distributed thereover and each of the width no greater than about half the width of said display space are supported on said respective tracks for movement across the width of said display space from one side thereof to the other, so that movement of an article display and support unit to one side or the other of the rack will expose the article support unit immediately therebehind. The rack frame is designed so that parts thereof are foldable into a compact position for shipment and storage.

3,750,894

## BINNING ARRANGEMENT

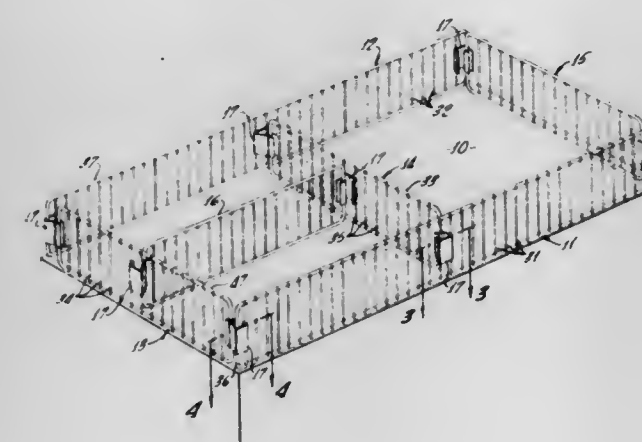
Jens S. Jensen; Edward M. Hamrock, and Clair E. Lookabaugh, all of Whittier, Calif., assignors to Enterprise Wire Products, Inc., Bell Gardens, Calif.

Filed Oct. 14, 1971, Ser. No. 189,159

Int. Cl. A47f 5/14

U.S. Cl. 211-184

8 Claims



A binning arrangement in which a sheet metal clip having two U-shaped sections is used to hold the binning dividers to front and back fences made of wire, the fences being held to the shelf by prongs on the mesh wires which extend beneath the shelf or by separate clips. The back fence may be eliminated with the ends of the dividers held by separate clips having wires defining a slot to receive the ends of the framing wires of the dividers, or the dividers may have a framing wire with a resilient back portion having an outwardly bent end adapted to fit through an opening in the shelf to exert a force in holding the back portion of the divider.

3,750,895

## YARD JIB CRANE

Pierre Durand, Lyon, France, assignor to Societe Anonyme Richier, Paris, France

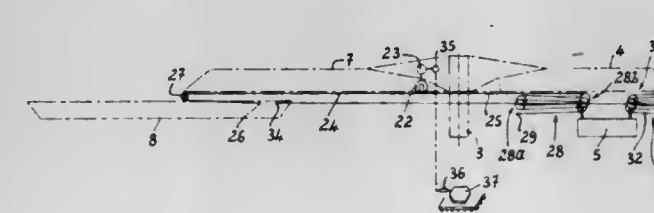
Filed Jan. 22, 1971, Ser. No. 108,753

Claims priority, application France, Jan. 22, 1970, 7002194

Int. Cl. B66c 23/72

U.S. Cl. 212-48

10 Claims



A yard jib or tower crane having a vertical mast, a hoist boom supporting a load hoist truck being pivotally supported for rotation about the mast end including a first beam and a second beam attached to said first beam and being radially movable relative thereto; a counterweight boom supporting a balancing weight compensating for the moments about the mast generated by said truck-supporting boom; and a control including a replaceable profile cam for predetermined radial displacement of said second beam relative to the first beam and of the balancing weight along the counterweight boom during angular displacement in a horizontal plane of said boom about the mast.

3,750,896

## DRAFT GEAR HAVING EMERGENCY RELEASE MEANS

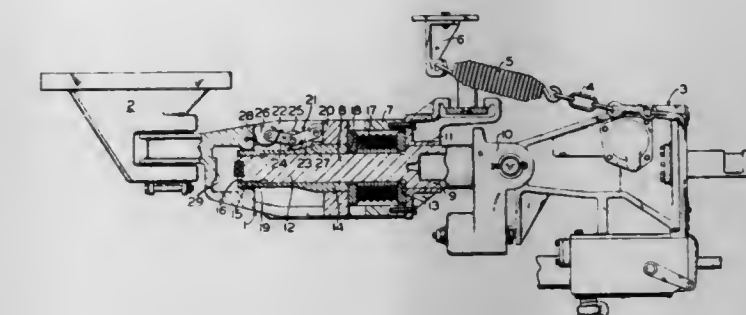
William B. Jeffrey, Irwin, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Apr. 17, 1972, Ser. No. 244,384

Int. Cl. B61g 9/04, 3/00

U.S. Cl. 213-75 R

5 Claims



An emergency release mechanism for draft gear apparatus that permits the draft gear to be restored to a normal condition after an emergency release without causing damage to the unit or requiring replacement of parts therefor. The draft gear unit is provided with a plurality of toggle joints which act as solid links under normal buff loads, but which are collapsible under collision forces. Bias springs urge the toggle joints back to their normal alignment whenever the load thereon is removed by pull-apart forces between the adjacent cars.

3,750,897

## AUTOMATIC RELEASING APPARATUS FOR COUPLERS OF RAILWAY VEHICLES

Kenichi Murato, Yokohama; Yasuo Maruyama, Tokyo; Mitsuro Wakao, Urawa; Shogo Takahashi, and Hisao Takami, both of Tokyo, all of Japan, assignors to Japanese National Railways and Kayabakogyokabushikisha, Tokyo, Japan

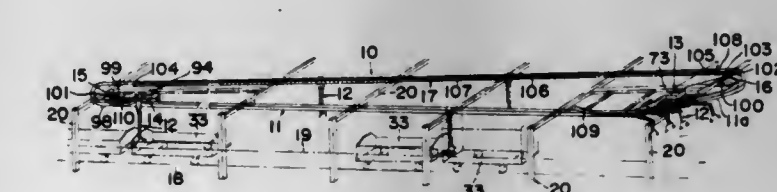
Filed Dec. 27, 1971, Ser. No. 212,320

Claims priority, application Japan, Dec. 26, 1970, 45/118759

Int. Cl. B61g 3/08

U.S. Cl. 213-211

11 Claims



The automatic releasing apparatus for couplers of railway vehicles comprises a circuit-like travelling guide rail positioned above a rail system and a number of robots suspending from the guide rail, each having automatic releasing mechanism for the couplers.

Couplers of railway vehicles are adapted to send out the robots one by one by conforming the sending out speed to the speed of the railway vehicles so as to pull out locking cotters automatically by means of the releasing mechanisms of respective robots, and to restore the cotters to their starting position by moving the releasing apparatus along the travelling guide rail.



3,750,898

**AUTOMATIC DRILLING-ROD TRANSFER DEVICE**

Gerard Ancy, L'Hay-les-Roses, and Rene Bourree, Fontenay-aux-Roses, both of France, assignors to Groupement Atomique Alsacienne Atlantique, Le Plessis-Robinson, France

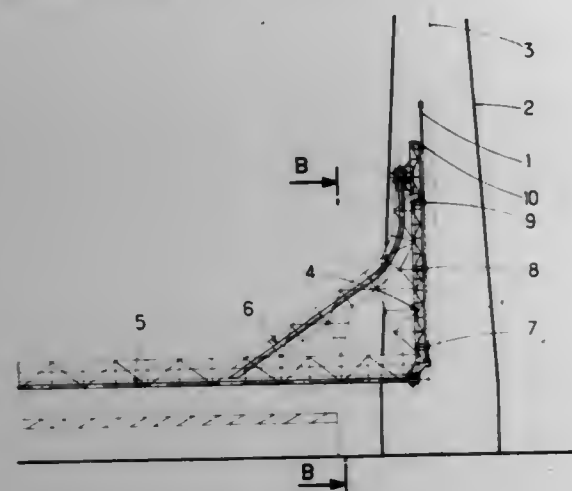
Filed Oct. 29, 1971, Ser. No. 193,724

Claims priority, application France, Oct. 30, 1970, 7039317

Int. Cl. E21b 19/00

U.S. Cl. 214-10

3 Claims



The device enables the automatic transfer of drilling rods held in the vertical position inside a derrick to a horizontal position near to a storage area and the reverse transfer operation, and comprises a carriage provided with bistable chucks for holding a triple set of rods during transfer. The carriage moves along two pairs of rails; the first pair of rails is horizontal, the second pair of rails starts off as an inclined curve through an angle of 30° to 45° in relation to the horizontal position and coming into the vertical position near the derrick, thus, the center of gravity of the load carriage describes a straight line.

3,750,899

**VERTICAL-LIFT DOUBLE-DECK PARKING STRUCTURE**

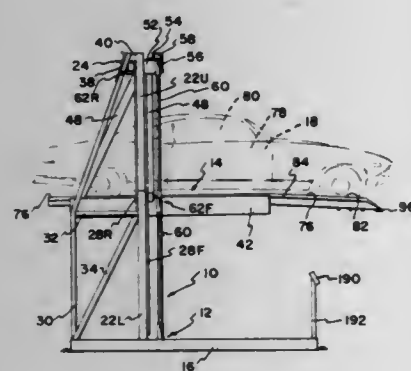
Edward M. Greer, Beverly Hills, Calif., assignor to Crown Parking Products Co., Commerce City, Colo.

Filed Mar. 18, 1971, Ser. No. 125,700

Int. Cl. B66f 7/04

U.S. Cl. 214-16.1 EC

20 Claims



This invention relates to a double-decked parking structure having a ground-anchored bedframe carrying two upright stanchions located in transversely spaced parallel relation to

one another so as to admit an automotive vehicle therebetween. These stanchions each carry two rails, one on the front face extending from near ground level up to at least roof-top height and the second continuing on up beyond the first but along the rear face thereof. An elevatable subframe is mounted between the stanchions for movement vertically thereof between a raised or elevated position and a lowered one resting on the ground. This subframe includes a horizontal vehicle-support platform, the major portion of which projects forwardly beyond the stanchions, and a pair of upright masts that mount grooved rollers which run along the rails. A pair of hydraulic rams connected between the bedframe and subframe are operative upon actuation to raise and lower the latter.

3,750,900

**TRAFFIC CONE RETRIEVER**

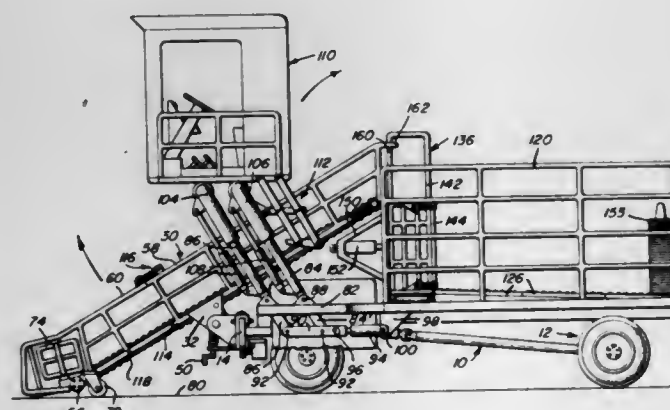
Robert D. Piercey, 238 N.W. Garden Valley Blvd., Roseburg, Oreg.

Filed Jan. 19, 1971, Ser. No. 107,735

Int. Cl. B60p 1/36

U.S. Cl. 214-6 B

14 Claims



A motorized land vehicle including a forwardly displaced and opening scoop discharging rearwardly onto the lower end of a rearwardly and upwardly inclined endless conveyor discharging rearwardly at a location with which a transversely shiftable upwardly opening receptacle is registered. The upper discharge end of the conveyor assembly discharges laterally into the front side of the upper portion of the receptacle and the vehicle is adapted to move along a roadway and sequentially engage and pick up traffic cones from the roadway for conveying the cones rearwardly and upwardly along the conveyor assembly for subsequent discharge into the receptacle for automatic stacking therein. The rear end portion of the vehicle includes transversely spaced longitudinally extending isles which may be sequentially filled with stacks of retrieved traffic cones and the conveyor assembly and forwardly displaced scoop are mounted on the vehicle for lateral shifting transversely of the latter and for oscillation of the conveyor assembly and forwardly displaced scoop about a horizontal transverse axis spaced intermediate the opposite ends of the conveyor assembly whereby the forward lower end of the conveyor assembly may be elevated above the roadway for transit from one location to another while the upper rear end of the conveyor assembly is lowered downward toward a support position with the conveyor assembly generally horizontally disposed. The forward end portion of the conveyor assembly which supports the forwardly disposed scoop is articulated for upward swinging movement of the forward scoop supporting end of the conveyor assembly relative to the remainder thereof and the vehicle includes a forwardly and upwardly displaceable operator's cab for shifting to a forwardly and upwardly displaced position during traffic cone retrieving operations of the vehicle.

3,750,901

**LOAD SQUARING APPARATUS**

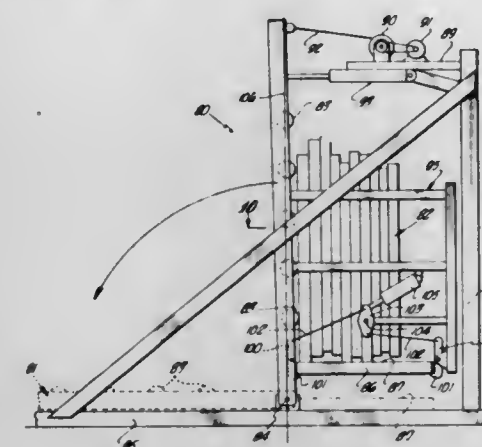
Thomas N. Melin, 1424 24th Ave., Longview, Wash.

Division of Ser. No. 704,196, Nov. 8, 1967, Pat. No. 3,596,776, which is a division of Ser. No. 609,973, Dec. 6, 1966, Pat. No. 3,376,985, which is a continuation-in-part of Ser. No. 401,594, Oct. 5, 1964, abandoned. This application Mar. 4, 1971, Ser. No. 121,041

Int. Cl. B65g 57/60

U.S. Cl. 214-6 S

5 Claims



The invention encompasses apparatus for rendering coplanar the end surfaces of all the pieces of timber in a stack of lumber by placing the stack in near vertical position while subjected to slight lateral constraints, and then dropping (or its equivalent) the stack end-wise to a foundation to produce a vertically effective impact upon the stack sufficient to cause the various timbers to move longitudinally relative to each other against the friction between the timbers, thereby to move the lower ends of all the timbers into a common plane. The stack is then returned to a horizontal position in such a manner that the timbers do not move longitudinally relative to each other.

3,750,902

**ROTARY VALVE IMPROVEMENTS**

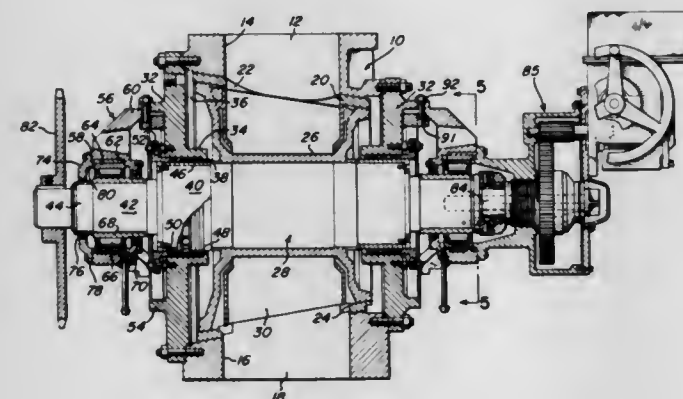
James R. Starrett, Springfield, Ohio, assignor to The Bauer Brothers Company, Springfield, Ohio

Filed Mar. 1, 1971, Ser. No. 119,682

Int. Cl. B66c 17/04

U.S. Cl. 214-17 CC

8 Claims



This disclosure is directed to material handling valves of a rotary type featuring unique bearing support structure for its rotor shaft. Such support structure is distinguished by eccentric inserts which are simply adaptable to readily preset the valve rotor and condition the valve housing to accommodate various conditions of differential pressure to which the rotor may be exposed. The structure enables that on operation of a valve under conditions where different portions of its rotor are exposed to different temperatures and pressures the rotor will inherently center in its housing.

3,750,903

**UNLOADER FOR REMOVING STOCK FOR A BODY OF STOCK CONTAINER IN A STORAGE SPACE**

Karl Scherz, Hauptplatz 7, Deutschlandsberg, Austria

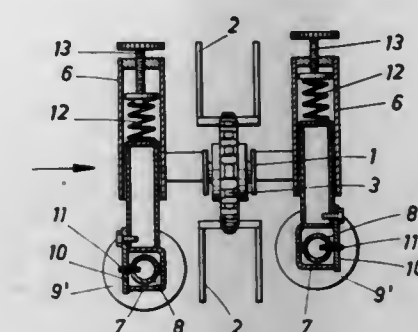
Filed July 13, 1971, Ser. No. 162,042

Claims priority, application Austria, July 21, 1970, 6615

Int. Cl. B65g 65/38

U.S. Cl. 214-17 DB

11 Claims



An unloader arm is adapted to be mounted over the body of stock. Stock-detaching and conveying means are carried by said unloader arm and adapted to engage said body of stock and to detach stock therefrom, and to convey detached stock for removal from said storage space. Two pressure rolls are carried by said unloader arm and disposed on opposite sides of said stock-detaching and conveying means and extend parallel thereto and are arranged to apply pressure to said body of stock as said stock-detaching and conveying means engage said body of stock.

3,750,904

**HEAT TREATING FURNACE**

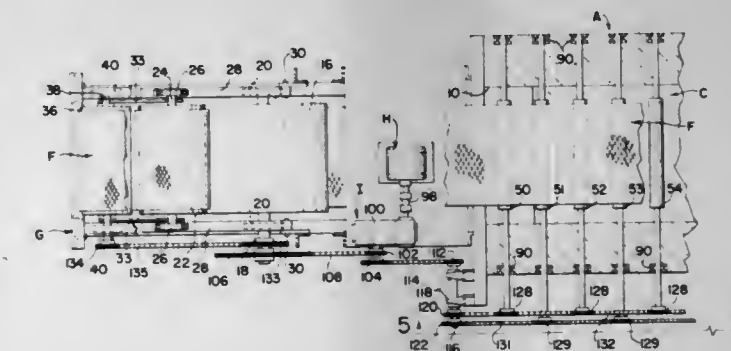
Lee Gail Wisler, Beloit, Ohio, assignor to The Electric Furnace Company, Salem, Ohio

Filed June 30, 1971, Ser. No. 158,158

Int. Cl. B65g 23/44

U.S. Cl. 214-21

24 Claims



A conveyor belt or flat elongated material is pulled in a predetermined direction at a predetermined speed across spaced-apart supporting rolls in a heat treating furnace. Alternate ones of the supporting rolls are rotatably driven to move the peripheral surfaces thereof at a speed greater than the predetermined speed and in a direction for imparting frictional forces to the belt or flat elongated material acting in the predetermined direction. The remainder of the rolls are rotatably driven so that the peripheral surfaces thereof move in a manner for imparting frictional forces to the belt or flat elongated material acting opposite to the predetermined direction. Alternate addition and subtraction of forces act on the belt or flat elongated material to provide essentially uniform tension in the belt or flat elongated material to obtain an essentially uniform catenary between rolls. The alternate addition and subtraction of forces maintains at a minimum the tension required to pull the belt or flat elongated material through the furnace.



3,750,905

**HAND-HELD EXTRUDING APPARATUS**

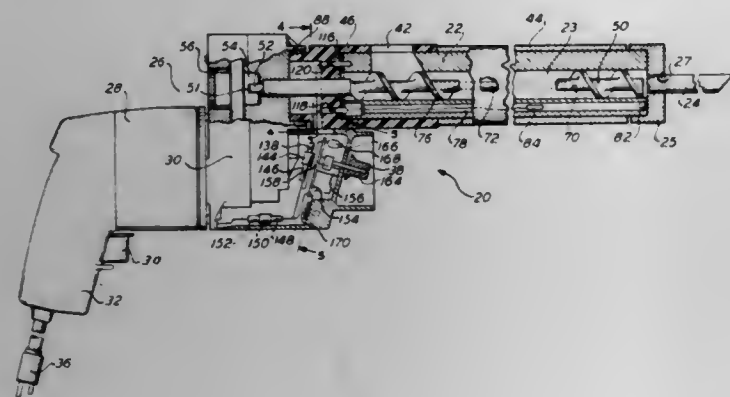
Norman S. Wolfrom, Cranford, N.J., assignor to Hardman Incorporated, Belleville, N.J.

Filed Aug. 23, 1972, Ser. No. 283,203

Int. Cl. B67d 5/62

U.S. Cl. 222-23

16 Claims



A hand-held extruding apparatus for applying thermoplastic sealant materials. The apparatus includes a barrel having a material feed passage extending therethrough. A plurality of heating element passageways extend parallel to the feed passage, with rod-like heating elements being mounted therein. A heat sensor is mounted in another parallel passageway in the barrel, and the sensor together with the heating elements are disposed in a control circuit enabling a preselected temperature to be accurately maintained. Material fed into the barrel is advanced by a motor-driven conveying screw toward an orifice at the outlet of the feed passage. The barrel is secured to a pistol-grip and housing portion of the device in such manner as to enable interchangeability of barrels, and to minimize heat transfer from the barrel to the grip and housing.

3,750,906

**TWO-NOZZLE SYSTEM FOR LIQUID FUEL DISPENSING APPARATUS**

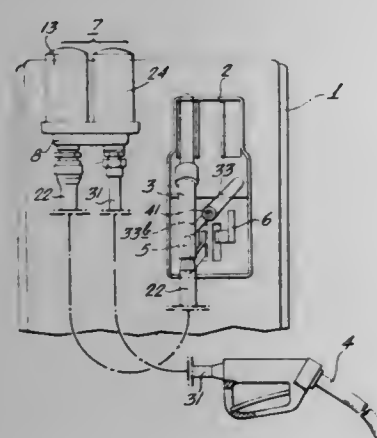
William B. Hansel, c/o Sun Oil Company, P.O. Box 426, Marcus Hook, Pa.

Filed Oct. 28, 1971, Ser. No. 193,264

Int. Cl. B67d 5/12

U.S. Cl. 222-74

2 Claims



A blending-type liquid fuel dispensing apparatus is provided with two separate nozzles, one a special nozzle for dispensing only low-lead or lead-free (unleaded) fuel, and the other a more conventional nozzle for dispensing blends of this fuel and a highly leaded fuel, as well as the highly leaded fuel alone. The apparatus has an interlocking arrangement which permits either nozzle to be utilized separately, but which prevents utilization of both nozzles simultaneously.

3,750,907

**FLUID CONTAINERS HAVING BOTH RELATIVELY STRONG AND RELATIVELY WEAK SEALS**

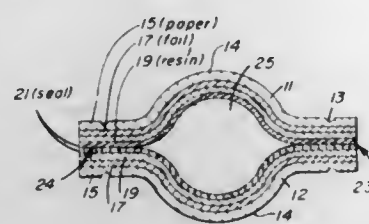
John D. Steele, Columbia, S.C., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 835,420, June 23, 1969, abandoned. This application Apr. 8, 1970, Ser. No. 26,604

Int. Cl. B65d 35/08, 35/14, 35/16

U.S. Cl. 222-107

26 Claims



A fluid container or pod for photographic processing liquid having a pair of walls carrying a heat activatable adhesive sealed together marginally by heat sealing. Preferably the container walls are both flexible and comprise lead foil carrying kraft paper on one side; and carrying on the other side a coating of a synthetic resin upon which is coated the heat activatable adhesive. The heat activatable adhesive is selected from the group consisting of (a) a plurality of mixed polymers, and (b) a mixture of a polymer selected from the group consisting of alcohol-soluble cellulose acetate butyrate, a polyhydroxy ether resulting from copolymerization of bisphenol A with epichlorohydrin, and toluene-soluble cellulose acetate butyrate, with a plasticizer selected from the group consisting of triphenyl phosphate and sulfonamide-formaldehyde resin. By varying the temperature, pressure and time in heat sealing, selected portions of the seal can be relatively strong, and other selected portions relatively weak, for controlled release of liquid through the weak seal portions when pressure is applied.

3,750,908

**CONCENTRATE DISPENSER WITH SUPPLY CONTAINER REMOVABLE FROM PERISTALTIC PUMP**

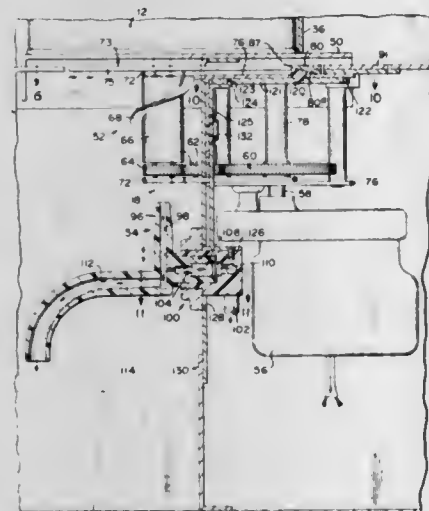
Carl C. Bauerlein; Linda M. Wertz, and Kenneth L. Acuff, all of Clearwater, Fla., assignors to Lykes Pasco Packing Co., Dispenser Manufacturing Div., Clearwater, Fla.

Filed Oct. 2, 1970, Ser. No. 77,431

Int. Cl. F04f 3/00

U.S. Cl. 222-80

8 Claims



A dispenser designed to mix a relatively viscous concentrate contained in a disposable container removably mounted therein with a diluent and then dispense the resultant diluted mixture. A peristaltic type pump is used on a flexible conduit which is removably connected between the disposable container and a mixing nozzle assembly. The mixing nozzle assembly includes a valve arrangement for controlled mixing of

the diluent with the concentrate in proper proportions immediately prior to exiting from the dispenser.

3,750,909

**AEROSOL DISPENSER WITH AUXILIARY VALVE**

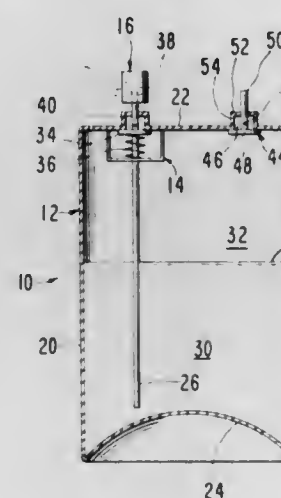
James L. Butler, 16th & Hwy. 1, Montara, Calif.

Filed July 28, 1972, Ser. No. 276,207

Int. Cl. B67d 1/08

U.S. Cl. 222-148

6 Claims



An aerosol dispenser having a pair of fluid valves, one of which is an auxiliary valve and can be used to purge the dispenser nozzle to prevent caking or solidifying of the dispensed material, such as paint which has dried in the nozzle orifice after being dispensed by the main valve of the dispenser. The auxiliary valve is located so that it can be placed in direct fluid communication with the space containing the pressurized gas of the dispenser. The nozzle is removably mountable on either valve and is normally carried by the main valve. In a preferred embodiment of the dispenser, the auxiliary valve is located on the top of the dispenser so that it can communicate directly with the pressurized gas in the upper portion of the dispenser.

This invention relates to improvements in aerosol dispensers and, more particularly, to such a dispenser having an auxiliary valve for use in cleaning out the nozzle normally carried on the main valve thereof.

3,750,910

**COMBINED MIXER AND POURER**

Yuen Se-kit, 97 Main St., Cha Kwo Ling, Kowloon, Hong Kong

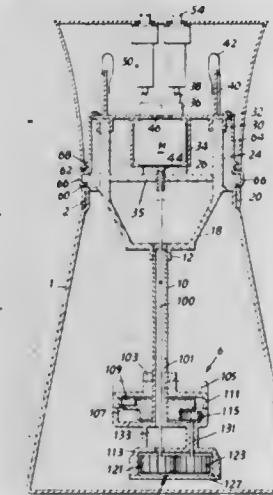
Filed Sept. 13, 1971, Ser. No. 179,838

Claims priority, application Great Britain, Jan. 25, 1971, 3,093/71

Int. Cl. B67d 5/48

U.S. Cl. 222-239

10 Claims



This invention relates to an improved agitating and pumping device, comprising: a housing; a gear chamber in said housing;

an inlet and outlet for said chamber; a pair of gears in said chamber for pumping liquids through said chamber; a centrifugal-type agitator supported by said housing; a pawl-type ratchet mechanism to actuate the agitator; and a drive member to effect rotation of the gears and the agitator; wherein rotation of the drive member in one direction causes the ratchet mechanism to be engaged and thus causes the agitator to rotate, and in the opposite direction causes the ratchet mechanism to be disengaged and the pump to pump a liquid from the inlet to the outlet.

3,750,911

**DEVICE FOR DELIVERING A MEASURED CHARGE OF A FLOWABLE POWDER**

Helmut Ebner; Bernd Stumer, and Hans Lang, all of Frankfurt/Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

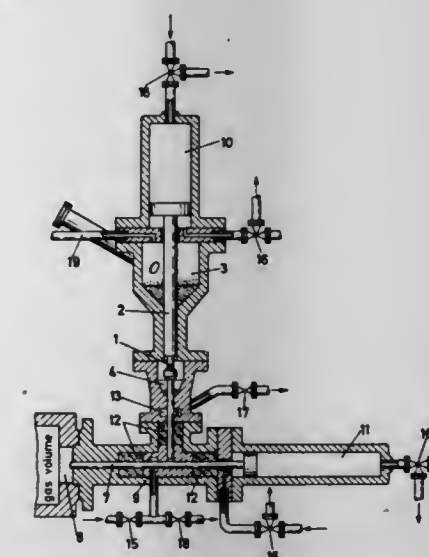
Filed Dec. 16, 1971, Ser. No. 208,839

Claims priority, application Germany, Dec. 18, 1970, P 20 62 513.2

Int. Cl. B01j 4/02

U.S. Cl. 222-254

6 Claims



A device for delivering a measured charge of a flowable powder comprising a storage container, a vertical piston rod and a buffer vessel, the rod being provided with a constriction which reaches into the storage container when the piston rod is at the upper end of its stroke, and reaches into the buffer vessel when the piston rod is at the lower end of its stroke. In the latter position the piston rod fits tightly in a first channel which is in connection with a second channel which has a clearing rod. At one end of its stroke the clearing rod occupies the second channel and at the opposite end of its stroke establishes a communication between the first channel and the open end of the second channel.

3,750,912

**POWDER DISPENSER**

Edward T. Miels, 4800 Williamsburg Ln. No. 133, La Mesa, Calif., and Sven Andreasson, 6805 Lanewood Ct., San Diego, Calif.

Filed Nov. 24, 1971, Ser. No. 201,911

Int. Cl. G01f 1/24

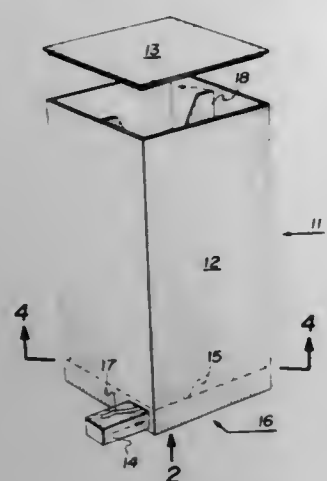
U.S. Cl. 222-359

4 Claims

A powder dispenser for dispensing a metered predetermined volume of powder, such as instant coffee, in which a ratchet arm is slidably received within a slot in the bottom of a container, the ratchet arm being spring-biased outwardly with a retaining shoulder and having a plurality of teeth in contact with the teeth of a circular ratchet gear which is fixedly attached to a stirring paddle rotating with the ratchet gear and stirring the contents of the housing; a dispensing disc coupled to the ratchet gear and disposed over a bottom plate in the



housing and having a plurality of apertures dimensioned for carrying a premeasured volume of powder; a spring detent for



centering the apertures over an aperture in the bottom plate and for drop activation of the contained metered powder.

3,750,913

**SOLID-FOODS DISPENSER**

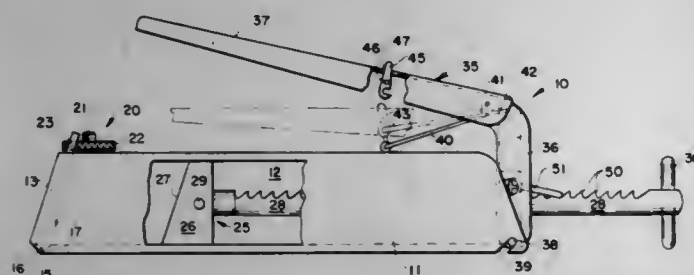
Heinz K. Wild, Mentor, Ohio, assignor to Te Wilo Industries Inc., Eastlake, Ohio

Filed June 10, 1971, Ser. No. 151,883

Int. Cl. G01f 1/100

U.S. Cl. 222-387

20 Claims



A solid-foods dispenser including a housing defining a chamber for receiving a stick of solid material to be dispensed, such as cold butter. An adjustable closure defines an adjustable discharge opening adjacent one end of the housing. A ratchet moves a plunger through the housing in the direction of the closure to compress the material and dispense it through the discharge opening in the form of a continuous ribbon. The plunger registers with the closure to assure complete discharge of the material from the chamber.

3,750,914

**CONTAINER DRAINAGE VALVE**

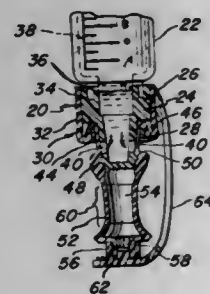
Bhupendra C. Patel, Elgin, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Aug. 17, 1971, Ser. No. 172,528

Int. Cl. B67d 3/00

U.S. Cl. 222-543

14 Claims



A reciprocating valve for a container, the valve including a stem and seat. The stem is movable between an outer position with the stem spaced from the seat to permit fluid flow from a

cavity in the container through the valve, and an inner position with the stem sealingly engaged against the seat to prevent passage of fluid. A flexible tube extends from the valve and has a sufficient length to permit compression of the tube by a user's fingers to regulate the passage of fluid through the tube. A cap is removably positioned on an orifice adjacent the outer end of the tube to selectively close the orifice, and a strap connects the cap with a portion of the valve intermediate a reciprocating portion of the valve and the container. The strap is sufficiently long to permit placement of the cap on the orifice in the inner valve position, but is sufficiently short to prevent movement of the valve from its inner to outer position without removal of the cap from the orifice.

3,750,915

**WINE POURER AND RESEALER**

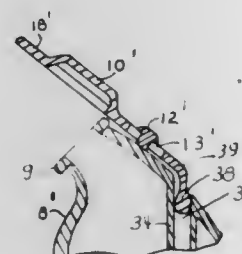
Patrick Kearney, 49-07 169th St., Flushing, N.Y.

Filed July 19, 1971, Ser. No. 163,802

Int. Cl. B65d 5/74; B67d 3/00

U.S. Cl. 222-567

1 Claim



A wine pourer and resealer comprising a housing adapted to be secured to the neck of a wine bottle. The housing has a neck portion for pouring wine and a cap for airtight closing of the neck portion. A vent adapted to extend into a bottle neck is integrally secured to the housing wall. Means for airtight closing of the neck portion and the air vent are provided.

3,750,916

**FOLDING APPARATUS**

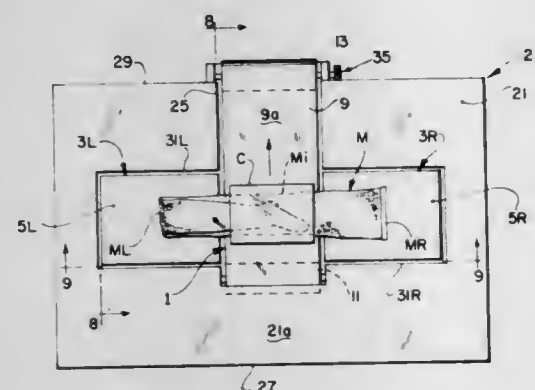
Myron Scott Stringer, Siler City; Daniel W. Smith, Durham; Robert G. MacIvergan, Raleigh, and Robert W. Eldenbaum, Cary, all of N.C., assignors to Kellwood Company, St. Louis, Mo.

Filed Sept. 20, 1971, Ser. No. 181,875

Int. Cl. A41h 33/00

U.S. Cl. 223-37

32 Claims



Apparatus for folding limp merchandise, such as hosiery, panty hose, or other items of apparel for packaging, in which the merchandise is placed on a conveyor belt with end portions of the merchandise on a pair of platforms on opposite sides of the belt. A card may be placed on the portion of the merchandise between the platforms. One platform is moved inwardly over the belt to fold over the respective end portion of the merchandise and then returned to its retracted position alongside the belt, after which the other platform is moved inwardly over the belt to fold over the other end portion of the

merchandise and then returned to its retracted position alongside the belt. As each platform moves inwardly, it is tilted to be inclined downwardly from its outer end.

3,750,917

**PANTY HOSE HANGER**

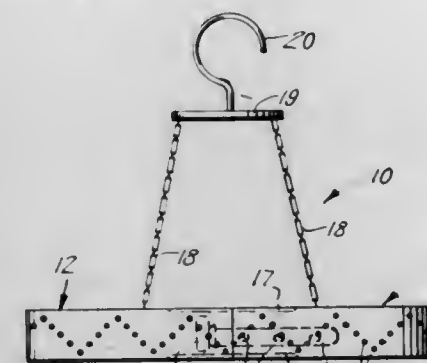
Lydia Villani, 2241 S. 24th St., Philadelphia, Pa.

Filed Mar. 21, 1972, Ser. No. 236,656

Int. Cl. D06c 15/00

U.S. Cl. 223-74

1 Claim



A device for suspending panty hose includes a pair of U-shaped members juxtaposed to define an elongated frame capable of being inserted within the open end of the panty hose. The members are perforated to permit air to circulate therethrough for expediting drying of the panty hose. The frame is capable of being adjusted to accommodate panty hose of various sizes. A hook is connected to the frame by chains to enable the frame to be suspended.

3,750,918

**FISHING ROD HOLDER**

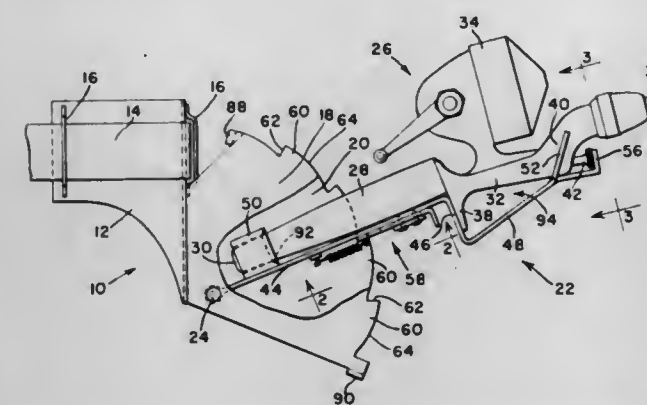
Arthur B. Jensen, R. R. 1, Box 232A, Moline, Ill.

Filed Aug. 25, 1971, Ser. No. 174,776

Int. Cl. A45c 1/04

U.S. Cl. 224-5 E

15 Claims



A body-mounted fishing rod holder including a support member adapted to be held against the abdomen of the user by a belt or a strap encircling the body, and a rod holder structure mounted on the support member for vertical pivotal movement about a transverse axis, the rod holder structure including a spring-biased latch mechanism cooperable with a plurality of ratchet teeth on the support member to hold the structure in any one of a series of angularly spaced positions. The ratchet teeth permit the holder structure to be raised from one position to another by merely exerting an upward force thereon, but necessitate a manual release of the latch mechanism to lower the structure between positions. The support member is composed in part of a pair of parallel plates extending forwardly on opposite sides of the rod holder structure and having the ratchet teeth formed in their leading edges, the plates serving as guide members facilitating quick and easy insertion of the rod on the rod holder structure.

**3,750,919**  
**FORMAT CONTROL TAPE CARTRIDGE AND MOUNTING ASSEMBLY THEREFOR**

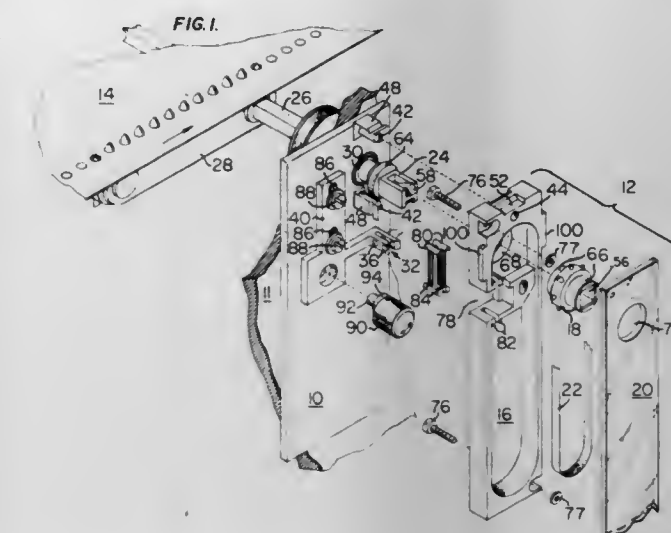
Paul R. Hoffman, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 20, 1971, Ser. No. 209,777

Int. Cl. B65h 25/00

U.S. Cl. 226-9

12 Claims



This invention applies to the control of material advancing means and more particularly to the control of the format of a record medium, such as an elongated paper web, advanced through a printing machine. The control is exercised by a format tape protectively housed within a cartridge and drivingly engaged by a sprocket wheel therein which is connectable to a driving shaft associated with that part of the printing machine for advancing the paper web. The cartridge with the enclosed tape and sprocket wheel is mounted upon a plate assembly carried by the machine having protruding operating elements, one a driving shaft associated with the web advancing means and the other a tape reader, the two operating elements cooperating with the construction of the cartridge to enter the same and in the first instance drivingly couple the sprocket wheel to the drive shaft and in the second instance disposing the tape reader in position to read the tape within the cartridge. When drivingly coupled to the drive shaft, the sprocket wheel is supported thereby so that it is free of any contact with the surfaces of the cartridge within which it is housed. Also provision is made for adjusting the tape reader while the cartridge is mounted on the printing machine.

3,750,920

**WEB GUIDE**

Richard W. Fountain, and Darrel D. Johnson, both of Appleton, Wis., assignors to Gilbert & Nash Company, Inc., Appleton, Wis.

Filed Apr. 5, 1971, Ser. No. 131,011

Int. Cl. B65h 25/26

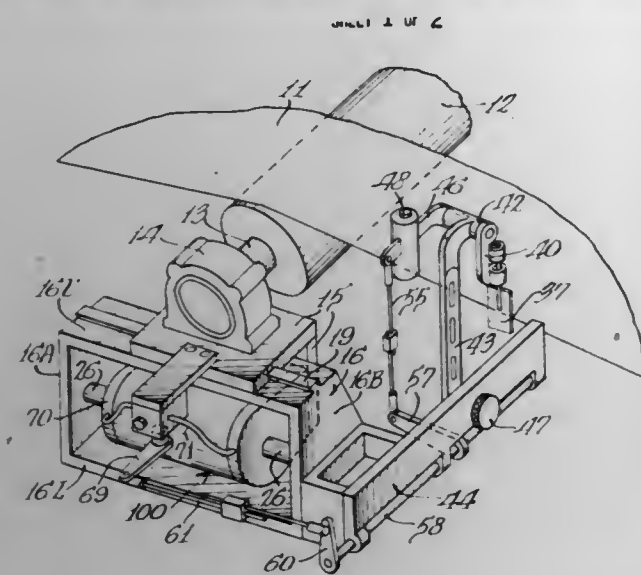
U.S. Cl. 226-23

4 Claims

An improved web guide for paper webs or other webs is disclosed employing a duplex air-hydraulic cylinder unit constructed with a single piston in a cylindrical tube to move a guide roller. A web edge follower and mechanical linkage govern an air pressure valve for supplying, in response to sensed web misalignments, different pressures to the sides of the piston. This air pressure difference moves the cylinder housing coupled to the roller so as to correct the web misalignment. The piston includes a longitudinally extending oil zone between it and the bore walls and a hydraulic seal ring affixed to the cylindrical tube. The ring divides the oil zone into two chambers which change volume with piston movement. A restricted flow path between the chambers prevents overcorrection and promotes smooth motion of the piston and roller. This arrangement provides for automatic lubrication of the



piston and simplified construction and operation of the web compressed air is fed through a bushing member which guide. The oil zone is preferably fed by oil taken from an air serves to create a rarefield atmosphere and to spread the



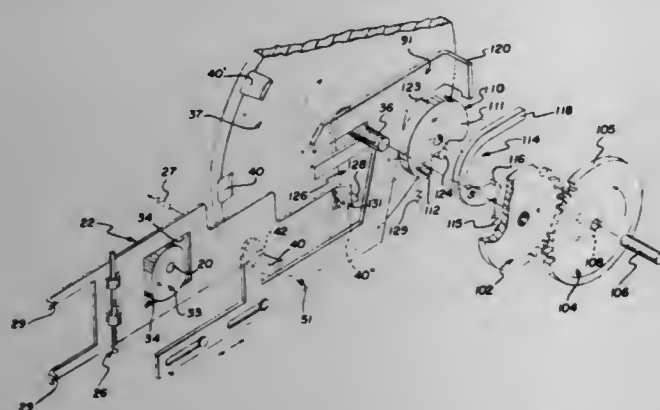
line lubricator unit to maintain the pressure in the oil zone at the same level as the air pressure.

3,750,921

**TWO FRAMES PER SECOND DEFEAT MECHANISM**  
John J. Bundschuh, 901 Elm Grove Rd., Rochester, N.Y.  
Filed May 4, 1972, Ser. No. 250,263  
Int. Cl. G03b 1/22

U.S. Cl. 226-62

5 Claims



An improved intermittent film transport mechanism for a motion picture projector includes a film claw which is caused to engage and advance the film in the projector at a periodic rate and also includes a member for intermittently intercepting the claw so as to achieve advancement of the film at a fraction of such periodic rate. The member is caused to move in a synchronous relation with the claw by a cam which is selectively operated by the engagement or disengagement of a pawl and ratchet mechanism.

3,750,922  
ASPIRATOR

Thomas J. Bethea; Charles R. Dixon, both of Rock Hill, S.C.; Wyatt P. Hargett, Jr., and William H. Stokes, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 213,862  
Int. Cl. B65h 17/32

U.S. Cl. 226-97

4 Claims

An aspirating device suitable for use in conjunction with the doffing of yarn wound members, the device employing a vacuum to pick up a yarn end and a selective compressed air supply to increase yarn threadline tensions only during initial yarn attachment to the next member to be wound. The

yarn filament bundle, increasing yarn cross-sectional area and consequently yarn tension.

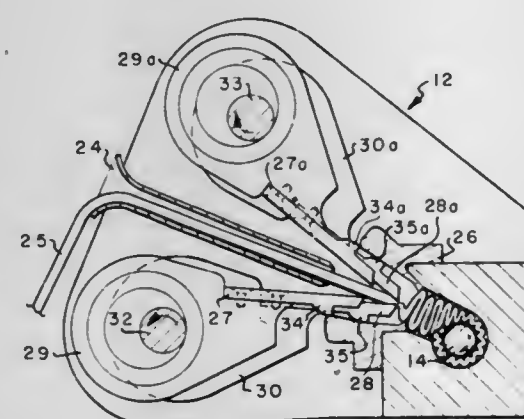
3,750,923

**COATING APPARATUS**

Norman E. Klein, Rt. 2, Inman, S.C.  
Division of Ser. No. 858,094, Sept. 15, 1969, Pat. No. 3,703,154.  
This application Feb. 25, 1972, Ser. No. 229,607  
Int. Cl. B65h 17/42

U.S. Cl. 226-112

7 Claims



Apparatus for extruding a coating around a core including an extruder screw, stock feeder means operatively associated with the screw, and core coating means disposed adjacent the delivery portion of the screw; the stock feeder comprising pairs of opposed finger elements positioned to contact strip stock and means for sequentially moving the pairs of finger elements to engage the strip stock and to advance same into contact with the extruder screw; the coating means comprising a die having an opening therethrough, a guide member disposed within the opening forming a cavity through the die, means for withdrawing a coated core material from the die and means adjacent the cord withdrawal means responsive to variations in the thickness of the coated core to control the withdrawal means.

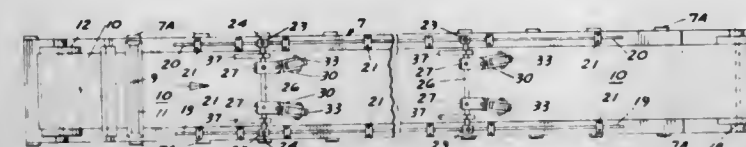
3,750,924

**WEB TENSIONER AND GUIDE SYSTEM**

Orlyn G. Pepper, 355 Everett, Milan, Mich.  
Filed Jan. 17, 1972, Ser. No. 218,227  
Int. Cl. B65h 23/16

U.S. Cl. 226-174

7 Claims



A system of counter-balanced wheels, mounted for lateral and vertical pivoted adjustment and mounted for lateral, longitudinal and lineal adjustment with respect to a web to be contacted by said wheels.

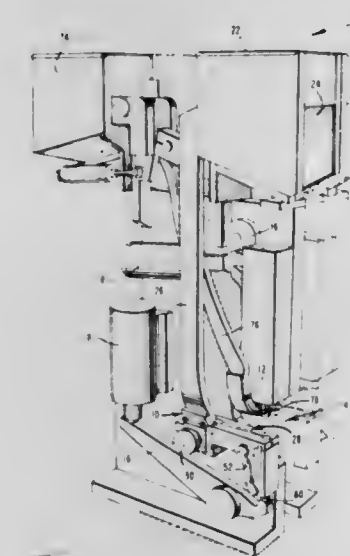
3,750,925

**SNAP ATTACHING APPARATUS**

Erich A. Schmidt, and Volker E. Schmidt, both of Lexington, Ky., assignors to Textron Inc., Providence, R.I.  
Filed Dec. 7, 1971, Ser. No. 205,550  
Int. Cl. B25c 7/00

U.S. Cl. 227-18

24 Claims



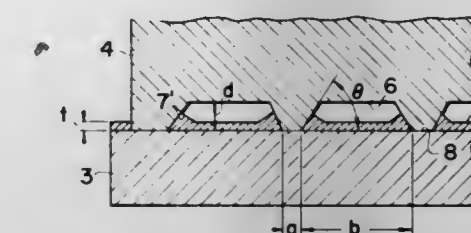
An improved feed arrangement is disclosed for feeding two component fasteners, such as buttons, snaps and the like having a pronged element and a backing element, to an apparatus which attaches the fasteners to material, such as a garment. The feed arrangement for each component includes a hopper-chute assembly, a guide channel and a driving means. Each hopper-chute assembly is readily detachable from the apparatus to provide rapid substitution of one type or style of fastener for another and includes means preventing discharge of elements from the chute when the assembly is detached from the apparatus. The guide channel and drive means are arranged to receive elements from the chute and move them successively in a single step to a setting station where an anvil and a ram forcefully bring the elements together. The guide channel for the pronged elements is formed by a pair of spaced, opposed wall members spring biased towards each other. The wall members have faces of non-linear shape and taper towards each other in the direction of feed to form a labyrinth configuration therebetween. This configuration serves to align the prongs with the axis of the channel so that they will not be prematurely and unwantedly deformed by jaws on the anvil.

3,750,926

**VIBRATION ELEMENT FOR SUPERSONIC BONDING**  
Yuzaburo Sakamoto, Musashimurayama; Hiroshi Nishizuka, and Kakutaro Kawai, both of Tokyo, all of Japan, assignors to Hitachi, Ltd., Chuyoda-ku, Tokyo, Japan  
Filed Mar. 2, 1971, Ser. No. 120,288  
Int. Cl. B23k 1/06

U.S. Cl. 228-1

1 Claim



A vibration element used for the apparatus for supersonically bonding a semiconductor chip on the back surface of which a relatively soft metal layer is formed, wherein thin grooves are disposed linearly or curvedly at suitable intervals in the surface of the vibration element so that the surface of the element has a sufficiently large vibration communicating area.

3,750,927

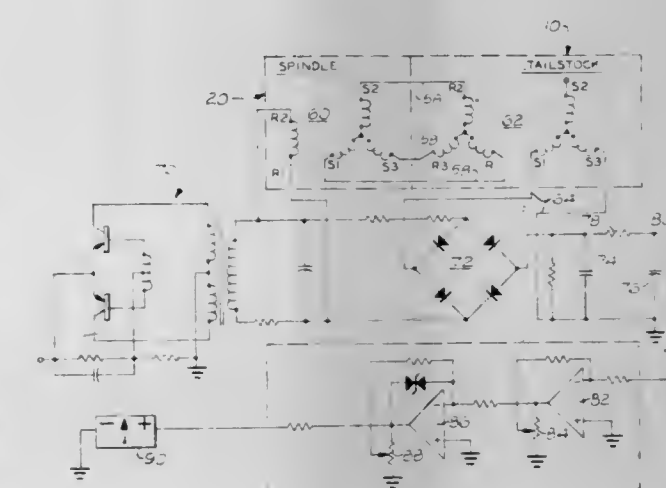
**APPARATUS AND CONTROL FOR ANGULAR ALIGNMENT OF INERTIA OR FRICTION WELDED PARTS**

Robert G. Miller, Metamora; John W. Crayton, Washington; Charles G. Farmer, Edelstein, and Ronald L. Satzler, Metamora, all of Ill., assignors to Production Technology Inc., Peoria, Ill.

Filed Nov. 12, 1971, Ser. No. 198,256  
Int. Cl. B23k 27/00

U.S. Cl. 228-2

2 Claims



Friction welded parts are rotatively aligned by turning one part with respect to the other through the hot plastic interface after the parts have been welded. A position error circuit measures the relative angular position of the parts at the end of the weld and activates a rotary actuator to turn one part with respect to the other until the desired angular alignment is obtained.



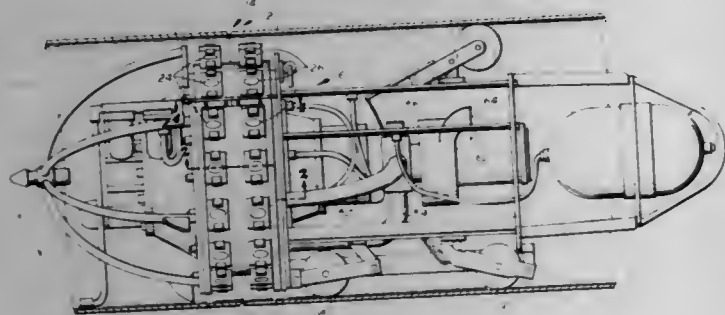
3,750,928

**VACUUM SEAL FOR INTERNAL PIPELINE LINE-UP CLAMP**

Lamar T. Valentine, 7374 E. 58th St., Tulsa, Okla.  
Continuation of Ser. No. 18,363, Feb. 27, 1970, abandoned,  
which is a continuation of Ser. No. 666,432, Sept. 8, 1967,  
abandoned, which is a continuation-in-part of Ser. No.  
650,274, June 30, 1970, Pat. No. 3,538,594. This application  
Aug. 6, 1971, Ser. No. 169,848  
Int. Cl. B23k 19/00

U.S. Cl. 228-44

6 Claims



A vacuum seal system is utilized in combination with an internal pipeline line-up clamp used in the welding of abutted elements, particularly lengths of pipe. A resilient and expandable seal is adapted to be attached to and movable with the actuating plungers or dogs of the internal alignment clamp. The seal is adapted to extend slightly above the 180° lower portion of the pipe joint to be welded. A vacuum or withdrawal of air in the sealed space will override the gravity influence of the welding process.

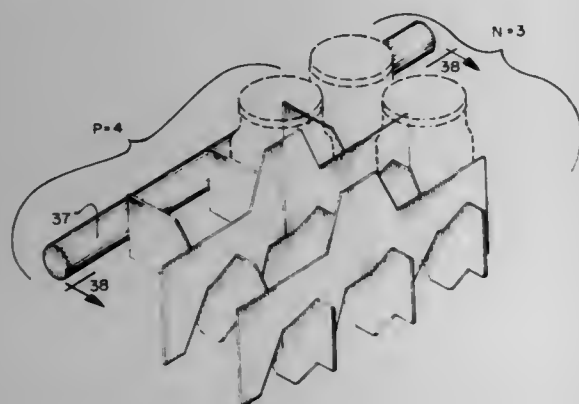
3,750,929

**CARTON PARTITION ASSEMBLY**

Thomas L. Flanagan, Killingworth, Conn., assignor to Emhart Corporation, Bloomfield, Conn.  
Filed Apr. 19, 1971, Ser. No. 135,272  
Int. Cl. B65d 5/48

U.S. Cl. 229-15

6 Claims



A partition assembly is disclosed for use in packing an array of articles, such as glass bottles or jars, in a carton, or tray, with selected portions of mutually perpendicular partition elements being utilized to separate the articles within the array so as to prevent breakage during normal jostling in handling of the carton. Each partition element is so designed that it can be readily cut from a continuous strip of paperboard material with a minimum of waste, and nevertheless possess a sufficient contact area or segment between each pair of adjacent articles in the array.

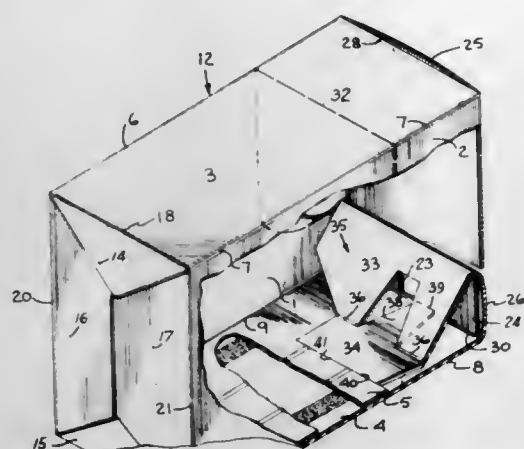
3,750,930

**CARTON**

Albert L. Roth, Spring Valley, N.Y., assignor to Becton, Dickinson and Company, East Rutherford, N.J.  
Filed June 28, 1972, Ser. No. 267,218  
Int. Cl. B65d 5/72

U.S. Cl. 229-17 B

7 Claims



A unitary carton blank adapted to be erected to form a dispensing carton for packaged articles is disclosed. The carton is formed having a tear-away zone to provide an access opening to facilitate removal of selected packages in the container and an inclined plane with a locking means integrally formed on one side of the carton so that the packages near the said side can be easily removed from the package.

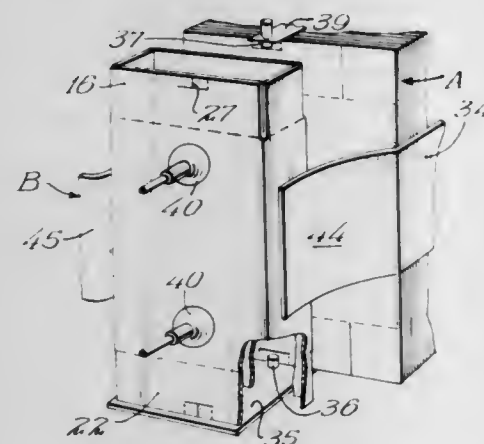
3,750,931

**CARTON OPENING MEANS**

Raymond S. Dick, Minneapolis, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.  
Filed June 19, 1972, Ser. No. 263,865  
Int. Cl. B65d 5/02

U.S. Cl. 229-37 R

6 Claims



A pair of opposed flaps are provided in closure flaps connected to a panel of a paste end carton to permit the passage of retaining fingers while squaring up the cartons from a flat folded state as the cartons are withdrawn from a hopper.

3,750,932

**CONTAINER HAVING IMPROVED BELLOWS CLOSURE AND BLANK FOR MAKING SAME**

Donald E. Ellison, Clayton, Ind., assignor to Inland Container Corporation, Indianapolis, Ind.  
Filed July 28, 1971, Ser. No. 166,921  
Int. Cl. B65d 5/02

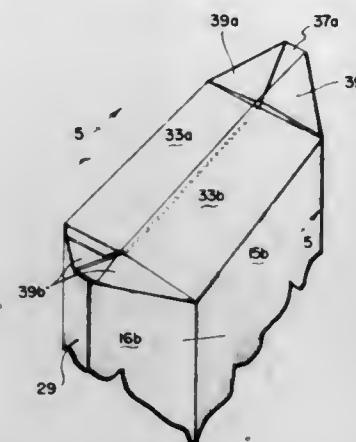
U.S. Cl. 229-37 R

15 Claims

A corrugated fiberboard container having an improved bellows closure biased to remain in closed condition, once folded, and thereby eliminate the necessity of gluing closure flaps prior to filling. Illustrated is a container having a bellows

bottom closure made up of four interconnected panels of equal length wherein diagonal score lines which do not meet provide trapezoidal closure flaps. The length of the closure panels provides an overlapping of the longer closure flaps in

Apertures are provided along the creases to permit introflexing a portion of the panels normal to the axis of the container, resulting in an axial constriction. The introflexed portion thereby becomes axially fixed, with the result that the container becomes rigid.



the closed condition with the edge of one flap nesting within the edge of the other. Slits are provided in the glue flap in the closure region which permit the glue flap to be hinged to the longer side wall and adhered to the shorter end wall thereby leaving the side wall unobstructed.

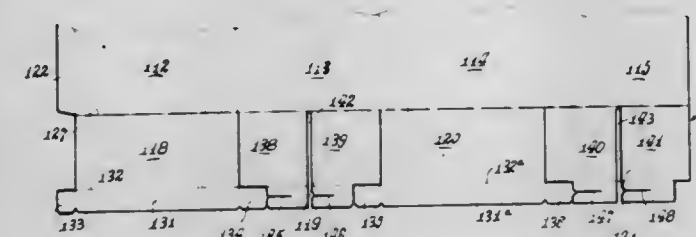
3,750,933

**CONTAINER AND CLOSURE FOR THE SAME**

Theodore E. Nicolay, 505 N. Lake Shore Dr., Chicago, Ill.  
Filed July 22, 1971, Ser. No. 165,191  
Int. Cl. B65d

U.S. Cl. 229-39 R

11 Claims



A container having a top, bottom and side panels and a locking closure, wherein the locking closure includes a closure panel and a tuck flap having foldable ears for engaging the underside of the closure panel.

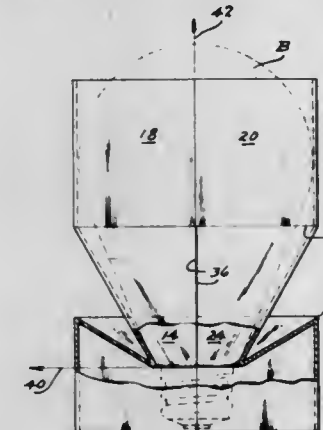
3,750,934

**CONTAINER WITH AXIAL INTERLOCKING MEANS**

Ronald E. Clinage, Ashland, Ohio, assignor to A. L. Garber Company, Ashland, Ohio  
Filed Jan. 18, 1972, Ser. No. 218,740  
Int. Cl. B65d 5/10

U.S. Cl. 229-39 B

1 Claim



A container of fiberboard or the like, formed into a polygonal shape and comprising panels defined by creases.

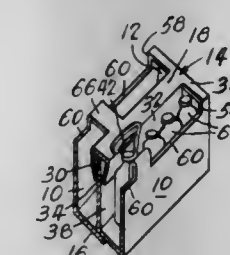
3,750,935

**CARTON**

Allardus A. Akkerman, Calgary, Alberta, Canada, assignor to Domtar Limited, Montreal, Canada  
Filed Apr. 14, 1972, Ser. No. 244,077  
Claims priority, application Canada, May 10, 1971, 112,539  
Int. Cl. B65d 5/46

U.S. Cl. 229-52 BC

9 Claims



A carton is formed having a longitudinally extending reinforcing beam formed by an elongated reinforcing panel defined in the top of the carton and by a central partition panel secured to the elongated reinforcing panel. Flaps are provided on opposite sides of the reinforcing panel to extend across the top of the carton and part-way down the side walls thereby to facilitate opening of the carton and withdrawal of the contents.

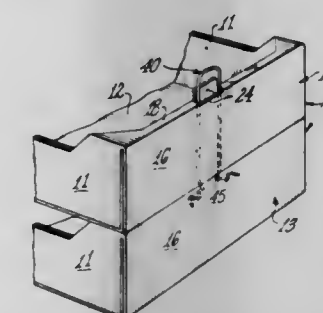
3,750,936

**HANDLE FOR PRODUCE CONTAINER**

Walton B. Crane, Sherman Oaks, Calif., assignor to Allied Plastics Company, Sherman Oaks, Calif.  
Filed Jan. 14, 1971, Ser. No. 106,434  
Int. Cl. B65d 5/46

U.S. Cl. 229-52 AW

3 Claims



A carrier handle for the container of the type shown in U. S. Pat. Re. No. 26,386, and which comprise opposite end walls, each of which has two spaced panels connected by a narrow top wall, a centrally located aperture in each top wall, and a centrally located aperture in the bottom, in vertical alignment with the aperture in the top wall. The carrier comprises a resilient wire bent into hair-pin form, forming legs terminating in extremities bent laterally away from one another through substantially a right angle to form oppositely extending feet. The legs are bent together with the grip of the hand to withdraw the feet sufficiently to enter the aperture in the top of an end wall, and then released, so that the feet project into positions underlying portions of the top wall at opposite ends of the entrance aperture. The extremities of the wire portions forming the feet are bent at right angles to the plane defined by the two legs of the wire carrier, and are of a length to gouge into the confronting end panel. The feet from which these extremities, barbs, or prongs project are backed up by the opposite end panel. The carrier is thus securely engaged with the



end wall structure, will stay in that position while coupling to a second container, and can be used to carry the container, either with or without a second container stacked thereon.

3,750,937

## PLASTIC BAG WITH EASY-OPEN FEATURE

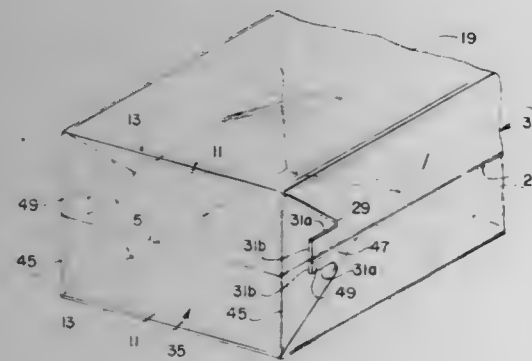
Ralph C. Goodwin, Wayzata, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

Filed Oct. 19, 1971, Ser. No. 190,547

Int. Cl. B65d 33/00

U.S. Cl. 229-66

8 Claims



A plastic bag having a gusseted bottom and sealed at both sides, and having special end formations for the gusseted bottom such as to provide a tab at the lower end of each side seal when the bag is packed, either of these tabs being adapted to be grasped and pulled upwardly toward the upper end of the bag to tear the bag open.

3,750,938

## PLASTIC CLOSURE FOR PAPER CONTAINERS AND METHOD OF MAKING SAME

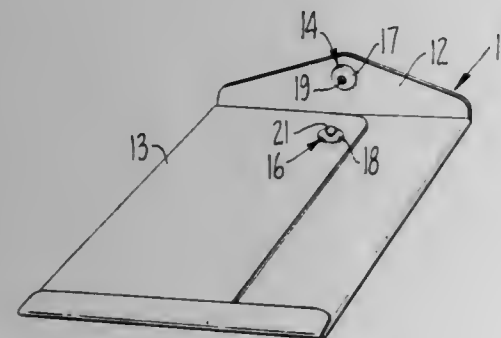
Robert F. Wiseman, 1227 Anza, San Francisco, Calif.

Filed Jan. 13, 1971, Ser. No. 106,134

Int. Cl. B65d 27/12

U.S. Cl. 229-77

6 Claims



The present invention relates to a container such as a paper envelope having an access closed by a flap releasably held closed by plastic snaps comprising a first snap element securely bonded to the body of the envelope, and a second snap element securely bonded to the flap, said first and second snaps adapted to releasably attach to each other, with the snap elements each being directly bonded to the paper-like material, and formed for combined strength and efficiency of space. The invention also provides a method of making a plastic closure system directly on a paper envelope having a main body section and a closure portion, which comprises molding a thermoplastic element directly adjacent to the main body and bonded therewith during formation thereof, and molding a second and mating closure element on the closure portion by direct molding with a thermoplastic material and in contact with said closure portion.

3,750,939

## SIGNALS FOR MAIL BOX

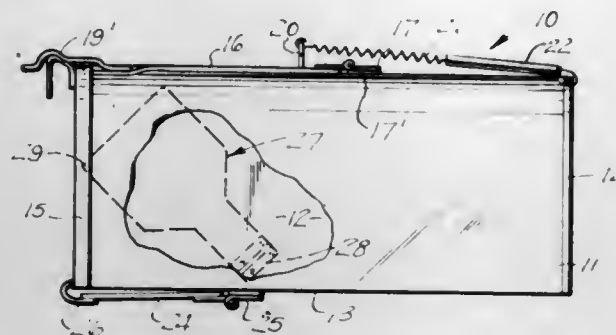
Earl D. Hallett, Rt. No. 2, Box 95, Columbia, Mo.

Filed Aug. 16, 1972, Ser. No. 281,227

Int. Cl. A47g 29/12

U.S. Cl. 232-35

3 Claims



A multiple number of signals for a mail box, include an enlarged spring lifted signal having hinge means for securing it to the top of a mail box, a side and gravity operated signal which is releasable by opening the mail box door, and a gravity operated bottom signal hinged to the bottom and including an extending lip for engagement with the mail box door.

3,750,940

## CONTROL MEANS FOR SELF-DISCHARGING CENTRIFUGE

Vilgot Raymond Nilsson, Hagersten, Sweden, assignor to Agfa-Laval AB, Tumba, Sweden

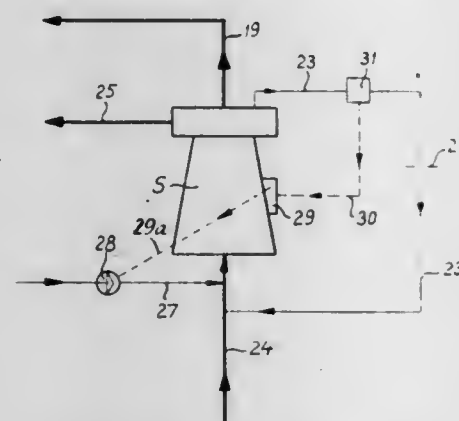
Filed Dec. 3, 1971, Ser. No. 204,625

Claims priority, application Sweden, Dec. 7, 1970, 16514/70

Int. Cl. B04b 11/00

U.S. Cl. 233-19 A

8 Claims



The centrifugal rotor has an inlet for the mixture to be separated, a central outlet for a separated liquid component of the mixture, and peripheral outlets for separated sediment of the mixture, means being provided for alternately opening and closing the peripheral outlets. The rotor is charged with a special liquid having a density intermediate those of the separated liquid component and the separated sediment, whereby an interface is formed in the rotor between the separated liquid component and the special liquid; and means are provided for sensing when this interface has moved radially inward to a predetermined level in the rotor.

3,750,941

## CENTRIFUGE POWER HEAD WITH MOUNTING MEANS

Robert M. Drucker, Astoria, Oreg., assignor to Blo-Consultants, Inc., South Gate, Calif.

Filed May 10, 1971, Ser. No. 141,656

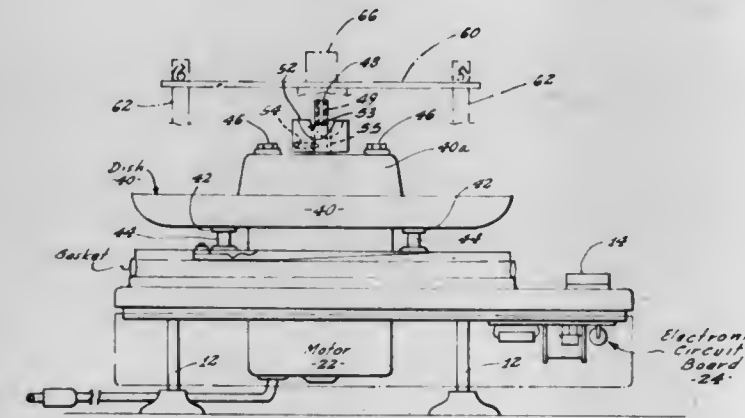
Int. Cl. B04b 9/12

U.S. Cl. 233-26

3 Claims

An improved centrifuge structure is provided for medical diagnostic purposes, and the like, and which is particularly

suited for use in conjunction with urine, blood and microhematocrit analyses. The structure involves an electric motor which is supported so that its drive shaft extends upwardly along the central axis of the centrifuge, and a coupler, in accordance with the invention is attached to the shaft by means, for example, of a set screw, or other means. The coupler defines a transverse trough extending radially with respect to the axis of rotation of the drive shaft, and the drive shaft extends upwardly through the bottom of the trough. A mating bushing is attached to the underside of the power head of the centrifuge, and it has a central aperture for receiving the motor shaft. The lower end of the bushing has a configuration



which is shaped to fit into the transverse trough of the coupler. A screw extends down through the power head and through the bushing to be threaded into the upper end of the drive shaft.

The aforesaid screw may have a knurled head to permit it to be loosened and tightened by hand. When the screw is tightened, the power head is held securely on the drive shaft with the bushing engaged by the coupler, and a positive drive is provided for the power head. However, it is an easy matter to exchange the power head with another type, if so desired, merely by removing the screw and placing a second power head, equipped with a similar type bushing, over the shaft and down into the coupler.

3,750,942

## DISTANCE MODE AREA NAVIGATION COMPUTER

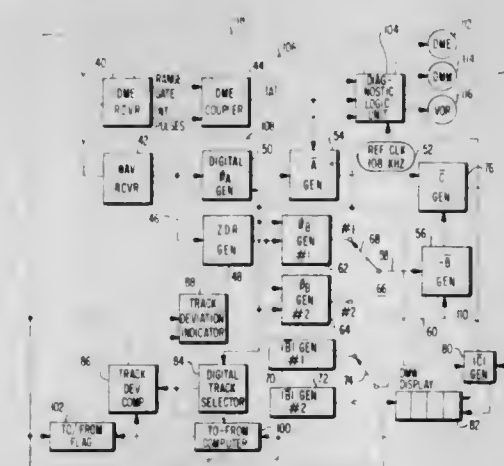
Stephen F. Bean, Columbus, Ohio, assignor to Autec Corporation, Columbus, Ohio

Filed Jan. 24, 1972, Ser. No. 219,992

Int. Cl. G06g 7/78

U.S. Cl. 235-150.27

17 Claims



An area navigation computer is disclosed which is designed to be compatible with all standard VOR and DME receivers. To avoid dependence on the characteristics of the latter, the DME information is generated by direct processing of the transponder interrogation and response data. Multiple waypoint address selection capability is provided by digital generation of waypoint bearing and range data, and digital

3,750,943

## VOTING APPARATUS

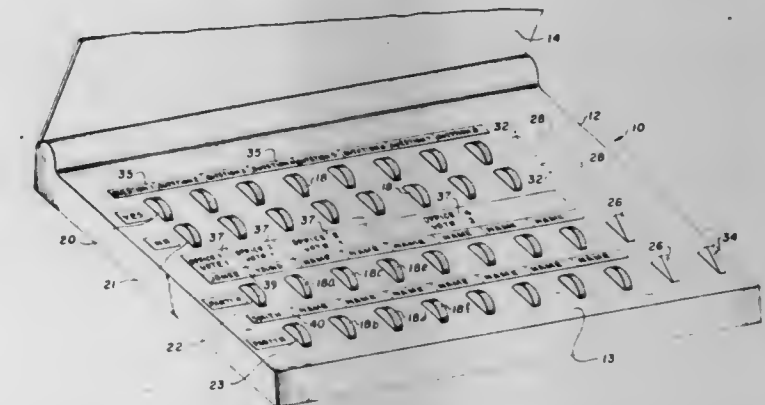
Stanley N. Darling, and Reyl Darling, both of 1248 Crigflower Rd., Victoria, British Columbia, Canada

Filed July 7, 1972, Ser. No. 269,715

Int. Cl. G07c 13/00

U.S. Cl. 235-54 R

52 Claims



Voting apparatus by means of which candidates in a general election can be selected and votes for these duly recorded. Votes can also be recorded for answers to specific questions. The apparatus can include means to enable a voter simultaneously to select all of the candidates of a desired party and to register these votes. In addition, the apparatus can be very easily set up for a primary election which enables a person to select the party for which he wishes to vote, after which he cannot vote for anyone in the other party, and then to select candidates within that party and record the votes.

3,750,944

## ZERO STOP DEVICE TEN KEY CALCULATING AND ADDING MACHINES

Gerhard Weskamp, Thalfingen, Germany, assignor to Walther Buramashinen, GmbH, Gerstetten, Germany

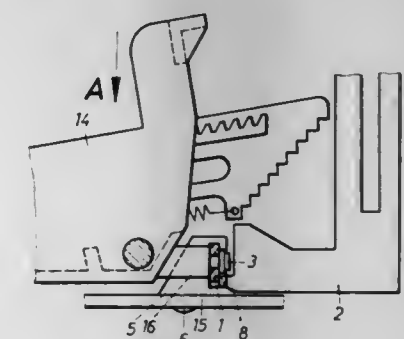
Filed May 8, 1972, Ser. No. 251,437

Claims priority, application Germany, May 8, 1971, P 21 22 783.8

Int. Cl. G06c 23/04, 27/00

U.S. Cl. 235-60 TK

7 Claims



A ten key calculating and adding machine has a set pin carriage displaceable transversely beneath the keyboard. A plurality of value selector members are actuated by the set pin carriage. A flexible band has a plurality of longitudinally spaced lugs along the center of one face and the lugs are engageable by the slides in their zero positions so as to constitute a zero stop member. The flexible band is slideably guided along a guide member fixed within the machine and has one end attached to the carriage and the other end to a spring so as to displace the carriage.



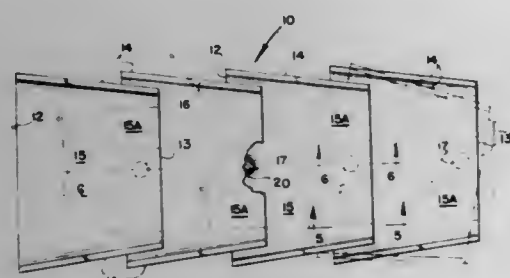
3,750,945

## TRACK FOR TOY AUTOS

Joseph P. Warr, 1810 N. Park Ave., Eugene, Oreg.  
Filed Mar. 20, 1972, Ser. No. 236,037  
Int. Cl. A63g 21/00

U.S. Cl. 238—10 E

2 Claims



A track for toy autos comprising pivotally linked track pieces each in alternate underlapped and overlapped supporting relationship at its ends with adjacent track pieces. The lapped portions include pivot means permitting articulated adjustment of each piece to provide track curves of various radii. Sidewalls of each piece confine the toy auto on the track. The traction surface of each piece includes beveled areas for an uninterrupted continuous traction surface for the track.

3,750,946

## RAIL JOINTS

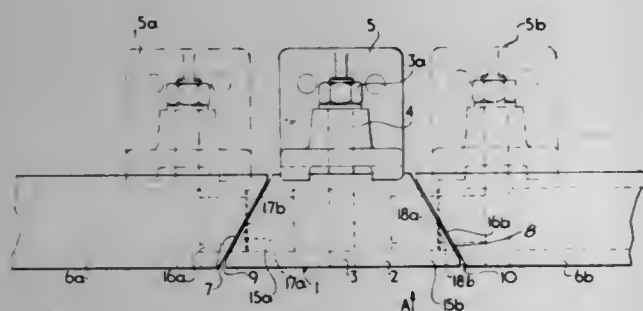
Andre Jacquemet, Grand-Lancy, Geneva, Switzerland, assignor to Battelle Memorial Institute and Dunlop Limited, Geneva, Switzerland and London, England  
Filed Feb. 8, 1972, Ser. No. 224,513

Claims priority, application Great Britain, Feb. 15, 1971, 4,630/71

Int. Cl. E01b 11/60

U.S. Cl. 238—226

2 Claims



A rail system for a vehicle in which a joint piece interconnects adjacent lengths of rail. Each joint piece is of similar cross section to the rails and is wedge shaped to co-operate with wedge shaped ends on the rails. Engagement means are provided within the cross-section of the rails which transmit at least part of the vehicle weight from the joint-piece to the rails, of which the following is a specification.

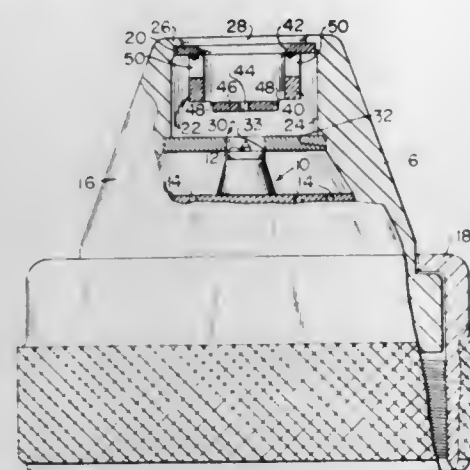
3,750,947

## ATOMIZING NOZZLE ASSEMBLY

Nathaniel Hughes, Beverly Hills, Calif., assignor to Energy Sciences Incorporated, El Segundo, Calif.  
Filed Sept. 2, 1971, Ser. No. 177,280  
Int. Cl. F23d 11/16

U.S. Cl. 239—11

10 Claims



Liquid (e.g., paint) is sprayed with a nozzle having an axial flow passage and coaxial radial holes into the passage spaced 180° apart intermediate the nozzle inlet and outlet.

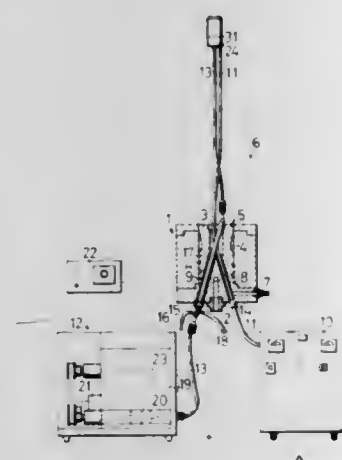
3,750,948

## APPARATUS FOR DEPOSITING POWDERED SUBSTANCE ON THE INNER SURFACE OF INFLATION TUBE

Shiro Saito, Tokyo, Japan, assignor to Nikka Kabushiki Kaisha, Tokyo, Japan  
Filed Nov. 9, 1971, Ser. No. 197,087  
Int. Cl. B05b 5/02

U.S. Cl. 239—15

7 Claims



An apparatus for uniformly and thinly depositing finely powdered substance on the inner surface of an inflation tube, which is being shaped by an ascensional inflation method, by diffusing said powdered substance into gaseous atmosphere in the inflation tube by means of static electricity.

3,750,949

## SPRAY GUN FOR PULVERULENT MATERIAL ENTRAINED IN A GASEOUS STREAM

Manfred H. Luderer, Weiler zum Stein, and Anton Ettenhofer, Winnenden, both of Germany, assignors to Atlas Copac Aktiebolag, Nacka, Sweden  
Division of Ser. No. 819,229, April 25, 1969, abandoned. This application Nov. 8, 1971, Ser. No. 196,381  
Int. Cl. B05b 5/02

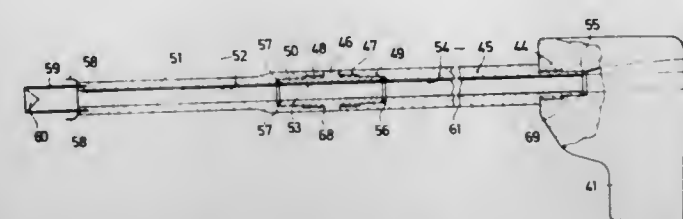
U.S. Cl. 239—15

16 Claims

A spray gun, for spraying pulverulent material, entrained in a pressurized gaseous stream, onto workpieces comprises a

number of interchangeable tubular parts whereby it may be lengthened or shortened, and a plastic composition tube may extend through the spray gun body to transport the pulverulent material. The interchangeable parts constitute a tubular gun barrel extending between an inlet and a discharge orifice,

electric drive motor which supplies the conventional pumping power. In one embodiment of the invention a split phase motor is employed having windings enclosed in an oil bearing jacket and fluid is circulated both internally and about the



and a thin electrically conductive wire extends in the zone of the bore of the gun barrel and is electrically connected to electrodes in the zone of the discharge orifice to connect the electrodes to a source of electric potential. Baffle bodies are interchangeably pluggable into the gun barrel at the discharge orifice, and may be designed as high voltage electrodes.

3,750,950

## LIQUID SENSING SWITCH ASSEMBLY

Robert V. Whitener, 20 Tall Tree Ct., Huntington, N.Y.  
Filed Aug. 10, 1971, Ser. No. 170,525  
Int. Cl. B05b 17/04

U.S. Cl. 239—63

4 Claims



A switch assembly activated by conductive liquids, typically water, and based upon use of a longitudinally slit resilient cylinder, carrying one of a pair of spaced, parallel rod-shaped electrodes at each side of the cylinder wall slit. A bolt passed transversely through the cylinder may be adjusted as to constrict or relax the resilient cylinder to thereby vary the spacing of the parallel electrode rods and the sensitivity characteristics of the switch. Moisture, for example, in the form of sprinkler produced water droplets, or the level of surface irrigation water, may bridge the electrode gap by impinging thereon and spreading longitudinally by surface tension effects. The resulting change in current may be utilized to trip a relay in an irrigation system supplying the activating water droplets, or—where the switch is used in a level detector system—to provide a precise indicating signal that the monitored liquid level has become accessible to the electrode gap.

3,750,951

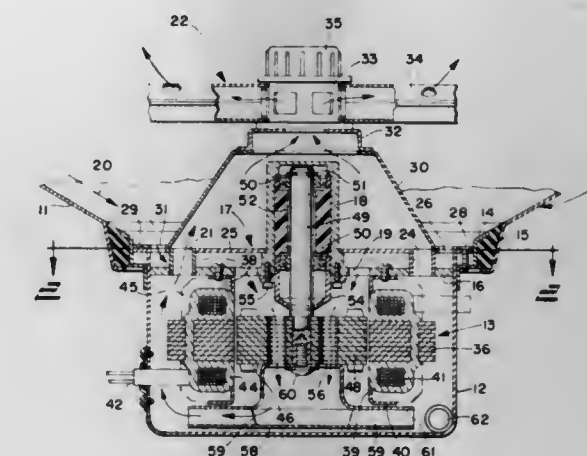
## HEAT SYSTEM FOR DISHWASHER

Richard L. Perl, Mansfield, Ohio, assignor to The Tappan Company, Mansfield, Ohio  
Filed Nov. 3, 1971, Ser. No. 195,197  
Int. Cl. F04b 23/04

U.S. Cl. 239—139

12 Claims

A dishwasher in which fluid temperature is elevated by the direction of the fluid into heat transferral contact with the



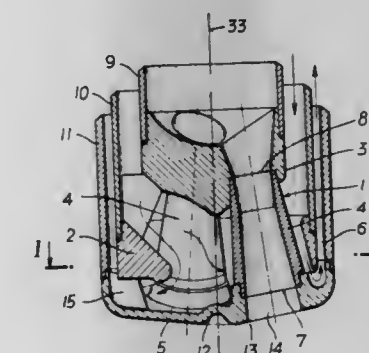
3,750,952

## NOZZLE-HEAD FOR A WATER-COOLED BLOWING LANCE

Otto Schweng; Hellmuth Smejkal; Hans Vereb, and Karl Eicher, all of Linz, Austria, assignors to Vereinigte Österreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria  
Division of Ser. No. 61,090, Aug. 5, 1970, Pat. No. 3,662,447.  
This application Nov. 26, 1971, Ser. No. 202,702  
Int. Cl. B05b 15/00

U.S. Cl. 239—132.3

2 Claims



The invention relates to a nozzle-head for a water-cooled blowing lance comprising at least one outlet opening for a gaseous refining agent and, if desired, fine-grained fluxes, an inlet piece, at least one nozzle tube leading through a water-cooled space and a front plate to which the at least one nozzle tube is connected, in which the improvement resides in that both the inlet piece and the front plate are provided with tubular projections which are connected with each other to form said nozzle tubes, the connection plane lying perpendicularly to the nozzle-head axis at a distance from the front plate amounting to about one-fourth to two-thirds of the height of the nozzle-head. The number of connecting seams corresponds to the number of nozzle tubes; the seams are far away from the front plate and thus sheltered from any danger to damage.



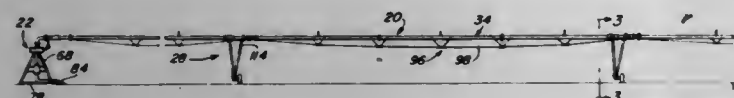
3,750,953

**ELECTRICALLY DRIVEN CIRCULAR IRRIGATION SYSTEM**

Richard F. Reinke, P.O. Box 272, Deshler, Nebr.  
Division of Ser. No. 792,013, Jan. 17, 1969, Pat. No. 3,608,826. This application Sept. 22, 1971, Ser. No. 182,725. The portion of the term of this patent subsequent to July 28, 1988, has been disclaimed.  
Int. Cl. B05b 3/12

U.S. Cl. 239-177

7 Claims



An elongated boom having a plurality of sprinkler heads mounted thereon with the boom being constructed of a plurality of articulately connected sections supported by electrically driven wheeled assemblies for propelling the boom in a circular path about a central standpipe. The boom is in the form of a truss construction, the articulate connections between the sections of the pipe are disposed interiorly of the flow path and the sections of the boom are retained in alignment in either direction of movement. An end gun is provided and cam operated to irrigate the normally missed corners of a square area and the lugged wheels on the supporting assemblies are timed so that the lugs track thereby providing less disturbance of the ground surface.

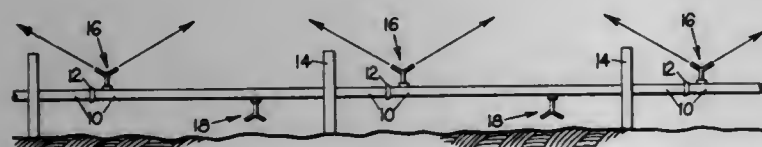
3,750,954

**SPRINKLER SYSTEM AND ADAPTER VALVE THEREFOR**

Leonard H. Williams, P.O. Box 233, Hermiston, Oreg.  
Filed Apr. 27, 1972, Ser. No. 247,967  
Int. Cl. B05b 3/18

U.S. Cl. 239-178

6 Claims



An elongated assembly of interconnected irrigation pipes, supported at spaced intervals on wheels, is provided at longitudinally spaced intervals with a plurality of sprinkler heads which extend from the pipe alternately in opposite directions and are connected to the pipe each by an adapter valve arranged automatically to open those heads extending upwardly from the pipe and to close those heads extending downwardly from the pipe when the latter contains water under pressure, and also to open those heads extending downwardly from the pipe when the latter contains unpressurized water, whereby to effect drainage of the pipe.

3,750,955

**SPRAY COATING APPARATUS**

Susumu Nakai, Tokyo, and Tadanori Sameshima, Fujinomiya, both of Japan, assignors to Honshu Paper Company Limited, Tokyo, Japan

Filed June 23, 1972, Ser. No. 265,565

Claims priority, application Japan, Sept. 10, 1971, 46/69671

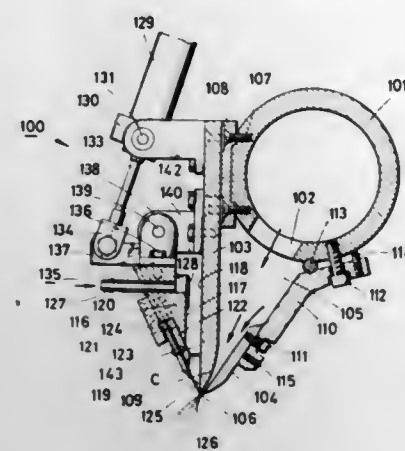
Int. Cl. F23d 11/16, 13/40, 15/00

U.S. Cl. 239-420

6 Claims

Coating apparatus is disclosed which has a spray tip characteristic tailored to produce an atomized spray pattern which is

substantially triangular in cross section. This results in a coat distribution uniform particularly throughout a given width of a



substrate. Means are also provided to hold the spray tip wide open for maintenance purposes.

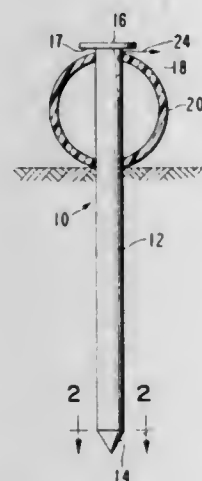
3,750,956

**SPRINKLER UNIT**

Gary J. Mastman, 5150 Graves Ave., San Jose, Calif.  
Filed Nov. 15, 1971, Ser. No. 198,859  
Int. Cl. A62c 31/22

U.S. Cl. 239-272

26 Claims



An improved sprinkler for use with a hose capable of being pierced wherein the sprinkler is adapted to be driven into and through the hose so that a recess in the sprinkler places the interior of the hose in fluid communication with a region exteriorly thereof to allow water flowing through the hose to enter the recess and exit therefrom into the region. One form of the sprinkler includes a shaft having a slot in its outer surface for defining the recess. The slot can have any one of a number of different configurations. Another form of the sprinkler includes a shaft having a tubular segment having a fluid passage forming the recess. In both forms, the shaft is sufficiently long so that a part of the shaft is adapted to project outwardly from a hose and to be used to anchor the hose against movement when water flows through the hose.

3,750,957

**TORCH FOR THERMOCHEMICAL PROCESSING OF WORK PIECES**

Heinz Gabel, Frankfurt/Main; Hans Hirschberg, Altenheim/TS, and Gerhardt Lange, Frankfurt/Main, all of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

Filed Sept. 16, 1971, Ser. No. 181,150

Claims priority, application Germany, Sept. 19, 1970, P 20 46 414.6

Int. Cl. B05b 7/00

U.S. Cl. 239-424

12 Claims

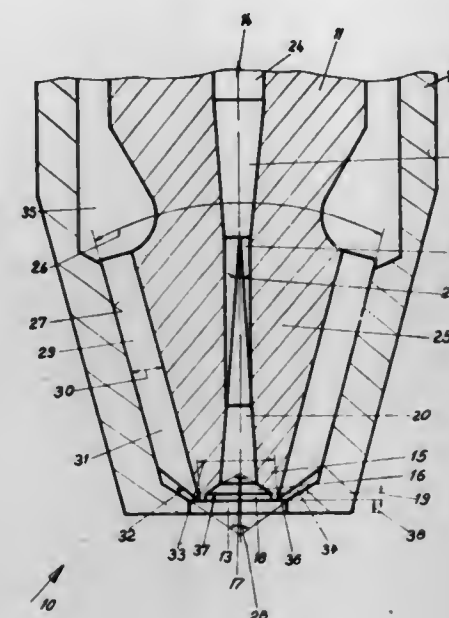
A torch for the thermochemical processing of work pieces has at least one channel for the processing oxygen and at least

3,750,959

**VALVE AND NOZZLE ASSEMBLY**

Roy J. Welkert, c/o General Films Inc., Covington, Ohio  
Filed June 19, 1972, Ser. No. 264,139  
Int. Cl. F16k 31/524, 31/528; B05b 1/32  
U.S. Cl. 239-539

9 Claims



opening is provided for the various gases. The processing oxygen channel has a depression at its outlet with the depression being at an angle of 90°-150° and preferably 120°.

3,750,958

**BURNER NOZZLE**

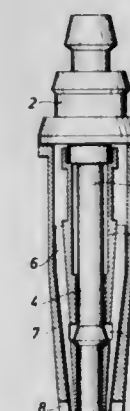
Severin Haselmann, Bandhagen, Sweden, assignor to Aga A B, Lidings, Sweden

Filed Oct. 7, 1971, Ser. No. 187,453

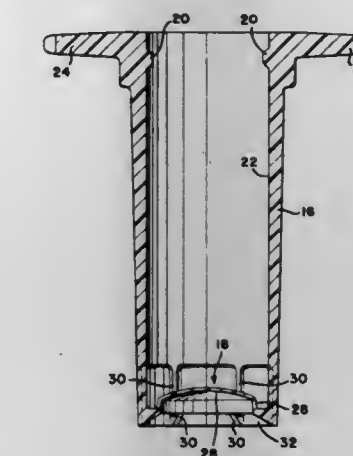
Int. Cl. F23d 11/16

U.S. Cl. 239-419.3

8 Claims



A burner nozzle for cutting purposes and provided with channels conducting cutting gas, burner gas and heating gas. The cutting gas channel extends rectilinearly through the entire nozzle. One of the other channels is annularly formed around the cutting gas channel and is connected at the outlet end of the nozzle to an annular chamber. Said chamber is connected with a plurality of narrow channels being inclined or turned relative the axis of the nozzle. Said narrow channels are mainly intended for the burning gas and said annularly formed channel is intended for the heating gas. The burning and heating gases are mixed when the heating gas flows out from said annular chamber in said inclined or turned channels. The gas mixture is arranged to flow annularly out around the jet of cutting gas and form a heating flame.



A one piece valve for controlling flow through a tubular nozzle. The valve includes a tubular portion slidably engaging the outer wall of the tubular nozzle and a dome shaped closure member positioned concentrically within the tubular portion of the valve by means of a series of radially extending ribs. The inner wall of the tubular portion of the valve is provided with cam followers which engage in cam grooves or slots in the outer wall of the tubular nozzle so that rotating the valve about the nozzle by means of outwardly projecting arms will cause the valve to move axially of the nozzle to bring the dome shaped closure member into sealing contact with the inner wall of the nozzle adjacent its lower end. The dome shaped closure member curves upwardly into the nozzle so that there is an increase in sealing force in response to the weight of the fluid acting on the closure member.

3,750,960

**FUEL INJECTOR**

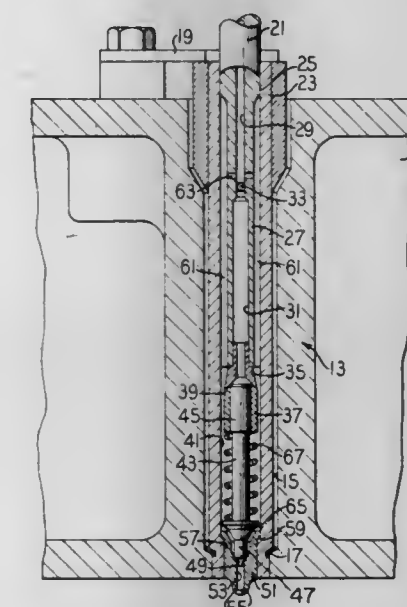
John H. Back, Washington; Elling Z. Johnson, Dunlap; Stanley J. Kranc, Morton, and Robert D. McDowell, Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 836,303, June 25, 1969, abandoned. This application Nov. 5, 1971, Ser. No. 196,153

Int. Cl. B05b 1/30

U.S. Cl. 239-533

6 Claims



A fuel injector of the inwardly opening type wherein an end of the fuel line is utilized as an integral part of the injector.



3,750,961

**VERY HIGH VELOCITY FLUID JET NOZZLES AND METHODS OF MAKING SAME**

Norman C. Franz, Apt. 902, 4620 W. 10th Ave., Vancouver, British Columbia, Canada

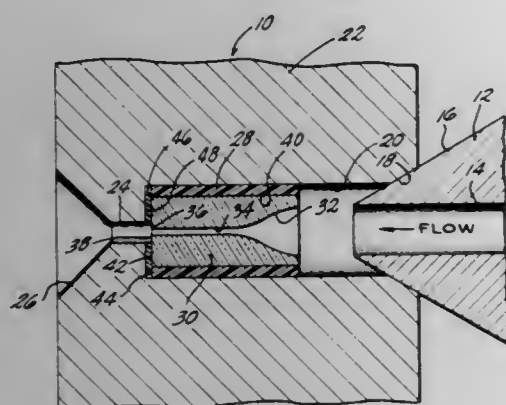
Continuation of Ser. No. 875,726, Nov. 12, 1969, abandoned.

This application July 16, 1971, Ser. No. 163,435

Int. Cl. B05b 1/00

U.S. Cl. 239—600

15 Claims



A very high velocity fluid jet nozzle comprised of a heavy walled vitreous body defining a jet orifice circular in cross section and substantially greater in length than the cross sectional diameter thereof, the orifice being defined by a smooth surface blending into an entry chamber defined by the vitreous body, the nozzle being made by a process including the steps of pressurizing the bore of a heavy walled vitreous capillary tube, softening a portion of the tube so as to form a chamber therein, and severing the tube at the chamber and at points spaced from the chamber.

3,750,962

**DISINTEGRATION PROCESS FOR FIBROUS SHEET MATERIAL**

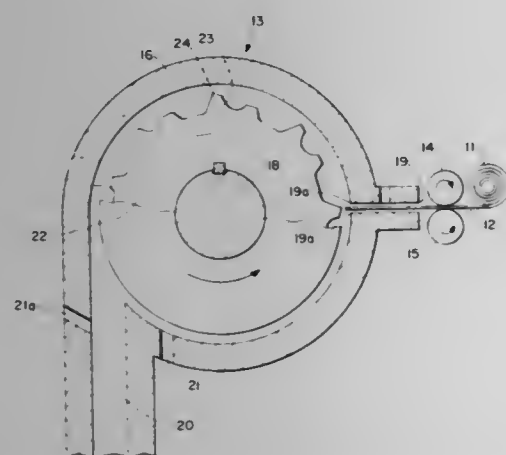
George Morgan, Jr., Cincinnati, Ohio, assignor to The Procter &amp; Gamble Company, Cincinnati, Ohio

Filed Sept. 22, 1971, Ser. No. 182,796

Int. Cl. B02c 13/08

U.S. Cl. 241—18

9 Claims



A process for continuously converting dried cellulosic fibrous sheet material into a dispersion of individual fibers in air. The fibrous sheet is advanced into a disintegrating device wherein the end of the sheet is repeatedly impacted at a predetermined velocity by one or more impacting elements at a critical distance from the support elements for the sheet. The fibrous sheet is entirely disintegrated into individual fibers at relatively high rates.

3,750,963

**BENEFICATION OF A CLAY CONTAINING SYLVINITE ORE**

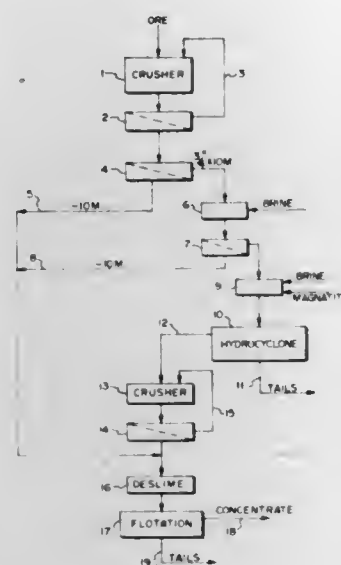
William B. Dancy, Lakeland, Fla., assignor to International Minerals &amp; Chemical Corporation, Libertyville, Ill.

Filed Oct. 2, 1970, Ser. No. 77,631

Int. Cl. B02c 21/00

U.S. Cl. 241—20

12 Claims



Coarse, unliberated, clay-containing sylvinitic is subjected to gravity beneficiation to remove significant amounts of halite and clay. The sylvite-containing overflow, having a reduced clay content, may be comminuted and subjected to wet beneficiation.

3,750,964

**ISOLATION AND FRACTIONATION OF ORGANS OF SMALL ANIMALS**

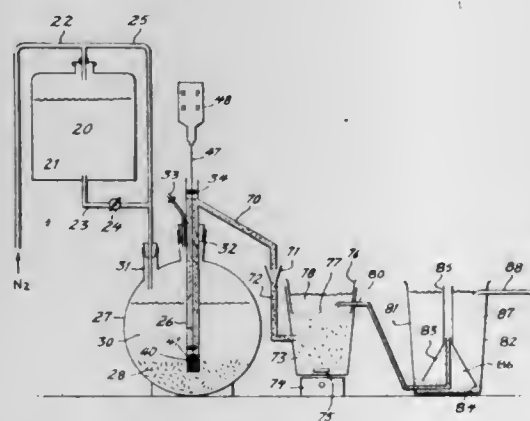
Leonard H. Cohen, Abington; Alfred Zweidler, Elkins Park; William F. Hafner, Huntingdon Valley, and Robert J. Ellis, Philadelphia, all of Pa., assignors to The Institute for Cancer Research, Philadelphia, Pa.

Filed Sept. 28, 1971, Ser. No. 184,366

Int. Cl. B02c 18/10

U.S. Cl. 241—29

14 Claims



Methods and apparatus are described for isolation of diverse organs from small animals and fractionation thereof. The invention involves a continuous mechanical dissecting system, a centrifugal agitator for the separation of fibrillar from globular particles, and a settling chamber for the fractionation of organs at unit gravity with sedimentation velocities above the useful range for centrifugation. The invention is applicable to the isolation of polytene and non-polytene nuclei from larvae of *Drosophila melanogaster* (fruit fly) and is applicable to other small animals such as adult fruit flies or other insect larvae.

3,750,965

**CRUSHING MACHINES FOR GLASS ARTICLES**

John Madden, Leven, Scotland, and Hans-Jorgen Bye-Jorgensen, Gravesend, England, assignors to Robinson Sacks Limited, Fife, Scotland

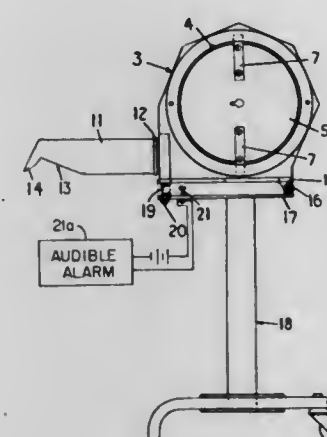
Filed June 28, 1971, Ser. No. 157,259

Claims priority, application Great Britain, July 4, 1970, 32,501/70; Dec. 10, 1970, 58,650/70

Int. Cl. B02c 25/00, 13/00

U.S. Cl. 241—36

9 Claims



A machine for crushing elements such as glass bottles having a chute into which the bottles are fed to a rotor chamber for crushing. The crushed material is fed from the chamber by the action of the rotor along a substantially horizontal outlet spout extending tangentially from the chamber. The rotor has a three-fold action consisting of (a) crushing action (b) creating a suction action in the chute and (c) feeding the crushed material from the chamber.

3,750,966

**SYRINGE DESTROYING DEVICE**

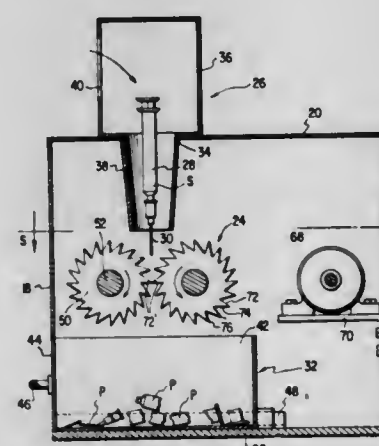
Bryce P. Anderson, Berkeley, Calif., assignor to Control Products Corporation, Salt Lake City, Utah

Filed June 30, 1971, Ser. No. 158,469

Int. Cl. B02c 18/06, 13/20

U.S. Cl. 241—99

4 Claims



A syringe destructing device includes breaking means in the form of a pair of counter-rotating toothed rolls which fracture an unbroken syringe passing therethrough into a plurality of discrete pieces. The teeth on the rolls are of a unique, sharp-edged configuration and the rolls are disposed with respect to one another so that at the nip therebetween, a sharp edge on the tooth from one roll just contacts the sharp edge on the tooth on the opposite roll.

3,750,967

**GYRATORY CRUSHER HAVING INTERCHANGEABLE HEAD MANTLES**

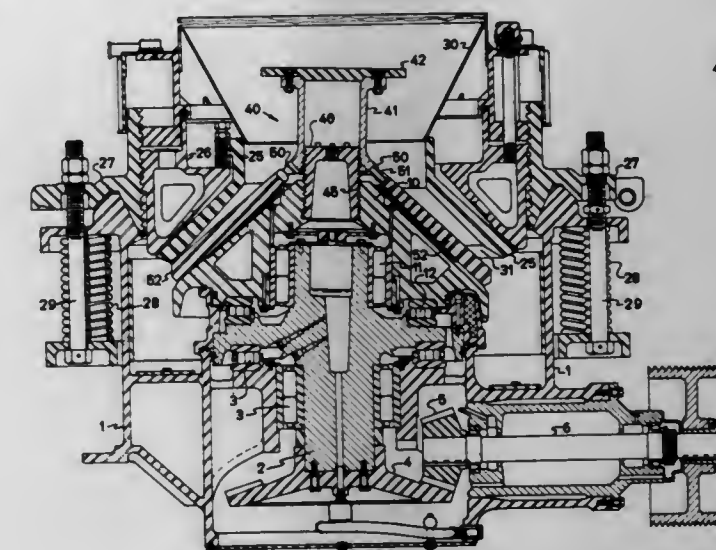
Ronald B. DeDiemar, Brown Deer, and LeRoy J. Schuman, Milwaukee, both of Wis., assignors to Barker-Greene Company, Aurora, Ill.

Filed Dec. 27, 1971, Ser. No. 212,368

Int. Cl. B02c 2/04

U.S. Cl. 241—207

5 Claims



A gyratory crusher having a generally conical crushing head rotatably mounted on an upright eccentric and which head cooperates with an annular concave to form a crushing chamber therebetween. A material hopper is located above the crushing chamber and acts to feed material downwardly into the crushing chamber. Interchangeable mantles are provided for the top of the crushing head and thereby one common head is provided for various types of mantles that are used for fine or coarse crushing operations.

**ERRATUM**

For Class 241—209 see: Patent No. 3,750,809

3,750,968

**ARTICLE WINDING DEVICE**

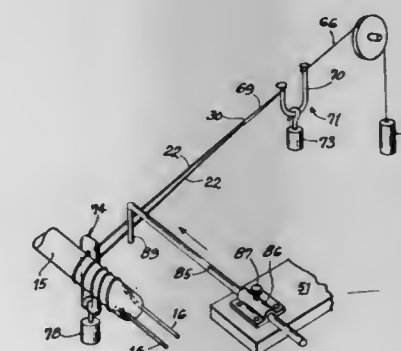
Mitsuaki Mochizuki, Kobe; Minoru Tanaka, Akashi, and Tadataka Koyama, Takarazuka, all of Japan, assignors to Okazaki Manufacturing Company, Kobe, Japan

Division of Ser. No. 697,554, Dec. 26, 1967, Pat. No. 3,574,931. This application Jan. 8, 1970, Ser. No. 7,327

Int. Cl. H01c 17/00

U.S. Cl. 242—7.15

3 Claims



A pair of resistance wires are wound onto a take-up member by rotating the take-up, providing twist prevention and tensioning on the trailing end of the wire and axially spacing the turns being wound. The twist prevention and tension is maintained on the trailing wire end by a weighted U-shaped member.



member attached thereto. The spacing is achieved by supporting a hook-shaped member on one wire so that the wires pass on opposite sides of one of the legs of said hook-shaped member, the dimension of said leg being the desired pitch distance of the wire spacing plus the sum of the radii of the two wires.

3,750,969

## COIL WINDING MACHINE

William B. Weis, 1511 Indian Rocks Rd., Largo, Fla.

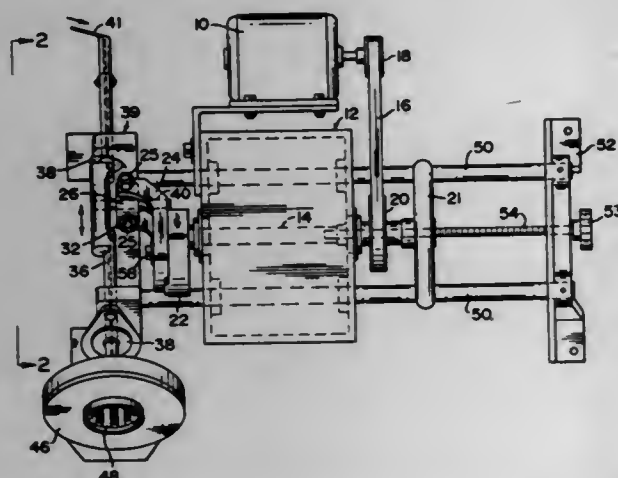
Continuation-in-part of Ser. No. 865,878, Oct. 13, 1969,

abandoned. This application Aug. 17, 1970, Ser. No. 64,294

Int. Cl. H02k 15/085

U.S. Cl. 242-1.1 R

8 Claims



The apparatus for quickly, easily and accurately varying the configuration and plane of the elliptical path of the needle of a semi-automatic stator-coil winding machine. The machine includes a rotary movement section and an elliptical movement section arranged in cooperation with one another such that a rotary movement is translated into an elliptical movement to drive a wire-carrying needle about the perimeter of a stator-coil and thereby wind it. By varying the elliptical path of the needle, the apparatus of this invention substantially improves the capability of the machine to wind coils of different configurations.

3,750,970

## LINE COILING APPARATUS

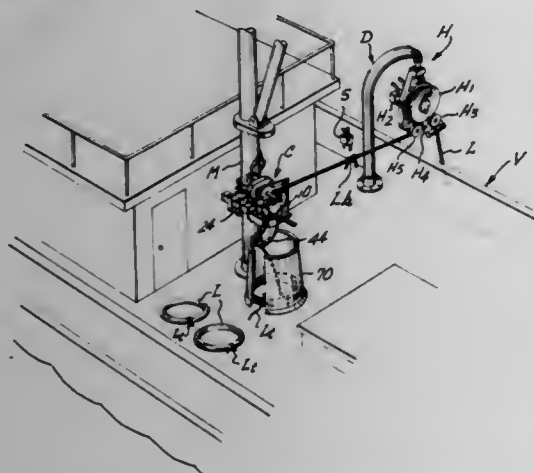
Olivier L. Tremoulet, Jr., Seattle, Wash., assignor to Marine Construction &amp; Design Co., Seattle, Wash.

Filed Feb. 2, 1971, Ser. No. 111,971

Int. Cl. B65h 51/00

U.S. Cl. 242-47

8 Claims



A crab trap warp line coiling mechanism is disclosed that can be operated conjunctively with line hauling mechanism. A chamfered presser wheel that wedges line into the V-shaped groove of the coiler's power driven sheave is mounted on a rocker arm operatively associated with interlock mechanism for the rotative slinger. A slip clutch for the drive connection

to the slinger permits the slinger assembly to be stopped positively by the interlock when the presser wheel is raised without interrupting the driven rotation of the grooved sheave, and thereby safely permits removal and insertion of line through registered slots in the slinger and associated parts.

3,750,971

## PAPER ROLL HOLDER

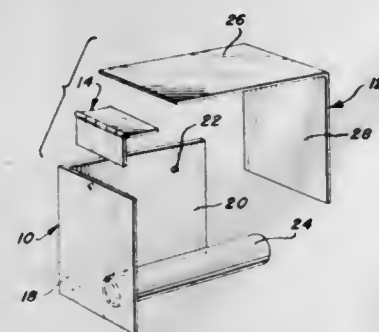
George Chevas, Chicago, Ill., assignor to John E. Pastuszynski and Grace Chevas, both of Chicago, Ill.

Filed June 1, 1972, Ser. No. 258,537

Int. Cl. B65h 19/04

U.S. Cl. 242-55.3

13 Claims



A paper roll holder comprised of a pair of generally identical right angled plate members, one member for mounting on a wall or the like and the other member being hinged to the one member for providing a cover for the holder as well as means to block removal of a paper roll from the holder. One angled plate member has a rear plate portion for securing to the wall and an end support plate portion protruding from the wall and having a rod-like paper roll holding member secured at one end thereof to one side of the end support plate portion. The second angled plate member has a top plate portion pivotally connected to the top edge of the end support plate portion of the first angled plate member for covering a roll of paper on the rod-like member, and an end plate portion depending downwardly from the top plate portion past the opposite end of the rod-like member to block removal of a roll of paper thereof but permitting removal of the paper roll simply by pivoting the second angled plate member upwardly.

3,750,972

## AUTOMATIC TENSION REGULATION OF YARN AND WIRE WINDING DEVICES

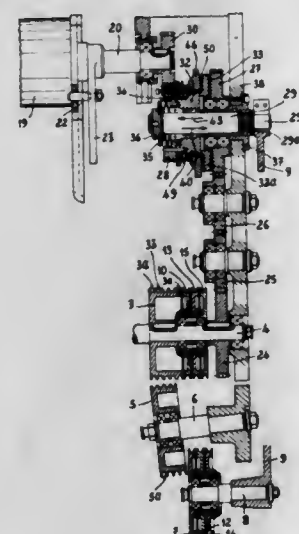
Joannes Francis Marcel Bonnabaud, 23 rue Noelas, Roanne, and Claude Brat, 119 route de Vichy, Rlorges, both of France

Filed Feb. 23, 1971, Ser. No. 118,111

Int. Cl. B65h 58/38

U.S. Cl. 242-45

8 Claims



A device for regulating the tension of a yarn or an assembly of yarns, or wires, between a pulling capstan and a winding

bobbin. The device is intended for avoiding the inconveniences resulting from sudden stoppages of the winding machine, the winding rate being controlled automatically by the yarn or wire tension through means adapted to modify accordingly the pressure of a friction coupling disposed between the pulling capstan and the winding bobbin.

3,750,973

## MEANS AND METHOD OF WEB SLITTING AND WINDING

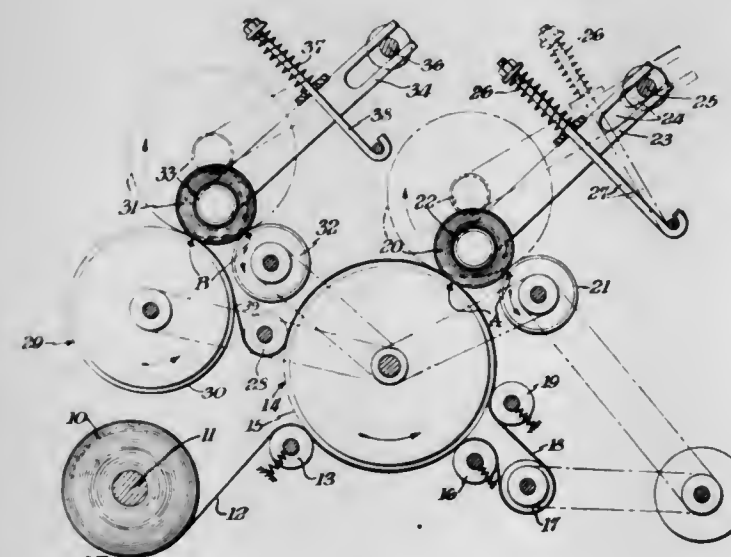
Gordon E. Walters, Williamstown, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Apr. 6, 1971, Ser. No. 131,614

Int. Cl. B65h 35/02, 23/10

U.S. Cl. 242-56.2

11 Claims



A means and method for winding webs cut from sheet material into a compact and uniform rolls by constant contact with a pair of rotating members under a substantially uniform pressure. The roll during winding being associated with means for maintaining the roll in contact with the pair of rotating members and so that the roll axis of rotation elevates along a substantially straight line upon the accumulation of its convolutions. A tension is applied to the webs throughout travel from the slitting of the sheet material to the winding roll.

3,750,974

## METHOD OF AND APPARATUS FOR WIRE RECEIVING AND STORING

James W. Dlbrell, Malibu, Calif., assignor to Microwire Corporation, Allentown, Pa.

Continuation-in-part of Ser. No. 52,594, July 6, 1970, Pat. No. 3,656,701. This application Mar. 27, 1972, Ser. No. 238,353

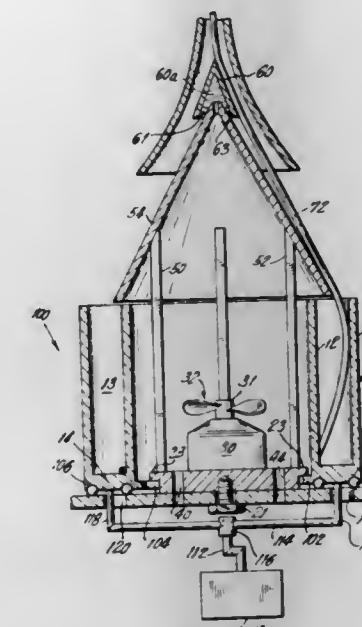
Int. Cl. B21c 47/00

U.S. Cl. 242-83

18 Claims

Wire to be wound and stored is drawn through a tube by the viscous drag of a flowing gas. The wire then is passed over a cone and an air stream having an angular component relative to the cone axis causes the wire to rotate over the cone surface. A storage container having an annular chamber is disposed adjacent the wide end of the cone, with the annular

opening communicating with the wide end of the cone so that wire is deposited into and wound within the annular chamber.



3,750,975

## CONTROL DEVICE FOR PROJECTOR FILM STRIPPING AND THREADING MECHANISM

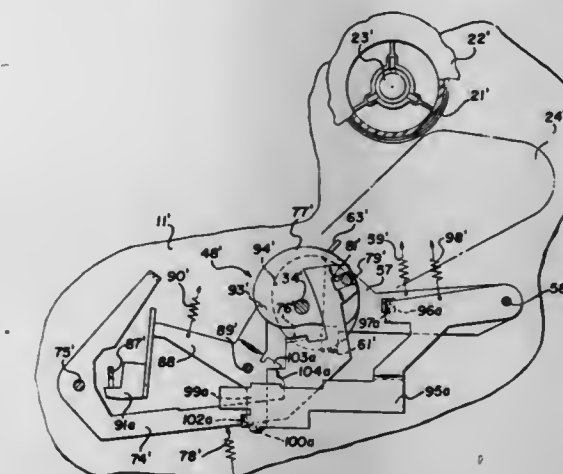
Leslie J. Bunting, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 23, 1971, Ser. No. 136,803

Int. Cl. G03b 1/58; B65h 25/28

U.S. Cl. 242-192

6 Claims



A self-threading motion picture projector includes a control device which latches a film stripping and threading mechanism of the projector in its active position wherein it is effective to feed film from a roll of film supported by the projector. When the leading end of the film has entered a film gate of the projector and has been engaged by a film-advancing member (which advances the film at a rate faster than the film stripping and threading mechanism), the control device is unlatched in response to the resulting tension of the film between the gate and the supply reel, thereby causing the stripping and threading mechanism to return to its inactive position so that the film can be projected. In the event the mechanism is moved to its active position when there is less than a minimum length of film on the supply reel (i.e., the film roll is of less than a minimum diameter), or if there is no supply reel on the projector, the control device will not latch the film stripping and threading mechanism in its active position.



3,750,976

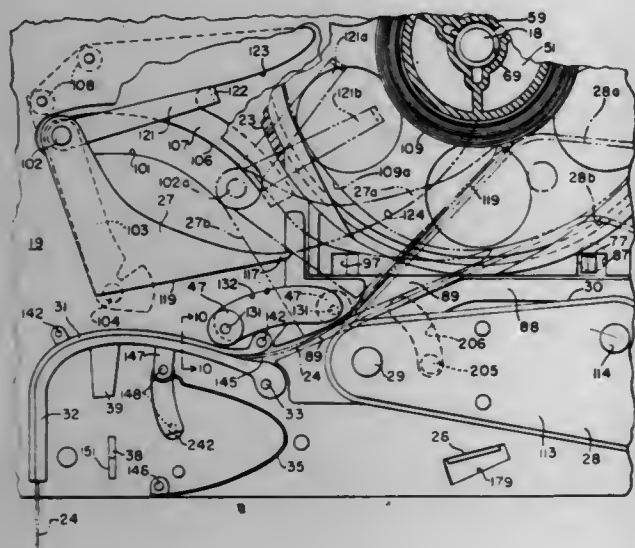
**CINEMATOGRAPHIC PROJECTORS OR THE LIKE AND CARTRIDGES FOR USE THEREWITH**

John J. Bundschuh, and Robert J. Roman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 685,616, Nov. 24, 1967, Pat. No. 3,552,683. This application Apr. 1, 1970, Ser. No. 24,657  
Int. Cl. G11b 15/32, 15/66, 23/10

U.S. Cl. 242-192

11 Claims



A machine such as a cinematographic projector is convertible to accommodate either a film supply cartridge or an unenclosed film supply reel, such conversion being automatically accompanied by corresponding change in the mode of operation of the machine.

3,750,977

**STRIPPING AND FEEDING DEVICE FOR STRIP MATERIAL**

Torakiyo Yamanaka, Yokohama; Yoshihiro Shigeta, and Kuniyoshi Suzuki, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

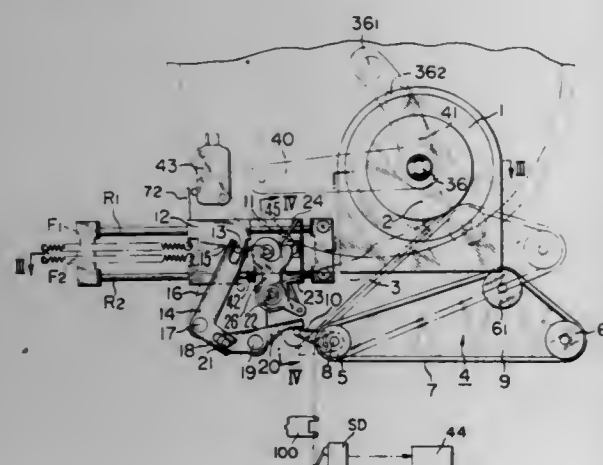
Filed Oct. 4, 1971, Ser. No. 186,010

Claims priority, application Japan, Oct. 5, 1970, 45/87360

Int. Cl. G03b 1/04, 1/56; G11b 15/32

U.S. Cl. 242-192

12 Claims



A cineprojector or similar device is provided with restraining means for controlling the entry of stripping means into a cartridge in use so as to ensure a strip material such as film to be smoothly stripped and threaded from a roll of such material irrespective of the variable size of the cartridge. Means for driving stripping means and threading means in association with each other is provided to simplify the operation of the device.

3,750,978

**SKYBOAT**

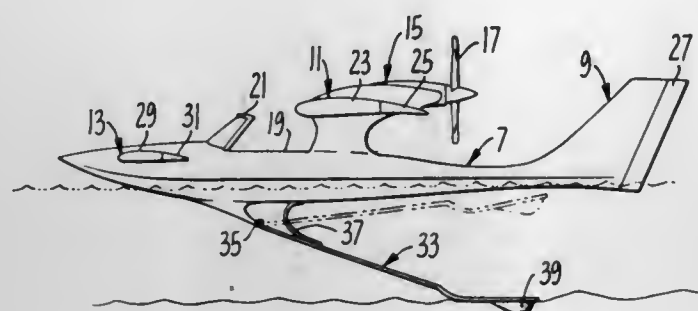
Byron H. Cunningham, 1013 Cedar St., Santa Cruz, Calif.

Filed Aug. 25, 1971, Ser. No. 174,653

Int. Cl. B64c 37/00

U.S. Cl. 244-2

2 Claims



A skyboat is provided which consists of an airplane-like structure having limited lift wings and a trailing ski which is ordinarily in contact with water. A high speed, efficient, safe craft for the transportation of people and cargo is thus provided.

3,750,979

**ROCKET ASSISTED PROJECTILE**

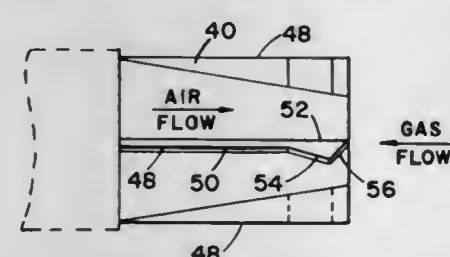
Joe W. Nelms, and William L. Nelms, both of Harvest, Ala.

Filed Sept. 23, 1970, Ser. No. 74,622

Int. Cl. F42b 15/16

U.S. Cl. 244-3.24

3 Claims



A rocket assisted projectile round consisting of a cartridge, a rocket motor and projectile wherein the cartridge propels the rocket motor out of a firing tube and ignites ignition powder in the rocket motor. Thereafter, the rocket motor is ignited and it propels the projectile in flight.

3,750,980

**AIRCRAFT WITH VERTICAL TAKE OFF AND LANDING CAPABILITY**

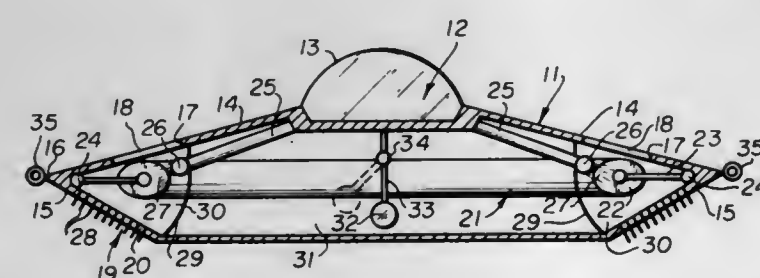
Samuel L. Edwards, 212 Prince St., Newark, N.J.

Filed June 30, 1970, Ser. No. 51,161

Int. Cl. B64c 17/02, 29/00

U.S. Cl. 244-12 C

6 Claims



An aircraft with vertical landing and take off capability comprising a stator having a housing for control means as well as a cockpit for operational personnel and a turbine like rotor driven by reaction jets mounted on the stator, the turbine rotor having an air inlet on the upper surface of the stator and an air outlet on the bottom of the stator with means for

directionally deflecting the air outlet for control purposes; the stator also including weight means mounted along the vertical axis of the stator and displaceable radially from the vertical axis.

3,750,981

**MAN-POWERED GLIDER AIRCRAFT**

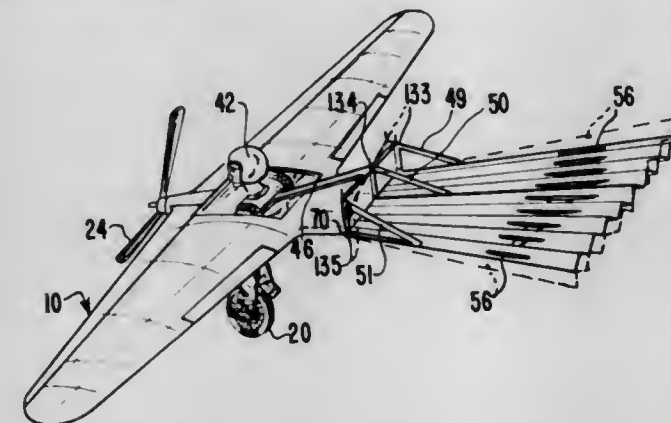
Alfred G. B. Prather, P.O. Box 53, Lanham, Md.

Filed Oct. 12, 1971, Ser. No. 188,289

Int. Cl. B64c 31/04

U.S. Cl. 244-16

4 Claims



The aircraft wings have means for varying their camber and include a fan-like tail section hinged to the rear of a rigid frame surrounding the pilot's space between the inner ends of the side wing sections, in substantially the same plane therewith, a unicycle being fixed to said rigid frame to provide a seat for the pilot. A collapsible propeller is mounted on a shaft extending forwardly from a bearing on the front of said rigid frame, and is driven by a chain or belt drive from a sprocket or pulley on the wheel of the unicycle, the blades of the propeller being keyed to the propeller shaft through limited annular slot and key connections between adjacent blade bearings, to spread the blades to their proper angular spacing whenever the shaft is driven, and to return them to a common vertical hanging position so as to reduce their drag during gliding operations whenever no power is applied.

The pilot sits on the unicycle seat, drops a yoke harness over his shoulders which is operatively connected to control the inclination and twist of the hinged tail section, whereby the shifting of his body forward, lifts the tail section to cause an increase in the angle of attack of the side wing sections, and by shifting his body rearward the tail section is lowered to decrease the angle of attack, and if he moves his body from side to side he can twist the tail section accordingly. After placing this yoke over his shoulders, the pilot inserts his arms through openings in the inner ends of said wing sections and grasps the handles of the corresponding hand control plates which are operatively connected to control the cambers of the side wing sections, the warping of the outer ends of these sections and the spread of the fan-like tail section.

3,750,982

**ROTARY WING AIRCRAFT**

John Philip Gear, Cherryacre, Thornford, near Sherborne, England

Filed Jan. 28, 1972, Ser. No. 221,610

Claims priority, application Great Britain, Feb. 5, 1971, 4,011/71

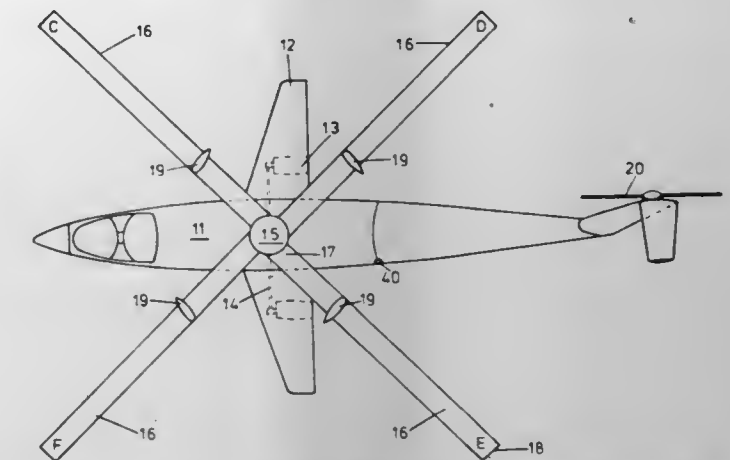
Int. Cl. B64c 27/50

U.S. Cl. 244-17.11

10 Claims

A means for folding a helicopter rotor blade includes a generally chordwise hinge located intermediate the root and tip ends of the blade, the outboard portion of the blade being rotatable about the hinge to a folded position in which it overlaps the inboard portion of the blade along at least part of its length. The hinge is formed in a generally cylindrical hollow member of aerofoil shape having leading and trailing sections

and a rotatable central section. The inboard portion is secured to the leading and trailing sections, and the outboard portion is secured to the rotatable central section. A motor located in the hollow hinge, acting through a spline connection, rotates the central section relative to the leading and trailing sections.



An arm formed integral with the central section abuts a surface formed in the inboard portion of the rotor blade adjacent the hinge when the outboard portion of the rotor blade is in its fully extended position. The hinge is locked and unlocked by a ram which, when extended, locates through mating holes in the arm and the abutting surface.

3,750,983

**GAS TURBINE DUCTED FAN ENGINES FOR AIRCRAFT**

Geoffrey William Morris, Breaston, England, assignor to Rolls-Royce Limited, Derby, England

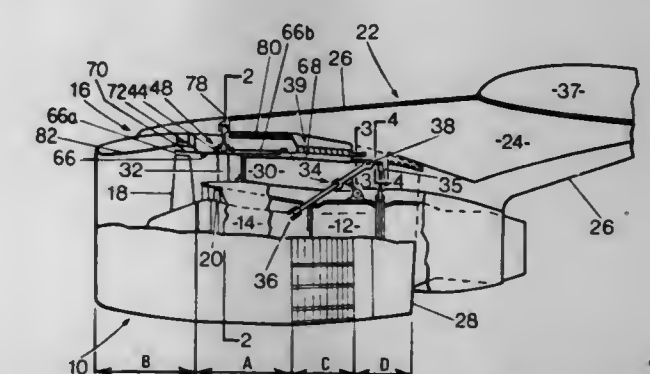
Filed Aug. 9, 1971, Ser. No. 169,971

Claims priority, application Great Britain, Aug. 11, 1970, 38,570/70

Int. Cl. B64d 27/12

U.S. Cl. 244-54

7 Claims



In a ducted fan gas turbine engine that part of the fan duct outer wall which extends over the tips of the fan blades, is connected to inter alia the fan air intake in a non-load bearing manner and is thus unaffected by way of deformation when the fan air intake is acted upon by adverse wind conditions. Thus, fouling of the fan blades is avoided. Moreover the fan intake outer wall can be made from relatively light materials.

3,750,984

**MECHANICAL TRANSMISSION RELAY FOR A CONTROL FACILITY COMPRISING A MANUAL ELEMENT AND A SERVO-MOTOR, AND ITS USE IN AIRCRAFT CONTROL SYSTEMS**

Henri Mouttet, Aix en Provence, and Gerard Lafortune, Marignane, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed May 11, 1972, Ser. No. 252,292

Claims priority, application France, May 18, 1971, 7117933

Int. Cl. B64c 13/18

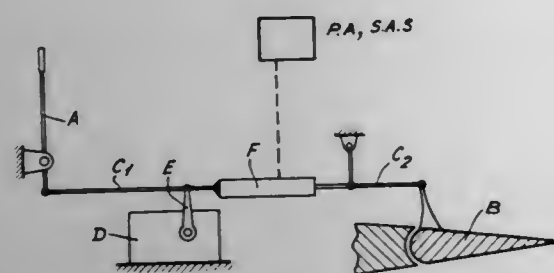
U.S. Cl. 244-76 R

12 Claims

A relay, incorporated in a single box, and including a single torsion spring which provides a reaction force equal and op-



posite to forces applied to the relay so that play between the parts is eliminated. The relay is used in an aircraft control system, being connected by a link with a manual control element and a servo-motor. The servo-motor coacts with the relay and actuates a control surface of the aircraft. The relay includes a pivotable connecting link fixed to a pivot pin. The



pivot pin is connected, through a quadrant which meshes with a pinion gear, to a shaft. The shaft carries a disc at one end. Movement of the shaft may be restricted by an electro-magnetic brake. The relay reacts to movement of either the manual control element or the central surface so as to provide a feel force for the pilot of the aircraft.

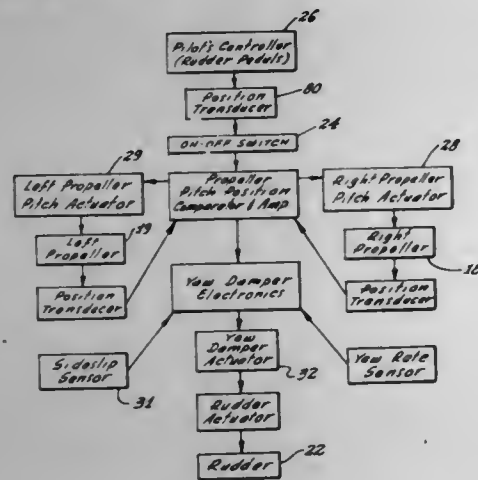
3,750,985

## SIDE FORCE CONTROL DEVICES

Wilbert G. Wheldon, Palos Verdes Peninsula, Calif., assignor to Northrop Corporation, Los Angeles, Calif.  
Continuation-in-part of Ser. No. 66,449, Aug. 24, 1970. This application Feb. 12, 1971, Ser. No. 114,818  
Int. Cl. B64c 13/04

U.S. Cl. 244-83 R

2 Claims



An airplane embodying devices functioning to provide an essentially true side force acting to alter the horizontal flight path of an airplane without sideslip and to avoid roll movements normally associated with maneuvers of this type.

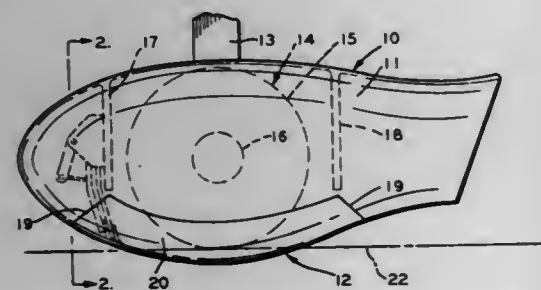
3,750,986

## AIRCRAFT PANTS STRUCTURE

James R. Bede, 355 Richmond Rd., Richmond Heights, Ohio  
Filed Feb. 11, 1971, Ser. No. 114,658  
Int. Cl. B64c 25/16

U.S. Cl. 244-103 R

15 Claims



A wheel pants structure is provided for aircraft having landing gear including wheel and axle means which are supported

in a substantially fixed position relative to the aircraft fuselage. The pants structure is in the form of a housing defined by fixed wall means having an opening therein adapted to be closed by a pair of pivotal door elements. The housing means including the fixed wall means and the door elements is adapted to completely enclose the wheel when the door elements are in the closed positions thereof. When the door means are moved to the open positions thereof, a portion of the wheel means is exposed for engagement with an underlying support surface for the aircraft. The door means may be moved between the open and closed positions thereof mechanically, electrically, hydraulically or pneumatically and may be actuated either manually from within the aircraft cabin or automatically.

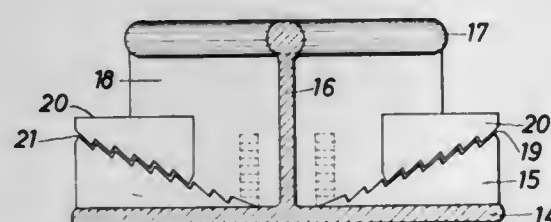
3,750,987

## BEARING FOR SUPPORTING ROOF COMPONENTS ABOVE ROOF CEILINGS

Klaus Gobel, Am Forst, 55 Trier-Irsch, Germany  
Filed Aug. 6, 1971, Ser. No. 169,789  
Claims priority, application Germany, Aug. 10, 1970, P 20 39 670.7; Aug. 10, 1970, P 20 39 669.4  
Int. Cl. E04g 21/00

U.S. Cl. 248-1

13 Claims



For supporting roof components, such as purlins or other roof bearers, above a ceiling, the invention provides a bearing comprising a base body which rests on the ceiling providing a plurality of inclined support surfaces, as well as individual support bodies each of wedge-like configuration providing a respective bearing surface resting upon the corresponding support surface, each support body being moveable upwardly on its support surface of the base body but being prevented from moving downwards in the opposite direction.

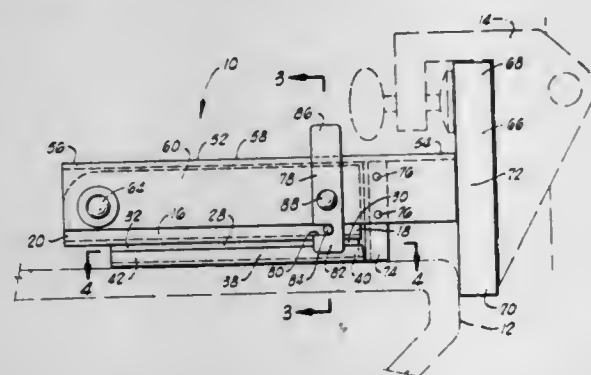
3,750,988

## MOTOR MOUNT

Clifford R. Lyon, 8 W. 40th St., Sand Springs, Okla.  
Filed May 25, 1972, Ser. No. 256,646  
Int. Cl. B63b 17/00

U.S. Cl. 248-4

8 Claims



A motor mount for securing an electric trolling motor or the like to the bow portion of a boat which includes a motor mounting plate secured to a folding frame structure. The folding frame structure is removably secured to the bow portion of the boat by means of a pair of mutually engageable wedge-type brackets fixedly secured respectively to the frame structure and the bow portion of the boat. A latch is carried by the

folding frame to secure the relatively movable members thereof in operating position. The motor mounting plate is sized such that it provides positive securement of the motor mount to the bow portion of the boat when the motor mount is latched in the operating position.

3,750,989

## ADJUSTABLE APPLIANCE SUPPORT

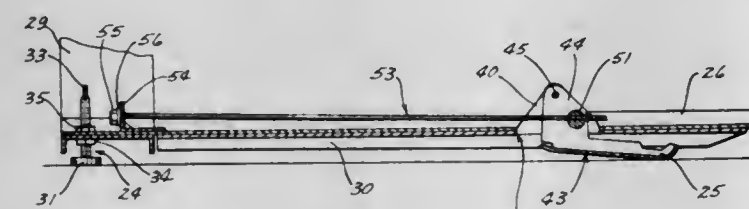
Richard P. Bergeson, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed July 19, 1971, Ser. No. 163,910

Int. Cl. F16m 11/00

U.S. Cl. 248-23

8 Claims



An adjustable three-point support for an appliance, such as a built-in dishwasher, includes a pair of threaded legs adjacent the front of the appliance and an adjustable member disposed toward the rear thereof but adjustable from the front of the appliance for achieving a selective positioning and levelling of the appliance from the front of the appliance.

3,750,990

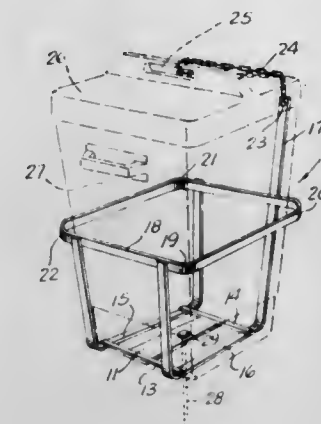
## REFUSE CAN HOLDER

Miles H. Jacobs, Rt. 2, Glouster, Ohio  
Filed July 15, 1971, Ser. No. 162,811

Int. Cl. F16m 13/00

U.S. Cl. 248-146

1 Claim



The present invention is directed to a refuse can holder which will support the refuse can in an upright position and has the top secured thereto by a flexible chain to prevent its loss. The holder is an open framework which encompasses the refuse can and is secured to the supporting surface by a spike driven into the ground or by a threaded fastener threaded into a socket in a concrete base.

3,750,991

## SUCTION MOUNTING DEVICE

Meyer J. Ragir, 1375 Sheridan Rd., Highland Park, Ill.  
Filed May 5, 1971, Ser. No. 140,386

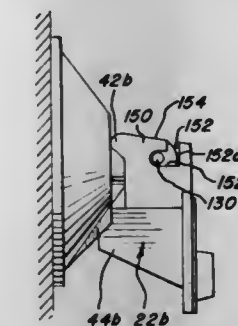
Int. Cl. F16b 47/00

U.S. Cl. 248-206 R

14 Claims

A suction device including an elastic diaphragm and a camming lever pivoted on pins carried by a stem extending from the diaphragm with a reaction member interposed between the diaphragm and the lever. The pins are formed in

tegral with the stem and the lever has a pair of arms located on opposite sides of the stem with the arms having L-shaped slots for receiving the pins. The lever also has a projection extending from an intermediate portion and the projection is in contacting engagement with an intermediate portion of the reac-



tion member when the suction device is supported on a wall. In another embodiment, the reaction member also has a recess for receiving the projection to prevent relative movement between the lever and the reaction member when the device is attached to a flat surface.

3,750,992

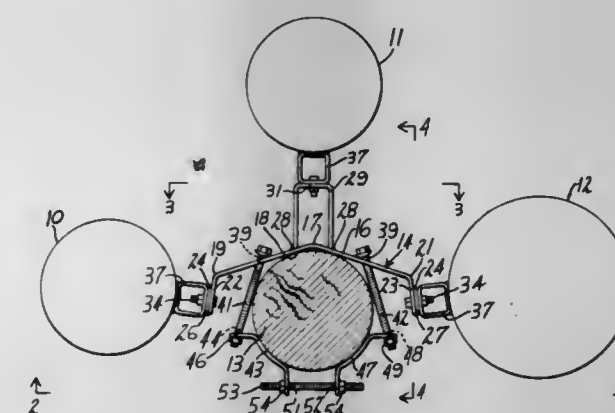
## TRANSFORMER MOUNTING ASSEMBLY

Eugene Johnson, 3626 5th Ave. South, Birmingham, Ala.  
Filed June 26, 1972, Ser. No. 266,160

Int. Cl. F16m 13/02

U.S. Cl. 248-221

1 Claim



A transformer mounting assembly embodying a pair of horizontal band units adapted for attachment to a supporting pole in vertically spaced relation. Horizontally spaced adaptor plates are carried by the band units and have vertically spaced attaching means disposed to cooperate with differently spaced mounting lugs on transformers.

3,750,993

## BRACKET ASSEMBLY FOR USE AS AN ADJUSTABLE REAR DRAWER SLIDE BRACKET AND THE LIKE

George Read, Glendora, Calif., assignor to Ajax Hardware Manufacturing Corporation, City of Industry, Calif.

Filed Jan. 24, 1972, Ser. No. 220,118

Int. Cl. A47b 88/00

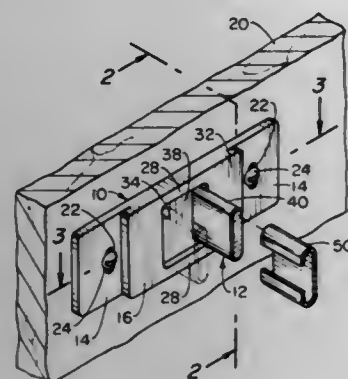
U.S. Cl. 248-298

4 Claims

A mounting member adapted for rearward mounting against a mounting surface has a longitudinally elongated, rectangular groove formed in a rearward surface opening rearwardly and a bracket opening of reduced longitudinal dimensions forwardly therethrough within the groove. A bracket member has a rectangular, rearward slide portion of reduced longitudinal dimensions slidably positioned in the mounting member groove with a bracket portion positioned projecting forwardly through the bracket opening of less longitudinal dimensions than the bracket opening to permit longitudinal



slideable movement of the bracket member within the mounting member groove. Selectively flexibly releasable, inter-engaged flanges project transversely between the bracket and



mounting member permitting and guiding the relative longitudinal movement therebetween while resisting rearward movement of the bracket member from the mounting member groove.

3,750,994

## MOUNTING DEVICE FOR PROJECTION SCREEN

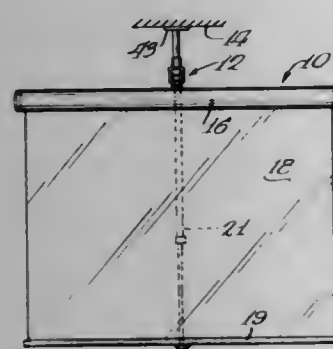
Hillard J. Bieschke, Itasca, Ill., assignor to Knox Manufacturing Company, Wood Dale, Ill.

Filed Feb. 24, 1972, Ser. No. 229,130

Int. Cl. G03b 21/56

U.S. Cl. 248—324

5 Claims



A mounting device for supporting a projection screen from a ceiling including a first bracket adapted to be secured to an overhead support, a second bracket adapted to be secured to a casing for a rollable projection screen, means mounting the second bracket on the first bracket for pivotal movement about a horizontal pivot axis, and cooperating detent means on the two brackets for permitting free pivotal movement of the second bracket on the first bracket and for supporting and positively holding the second bracket in angularly adjusted positions such that the screen is inclined from vertical to avoid dimensional distortion which occurs if an image is projected to a screen inclined to the path of projection.

3,750,995

## MOUNTING DEVICE FOR PROJECTION SCREEN

Horst Genger, Medinah, Ill., assignor to Knox Manufacturing Company, Wood Dale, Ill.

Filed Feb. 24, 1972, Ser. No. 229,131

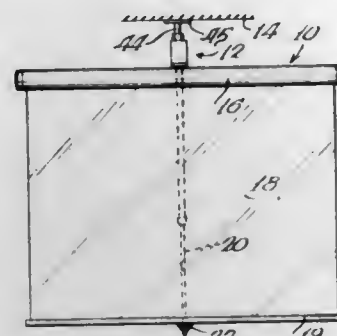
Int. Cl. G03b 21/56

U.S. Cl. 248—324

9 Claims

A mounting device for supporting a projection screen in angularly adjusted positions inclined from vertical including a first bracket adapted to be secured to an overhead support, a second bracket adapted to be secured to a casing for a projection screen, means pivotally mounting the second bracket for adjustment on the first bracket, cooperating detent means on

the two brackets for positively holding the second bracket in adjusted positions, and release means responsive to angular



movement of the second bracket on the first bracket for disengaging the detent means for return of the second bracket to vertical position.

3,750,996

## DEVICE FOR SPACING SHEETING OF A CONSTRUCTION FORM

Josef Maier, Kreuzbuehlstr. 4, D 7611 Steinach, Germany

Continuation-in-part of Ser. No. 8,184, Feb. 3, 1970,

abandoned. This application Apr. 6, 1972, Ser. No. 241,649

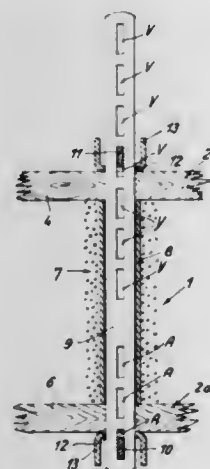
Claims priority, application Germany, Apr. 3, 1967, P 16 84

356.4; Dec. 10, 1969, P 19 61 898.5

Int. Cl. E04g 17/08

U.S. Cl. 249—43

10 Claims



An arrangement for holding spaced opposite sheeting boards of a construction form against movement away from each other during pouring of concrete or the like between the boards, in which an elongated metal strip extends between and with opposite ends beyond the boards. The strip is provided with a plurality of fixing holes arranged equally spaced from each other in the longitudinal direction of the strip and a plurality of elongated locking holes spaced from the fixing holes and from each other in the longitudinal direction of the strip. The arrangement includes further a first abutment means which abuts against the outer face of one of the boards and which includes a fixing member which may be a pin or a wedge driven into one of the fixing holes, whereas the second abutment means abuts against the outer face of the opposite board. The second abutment means includes a wedge driven in one of the elongated locking holes. The reference spacing of the fixing holes and that of the locking holes, the length of each locking hole and the wedge of the second abutment means are constructed and dimensioned in such a manner to assure that the opposite boards can be held against movement away from each other regardless of the desired spacing between the boards.

3,750,997

## LOCKING RING FOR CORNERS OF PLYWOOD FORM PANELS

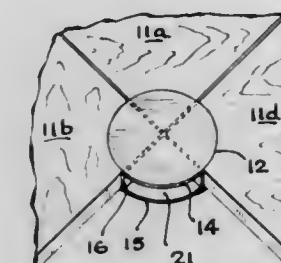
John S. Andersen, 2932 N. River Rd., River Grove, Ill., and Urban C. Lindquist, 1906 W. Argyle St., Chicago, Ill.

Filed Aug. 23, 1971, Ser. No. 173,901

Int. Cl. E04g 17/02

U.S. Cl. 249—47

2 Claims U.S. Cl. 251—11



The plywood panels of a deck on which concrete is poured have the adjacent corners aligned with a fixture. This fixture comprises top and bottom plates connected by vertical webs and defines four pockets of a size to receive the four adjacent corners of four plywood panels and hold them aligned.

3,750,998

## COMPOSITE FORM WITH LINER PLATES

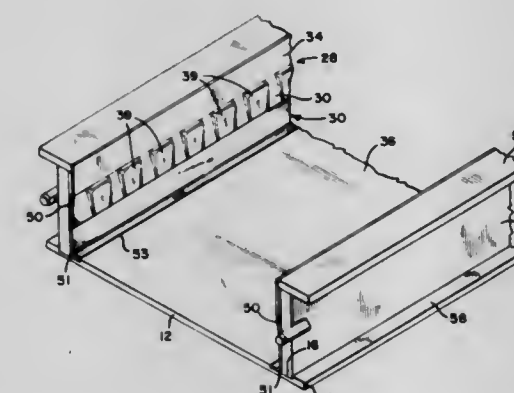
Theodore W. Shoe, Fletcher, and Robert E. Smith, Kettering, both of Ohio, assignors to The Flexicore Co., Inc., Dayton, Ohio

Filed Dec. 13, 1971, Ser. No. 207,189

Int. Cl. B28b 7/06, 7/20

U.S. Cl. 249—50

4 Claims



A composite slab casting form particularly adapted to resist the transverse deflection forces generated by the weight of concrete in the form. The base or pan of the form is constructed from a relatively thick, flat, plate member having a pair of longitudinally extending notches machined in its upper surface. A pair of relatively thin liner plates are bent about longitudinally extending axes to form base leg portions and side leg portions joined by a smoothly curved connecting section. The liner plates are mounted on the pan with the base leg portions thereof received in the notches. Longitudinally extending voids are defined by the inner ends of the base leg portions and opposing portions of the notches in the pan and these voids are filled with a welding material, which is thereafter ground to provide a smooth flat surface coplanar with the upper surface of the pan and the adjoining surface of the liner plate. In bending the liner plates to provide the base and side leg portions the base leg portions are formed long enough to space the above mentioned welding material far enough away from the connecting section that the welding material can be readily ground with conventional tools without gouging, undercutting or otherwise blemishing the surfaces of the form.

3,750,999

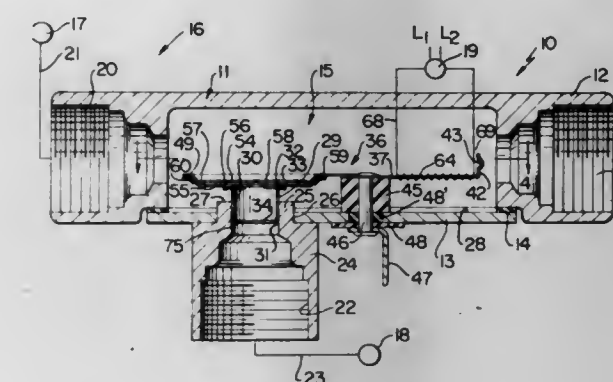
## HEAT MOTOR OPERATED GAS VALVE CONSTRUCTION AND SYSTEM AND METHOD

Francis S. Genbauffe, Irwin, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Nov. 16, 1971, Ser. No. 199,254

Int. Cl. F16k 31/00

7 Claims



A heat motor operated gas valve construction having a housing for the passage of gaseous fuel therethrough and a bimetal member for operating a valve member of said housing and carrying an electrical heater that is utilized to cause warpage of the bimetal member to move the valve member to one operating position thereof when the heater is energized to heat the bimetal member. Means are disposed between the bimetal member and the electrical heater with such means not acting as a catalyst with the gaseous fuel to prevent the bimetal member when heated from acting as a catalyst with the gaseous fuel to "crack" the fuel and cause carbon to build up between the bimetal member and the heater.

3,751,000

## VALVE CONSTRUCTION

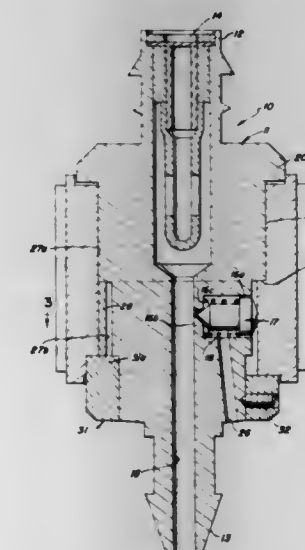
Zygmunt Natkanski, Chicago, Ill., assignor to Minnesota Mining and Manufacturing, St. Paul, Minn.

Filed Nov. 24, 1971, Ser. No. 201,778

Int. Cl. F16k 31/524

U.S. Cl. 251—77

4 Claims



A valve construction is provided for use in manually controlling the flow of a fluid under pressure. The valve construction in question is particularly suitable for use in sphygmomanometer apparatus. The valve construction includes a hollow body member having an inlet and an outlet and a port formed in the body member and disposed intermediate said inlet and outlet. A closure piece is adjustably mounted on the body member for movement towards and away from a port-closing position. The closure piece is biased to assume a non-



closing position with respect to the port. A manually actuated means is adjustably mounted on the body member and is in sliding engagement with the closure piece to effect selective positioning of the latter with respect to the port. The manually actuated means is in continuous contact with the closure piece.

3,751,001

# APPARATUS FOR CONTROLLING A FLOW OF PRESSURE FLUID

Arthur George Rayment, Kent, England, assignor to Gunson's Sortex Limited, London, England

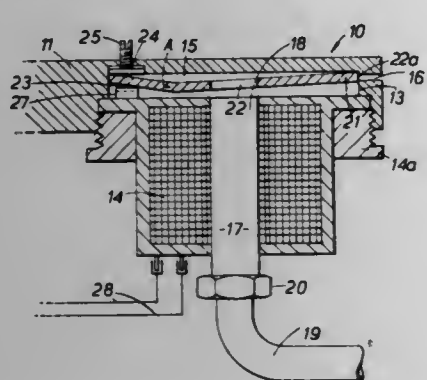
Filed Nov. 5, 1971, Ser. No. 195,962

Claims priority, application Great Britain, Nov. 11, 1970, 53,702/70

Int. Cl. F16k 31/08

U.S. Cl. 251-141

8 Claims



An electromagnetic valve for a sorting machine has a chamber in which there is a valve disc. The valve disc is urged to an open position by the energisation of a solenoid and in the open position pressure fluid may leave the chamber through an exit. In the closed position a portion of the edge of the valve disc prevents flow of pressure fluid from the chamber. The valve disc may be replaced by a tubular member.

3,751,002

# FLUID COUPLING FOR HIGH PRESSURE SPOOL VALVE HYDRAULIC POWER STEERING GEAR

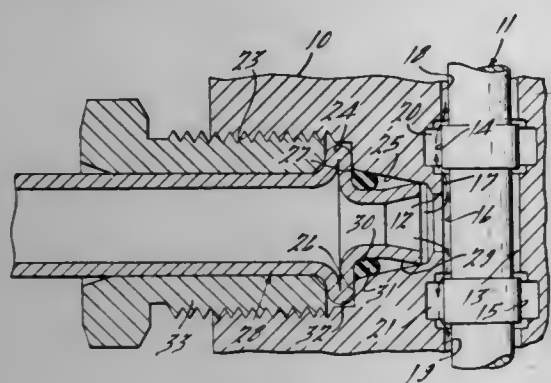
Walter E. Folkerts; Hazel Park, and Reginald Y. Jamieson, all of Huntington Woods, Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 27, 1972, Ser. No. 238,075

Int. Cl. F16l 19/02

U.S. Cl. 251-148

14 Claims



A valve housing for an automobile hydraulic power steering gear and integrated spool valve is provided with a tube receiving opening having a threaded outer portion, an annular coaxial pilot portion at the inner end of the threaded portion, and a coaxial conical guide portion converging inwardly from the pilot portion and opening axially into a transverse bore for a spool valve that controls operation of the gear. The outer end of the conical opening is of smaller diameter than the pilot

opening and is defined by an annular clamping shoulder of the housing at the inner end of the pilot opening. A tube for conducting high pressure hydraulic fluid is provided with a radial enlargement spaced from its inner end. An O-ring is seated on the tube between the enlargement and a flared inner end of the tube. The flared end retains the O-ring on the tube until the coupling is assembled and also shields the O-ring from injury when the flared end is inserted into the tube receiving opening during the assembly and guided by the conical opening to a position whereat the annular enlargement seats at the clamping shoulder. An externally threaded nut engaged within the threaded opening clamps the enlargement against the shoulder and deforms the O-ring into sealing engagement with the adjacent sidewalls of the tube and conical guide opening.

3,751,003

# FLUID VALVE

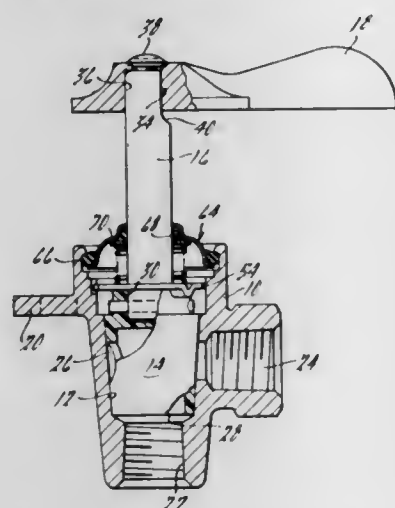
Gerald H. Kass, Garden City, Mich., assignor to Anderson Brass Company, Detroit, Mich.

Filed Sept. 24, 1971, Ser. No. 183,355

Int. Cl. F16k 5/04

U.S. Cl. 251-312

11 Claims



The present disclosure relates to a fluid valve having a valve actuating stem extending from an opening in the valve housing, and specifically a novel cap structure for closing and sealing said opening around said stem, said structure utilizing an annular resilient sealing element for both sealing and retaining said cap structure. There is also disclosed a novel method of assembling a fluid valve incorporating said cap structure.

3,751,004

# FLANGED BODY WITH FLANGE REINFORCING RIBS

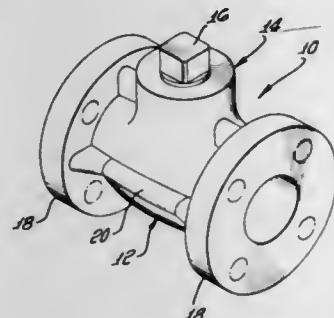
Robert W. Quirk, Los Angeles, Calif., assignor to Rheem Fluid Systems, Inc., Chatsworth, Calif.

Filed Dec. 17, 1971, Ser. No. 209,215

Int. Cl. F16k 27/00

U.S. Cl. 251-366

4 Claims



A so-called filament wound article having an annular flange and a longitudinal rib buttressing the flange. The latter comprises one or more synthetic resin impregnated, helical

windings of fiber glass roving, tape, or the like. Rib reinforcing elements of similar materials are embedded in and extend lengthwise of the rib and have ends interspersed with and entangled with the flange reinforcing windings. Thus, the reinforcing elements of the rib and the flange are mechanically interlocked for increased strength.

3,751,005

# POWDERED METAL VALVE PLATE ASSEMBLY

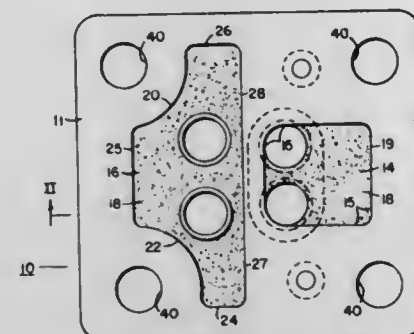
Robert W. Earley, Worthington, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 30, 1971, Ser. No. 203,299

Int. Cl. F16k 51/00, 27/00

U.S. Cl. 251-368

3 Claims



The invention provides a substantially impervious molded sintered iron valve plate arrangement wherein both sides of the valve plate include inwardly relieved surfaces and generally planar outwardly disposed surfaces. The outwardly disposed surfaces are ground flat for properly seating gasketing material thereon. The gasketing material maintains the machined area impervious, while the inwardly disposed surfaces have an outer impervious layer formed by subjecting the valve plate to a steam oxide treatment after its formation from powdered metal.

3,751,006

# RANDOM ACCESS TIME-SHARED MICROFORM IMAGE RECOVERY APPARATUS

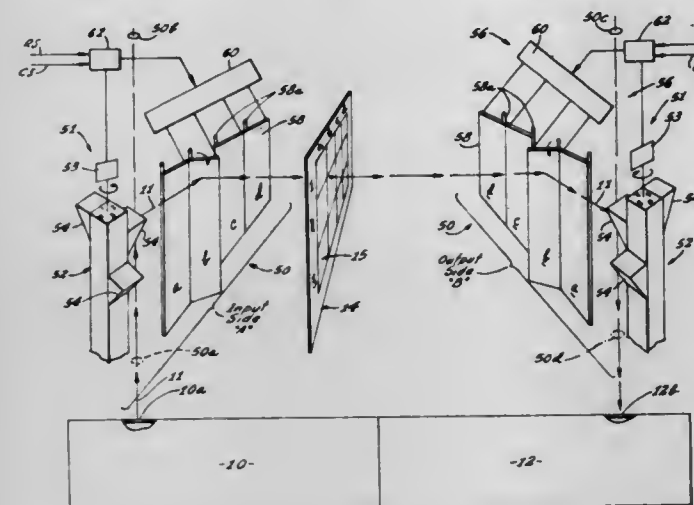
Leonard Jack Crag, 204 S. Anita Ave., Los Angeles, Calif.

Filed Oct. 12, 1970, Ser. No. 79,884

Int. Cl. G03b 23/02, 23/08, 21/28

U.S. Cl. 353-25

8 Claims



A plurality of random access microform recovery units holding a plurality of separate transparencies in a non-reading position, each transparency at a different serial position along a reading path for light. Each transparency has at least one image for modulating light. A collimated beam of light is directed along the reading path and the path may be moved to a desired one of a plurality of parallel path positions when the

transparency contains more than one image. A carrier selectively moves any one of the transparencies at its respective serial position into a reading position wherein the image thereon modulates the light beam. The modulated light beam impinges on a radiation sensor and the image is reproduced thereby as an electronic image signal. The image signal is retained in a buffer channel for conversion to visual information. A plurality of input/output stations are used to provide for a time-sharing of the random access recovery unit.

3,751,007

# JACK USING FLEXIBLE EXPANSIBLE MOTOR

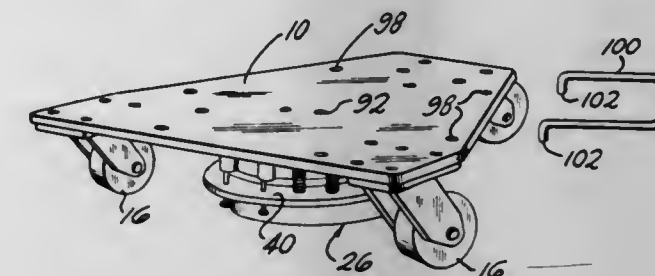
Charles Hollerith, 715 W. Michigan Ave., Jackson, Mich.

Filed Dec. 27, 1971, Ser. No. 211,908

Int. Cl. B60p 1/60; B66f 3/24, 5/04

U.S. Cl. 254-2 R

10 Claims



A portable jack using an expansible motor having a flexible wall wherein the jack consists of a frame mounted upon wheels. A casing or assembly is mounted upon the underside of the frame intermediate the frame and the floor, and houses the expansible motor which is supplied with a pressurized medium through a hose or the like. Pressurization of the expansible motor causes a lower portion of the casing or assembly to extend downwardly to engage the floor and raise the frame relative thereto. The expansible motor operation may utilize both hydraulic fluid and compressed air, and a pair of expansible motors may be utilized in parallel to increase the jack lifting capacity.

3,751,008

# APPARATUS FOR RESTORING DAMAGED PAPER ROLLS

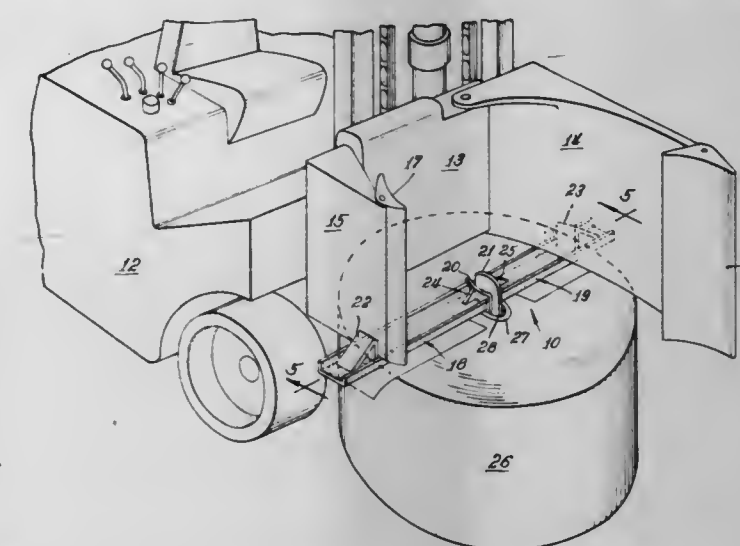
Newman W. McNatt, 226 Paulsen Ave., Battle Creek, Mich.

Filed Oct. 14, 1971, Ser. No. 189,221

Int. Cl. B66f 3/38

U.S. Cl. 254-134

10 Claims



An apparatus is provided for salvaging large paper rolls having a tubular core at the axis thereof, which rolls have been damaged through accidental mishandling and which have thereby become distorted with the central core flattened to such an extent that a suitable roll mounting and supporting mandrel with tapered spools cannot be inserted therein, said



apparatus comprising in combination a pair of retracting members each having a core engaging member affixed to one end thereof and means at the other end thereof adapted to be engaged by the arms of a hydraulically operated lift truck designed for handling large paper rolls. The force applied to the retracting members by the clamping members of the lift truck causes the core engaging members to straighten the core substantially into its original circular form.

3,751,009

## MOTIONLESS MIXING DEVICE

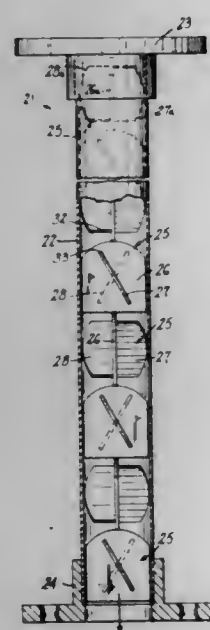
Stephen V. Archer, Hamden, Conn., assignor to Joseph P. McHugh, Hamden, Conn.

Filed Mar. 2, 1972, Ser. No. 231,140

Int. Cl. B01f 5/00

U.S. Cl. 259-4

13 Claims



A motionless mixing device in which a hollow, cylindrical tube has fixedly positioned within the tube a plurality of mixing elements in end-to-end contact, wherein each mixing element comprises a flat, generally rectangular plate-like member having a pair of flat, plate-like vanes mounted substantially perpendicular on opposite faces of the plate-like member, the vanes in each pair being angled in opposite directions, the angle between any pair of adjacent plate-like members being about 90°. An apertured disk may be positioned between the mixing elements to improve transverse flow.

3,751,010

## MIXER

George A. Latinen, deceased, late of Springfield, Mass. (by May V. Latinen, administratrix), assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1971, Ser. No. 172,059

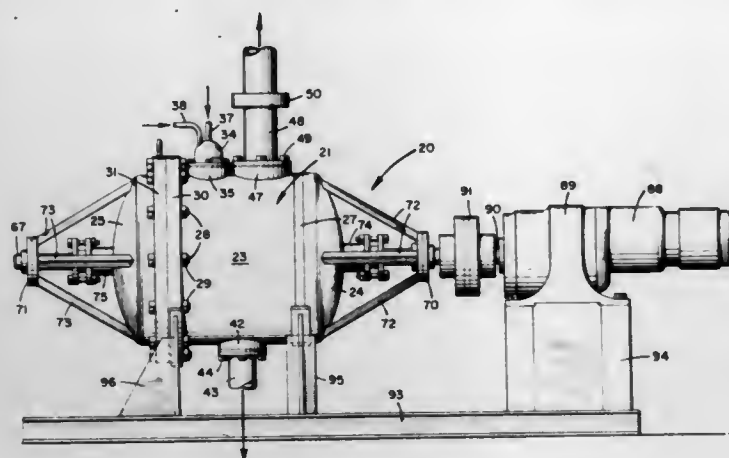
Int. Cl. B01f 7/04

U.S. Cl. 259-9

14 Claims

A housing and paddle assembly adapted for use in processing and mixing highly viscous fluids is provided. The mixer employs a paddle assembly which rotates about a horizontal axis and which has at least one pair of diametrically opposed axially extending blade members which are slotted at

diagonally opposite outside ends. In operation, the paddle assembly can sweep out substantially all of the housing interior



3,751,011

## MIXING OF PARTICULATE AND FIBROUS MATERIALS

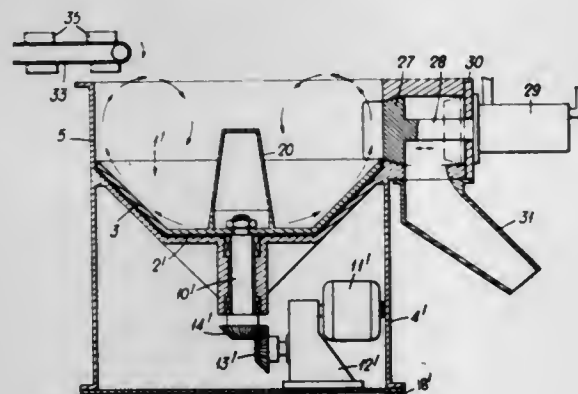
Rudolf F. L. Millik, Welwyn Garden City, England, assignor to Design Link, Hertfordshire, England

Filed Jan. 24, 1972, Ser. No. 220,421

Int. Cl. B28c 5/06

U.S. Cl. 259-146

5 Claims



Two or more materials, at least one of which is fibrous are mixed together by supplying the materials onto a dish-shaped circular surface which is free of projections, closely surrounding the edge of the circular surface with a wall which extends upwards from the surface and rotating the surface with the materials upon it and thus flinging the materials outwards centrifugally and causing them by the dished shape of the surface to be deflected upwards over the face of the wall which slows down the rotation applied to the materials by the rotating surface and directs the materials inwards again towards the centre of the surface whence they are flung centrifugally outwards so that the materials form a toroidally shaped mass around the edge of the surface and the materials circulate around the toroid following a helical path.

3,751,012

## METHOD AND SYSTEM FOR MIXING UNLIKE INGREDIENTS

Hildegard M. Michenko, Reynoldsburg, and Hubert Thomas Tyler, Columbus, both of Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed June 29, 1970, Ser. No. 50,048

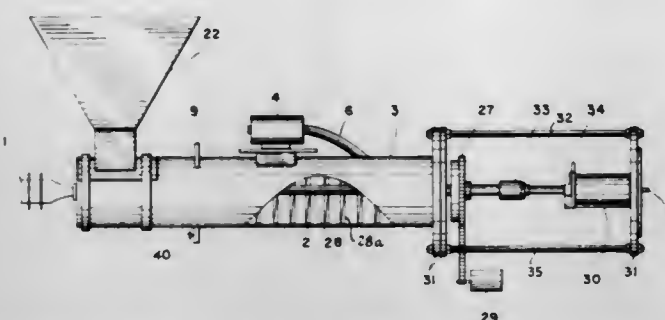
Int. Cl. B28c 5/18; B01f 1/102

U.S. Cl. 259-148

16 Claims

A batching or mixing apparatus and process for combining in an unhomogenous mix the several ingredients through the

simultaneous application of high and low frequency excitation. The high frequency excitation includes a sonic resonant electromechanical transducer impact coupled to a rotating auger shaft. The auger is of a specific design to permit the



maximum application of the high frequency excitation to the mixture. A specific embodiment is disclosed for the continuous mixing and combining the ingredients for concrete having an improved compressive and bonding strength and a finished surface for sealing against penetration of liquids.

3,751,013

## MIXER ATTACHMENT FOR ICE CREAM FREEZER

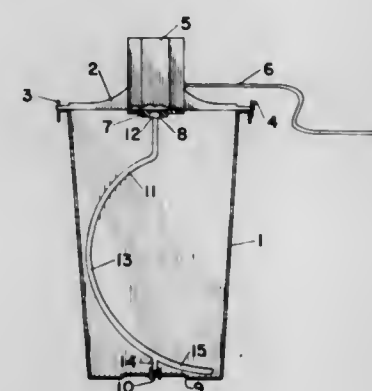
Clarence J. Schroeder, Box 660, Murphy, N.C.

Filed May 24, 1972, Ser. No. 256,398

Int. Cl. B01f 7/16

U.S. Cl. 259-185

1 Claim



An agitator or stirrer adapted for use in a home ice cream freezer to mix bread dough and the like which consists of a curved length of rod having an angular fitting at its upper end to be engaged and driven by the driving socket of the freezer and a finger projecting downwardly into the bearing socket of the freezer tub, the lower end being shaped to extend close to the corner between the side wall and bottom of the tub and the portion between the upper fitting and the finger extending into close proximity with the wall of the tub.

3,751,014

## APPARATUS FOR EXTRUDING SYNTHETIC PLASTIC RESINS AT LOW TEMPERATURES

William C. Waterloo, York, Pa., assignor to Graham Engineering Corporation, York, Pa.

Filed Sept. 21, 1970, Ser. No. 73,870

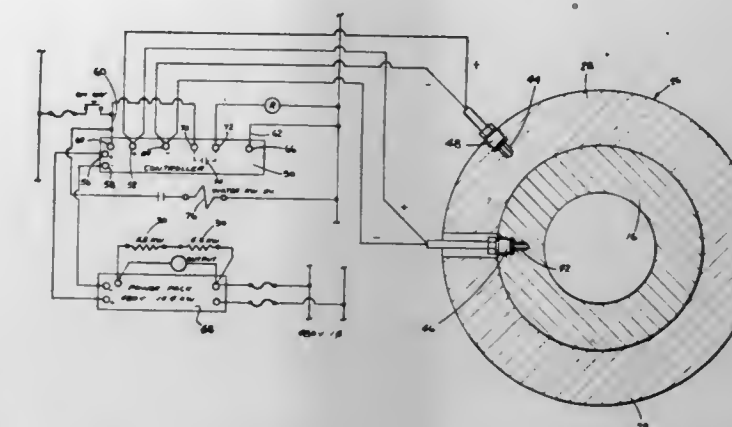
Int. Cl. B29b 1/06, 3/00; H05b 1/02

U.S. Cl. 259-191

7 Claims

A method and apparatus for manufacturing synthetic resin extrusion products by controlling the temperature of the resin to within  $\pm 10^\circ\text{F}$ . of a desired point as it is formed into a homogeneous mass and extruded. This control is accomplished by providing one temperature sensing thermocouple in the barrel of the extruder, another temperature sensing thermocouple in the heating/cooling jacket mounted on the outside of the barrel, and by providing electrical control circuitry which averages the temperature readings of the two thermocouples and controls the supply of energy to the heat-

ing/cooling jacket in accordance with the difference between that average and the desired temperature to which the controller is set. Included as well is the novel synthetic resin extru-



3,751,015

## SCREW EXTRUDER WITH RADIALLY PROJECTING PINS

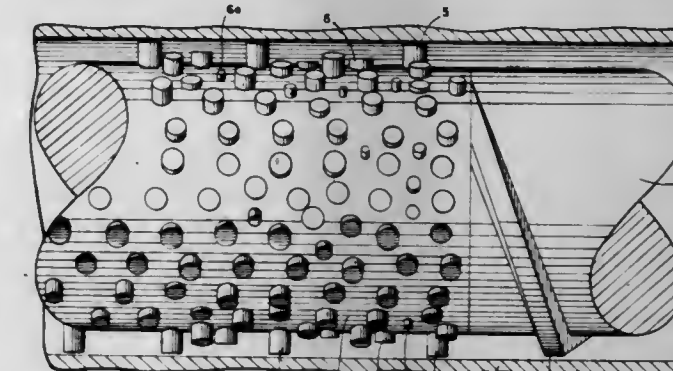
Friedhelm Hensen, Remscheid; Hans Siemetzki, Hilgen, and Egon Gathmann, Hückeswagen, all of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany

Filed June 22, 1971, Ser. No. 155,458

Int. Cl. B29f 3/01; B29b 1/06

U.S. Cl. 259-191

10 Claims



A screw extruder for the continuous processing of a synthetic thermoplastic material in which one section of the rotatable screw in the metering or discharge zone of a barrel extruder carries a plurality of radially projecting pins of different specific heights in place of the thread flight, this section extending along an axial length of at least two screw diameters. This combination of apparatus is particularly useful in evening or equalizing the temperature of the processed thermoplastic material.

3,751,016

## CARBURETION SYSTEM

Glancarlo Nardi, Pisa, Italy, assignor to Compagnia Italiana Westinghouse Freni e Segnali, Torino, Italy

Filed Mar. 23, 1971, Ser. No. 127,153

Claims priority, application Italy, Apr. 24, 1970, 68417 A/70

Int. Cl. F02m 69/04

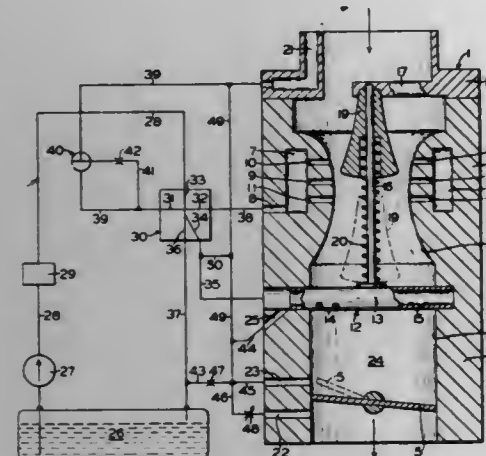
U.S. Cl. 261-36 A

8 Claims

A carburetion system including a carburetor with a venturi in the air intake passageway thereof and a fuel nozzle opening thereinto downstream of the venturi, a fluidic regulator device for effecting fuel delivery from a fuel tank to said fuel nozzle



for injection into said intake passageway at a rate according to a pressure differential between atmospheric pressure and a venturi induced pressure in the intake passage impressed across the control inputs of the regulator device, said carburetor including a metering element disposed within the venturi area and being axially displaceable against biasing means from a normal position adjacent the most constricted region of the



venturi throat toward the least constricted region by dynamic action of intake air flow through the intake passageway, the degree of such dynamic action and, therefore, the amount of such axial displacement of said metering element being determined by the extent to which a throttle valve disposed in the intake passageway downstream of the venturi is opened, thereby proportionally modifying the effect of pressure differential across the input controls of the regulator device.

3,751,017

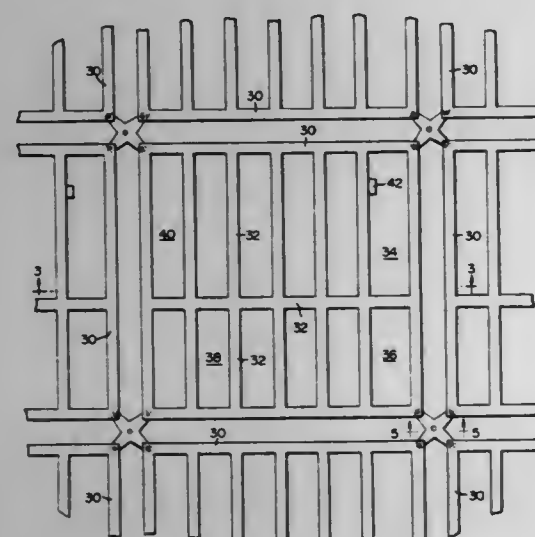
## COOLING TOWER

Alphonse A. A. Lemmens, Brussels 18, Belgium, assignor to Societe Hamon Sobelco, S.A., Bruxelles, Belgium  
Continuation-in-part of Ser. No. 108,642, Jan. 21, 1971, abandoned, which is a continuation of Ser. No. 771,513, Oct. 29, 1968, abandoned. This application Apr. 23, 1971, Ser. No. 136,668

Int. Cl. B01f 3/04

U.S. Cl. 261-111

11 Claims



A cooling tower employing a plurality of vertically arrayed reticulate frame elements formed of laths. Water falls on the various tiers and is contacted by air flowing generally upwardly and/or transversely. Rotation of the frames yields different fall/flow patterns.

### 3,751,018 METHOD OF BAND-SYSTEM HARDENING OF THIN-WALLED STEEL PRODUCTS, PARTICULARLY OF SCRAPER CONVEYOR TROUGHS, AND THE DEVICE FOR IMPLEMENTATION OF THIS METHOD

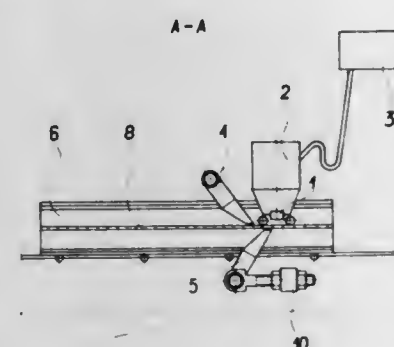
Henryk Partyka, ul. Zacisze 4, Jaworzno; Stanislaw Janowski, ul. Dlugosza 10, Rybnik, and Jerzy Manka, ul. Ofiar Terroru 12, Ryduktowy, all of Poland  
Filed Nov. 15, 1971, Ser. No. 198,851

Claims priority, application Poland, Nov. 14, 1970, P. 144 422

Int. Cl. C21d 1/66

U.S. Cl. 266-4 E

6 Claims



A thin-walled steel product such as a conveyor trough is hardened in a surface thereof by means of heat-treatment. The heat-treatment comprises heating the surface to be hardened progressively in a longitudinal band thereof and progressively cooling the surface by spraying a coolant thereon. In order to prevent deformation of the product, its opposite surface is cooled after the heating of the surface to be hardened but before cooling of this latter surface.

3,751,019

## FLUID COOLED LANCE

Kein James Phillips, Mount Waverley, Victoria, Australia, assignor to Conzinc Riotinto of Australia Limited, Melbourne, Victoria, Australia

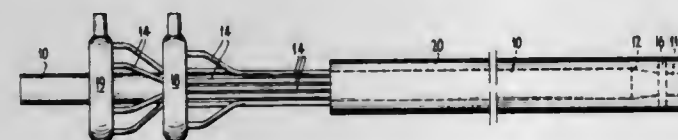
Filed Nov. 16, 1971, Ser. No. 199,134

Claims priority, application Australia, Nov. 19, 1970, 3251/70

Int. Cl. C21c 5/32

U.S. Cl. 266-34 L

23 Claims



Fluid cooled lance formed of composite refractory and metal for conveying oxygen-containing or other gases, with or without entrained solids, into or onto molten baths, including a heat and corrosion-resistant nozzle in the lance adapted to provide a localized increase in the gas delivered from the lance. The lance also includes a plurality of individual small diameter pipes facilitating increased resistance to operating stresses, providing an increased cooling surface, and allowing for the reduction of its external refractory envelope.

3,751,020

## SHOCK ABSORBER

Giles A. Kendall, Burbank, Calif., and William D. Wallace, Chicago, Ill., assignors to Miner Enterprises, Inc., Chicago, Ill.

Filed Apr. 9, 1971, Ser. No. 132,858

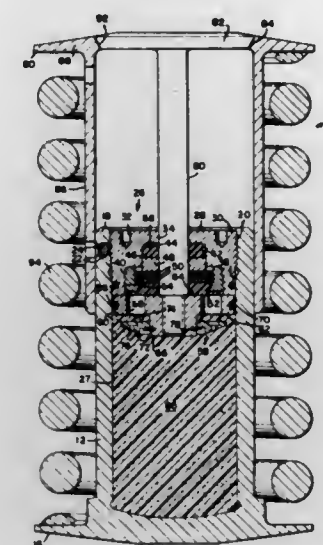
Int. Cl. B60g 1/152

U.S. Cl. 267-33

3 Claims

A shock absorber having a pressure cylinder defining a chamber, in which a piston assembly connected to a piston rod

is movable, and which is incompletely occupied by a compressible solid so that air space is present. The piston assembly is movable in the chamber to the extent of the air space unre-



sisted by the compressible solid during short strokes of the piston rod, but is resisted by the compressible solid during long strokes of the piston rod.

3,751,021

## LEAF SPRING CLAMP AND SUPPORT

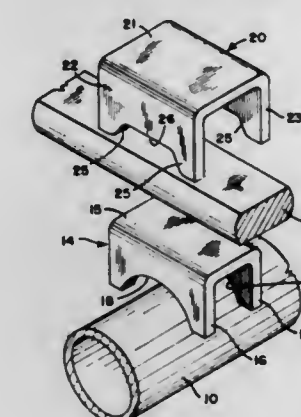
Alan D. Foster, Adrian, Mich., assignor to The Dayton Steel Foundry Company, Dayton, Ohio

Filed Oct. 12, 1971, Ser. No. 188,153

Int. Cl. F16f 1/26

U.S. Cl. 267-52

7 Claims



A leaf spring for use with a mobile home or the like is clamped between an axle pad and a top pad of generally U-shaped cross-sectional configuration. The sides of the top pad overlap the axle pad, and the parts are welded together while retained under a substantial preload force to form a permanent spring support. The axle pad is then suitably mounted on the axle.

3,751,022

## MOTORCYCLE SUSPENSION DEVICE

Giuseppe Bertelli, Bologna, Italy, assignor to S.E.B.A.C. S.p.A., Bologna, Italy

Filed June 14, 1971, Ser. No. 152,811

Claims priority, application Italy, Jan. 21, 1971, 3314 A/71

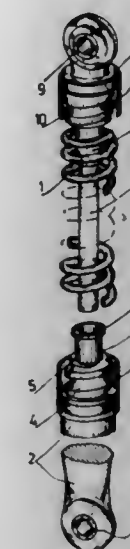
Int. Cl. F16f 5/00

U.S. Cl. 267-60

2 Claims

An inexpensive suspension device for motorcycles, motorbikes and the like. A spring has externally threaded centers made of molded synthetic resin threaded axially into opposite ends of the spring. Each spring center has an integral eye

disposed axially outwardly of the spring for mounting the device. Synthetic resin sleeves are disposed on opposite ends of the spring circumferentially of the convolutions or spring coils on which the centers are threaded. A rod axially of the spring is fixed to one of the centers and the other spring center has an axial blind bore within which is disposed a sleeve in which the rod moves reciprocally as the device and spring are



variably loaded axially. The device is easily assembled by mounting the end sleeves on the respective centers and threading the center with the blind bore on one end of the spring and then threading on the other spring center on the opposite end. The axial rod then moves reciprocally in the sleeve in the blind bore as the device is variably loaded axially and the spring oscillates.

3,751,023

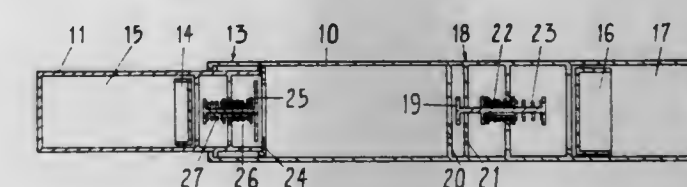
## SUSPENSION DEVICES

John Henry Thomas, 2 Merrville Rd., Cheltenham, England  
Filed Oct. 7, 1971, Ser. No. 187,314

Int. Cl. F16f 5/00

U.S. Cl. 267-64 R

11 Claims



A suspension device comprises a pair of telescopically engaged members which define at least a pair of chambers which are reduced in volume as the members are moved inwardly relative to each other. One of the chambers is filled with a gas under pressure and the other chamber is filled with a liquid. Moreover, a valve assembly is provided which when the rate of closure of the members exceeds a predetermined value closes to increase the resistance to the closing movement of the members.

3,751,024

## SHOCK AND VIBRATION DAMPER

Andre Lucien Pineau, 12 Rue de Bearn, 92 Saint Cloud, France

Filed Aug. 13, 1971, Ser. No. 171,423

Claims priority, application France, Aug. 13, 1970, 7029833

Int. Cl. F16f 1/34

U.S. Cl. 267-153

20 Claims

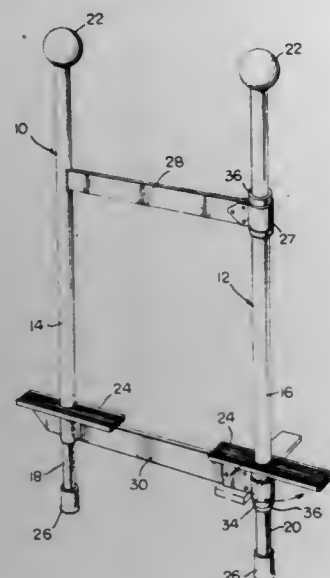
Device for damping shocks and vibrations comprising a first member and a second member having a common axis and concentric with this axis. At least one annular series of elastomer elements or at least one toric elastomer element is



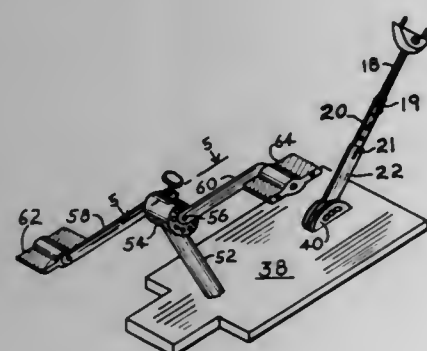




ected by a laterally extending frame so that two individuals spaced oval relationship forming a racket portion. The can jump in unison. The laterally extending frame connecting modified tubular members include an annular recess and



**3,751,033**  
**COMBINATION OF A CHAIR AND PEDALING DEVICE**  
Walter Rosenthal, Schwedenschanze 15, 7780 Konstanz, Germany  
Filed Dec. 15, 1971, Ser. No. 208,152  
Int. Cl. A63b 21/22, 23/04  
U.S. Cl. 272-58  
1 Claim

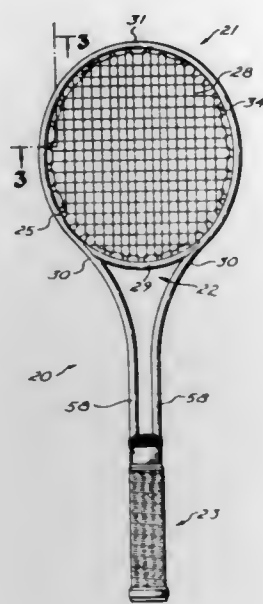


A combination of a chair and an advanceable and retractable pedaling device. The pedaling device is pivotally secured to the bottom of the chair by a telescoping member. The telescoping member with the pedaling device may be adjusted at a desired angle for comfortable pedaling. The length of the telescoping member may be varied to suit the length of a user's legs. An adjustable counterforce device is provided to vary the force desired applied by the user. The pedaling device may be locked in place out of the way, under the chair.

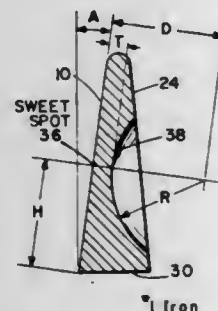
**3,751,034**  
**GAME RACKET**  
William E. Portz, and Eugene W. Flieger, both of Geneva, Ohio, assignors to True Temper Corporation, Cleveland, Ohio  
Filed Nov. 2, 1970, Ser. No. 86,042  
Int. Cl. A63b 51/00  
U.S. Cl. 273-73 D  
13 Claims

A tubular structure for a tennis or like game racket is formed from modified metal tubular members arranged in a

spaced oval relationship forming a racket portion. The modified tubular members include an annular recess and



**3,751,035**  
**SET OF GOLF IRONS**  
John W. Lockwood, 236 Playa del Norte, La Jolla, Calif.  
Filed July 2, 1971, Ser. No. 159,133  
Int. Cl. A63b 53/04  
U.S. Cl. 273-77 A  
6 Claims



A set of golf club irons with heads having graduated loft angles, the striking faces being of the same size and elliptical shape so that the club head is balanced both vertically and horizontally about the center of the elliptical driving face, with a downwardly curved lower front edge to minimize the divot, and a recess in the rear face creates a sweet spot at the center of the striking face and a uniform distance from the lower front edge throughout the set of irons, the minimum thickness of metal at the sweet spot being also uniform throughout the set of irons since the recess is a spherical segment, above the sole of the head, having a constant radius with a center on a line through the center of the driving face and normal to the plane of the driving face. The psychological advantage in locating the sweet spot identically in identical driving faces is obvious since the user can more easily learn to use all the clubs of the set with heightened efficiency.

**3,751,036**  
**SHAKER BOARD FOR BOWLING PINSETTER**  
Harry C. Bockelman, 1902 S. Volutsia, Wichita, Kans.  
Filed Mar. 20, 1972, Ser. No. 236,075  
Int. Cl. A63d 5/00  
U.S. Cl. 273-43 R  
4 Claims

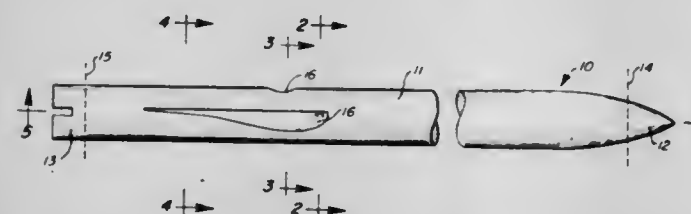
A shaker board to receive and agitate the bowling pins and ball in the pit of a bowling alley. A frame having upwardly turned rear corner portions supports and shapes a sheet-like

outer member formed of fiberglass reinforced polyester resin or polyepoxide resin. Generally tetrahedral shaped compartments are formed in the upwardly turned corner portions of the outer member and these compartments are filled with a



fiberglass filler material to strengthen the shaker board. Apertures are provided at the front edge of the shaker board to bolt the board to a shaking mechanism. A carpet covering is adhesively secured to the upper surface of the outer member.

**3,751,037**  
**ARROW FLUID-DYNAMICS**  
Calice G. Courneya, Rt. No. 3, Alexandria, Minn.  
Filed Nov. 4, 1971, Ser. No. 195,554  
Int. Cl. F41b 5/02  
U.S. Cl. 273-106.5 C  
7 Claims

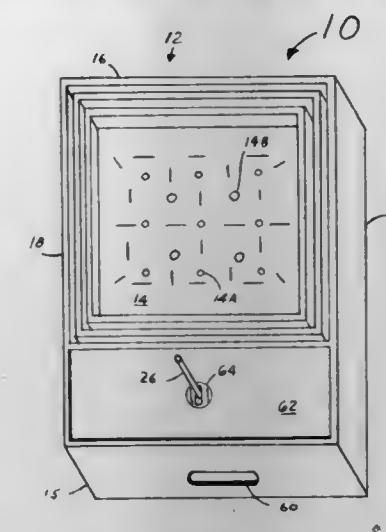


Disclosed is a new means to cause rotation of a missile as it moves through a fluid, which means maintains the missile in alignment with its direction of movement through the fluid. The means consists essentially of fluid-dynamically spaced elongated depressions in the gross outer surface of at least some portion of the trailing half of the mass of the body part of the missile. These depressions are aligned on the gross outer surface within an angle not greater than 30° from the axis of missile rotation. Each depression has a maximum width and maximum depth less than the length thereof, and also less than the radius of the circumference generated by rotation of the body portion of the missile at the location of the depression. Further, these depressions have a greatest depth portion radially-displaced with respect to a lesser depth portion and this greatest depth portion is forward of the longitudinal midpoint of the depression. The depressions are especially effective to guide the flight of missiles such as arrows, and can be used to replace the normal feathers or fins on standard archery arrows. Each special depression, during transit of the missile through a fluid, creates a resultant fluid-dynamic composite force vector which lies in a line not intersecting the longitudinal axis of rotation of the missile, but passing laterally to that axis. The composite force vector line of each depression passes that axis on the same lateral side, thereby effecting rotation of the missile.

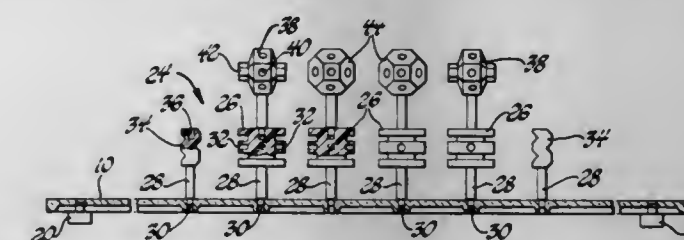
**3,751,038**  
**GIMBAL-MOUNTED GAME BOARD TILTABLE BY CONTROL STICK**  
Jack Victor O'Keefe, 726 W. Dempster St., Apt. H 204, Mt. Prospect, Ill.  
Filed June 9, 1971, Ser. No. 151,319  
Int. Cl. A64f 7/16  
U.S. Cl. 273-110  
3 Claims

A game device having a laterally and longitudinally tiltable platform manually manipulable by means of a control stick.

Cooperating game boards which are removably mountable on said platform are provided with playing surfaces having raised



**3,751,039**  
**THREE-DIMENSIONAL BOARD GAME APPARATUS**  
Walter J. Dykoski, 9041 Hensley Dr., Sterling Heights, Mich.  
Filed Dec. 3, 1971, Ser. No. 204,592  
Int. Cl. A63f 3/02  
U.S. Cl. 273-131 AC  
14 Claims



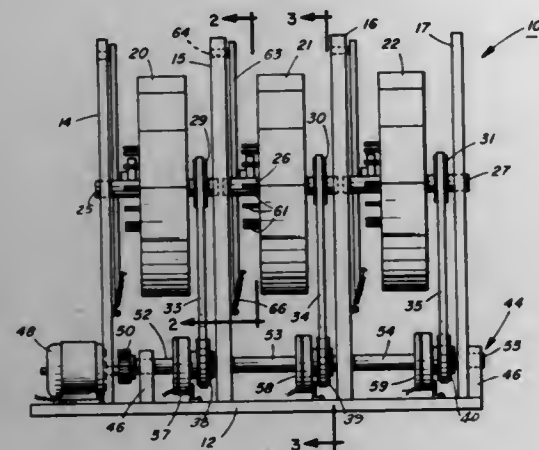
Game apparatus including a game board having an eight-by-eight array of square playing positions. Each playing position is provided with a peg hole centrally thereof to accommodate a support peg of a game piece. Three games are disclosed, each game comprising a distinct set of game pieces. All game pieces include transparent plastic bodies and vertically depending support pegs to permit the game pieces to be removably disposed in the peg holes of the game board and moved from one playing position to another. In addition, each game piece is provided with at least one peg hole in the body thereof so as to permit game pieces to be stacked on top of one another. In the first of the three games, the game pieces may be stacked on top of one another in various angular orientations to accomplish an objective somewhat similar to a three-dimensional tic-tac-toe game. In the second game, the game pieces are simply vertically stacked on one another but are provided with directional programming indicators to provide an objective similar to that of the game of checkers but with additional complexity and variation. In the third game, the game pieces are provided in an assortment similar to the standard game of chess and the game objective is similar with the additional facet of game piece stacking and compounding of power.

**3,751,040**  
**PLURAL ROTATABLE DRUM CHANCE DEVICE**  
William H. Carey, Keansburg, N.J., assignor to The Walk-In-Boys, Inc., Keansburg, N.J.  
Filed May 28, 1971, Ser. No. 148,108  
Int. Cl. A63f 5/04  
U.S. Cl. 273-143 R  
2 Claims

A power driven amusement wheel device having a plurality of wheels mounted on a base for independent rotation wherein



a power drive is selectively engageable and disengageable from the wheels and wherein a brake for retarding the rotational movement of each of the wheels is provided to be engageable and disengageable in response to the actuation and



deactuation of any one of a plurality of switches by users of the amusement wheel device. The device is controlled such that retardation of the rotational movement of the wheels cannot occur prior to the passage of a predetermined period of time after initial actuation of the power drive.

3,751,041

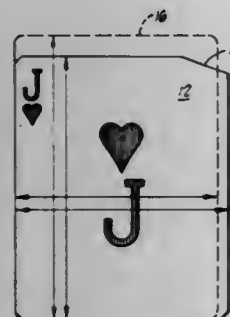
# METHOD OF UTILIZING STANDARDIZED PUNCH CARDS AS PUNCH CODED AND VISUALLY MARKED PLAYING CARDS

Thomas G. Seifert, 2533 N.W. 56, Oklahoma City, Okla.  
Filed Mar. 5, 1971, Ser. No. 121,469

Int. Cl. A63f 1/06

U.S. Cl. 273-149 P

11 Claims



The method of formation of playing cards from a standardized codable card which is readable with automated data processing equipment such that the playing cards may be more readily sorted and/or susceptible of game playing analysis through use of conventional computational equipment. The coded playing cards constructed in accordance with the invention are particularly suitable for use in duplicate bridge games, e.g., large-scale tournament competition, but the invention also contemplates more limited usage with provision of individual playing card deck sensing devices suitable for home use or casual play.

3,751,042

# MAGNETIC TAPE TRANSPORT

John D. Platt, Claremont, Calif., assignor to MSI Data Corporation, Montclair, Calif.

Filed Jan. 6, 1971, Ser. No. 104,351

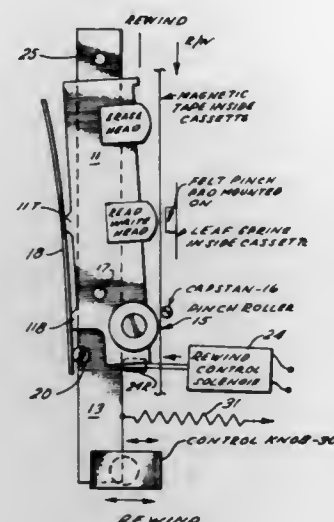
Int. Cl. G11b 21/00, 15/24

U.S. Cl. 274-4 C

6 Claims

A tape transport assembly for a cassette tape cartridge adapted for releasably mounting the cartridge for a transducing operation. A pivotal headplate is mounted on the base member adjacent to a capstan and carries a pinch roller and a transducer to allow the pinch roller to engage the capstan with the tape for advancing the tape from reel to reel when the

plate is swung towards the capstan to effect a transducing operation. A radius arm is pivoted to the transport assembly and pivotally carries the head plate. The radius arm may be



automatically controlled for moving it into engagement with a resilient mounting means for the head plate to pivot the radius arm and thereby the head plate to allow a tape rewind operation.

3,751,043

# TAPE MAGAZINE FOR RECORDER/REPRODUCER

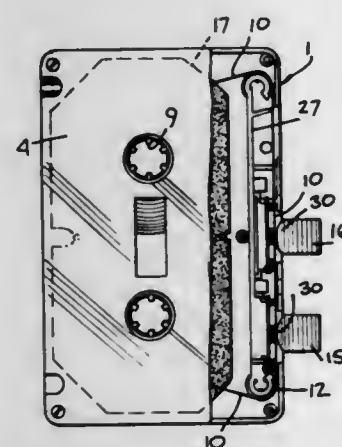
George T. Bracci, Bedford, Mass., assignor to Viatron Computer Systems Corp., Bedford, Mass.

Filed Mar. 23, 1970, Ser. No. 21,727

Int. Cl. G11b 23/10, 15/60

U.S. Cl. 274-4 C

5 Claims



A magazine or cassette is disclosed of the type having a hollow case containing a magnetic recording tape arranged for being driven back and forth between spaced hubs positioned within the casing. The path of the tape from one hub to the other runs adjacent to one narrow sidewall of the case so that the tape is exposed to recorder/reproducer heads through one or more apertures in that sidewall. The magazine is adapted for high speed two directional multi-speed tape operation with digital or other computers and includes an improved low friction skew resisting tape mounting including a pair of low friction shim members positioned between the tape and the casing walls. The magazine is also adapted for hub drive of the tape in both directions within the casing and includes improved integral control devices on the casing for precision insertion and for protecting against double recording and against improper insertion of the magazine into the recorder/reproducer.

3,751,044

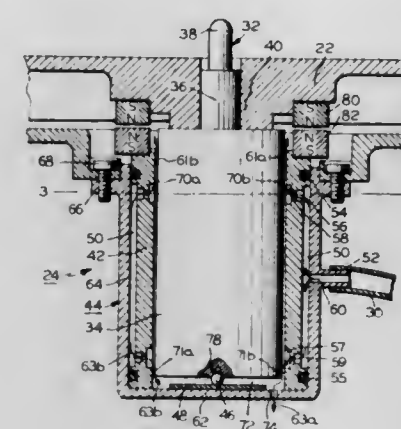
# TURNTABLE SUPPORT FOR A RECORD PLAYER

Takehiko Sawada, Fukui-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan  
Continuation-in-part of Ser. No. 768,830, Oct. 18, 1968, abandoned. This application Sept. 11, 1970, Ser. No. 71,315

Int. Cl. G11b 3/60

U.S. Cl. 274-39 A

5 Claims



A record player having a stationary chassis member and turntable having a turntable shaft. A driving device is coupled to said turntable for rotating said turntable and an air supply device is supported on said chassis member. A stationary turntable supporting member is secured to said chassis member and includes a radial bearing and a thrust bearing supporting said turntable shaft. The radial bearing is a static air bearing having said air supply device coupled thereto. The thrust bearing is a ball thrust bearing for limiting the vertical displacement of said turntable, and is on the bottom of said turntable shaft. Said stationary turntable supporting member is provided with an exhaust port of predetermined size strategically placed at the bottom thereof.

3,751,045

# FLUID SEAL

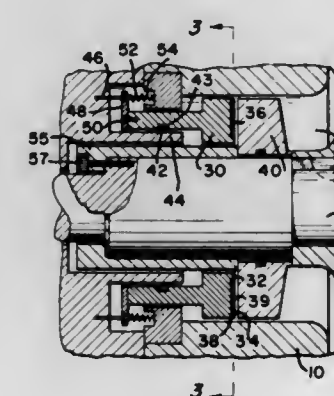
Herman Lindeboom, Pennington, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.

Filed Mar. 19, 1970, Ser. No. 21,164

Int. Cl. F16j 15/34

U.S. Cl. 277-27

5 Claims



This is an improved straight leakoff seal. A differential pressure is maintained in the space between a first sealing member such as a collar on a rotatable shaft and an axially movable second seal member. An annular dam on the second seal member located adjacent the high-pressure end of the space between the two seal members is provided with a plurality of grooves equally spaced circumferentially. The new seal may be used for sealing gas or liquid.

3,751,046

# FACE TYPE SEALING DEVICE

Alexei Ivanovich Golubev, Gorokhovskiy pereulok, 4, kv. 32; Vitaly Viktorovich Gordeev, ulitsa Parshina, 21, korpus 2, kv. 10; Boris Sergeevich Goritsky, proezd Shokalskogo, 29, korpus 1, kv. 4, and Grigory Markovich Friedisman, ulitsa Dybenko, 22, korpus 1, kv. 24, all of Moscow, U.S.S.R.

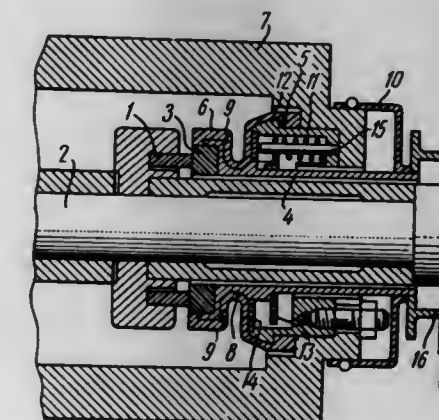
Filed Apr. 28, 1972, Ser. No. 248,527

Claims priority, application U.S.S.R., July 30, 1971, 1680964

Int. Cl. F16j 15/36

U.S. Cl. 277-88

1 Claim



The face type sealing device includes sealing rings of which one is mounted about the shaft and the other one is stationary and is pressed to the first ring by a pressing member. The latter is sealed away from the fluid being sealed by the device with the help of a single-corrugation bellows and is mounted intermediate of the housing of the device and a sleeve. One end of the sleeve has cut therein a groove for receiving and supporting the corrugation of the bellows, whereas the opposite end of the sleeve has mounted thereon a resilient member, whereby positive fluid-tight sealing away of the pressing member is ensured.

3,751,047

# PISTON RING ASSEMBLY

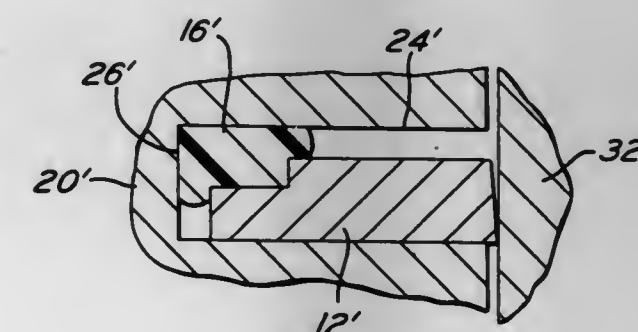
Richard P. McGee, Yeadon, Pa., assignor to Gould Inc., Mendota Heights, Minn.

Filed June 10, 1971, Ser. No. 151,750

Int. Cl. F16j 9/00

U.S. Cl. 277-165

6 Claims



A piston ring assembly is comprised of a metal compression ring and an elastomeric polymeric expander ring engaging the inner diameter of the compression ring. The expander ring is made from a high temperature resistant elastomeric material which is deformed between the piston ring groove and the cast iron outer ring to form an oil seal and blow-by seal.



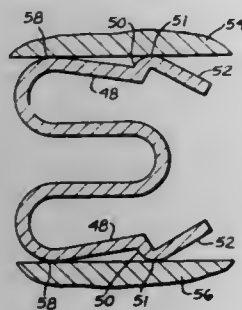
### 3,751,048 SEAL ELEMENT

John E. Rode, Fonda, N.Y., assignor to Temper Corporation, Fonda, N.Y.

Filed June 2, 1972, Ser. No. 259,124  
Int. Cl. F16j 15/08

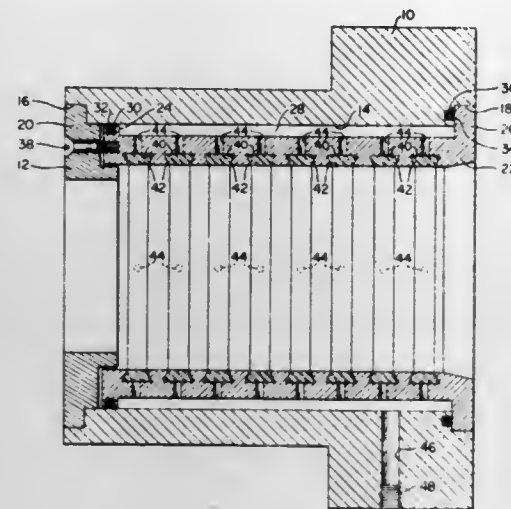
U.S. Cl. 277-200

11 Claims



A seal element in the form of a convoluted tubular member formed of a resilient ductile metal which work hardens when stressed beyond the elastic limit. The seal element at the ends has shoulders formed at the juncture of axial and radial flanges which define annular seal regions that can create a high stress region when the seal element is compressed between opposed parts.

the bore. An elastomeric material fills the grooves and is bonded to the sides of the grooves. Passages in the chuck body



form a means for introducing a pressurized fluid to the bottom of the grooves so that the elastomeric material will bulge and grip the object to be machined.

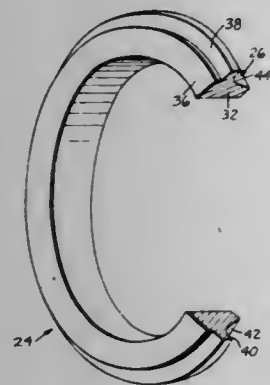
### 3,751,049 SEAL RING AND METHOD OF MAKING

Donald W. Busby, Durango, Colo., and Robert D. Goodfellow, Jr., Bedford, Pa., assignors to Subterranean Tools Inc., Beaumont, Tex.

Filed Feb. 25, 1971, Ser. No. 118,709  
Int. Cl. B65d 53/00

U.S. Cl. 277-235 A

4 Claims U.S. Cl. 279-16



The specification discloses a seal ring, specifically, a dynamic seal ring consisting of a ring of metal having an annular radial sealing face on one end thereof on which is fused a non-metallic coating, such as a ceramic material and which coating is finished smooth and polished.

### 3,751,050 POT CHUCK

Ira Wade Hayes, Reinbeck, and Vernon John Barnes, Waterloo, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed May 8, 1972, Ser. No. 251,289  
Int. Cl. B23b 31/10

U.S. Cl. 279-4

15 Claims

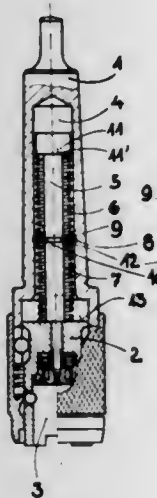
A pot chuck for internal machining of hollow, thin walled, cylindrical objects includes a body having a cylindrical bore with a plurality of annular grooves provided in the surface of

### 3,751,051 QUICK-CHANGE CHUCK WITH LONGITUDINAL COMPENSATION FOR THREAD-CUTTING TOOLS

Wolfgang Schmidt, Lauf, Germany, assignor to Emuge-Werk Richard Glimpel Fabric, Fur Prazisions-Werkzeuge vorm Moschkau & Glimpel, Lauf, Germany

Filed Sept. 14, 1971, Ser. No. 180,390  
Int. Cl. B23a 31/12

5 Claims



A quick-change chuck for thread-cutting tools or the like, having a shaft with an axial bore therein, and an axially movable tool-holding portion including a bolt extending into the axial bore of the shaft. A pair of axially aligned compression springs are disposed within the axial bore and engaging the interior of the shaft and the tool-holding portion. A pair of transverse washer-like stop members are provided, one secured to the interior of the bore and the other to the bolt, whereby one of the springs will be compressed under compression of the chuck and the other spring will be compressed under tension of the chuck, the non-affected spring in each case remaining unstressed.

### 3,751,052 DRILL CHUCK

George C. Derbyshire, Sheffield, England, assignor to The Jacobs Manufacturing Company, Limited, Sheffield, England

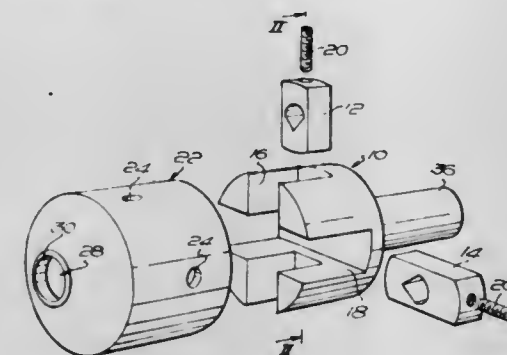
Filed Nov. 22, 1971, Ser. No. 201,090

Claims priority, application United Kingdom, May 13, 1971, 14,870/71

Int. Cl. B23b 31/04

U.S. Cl. 279-18

10 Claims



A drill chuck having a sleeve for reception of a drill shank through a central hole in its front end into a body part received into the sleeve, the body part having mutually slidable gripping members provided with apertures into which the shank is received and retained by means of adjustable screws in the slidable member. The sleeve protectively covers over the screws; and the body part is adapted for attachment to a driving spindle.

In a modified form the sleeve may be of plastics material, which the body may be of plastics, or rubber material.

### 3,751,053 CHUCK WITH CENTERING AND COMPENSATING JAWS

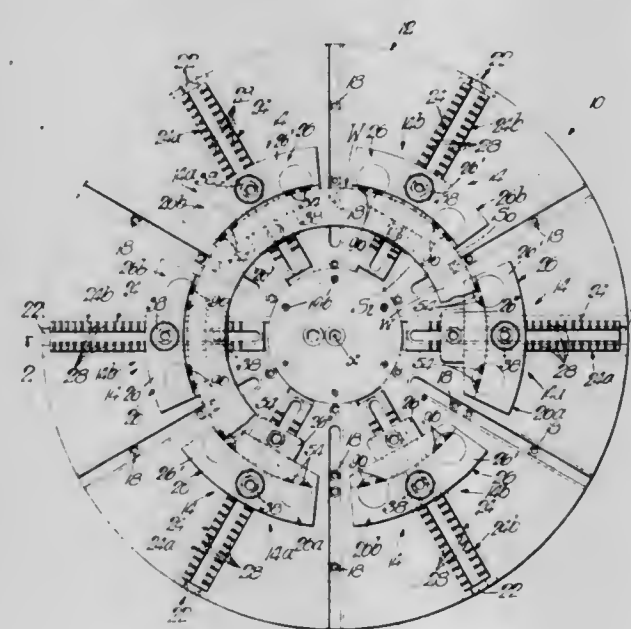
Linwood B. Swanson, Newington, Conn., assignor to Cushman Industries, Incorporated, Hartford, Conn.

Filed Apr. 24, 1972, Ser. No. 247,095

Int. Cl. B23b 31

U.S. Cl. 279-119

10 Claims



A chuck having a set of centering jaws and a set of compensating jaws, two axially movable plungers operatively connected with the jaws of the respective sets, with the plunger for the compensating jaws including a ball member with a universally movable socket member thereon for compensating action of the associated jaws, and fluid-operated mechanism operative to move the plungers for closure of the centering jaws on work before the compensating jaws close thereon, and for applying full work-gripping force to the jaws only when all

jaws are in engagement with work. The compensating jaws are convertible into centering jaws by releasably locking the socket member to the ball member against movement from a neutral position in which the converted jaws are held centered on the chuck axis.

### 3,751,054 SKI EDGE

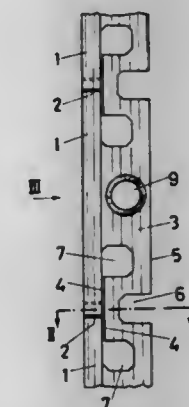
Friedrich Deutsch, Archenweg 40, A-6020 Innsbruck, Austria

Filed July 9, 1971, Ser. No. 161,073

Int. Cl. A63c 5/04

U.S. Cl. 280-11.13 E

1 Claim



A ski edge having a vertical flange and a horizontal flange, said vertical flange being divided in successive sections by spaced slits running transversely to the longitudinal direction of the edge. Each slit of the vertical flange branches out into at least two branches running in opposite directions of the horizontal flange of the edge. The inner longitudinal border of the horizontal flange has an incision opposite each slit of the vertical flange.

### 3,751,055 SKI BINDING

Yoshikatsu Ishida, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

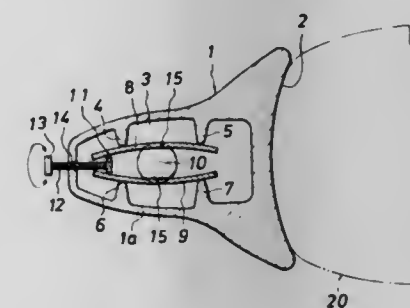
Filed Sept. 3, 1971, Ser. No. 177,571

Claims priority, application Japan, Sept. 14, 1970, 45/80324

Int. Cl. A63c 9/00

U.S. Cl. 280-11.35 T

14 Claims



A ski binding comprising a box-like hollow body pivotally supported about a pin, the hollow body having a room therein. Two pairs of projections are disposed in the room substantially in symmetrical relation to each other with respect to the pin. A pair of elongated plate springs are inserted between the pin and projections, one of the springs being inserted between the pin and pair of projections, and the other between the pin and the other pair of projections. The springs are engaged with flat sections formed on both sides of the pin. The springs act to apply the urging forces to the pin and projections, so that the body is held in position. The body may be provided with another member adjusting the urging forces of the springs.



3,751,056

## CONNECTOR FOR SKI TRAINING

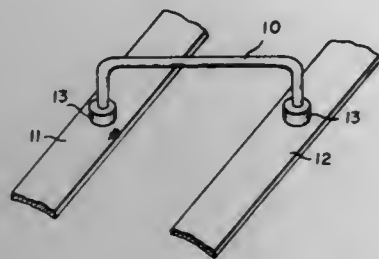
Warren J. Wightman, 6 Crossover Rd., Fairport, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,693

Int. Cl. A63c 11/00

U.S. Cl. 280-11.37 E

10 Claims



An improved connector releasably secures the ends of a ski training rod to a pair of skis. The connector includes heads on the ends of the rod adjacent shank portions of the rod and an elastomeric receptacle on each ski to receive the head and shank ends of the rod. The receptacle has a hollow interior and its upper region has a gripping sleeve with a through opening approximately the diameter of the shank and extending downward into the hollow interior of the receptacle. The head of the rod can be forced down through the opening to interlock with the bottom of the sleeve and can be pulled straight up through the opening, but in use, the receptacle holds the shank securely and resists any force tending to alter the distance between the other end of the rod and the receptacle, even as the shank inclines relative to the receptacle.

3,751,057

## SLED SKI

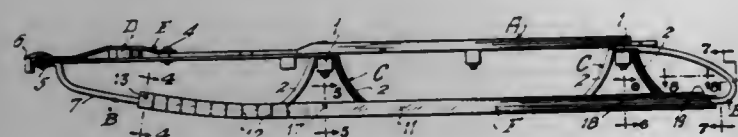
Roy A. Matthiessen, 30 Sandy Hill Rd., Westfield, N.J.

Filed Sept. 8, 1971, Ser. No. 178,642

Int. Cl. B62b 13/12

U.S. Cl. 280-28

5 Claims



A sled has a body and two runners each connected thereto by braces secured at their ends to said body and the runner respectively, and a ski for each runner comprising an elongated strip of sheet metal bent to provide a base having a central longitudinal portion and downwardly extending longitudinal runner wings spaced apart transversely of said central portion and diverging from each other from their front ends to their rear ends and having upwardly projecting flanges at opposite sides of the sled runner and the braces, said flanges being drawn together above the runner and into snug engagement with the braces, and said central longitudinal portion and the downwardly extending diverging runner wings providing increased contact surface in snow.

3,751,058

## COMBINED SNOW SHOVEL, WHEEL BARROW AND DOLLY

Bjorn Arild Larsen, Oslo, Norway, assignor to Spigelverks Christiania, Oslo, Norway

Filed Oct. 1, 1971, Ser. No. 185,656

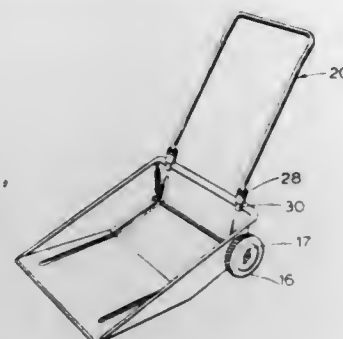
Int. Cl. B62b 3/02

U.S. Cl. 280-30

8 Claims

A multi purpose, manually operated carrying device, which can be utilized as a wheel barrow, a dolly or as a snow shovel.

It comprises a substantially flat bottomed, trough-shaped container with two opposite side walls, and one transverse end wall, which container is adapted for a pair of wheels and provided with a pivotable handle member. The handle member and the container are mutually adapted to each other such that the handle member can be fixed to the container in a first



3,751,059

## CANTILEVER-TYPE, NESTABLE SHOPPING CARTS

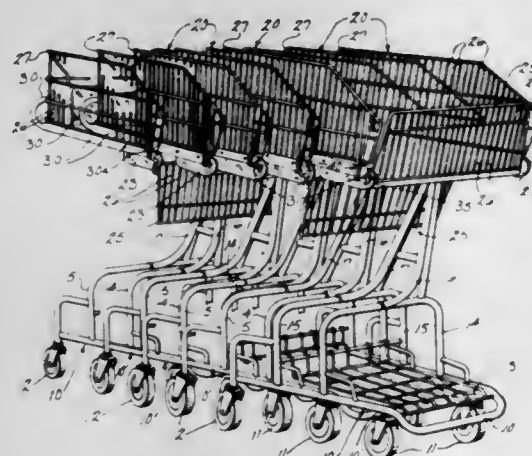
David N. Dunder, Glendora, and Howard Lee James, Sylmar, both of Calif., assignors to Technibilt Corporation, Burbank, Calif.

Filed Sept. 21, 1971, Ser. No. 182,390

Int. Cl. B62b 3/04

U.S. Cl. 280-33.99 F

9 Claims



A cantilevered shopping cart wherein the forward end of the basket is wider than the rearward end, said forward end being provided with a bottom-hinged gate swingable either forwardly from its closed, upright position to an open position to allow the easy removal of the basket contents, or rearwardly and downwardly to a horizontal position to allow the telescopic nesting of a plurality of carts, said cart being provided with a novel collapsible baby seat located at its smaller end.

3,751,060

## TRACTOR TRAILER VEHICLE COMBINATIONS

Bengt Roland Holmberg, Kalmar, and Ralf Krister Ebbe Petersson, Alsterbro, both of Sweden, assignors to Kalmar Verkstadsakiebolag, Kalmar, Sweden

Filed Aug. 12, 1970, Ser. No. 63,228

Claims priority, application Sweden, Aug. 13, 1969, 11243/69

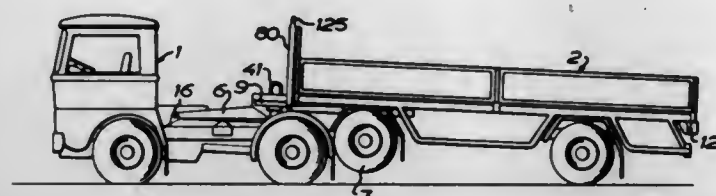
Int. Cl. B62d 53/00

U.S. Cl. 280-402

8 Claims

A vehicle combination comprising a tractor and a trailer, in which combination the tractor in addition to a trailer coupling

has a semi-trailer coupling (fifth wheel), and the trailer in addition to a trailer coupling has a semi-trailer coupling (king pin) and front wheels which can be raised by means of an



operating mechanism from a normal wheel position for the trailer to an upper position which permits using the trailer as a semi-trailer.

3,751,061

## VEHICLE WITH INDIVIDUAL WHEEL SUSPENSION

Hans Scheuerpflug, Bad Mingolsheim, Germany, assignor to Johannes Fuchs, K. G., Ditzingen, Germany

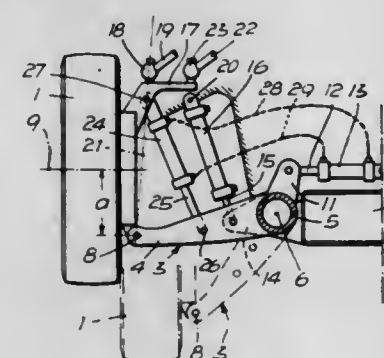
Filed Jan. 12, 1972, Ser. No. 217,138

Claims priority, application Germany, Jan. 14, 1971, P 21 01 513.4

Int. Cl. B60p 1/00

U.S. Cl. 280-96.2 R

6 Claims



An individual wheel suspension for a vehicle comprising a single transverse lever for pivotally connecting a wheel to the vehicle chassis, and hydraulic means for adjusting the camber of the wheel within wide limits independently of any angular position to which the transverse lever might be pivoted.

3,751,062

## SCOOTER SKATEBOARD

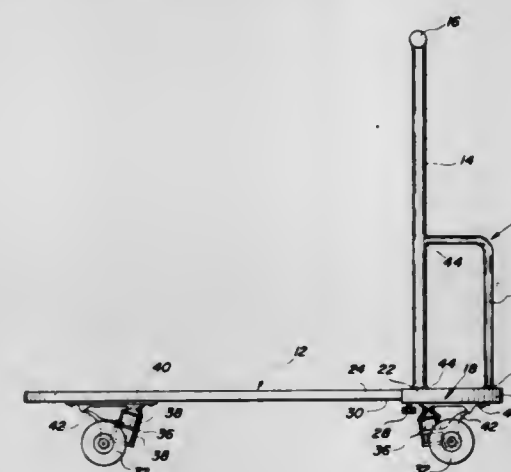
H. Thomas White, Sr., 2103 Saranac St., Adelphi, Md.

Filed Feb. 24, 1972, Ser. No. 228,811

Int. Cl. B62k 9/00

U.S. Cl. 280-87.04 A

2 Claims



The scooter skateboard has a platform with any well-known tracking wheel trucks suspended for automatic balancing and steering by tilting the rider's body and the skateboard platform in the steering direction, and a removable handle mounted

firmly on one end of the platform for assisting novice riders in gaining practice in balanced riding and steering maneuvers until they can perform without relying on the assistance of the handle to ride the skateboard unobstructively and with more dexterity in either direction.

3,751,063

## MULTIPLE JOINT TANDEM SUSPENSION WITH TORQUE SPRINGS

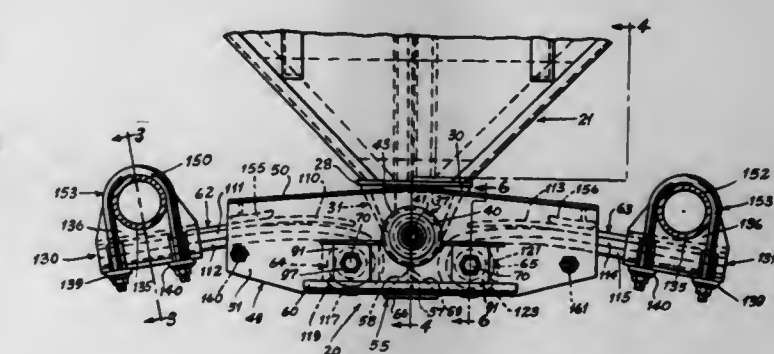
John E. Radel, Springfield, Mo., assignor to Ridewell Corporation, Springfield, Mo.

Filed Nov. 16, 1971, Ser. No. 199,150

Int. Cl. B60g 5/04

U.S. Cl. 280-104.5 A

9 Claims



A tandem vehicle suspension having a compensator member pivotally supported on a transverse trunnion depending from a vehicle chassis, independent forwardly and rearwardly extending torque springs pivotally connected to the compensator at one end and to the forward and rearward axles, respectively, at their other ends, and bearing means between the compensator and torque springs, the respective pivotal connections and bearing means creating greater reactive forces and better load distribution between the two axles.

3,751,064

## MOBILE HOME UNDERFRAME

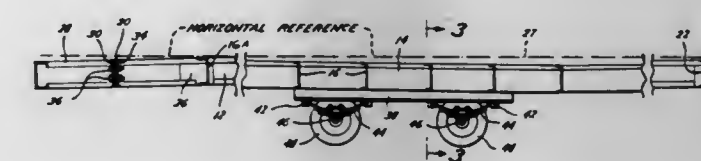
Albert A. Goodson, Jr., Houston, Tex., assignor to Southwestern Pipe, Inc., Houston, Tex.

Filed Dec. 8, 1971, Ser. No. 205,892

Int. Cl. B60p 3/00

U.S. Cl. 280-106 T

7 Claims



An underframe structure, system and method for use with mobile homes and other transportable buildings including a pair of longitudinal beams made of C-sections, an interlocking C-section used at the area of greatest bending moment, a reinforcing hat-section member rigidly affixed to each beam but removable therefrom to increase stiffness in the area of greatest bending moment, a wheel support structure depend-



ing from the hat-section member, and a removable hitch on the underframe which can be attached to the wheel support structure and hat-section members to move them independently of the underframe. The disclosure also includes a method of assembly of such an underframe structure, using a minimum of simple jigs. There is also disclosed a method for moving a mobile building from a first location to another location wherein a wheel support structure which includes elongate stiffening members is mounted beneath the building in such a way as to improve the stiffness of the building underframe during transporting, a removable hitch member is attached to the frame of the building, the building is moved to the other location, and the support structure and hitch are then removed from the mobile building and attached to each other for transportation independently of the building, while the building is lowered to a suitable foundation.

3,751,065

**RACING CAR AND CHASSIS THEREFOR**

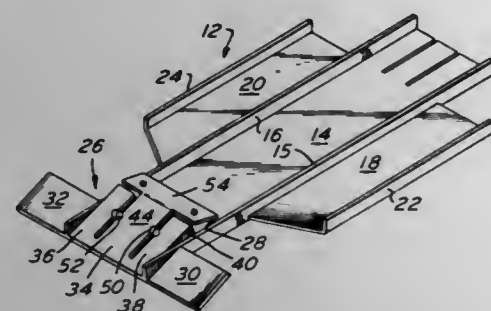
Matthew A. Sullivan, Willow Grove, Pa., assignor to Sullivan Products, Inc., Willow Grove, Pa.

Continuation-in-part of Ser. No. 157,561, June 28, 1971. This application Dec. 16, 1971, Ser. No. 208,848

Int. Cl. A63h 17/26

U.S. Cl. 280—106.5 R

10 Claims



A radio control racing car having a resilient suspension system which is adjustable is provided. The wheels of the car are permitted to flex substantially independently of each other with a positive control provided for the amount of flexibility of each wheel.

3,751,066

**WHEEL SUSPENSION SYSTEM**

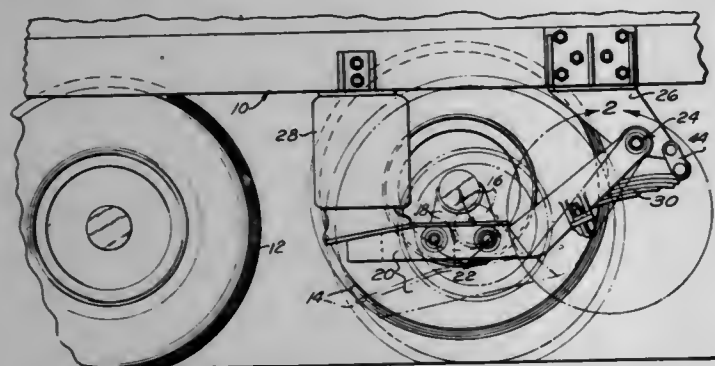
Gattu Narahari, Marion, Ohio, assignor to Sycon Corporation, Marion, Ohio

Filed Sept. 1, 1971, Ser. No. 176,911

Int. Cl. B60g 11/46

U.S. Cl. 280—124 F

6 Claims



An air suspension system for a wheeled vehicle and particularly for the auxiliary lift axle of a vehicle wherein a trailing arm supporting the axle is pivotally supported at one end to the frame with an air spring operatively connected to the other end of the arm and a cantilever leaf spring rigidly connected at one end to the arm and cooperating with a frame-supported link at its other end to form a mechanism which normally biases the axle to an elevated position and which, in the lowered position of the axle, serves both as an energy store for lifting the axle and as a means of shock absorption.

3,751,067

**TRAILER LANDING GEAR FOOT**

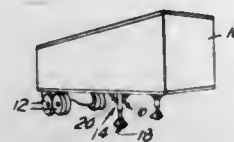
Hyle K. Claffin, North Muskegon, and Jack T. Belke, Grand Rapids, both of Mich., assignors to Westran Corporation Muskegon, Mich.

Filed Sept. 13, 1971, Ser. No. 179,850

Int. Cl. B60s 9/00

U.S. Cl. 280—150.5

9 Claims



A readily detachable foot construction which includes a base plate and a pair of upstanding side plates fixed to the base plate for retaining the lower end of a landing gear leg therebetween. In one embodiment of the invention the two side plates include aligned apertures with one of the side plates laterally bendable prior to assembly to permit ready insertion of the leg into the foot. In another embodiment the bendable side plate is replaced by a hub plate which can be attached to the side plate by bolts or the like to mount the leg to the foot. Also included in each embodiment is a cross plate having at its upper edge a cut-out portion engageable with a mating extension at the lower leg end to take the side loads which would normally be imposed upon the side plates.

3,751,068

**DOOR-OPERATED VEHICLE BOARDING STEP**

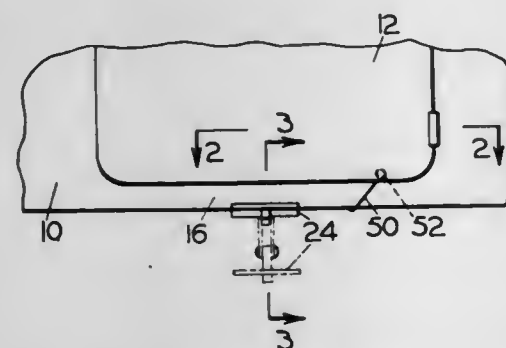
Howard C. R. Green, 1942 11th Ave. W., Eugene, Oreg.

Filed Sept. 9, 1971, Ser. No. 179,029

Int. Cl. B60r 3/02

U.S. Cl. 280—166

3 Claims



A boarding step for trucks, construction equipment and other vehicles having hinged entrance doors comprises a telescoping support arm having on its inner end means for attachment to a first frame member beneath the vehicle and on its outer end a step. One end of a lever is pivotally connected to the vehicle frame and the other end to the outer segment of the telescoping support arm. Flexible link means interconnects the outer segment of the support arm and the door. Resilient means interconnects the outer segment of the support arm and a second frame member. Opening the door swings the step outwardly and downwardly to its extended use position. Closing the door permits the resilient means to shift the step inwardly and upwardly to its retracted storage position.

3,751,069

**TRAILER HITCH HAVING A STABILIZING MECHANISM**

Theodore K. Suckow, 160 Rock Rd., Glen Rock, N.J.

Filed Mar. 6, 1972, Ser. No. 231,938

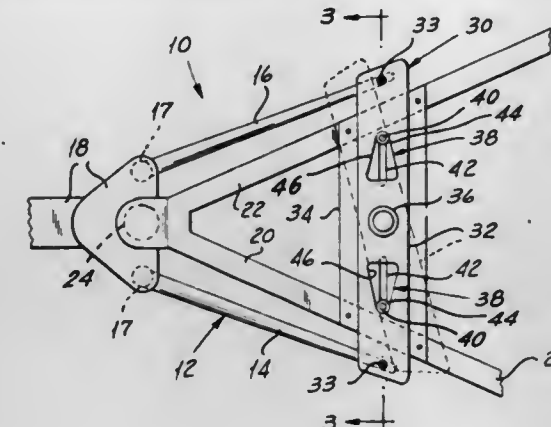
Int. Cl. B62d 53/00, 1/06

U.S. Cl. 280—406 A

18 Claims

The trailer hitch stabilizing mechanism has an elongated bar assembly wherein each bar is pivotally secured at one end to the tractive vehicle and, at its opposite distal end portion, con-

nected to the frame of the trailer so that, upon endwise axial movement of the bar relative to the trailer frame, the bar causes a horizontal, stabilizing force to be exerted on the trailer frame. The mechanism includes, in combination with the elongated bar assembly, locking means coacting with each



elongated bar assembly to render the bar, as desired, operative or inoperative with respect to exerting a horizontal stabilizing force. A control means for selectively actuating the locking means to effect operativeness and inoperativeness of the elongated bar assemblies is provided at a location remote from the locking means.

3,751,070

**FIFTH WHEEL UNIT**

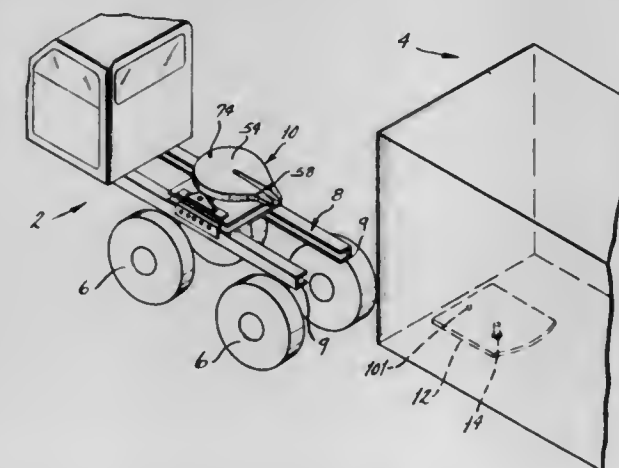
Raymond H. Schaffart, Rt. 5, Box 71, and Charles V. Otis, Rt. 5, Box 76, both of Rolla, Mo.

Filed Oct. 29, 1971, Ser. No. 193,684

Int. Cl. B62d 53/08

U.S. Cl. 280—432

10 Claims



A fifth wheel assembly for coupling an over-the-road tractor to a trailer has a skid plate which is carried by a turntable bearing on the tractor so that the skid plate is normally free to rotate relative to the tractor. The skid plate is provided with a retractable locking pin which normally projects into the trailer and prevents the tractor from rotating relative to the skid plate. It is further provided with the usual latch for engaging and retaining the trailer king pin and a release lever for operating that latch. The locking pin is coupled to the release lever and operated thereby so that when the latch is opened, the locking pin is retracted to permit complete disengagement of the tractor from the trailer. A brake mechanism is incorporated into the fifth wheel assembly and includes brake cylinders disposed within the bearing. When expanded, these cylinders bear against the mount for the skid plate and prevent the skid plate from rotating relative to the tractor. The brake cylinders are operated through a valve which opens on manual command to facilitate coupling and also opens when the tractor-trailer combination is involved in a panic stop to prevent jackknifing during the stop.

3,751,071

**HITCH STRUCTURE FOR AGRICULTURAL IMPLEMENTS**

Roger Lee Patterson, Fontheil, and Henning Isachsen, Merittton, Ontario, both of Canada, assignors to Deere & Company, Moline, Ill.

Filed Oct. 30, 1970, Ser. No. 85,377

Int. Cl. B60d 1/14

U.S. Cl. 280—478 A

8 Claims



A foldable hitch structure for use on an elongated agricultural implement convertible between a wide, generally cross-wise operating position and a narrow, generally longitudinal transport position, the hitch comprising a pair of arms pivotally connected to spaced points on the implement frame at their rearward ends and pivotally interconnected at their forward ends. The hitch is adapted for connection to the drawbar of a tractor at a point near the interconnection of the two arms, and one of the arms is telescopic to permit the structure to fold from an operating position, wherein the connection point is located forwardly of the implement, to a transport position, wherein the connection point is located toward one end thereof. A spring biased latch pin is actuated by movement of the telescopic arm to secure the hitch in either position.

3,751,072

**SWINGING TYPE TRAILER HITCH**

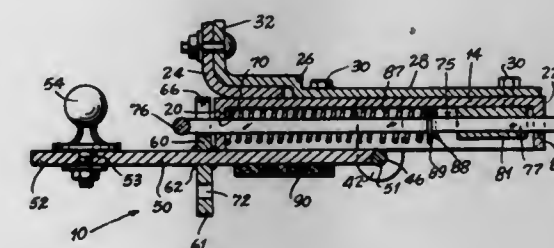
Galen Williams, 2508 Random Acres Ct., Pittsburg, Kans.

Filed Aug. 25, 1971, Ser. No. 174,817

Int. Cl. B60d 1/06

U.S. Cl. 280—491 B

17 Claims



This invention relates to a retractable trailer hitch and more particularly to one having quick release and locking means for placing the hitch in either its tow or store position and includes a housing, a retractable T-bar mounted within the housing, and a pivotal tow plate pivotally mounted near the center of the housing for swinging movement between a tow position and a stored position. The T-handle is spring biased to releasably lock the tow plate in either of its two positions.



3,751,073

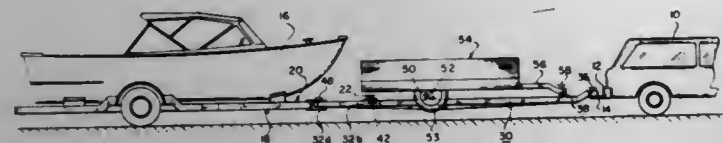
**METHOD AND APPARATUS FOR TOWING TRAILERS**

William M. Alexander, 8554 Sonnevile Dr., and Lawrence J. Stancik, 8562 Sonnevile Dr., both of Houston, Tex.

Filed Sept. 27, 1971, Ser. No. 183,901  
Int. Cl. B62d 53/00

U.S. Cl. 280-482

2 Claims



This invention relates to a piggyback extension for piggybacking a wheeled trailer. The extension includes a frame, a hitch disposed near the front end of the frame to connect the frame to a towing vehicle, and a hitch disposed near the rear end of the frame to connect the frame to a trailer. The extension when so connected is disposed in a generally-horizontal orientation. A support, laterally-mounted on the frame, is adapted to hold the axle of the trailer being piggybacked.

3,751,074

**MAGAZINE INSERT**

Paul J. Krohnert, 20 Collins Grove Rd., Westhill, Ontario, Canada

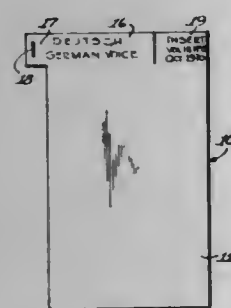
Filed Mar. 10, 1972, Ser. No. 233,698

Claims priority, application Canada, Mar. 18, 1971, 108109

Int. Cl. G09b 17/02; B42d 1/00

U.S. Cl. 283-46

4 Claims



The invention comprises a magazine insert consisting of a plurality of pages each corresponding in printed word content with a page of a magazine but in a language different from that of the magazine page. The insert pages, fixed together in numerical order, will be circulated with the magazine in the country of the language of the insert pages. The magazine may therefore be produced in a single basic language edition but when combined with an appropriate translation insert of the printed articles therein will provide a format and display items in identifiable relation to the translated passages in the insert pages.

3,751,075

**COUPLING MEMBERS FOR PLASTIC PIPES AND FITTINGS USEFUL THEREWITH**

Peretz Rosenberg, Moshav Beit Shearim, Israel

Filed Mar. 22, 1971, Ser. No. 126,756  
Int. Cl. F16l 3/00

U.S. Cl. 285-61

6 Claims

A coupling member particularly for plastic pipes is formed with a through-going bore and with an annular shoulder dividing the member into a short part and a long part separated by the shoulder, the shoulder being defined by a pair of intersecting annular walls forming a sharp peripheral edge at their juncture. The annular wall at the long part side of the shoulder is substantially at right angles to the longitudinal axis of the member, and the annular wall at the short side of the shoulder is formed with a concave taper. Various applications of such

coupling member are described, including an arrangement wherein it is attached to the end of a flexible tube, an arrange-



ment wherein it is mounted in a bore in the wall of a pipe, and a further arrangement wherein it is received in a bore of a fitting for coupling to a water sprinkler.

3,751,076

**COLLET HOSE BRACKET**

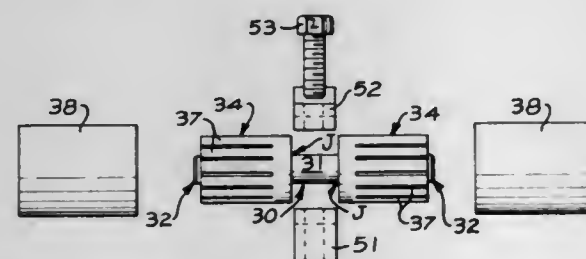
James W. Thais, Decatur, and Donald E. Daykin, Taylorville, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 10, 1971, Ser. No. 206,780

Int. Cl. F16l 3/00

U.S. Cl. 285-62

1 Claim



A collet hose bracket includes a central metal conduit structure which can be physically clamped to adjacent machine structures and a pair of collet hose couplings attached to each end thereof, whereby high pressure flexible hoses can be tethered in the area of articulated hitches and the like of earthmoving equipment where there is danger of environmental damage to such hoses and therefore a necessity to tether them.

3,751,077

**WELDED SLEEVE FITTING**

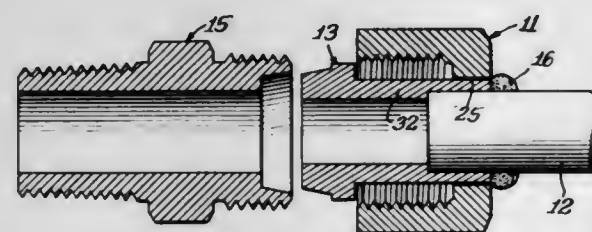
Jan A. Hiszpanski, Chicago, Ill., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed Feb. 28, 1972, Ser. No. 229,707

Int. Cl. F16l 55/00

U.S. Cl. 285-169

10 Claims



A fitting for use with metal tubes adapted for critical applications such as involving high pressure and/or elevated temperatures for heavy external loads. The fitting includes a sleeve which is sealingly welded to the tube end and defines an

improved cooperative nut and sleeve structure whereby the nut may be threadedly withdrawn from the body notwithstanding the projection of the sealing weld sufficiently from the tube to prevent complete withdrawal of the nut from the sleeve.

3,751,078

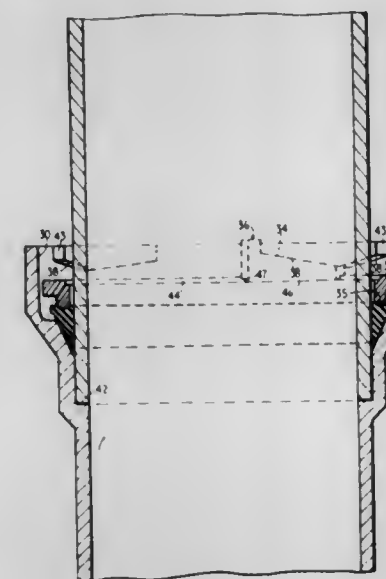
**PIPE JOINTS**

John Leslie O'Brian; Bryan Finnimore, and Dallas John Arthur Hogg, all of c/o John L. O'Brian &amp; Associates, 70 Derby St., Auburn, New South Wales, 2144, Australia

Filed Aug. 26, 1971, Ser. No. 175,092

Int. Cl. F16l 21/02

U.S. Cl. 285-339



The invention provides a spigot and joint where an internal sealing ring between the spigot and joint is retained in position by an insertable latched ring. In another modification the sealing ring is retained in position between the spigot and socket members by a gland ring and separate wedges. Axial displacement of the gland ring to compress the sealing ring is achieved by disposing the wedges between a beveled lug at the mouth of the socket and a lug on the outer face of the gland ring.

3,751,079

**FIFTH WHEEL PLATE ASSEMBLY**

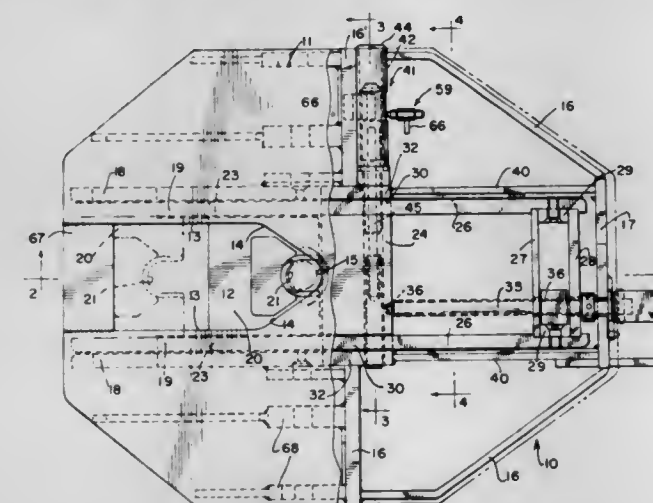
Walter J. Marulic, Gary, Ind., and Ray L. Ferris, Thornton, Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed Oct. 27, 1971, Ser. No. 193,011

Int. Cl. F16d 9/00

U.S. Cl. 287-20.5 R

5 Claims



A fifth wheel plate assembly for trailer hitches securing trailers to railway flat cars includes a top plate having an open-

ing in which a movable lock jaw is supported for grasping and locking the kingpin of a trailer to the fifth wheel. The lock jaw is provided with extensions which are connected to a suitable screw type actuating assembly for moving the jaw to its closed position. In the closed position the jaws are locked by means of a lock bolt assembly which is moved into engaging position with the extensions to lock the jaw against movement. A lock bolt assembly also includes an indicating and latch assembly which in turn locks the locking bolt in the engaging position and indicates visually that it is locked.

3,751,080

**CONNECTING ROD MANUFACTURING**

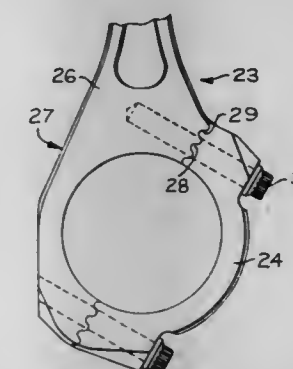
John M. Bailey, Dunlap, and Donald G. Zook, Metamora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 15, 1971, Ser. No. 106,804

Int. Cl. B60b 27/06

U.S. Cl. 287-52.03

3 Claims



High quality connecting rods and similar machine components comprised of an assembly of two clamped together parts are manufactured from tough heat treated high carbon steel, or the like, according to a manufacturing method of reduced cost. Essentially all machining of the component is conducted on an integral piece prior to its being divided into the two separate parts by fracturing along a frangible zone effected by electron beam bombardment. The resulting irregular mating surfaces of the respective parts have substantial resistance to relative sliding upon clamping of the parts together.

3,751,081

**THREE-PIECE CLAMP ASSEMBLY FOR THE BRACES OF SCAFFOLDING**

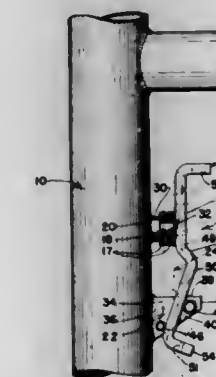
Vernon R. Schimmel, Arlington Heights, and James C. Shoemaker, Hampshire, both of Ill., assignors to Symons Corporation, Des Plaines, Ill.

Filed June 23, 1972, Ser. No. 265,542

Int. Cl. E04c 1/00

U.S. Cl. 287-53.5

7 Claims

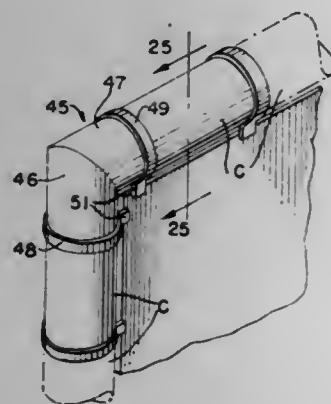


A three-piece, inseparable, post-attached clamp assembly including a wedge piece by means of which the contiguous



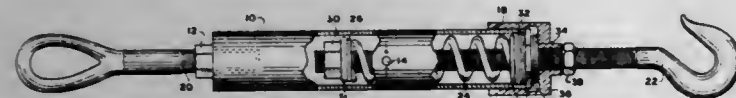
ends of the diagonal and/or horizontal braces of conventional scaffolding may be clamped firmly but releasably against the post to which the assembly is applied.

**3,751,082**  
**CONNECTOR AND MODULES FOR STRUCTURAL ASSEMBLIES**  
 Kenneth E. Somerville, 47091 Dequinder, Rochester, Mich.  
 Filed Feb. 8, 1972, Ser. No. 224,519  
 Int. Cl. F16b 7/04, 2/20  
 U.S. Cl. 287—54 A 17 Claims



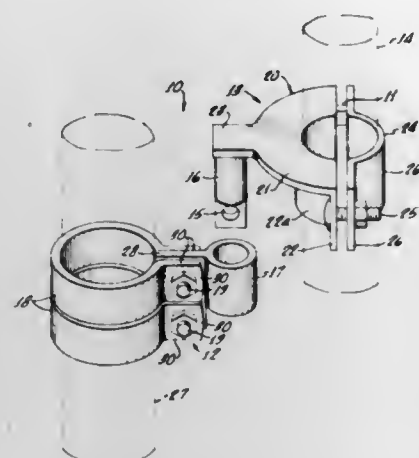
Modular structure and method for constructing furniture and the like, wherein inexpensive, resilient connecting means is used to join together a plurality of normally discarded cans, such as soft drink and beer cans and the like, to construct useful items such as household furniture and decorations and the like with the discarded cans.

**3,751,083**  
**TENSION TURNBUCKLE**  
 Sol H. Jacobson, Bedford, and Donald R. Gorsuch, Northborough, both of Mass., assignors to Sanders Associates, Inc., Nashua, N.H.  
 Filed Feb. 25, 1972, Ser. No. 229,450  
 Int. Cl. F16b 7/06  
 U.S. Cl. 287—60 9 Claims



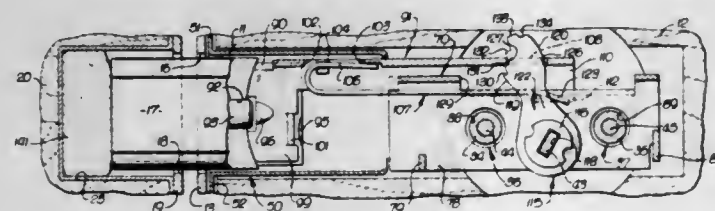
A tension turnbuckle comprises first and second bolts having connectors integral therewith, a preloaded spring arranged about the inner end of said second bolt, a turnbuckle housing threaded onto said first bolt for movement thereon and fixed to the outer end of said preloaded spring, an indicator fixed to the inner end of said second bolt and cooperating with a viewing slot within the turnbuckle housing to permit ascertainment of the tension of the turnbuckle, and a housing cap arranged to be screwed onto the turnbuckle housing after the proper tension is achieved to lock out the spring and provide a solid metal load path through the turnbuckle from the first bolt to the second bolt.

**3,751,084**  
**TRANSLATING GATE LATCH**  
 George O. Lening, Rowland Heights, Calif., assignor to Master Fence Fittings, Inc., La Habra, Calif.  
 Filed June 24, 1971, Ser. No. 156,320  
 Int. Cl. E05c 5/00  
 U.S. Cl. 292—114 3 Claims



A rotatably adjustable rolling gate latch which eliminates the need to bring a translating gate into precise alignment with a fence post when it is desired to latch the gate.

**3,751,085**  
**INCREMENTAL DEAD BOLT LATCH**  
 Vernard W. Sanders, Los Angeles, Calif., and Dennis G. Potter, Delta, B. C., Canada, assignors to Norris Industries, Inc., Los Angeles, Calif.  
 Filed Feb. 7, 1972, Ser. No. 224,151  
 Int. Cl. E05c 1/06  
 U.S. Cl. 292—140 3 Claims

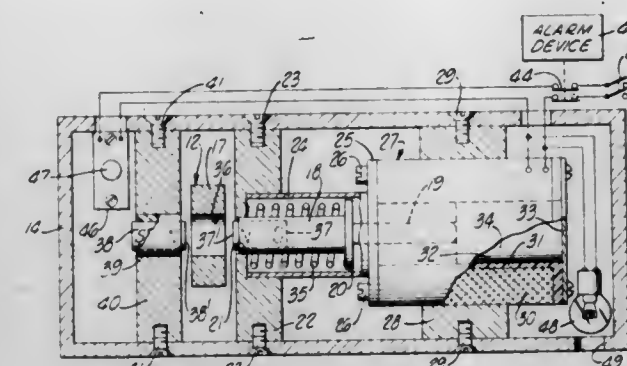


A dead bolt latch for a door has a rotating cam lever action for extending the bolt into a strike plate recess in the door frame. The cam has the form of a pivoted arm and is rotated by the tail piece of a lock device. The pivot axis is near one edge of a lock case and engages a cam opening in an actuator slide at the opposite side of the latch case, the actuator slide being attached to the latch bolt. A series of stepped shoulders on the cam lever serve as blockers to prevent retraction of the actuator slide by pressure against the latch bolt so that the latch bolt can be locked in any one of several extended positions and need not occupy a fully extended position to be assured of there being no unauthorized retraction which might otherwise be possible with a partially extended latch bolt.

**3,751,086**  
**FAIL-SAFE MEANS FOR SOLENOID ACTUATED DEVICES**  
 Arthur V. Geringer, 5424 Geyer Ave., Tarzana, Calif.  
 Continuation of Ser. No. 47,959, June 22, 1970. This application July 12, 1972, Ser. No. 272,901  
 Int. Cl. E05b 47/02  
 U.S. Cl. 292—144 3 Claims

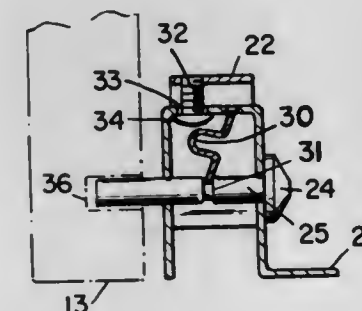
Fail-safe means for solenoid actuated devices, such as door locks, valves and the like, wherein the actuated element is operable to an active position upon energization of the sole-

noid, and upon deenergization of the solenoid is activated by a compression spring to an inactive position. A pair of permanent magnets provide the fail-safe feature, whereby the actuated element will be moved to its inactive position, in the proximity. The bolt is held in projected position by a detent withdrawable against gravity by a second electromagnet under



event of spring failure. One of these magnets is fixedly mounted, and the other is carried by the actuated element, the magnets being so oriented as to present closely confronting like magnetic poles in a repulsion mode when the actuated element is in its active position.

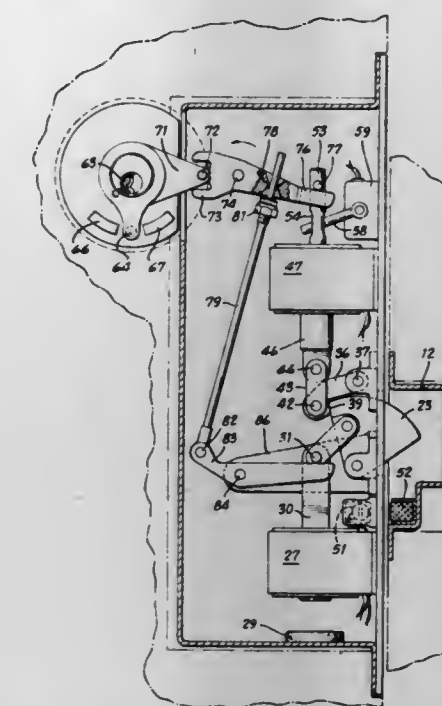
**3,751,087**  
**FOOT OPERATED PATIO DOOR LOCK**  
 Donald B. Hawkins, P.O. Box 221, San Leandro, Calif.  
 Filed May 1, 1972, Ser. No. 249,675  
 Int. Cl. E05c 1/00, 13/02  
 U.S. Cl. 292—170 9 Claims



A device for locking sliding patio doors and the like employing an over-center spring-induced toggle action imparted to a lock bolt to selectively urge the lock bolt into locked position or hold it in an unlocked position. The spring functions as a keeper for retaining the bolt in the locked position and as a stop for determining the unlocked position of the bolt. A pedal member impinging on the spring releases the lock by forcing the spring to shift the bolt from locked to unlocked position.

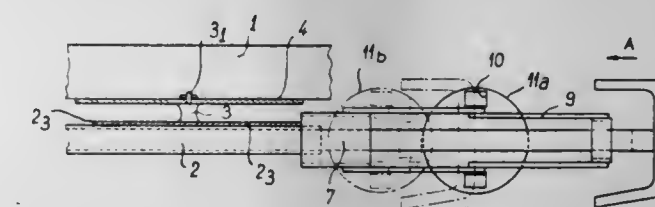
**3,751,088**  
**ELECTROMAGNETIC LOCK**  
 Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, San Francisco, Calif.  
 Filed May 24, 1971, Ser. No. 146,115  
 Int. Cl. E05c 3/06; E05b 47/00;  
 U.S. Cl. 292—201 2 Claims

An electromagnetic lock has a frame on one of two relatively movable door members and a strike on the other of the door members. A bolt horizontally pivoted on the frame is withdrawn by gravity and impelled under manual control into projected, strike-engaging position by a first electromagnet-effective only when a magnetically responsive switch on one door member and a magnet on the other door member are in



manual control. Mechanical operation is also provided, and indicators and alarms show relative position of the lock parts.

**3,751,089**  
**FRANGIBLE SHOCK ABSORBING BUMPER**  
 Andre Lefevre, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt (Hauts de Seine) and Automobiles Peugeot, Paris, both of France  
 Filed Sept. 3, 1971, Ser. No. 177,591  
 Claims priority, application France, Sept. 17, 1970, 7033727; Jan. 11, 1971, 7100645  
 Int. Cl. B60r 19/04; B61f 19/04; F16d 63/00  
 U.S. Cl. 293—1 8 Claims



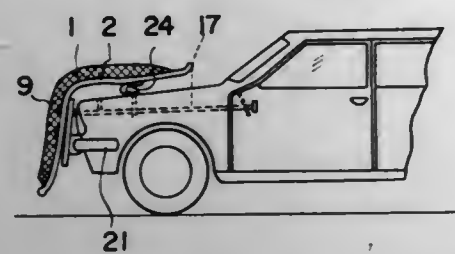
A frangible shock absorbing bumper device for automotive vehicles, characterized in that it comprises an auxiliary chassis disposed at the end of the main chassis of the vehicle or of the structure corresponding thereto, the auxiliary chassis being connected to said main chassis by at least one element so arranged as to undergo a permanent deformation by shearing according to a predetermined law, the resistance to deformation of the element being lower than the resistance to deformation of the main chassis.

**3,751,090**  
**VEHICLE FENDER**  
 Manzo Wakabayashi, 7-13, 2-chome, Nishiokubo; Toshio Kato, 353, 3-chome, Kashiwagi, both of Tokyo; Michio Kawabe, 2341 Isurumi-cho, Yokohama; Nobumi Kawai, 2-13, 2-chome, Ebis, Tokyo, and Minoru Ishida, 66-Shirahata, Urawa, all of Japan  
 Continuation of Ser. No. 146,031, May 24, 1971, abandoned.  
 This application July 27, 1972, Ser. No. 275,892  
 Int. Cl. B60r 19/06, 21/14; B61f 19/06  
 U.S. Cl. 293—38 3 Claims

This invention relates to a rescue device adapted to be at-



tached to a car body, and comprising a net stretched over a frame which is foldably and vertically slidably attached to the



front of the car body and elastic means for unfolding said net to spread it out in front of the car body.

3,751,091

## ENERGY ABSORBING BUMPER SUPPORT

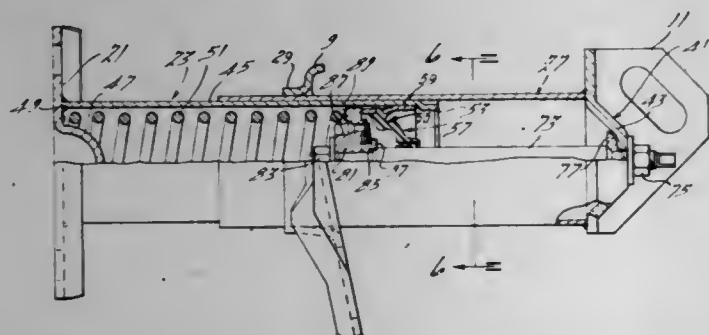
Dennis N. Renneker, Warren, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 18, 1971, Ser. No. 172,788

Int. Cl. B60r 19/04; F16f 9/22

U.S. Cl. 293-70

20 Claims



Energy absorbing bumper system for an automotive vehicle using two telescoping tubular members with a piston connected by a rod to one member and slideable in the other member. Fluid is sealed in the other tubular member and is forced through valve means in the piston when the pressure of the fluid is increased above a predetermined value due to the application of a force of a predetermined magnitude on the other member, thereby allowing the members to telescope and absorbing energy.

3,751,092

## IMPACT PROTECTOR FOR AUTOMOTIVE VEHICLES

Hubert Granig, Thomas-Schmid-Gasse 19, Klagenfurt, Austria

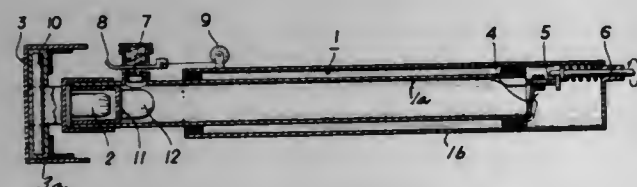
Filed Nov. 12, 1970, Ser. No. 88,956

Claims priority, application Austria, Nov. 14, 1970, 8A 10 697/69, 63c3

Int. Cl. B60r 19/06

U.S. Cl. 293-73

10 Claims



An impact protector for automotive vehicles, which comprises a bumper bar, and means for varying the distance of the bumper bar from the chassis of the vehicle. The distance varying means include means providing a pressurized gas. At least one hydraulic, telescopic piston-cylinder unit having a first chamber which receives a pressure liquid and includes a working chamber in an operative condition, and the pressure liquid is adapted to be pressed into the working chamber by the pressurized gas and operates by expanding the piston-cylinder unit. The protector remains then in an inoperative collapsed position during normal vehicle operation.

### 3,751,093 ENERGY STORING RECOVERABLE BUMPER SYSTEM

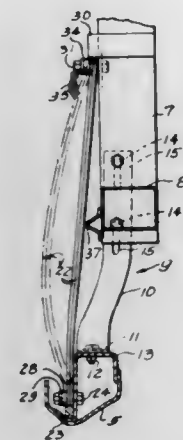
Victor F. Hebert, San Jose, Calif., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Filed Apr. 22, 1971, Ser. No. 136,375

Int. Cl. B60r 19/06

U.S. Cl. 293-89

15 Claims



A horizontal bumper is supported in relation to a support such as a vehicle frame by jacking and roll-preventing bracket structure which is adapted to transmit to the frame impacts against the bumper transversely relative to the vehicle but permits the bumper to displace relatively toward the frame in response to inboard pressures or impacts against the bumper, with the impact energy stored in resilient buckling column bars thrustably interposed endwise between the bumper and the frame. To accommodate conditions where resilient flexing of the buckling column bars in a horizontal direction is not feasible, the arrangement enables the buckling columns to flex in a generally vertical direction.

3,751,094

## SLIDEABLY ADJUSTABLE AUXILIARY LIFT HANDLE

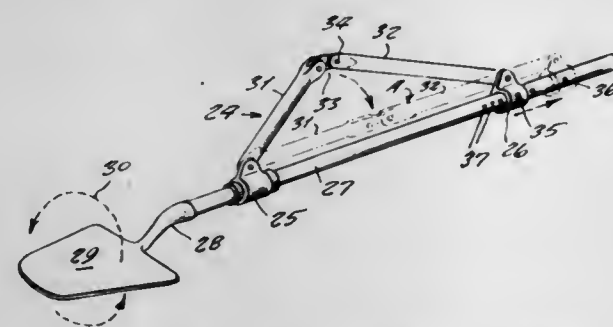
Gerard M. Bohler, R.D. 2, Pine Grove, Pa.

Filed Aug. 10, 1971, Ser. No. 170,519

Int. Cl. A01b 1/22; B25g 1/04

U.S. Cl. 294-58

3 Claims



An auxiliary handle which is readily securable to a regular handle of an implement such as a shovel, rake or hoe, the device consisting of an angularly shaped member that is secured at its opposite ends to the regular handle, and the center angular portion of the auxiliary handle extending upwardly so that it may be grasped by a person's one hand while the other hand grasps the regular handle.

3,751,095

## UNIVERSAL SUCTION HEAD CONVEYOR

Charles E. Myles, St. Louis County, Mo., assignor to Alvey, Inc., St. Louis, Mo.

Filed Sept. 30, 1971, Ser. No. 185,078

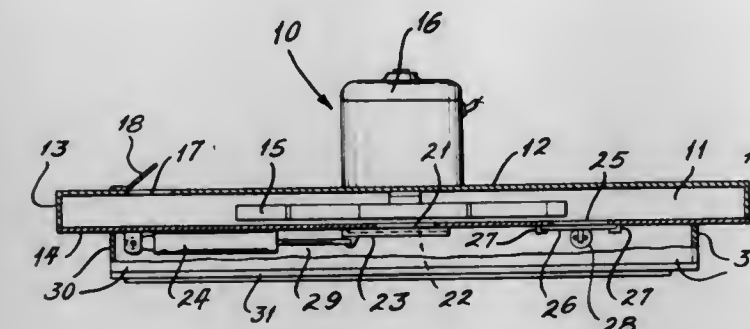
Int. Cl. B66c 1/02

U.S. Cl. 294-64 R

8 Claims

A conveyor suction head assembly operating on the principle of establishing a grip on a load which may be a group or a

layer of articles by a differential pressure across the load wherein a plenum chamber is created with a plurality of individually valve controlled pockets capable of establishing surface contact with the load to be transported and, thereby establishing an operating condition where the plenum chamber when reduced to a negative atmospheric condition will establish the pressure differential across the load or layer



of articles which are normally at ambient pressure conditions. In the assembly the respective pockets are equipped with gravity responsive control valves for controlling the effectiveness of the pressure drop across the load, and it is unique that the control valves and the orifices controlled thereby may be easily removed for replacement if different orifice size and different weight of valve elements may be required.

3,751,096

## TWISTLOCK DEVICE FOR LOAD HANDLING APPARATUS

Andrew Stewart Wyon, Bath, England, assignor to Stothert & Pitt Limited, Bath, Somerset, England

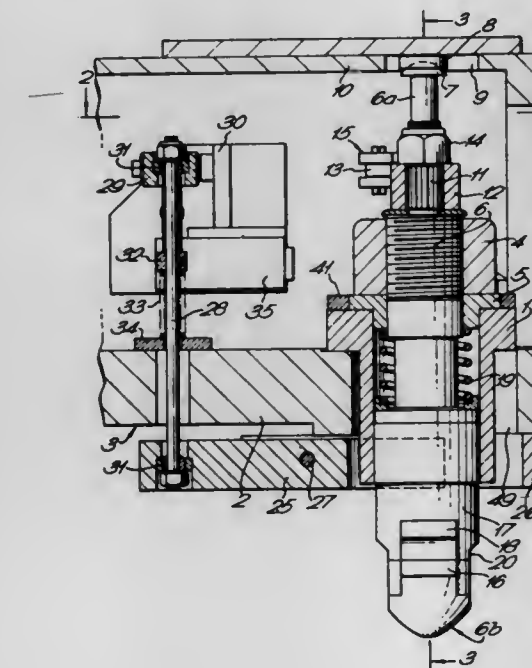
Filed Feb. 7, 1972, Ser. No. 223,906

Claims priority, application Great Britain, Feb. 11, 1971, 4,452/71

Int. Cl. B66c 1/22

U.S. Cl. 294-67 R

19 Claims



A twistlock device for use in handling load handling containers of the type used in I.S.O. and "Sealand" systems, comprising first engagement means suitable for I.S.O. castings, and second engagement means suitable for "Sealand" castings, wherein said first and second engagement means are in co-axial relationship with one another, and are releasably engageable with one another, so that they can be angularly turned in unison, or one relative to the other.

3,751,097

## ADJUSTABLE ENGINE LIFT

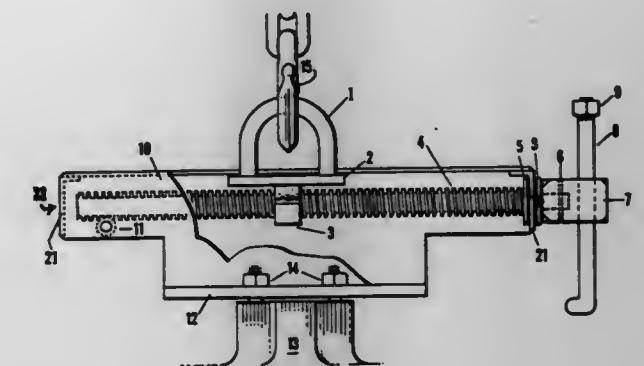
Robert L. Jones, 715 N. 55th, and Harold H. Jones, 2611 N. 36th, both of Lincoln, Nebr.

Filed Apr. 12, 1971, Ser. No. 133,071

Int. Cl. B66c 1/66

U.S. Cl. 294-78 A

7 Claims



An adjustable engine lift adapted for use by mechanics and the like, wherein a means for removing and installing an automobile engine is simplified by being able to adjust engine angle while the engine weight is suspended.

3,751,098

## CONTAINER CARRIER

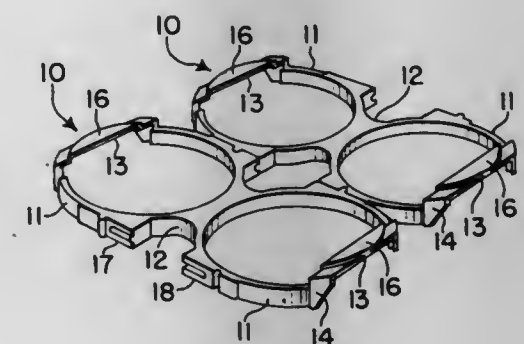
Ronald C. Owen, Harwood Heights, Ill., assignor to Illinois Tool Work Inc., Chicago, Ill.

Filed Nov. 17, 1971, Ser. No. 199,606

Int. Cl. B65d 21/02

U.S. Cl. 294-87.2

3 Claims



A molded plastic carrier for a pair of containers such as cans in which the sides of the carrier include male and female snap means so that two or more carriers may be joined together to provide a unitary package of a selected number of carriers for storing and transporting a selected number of pairs of containers and further may be conveniently manually separated or rejoined.

3,751,099

## HYDRAULIC ACTUATORS FOR ORIENTING IMPLEMENTS ON CRANES

Roy O. Billings, 6221 W. Wisconsin Ave., Milwaukee, Wis. Division of Ser. No. 879,686, Nov. 25, 1969, Pat. No. 3,633,607. This application Oct. 7, 1971, Ser. No. 187,460

Int. Cl. B66c 1/22

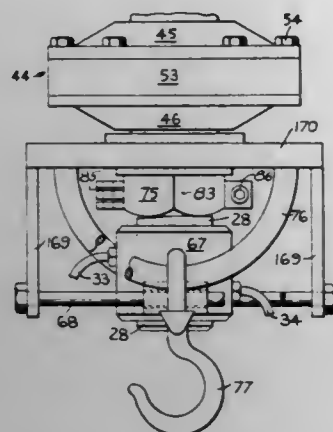
U.S. Cl. 294-88

8 Claims

A pressure plate which is adjustably supported on the end of the dipper stick has a depending non-rotatable shaft around which a circular hydraulic actuator is rotatably mounted, there being provision for removably supporting an implement



for rotation around the shaft, together with means for detachably connecting the implement to the actuator so that when the cables are unwound from the reels in order to permit them to be attached to the anchoring stations. The spring acts



the latter operates the implement in swiveling movement, hydraulic conduits for the actuator and implement being disposed within the non-rotatable shaft.

3,751,100

## REMOVABLE VEHICLE WINDOW COVER

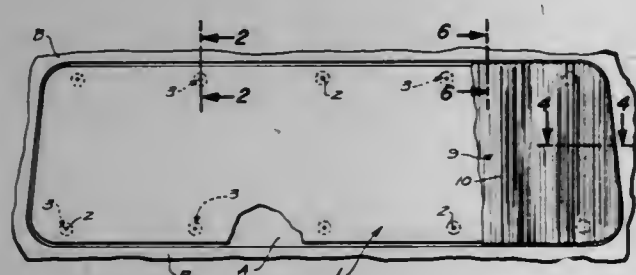
Robert A. Keyes, Box 90873, Inglewood, Calif.

Filed Dec. 10, 1971, Ser. No. 206,655

Int. Cl. B60j 1/20

U.S. Cl. 296—95 C

6 Claims



A window cover primarily intended to cover the windows of recreational motor vehicles used for camping, the window cover including a transparent, translucent or opaque cover sheet dimensioned to fit a vehicle window, either within the window frame on the window itself or on the window frame, and removably secured thereto by paired separable fastening elements secured respectively to the window or the frame and to the cover sheet. The window cover also includes a removable curtain unit having marginal portions fitting over the margins of the cover sheet.

3,751,101

## VEHICLE SERVICING CART

Matthew N. Miller, Woodland Hills, and Fred H. Seitz, Yorba Linda, both of Calif., assignors to Fairchild Industries, Inc., Germantown, Md.

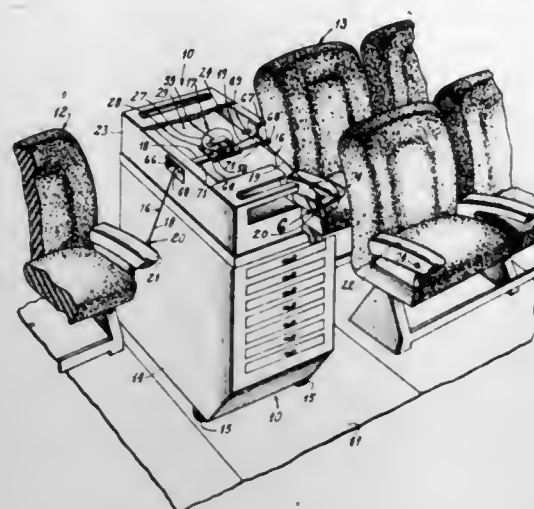
Filed Apr. 6, 1971, Ser. No. 131,730

Int. Cl. B64d 11/04

U.S. Cl. 296—1 R

9 Claims

A vehicle servicing cart adapted for use within a vehicle that has two separate cables for attachment to various stationary anchoring stations within the vehicle and separate reels for each cable that are rotatable relative to each other on a common shaft. The reels are adapted to normally be locked against each other and a cam is provided which upon actuation disengages the reels and permits relative rotation of the reels with respect to each other when the cables are to be extended or retracted. A resilient spring is provided that interconnects the reels and the spring is wound as the reels rotate



3,751,102

## INGOT CARRYING TRAILER

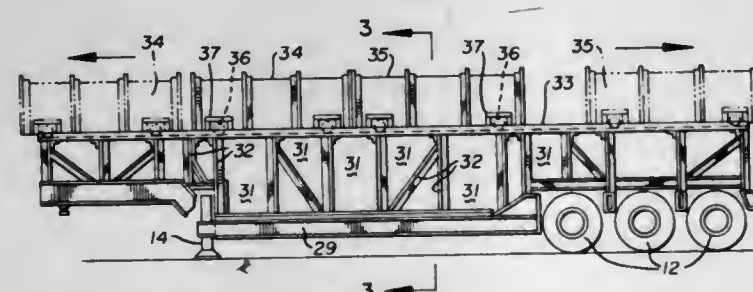
Jerry L. Stoneburner, P.O. Box 277, North Jackson, Ohio

Filed Dec. 2, 1971, Ser. No. 204,212

Int. Cl. B60p 3/00

U.S. Cl. 296—3

5 Claims



An ingot carrying trailer particularly adapted for transporting a plurality of hot metal ingots in upright side by side relation includes an elongated frame having a depending center area in which a rack for said ingots is positioned and spaced with respect to an insulated deck therebeneath, insulated closure panels surround said rack and a pair of longitudinally movable insulated cover sections are positioned on a longitudinal track-way for movement toward and away from said depending center area of said trailer.

3,751,103

## INTERIOR ASSEMBLY FOR A PICKUP CAMPER

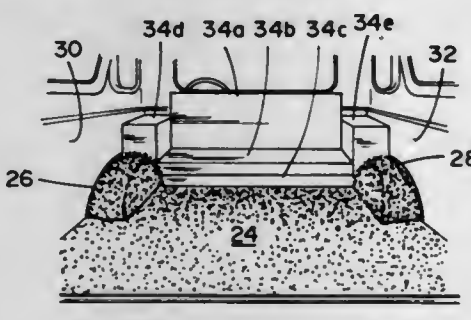
Robert H. Robertson, 2640 Heatherwood, Dallas, Tex.

Filed May 18, 1972, Ser. No. 254,540

Int. Cl. B60p 3/38

U.S. Cl. 296—23 R

17 Claims



The specification discloses an interior assembly for installation in a pickup having a camper cover. A rug is shaped to fit

on the bottom of the pickup bed and includes curved side portions which are contoured to cover the wheel well covers of the pickup bed. A pair of elongated side panels are dimensioned to cover the interior sides of the pickup bed and include cutout portions for receiving the wheel covers of the pickup bed. A front panel is dimensioned to cover the bulkhead of the pickup bed. The side and front panels are attached to the interior sides of the pickup bed by screws or the like such that the bottom edges of the panels exert a sufficient downward force upon the edges of the rug to firmly hold the rug in place. A plurality of rectangular cushions are dimensioned for being selectively arranged on the rug as a couch or as a bed. The various portions of the interior assembly may be conveniently packaged as a compact kit for shipment to and installation by the consumer.

3,751,104

## MOVEMENT CONTROL FOR PICKUP-MOUNTED VEHICLE

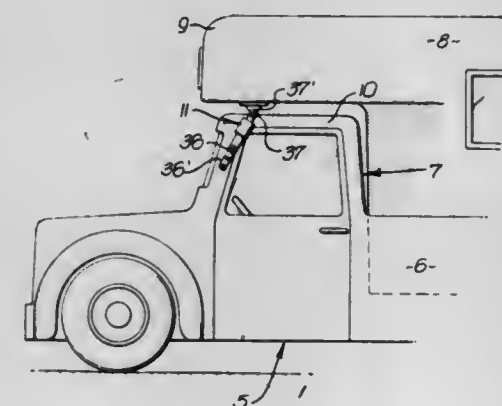
Quenten E. Thompson, 842 N. Cummings Rd., Covina, Calif.

Filed July 7, 1971, Ser. No. 160,412

Int. Cl. B60p 3/32

U.S. Cl. 296—23 MC

5 Claims



Hydraulic members connect two relatively movable parts exemplified by a pickup bed and a camper mounted thereon, said members being extensible and contractable in response to movement of the parts. A cylinder connected to one part cooperates with a piston axially movable in the cylinder and connected to the other part. Oppositely biased poppets are carried by the piston. One poppet, during piston movement in one direction, bypasses hydraulic fluid from one end of the cylinder to the other end, and the other poppet, during movement in the opposite direction, bypasses hydraulic fluid from said other end to the first mentioned end of the cylinder. Bias-regulating springs for each poppet are capable of being adjusted to regulate the bypass flow.

3,751,105

## CORNER CONSTRUCTION FOR VEHICLE TRAILERS

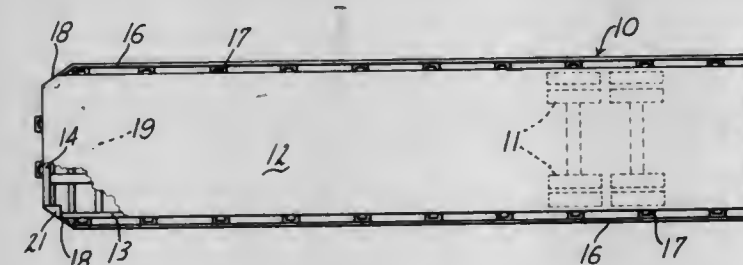
Noah M. Norman, Trussville, Ala., assignor to Altamil Corporation, Birmingham, Ala.

Filed Sept. 24, 1971, Ser. No. 183,339

Int. Cl. B62d 33/02

U.S. Cl. 296—28 M

2 Claims



An "add-on" corner for the decks of flat bed trailers and the like which permits a manufacturer to produce trailers having

truncated front corners while being able, on request, to furnish square cornered decks. The invention comprises a corner fill piece which may be secured to a truncated corner thus to "square" it off.

3,751,106

## SECUREMENT OF COVERING ABOUT VEHICLE CONTOURED SUNVISOR

Gert Mahler, Radevormwald, and Gerhard Zwirner, Düsseldorf, both of Germany, assignors to Gebr Hoppich GmbH, Wuppertal-Elberfeld, Germany

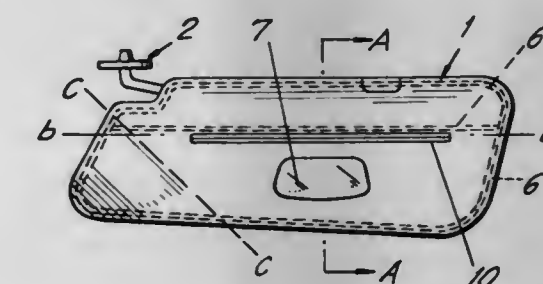
Filed July 28, 1971, Ser. No. 166,681

Claims priority, application Germany, Nov. 7, 1970, P 20 54 953.5

Int. Cl. B60j 3/00

U.S. Cl. 296—97 H

12 Claims



Means for securing the cover wrapping of a sunvisor to the concavely curved side of the contoured sunvisor body through bonding covering material to a structural support wire of the visor located within the deepest concave region of the body of the visor.

3,751,107

## RESTAURANT BOOTH WITH SNAP AWAY BACK

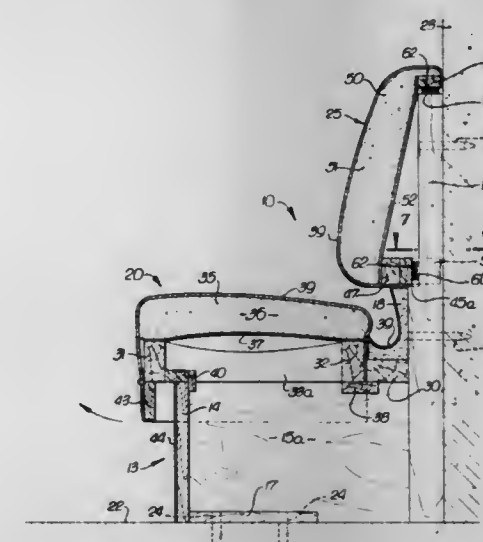
Melvin A. Greltzer, Los Angeles, Calif., assignor to Imperial Data Corporation, Los Angeles, Calif.

Filed Aug. 12, 1971, Ser. No. 171,058

Int. Cl. A47c 7/02

U.S. Cl. 297—455

1 Claim



A restaurant booth structure is disclosed wherein only the supporting understructure of the booth including the base and vertical support members are permanently installed in the restaurant. Both the upholstered seat and back portions of the booth are removably attached to the supporting understructure so as to enable the replacement of these portions by newly upholstered portions at the site of the booth. To facilitate the replacement, the back portion of the booth is constructed to be connected by quick fasteners to the vertical support members.



3,751,108

## DETACHABLE WRITING SURFACE FOR DIRECTOR'S CHAIR

Louis J. Bakanowsky, Lexington, Mass., assignor to Cambridge Seven Associates, Inc., Cambridge, Mass.

Filed May 7, 1971, Ser. No. 141,154

Int. Cl. A49b 16/00

U.S. Cl. 297-160

10 Claims



A writing board carries two members of L-shaped cross section that define a channel for accommodating the arm of a director's chair with the space between the two members accommodating a vertical post of the chair.

3,751,109

## METHOD OF MAKING A SEAT SHELL

Ronald Dufton, Bushey Heath, England, assignor to Du-Al Furniture Limited, Middlesex, England

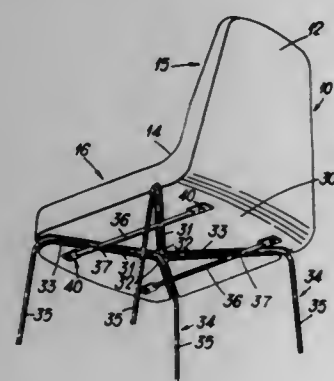
Filed Sept. 20, 1971, Ser. No. 181,751

Claims priority, application Great Britain, Oct. 2, 1970, 47,086/70

Int. Cl. A47c 3/00, 7/14

U.S. Cl. 297-445

6 Claims



A method of making a seat shell having an inner and an outer wall with a cavity therebetween, said method including expanding a hollow softened element of thermoplastic synthetic resin material against the internal surfaces of a mould by injecting a gaseous fluid into said hollow softened element, the mould being so shaped that the seat shell produced therefrom has a seat portion and a back rest portion which are integral with each other.

3,751,110

## STRAP FASTENING ARRANGEMENT

Lawrence M. Shaw, Salisbury, N.C., assignor to Lyon-Shaw, Incorporated, Salisbury, N.C.

Filed June 5, 1972, Ser. No. 259,937

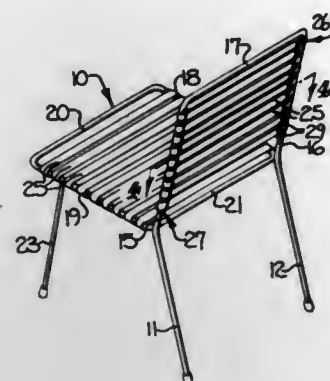
Int. Cl. A47c 7/20, 7/14, 31/04

U.S. Cl. 297-452

1 Claim

Upholstery straps used in providing body supporting surfaces for a seating furniture piece such as a lawn chair are maintained in a desired spaced relation through the use of

elongate, comb-like fastener means secured to the structural skeleton of the furniture piece. Terminal ends of the upholstery



straps are wrapped about the structural skeleton of the piece and are secured by being penetrated by the teeth of the comb-like members.

3,751,111

## VARIABLE DENSITY CONTOUR CHAIR

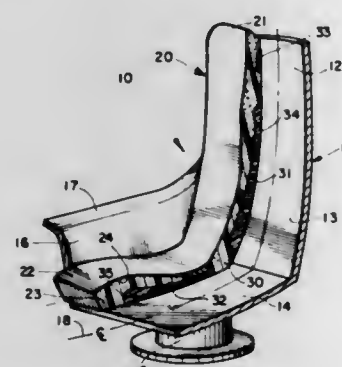
Marvin A. Taylor, Glenn H. Johnson, both of Santa Monica, and H. Jack Becker, Los Angeles, all of Calif., assignors to said Taylor, said Johnson, both of Santa Monica, and said Becker, Los Angeles, all of Calif., part interest to each

Filed Feb. 22, 1972, Ser. No. 227,870

Int. Cl. A47c 7/02, 1/12

U.S. Cl. 297-456

7 Claims



A chair includes a cushion of relatively low density flexible material that captivates specially positioned blocks of relatively high and intermediate density flexible material in a manner to improve comfort and minimize certain discomforts of sitting.

The relatively high and intermediate density blocks are arranged in a pattern to coincide with predetermined high and intermediate load bearing regions determined from data derived from measuring a backside area of a person or a group of people.

The load is distributed so that the stronger and more sensitive prone parts of a person are subjected to proportionally greater and lesser amounts of the overall load as compared with conventional cushions of uniformly compressive material or layered materials.

3,751,112

## TAILGATE

Leroy G. Hagenbuch, 3910 Millbrook Road, Peoria, Ill.

Filed June 17, 1971, Ser. No. 153,964

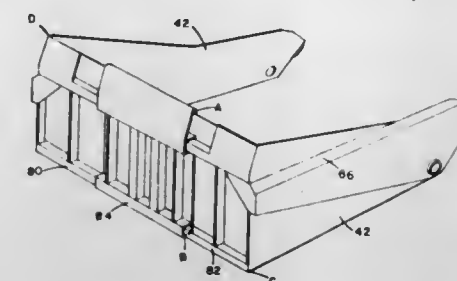
Int. Cl. B60p 1/16, 1/28

U.S. Cl. 298-23 DF

4 Claims

An improved tailgate for a rear dump vehicle having a pair of side plates that are pivotally connected to the side sheets of a dump body. A telescoping rear plate is connected to the

pivoted side plates that provides for expansion of the sidesheets of the dump body. A pair of telescoping outriggers



are coupled between the side plates and the rear pump vehicle main frame that provides ease of assembly of the tailgate on a plurality of vehicles.

3,751,113

## TOOL RETAINING MEANS

Sidney E. Proctor, High Wycombe, England, assignor to Austin Hoy and Company Limited, High Wycombe, Buckinghamshire, England

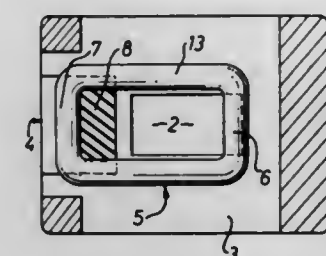
Continuation-in-part of Ser. No. 18,477, March 11, 1970, abandoned. This application Sept. 3, 1971, Ser. No. 177,645

Claims priority, application Great Britain, Sept. 11, 1970, 43,678/70

Int. Cl. E21c 25/46

U.S. Cl. 299-92

16 Claims



A holder for a mineral mining cutter pick having a shank arranged for receipt in a socket in the holder, wherein the holder has a latch comprising a loop member arranged to surround a tool shank in the holder, and at least one resilient member e.g. of rubber co-operating with a part of the loop member to urge the loop member into engagement with the tool shank to resist removal of the shank from the socket.

3,751,114

## CUTTER BIT AND BLOCK

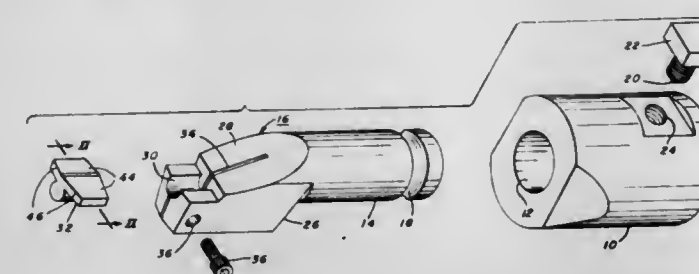
Charles S. Davis, Bridgeport, W. Va., assignor to Carmet Company, Pittsburgh, Pa.

Filed Sept. 22, 1971, Ser. No. 182,791

Int. Cl. E21c 25/48

U.S. Cl. 299-85

7 Claims



An improved cutter bit and block for a mining or excavating machine of the type wherein bits are circumferentially spaced around a rotary cutting head or mounted on a cutting chain, characterized in that each bit has a cylindrical shank which can rotate within a cooperating bore in a bit block secured to

the cutting head or chain. The cutting tool carried on the bit has a cutting edge behind the axis of the shank in the direction of movement of the cutting head or chain such that, as the angle of attack of the cutting device is changed, the bit will rotate to cause the cutting tool to cut on its forward edge at all times, eliminating wear on the sides of the bit and the production of dust within a coal mine or other similar environment.

3,751,115

## TOOLS AND HOLDERS THEREFOR

Sidney E. Proctor, High Wycombe, Buckinghamshire, England, assignor to Hoy, Austin, and Company Limited, Buckingham, England

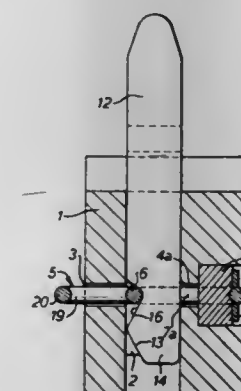
Filed Sept. 13, 1971, Ser. No. 179,834

Claims priority, application Australia, Dec. 22, 1970, 3562/70

Int. Cl. E21c 35/18

U.S. Cl. 299-92

10 Claims



The combination of a shanked tool and a holder therefor the holder being formed with a socket for receiving the tool shank and with a resilient latch biased in a direction transverse to the operating direction for engaging in a recess in the side of the tool shank.

3,751,116

## DECELERATION CONTROLLER FOR RAILWAY BRAKE SYSTEMS

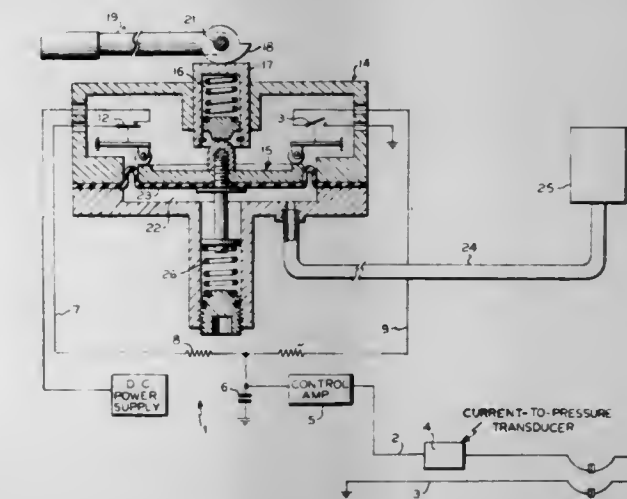
Thomas H. Engle, Watertown, N.Y., assignor to General Signal Corporation

Filed Jan. 27, 1972, Ser. No. 221,344

Int. Cl. B60t 13/68

U.S. Cl. 303-20

5 Claims



The disclosure concerns a railway brake controller which modulates the trainline brake-controlling signal as required to maintain balance between a command force indicative of a desired rate of retardation and a feedback force developed by a liquid-filled column subject to the actual rate of retardation.



3,751,117

## ANTISKID APPARATUS

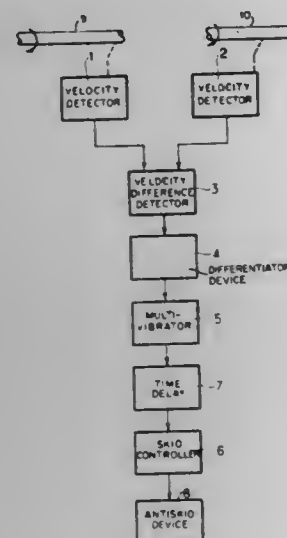
Jacques Soffer, Sceaux, and Francois Tonnerieux, Fontenay Aux Roses, both of France, assignors to Societe Generale de Construction Electriques et Mechaniques (Alstom), Paris, France

Filed Nov. 18, 1970, Ser. No. 90,765

Int. Cl. B60t 8/06

U.S. Cl. 303—21 EB

4 Claims



Antiskid apparatus wherein the velocity of two axes is electrically measured and a signal representing the velocity difference is fed to a differentiator device which operates a switching circuit when the change in velocity difference exceeds a predetermined value. The switching circuit then operates an antiskid device to reduce the velocity difference. A time delay is coupled to the switching circuit to maintain the switching circuit operated for a predetermined period of time after the switching circuit input is turned off (that is, after the change in velocity difference falls below a predetermined value).

3,751,118

## CONTAMINANT DEFLECTION GROOVE FOR GAS BEARING

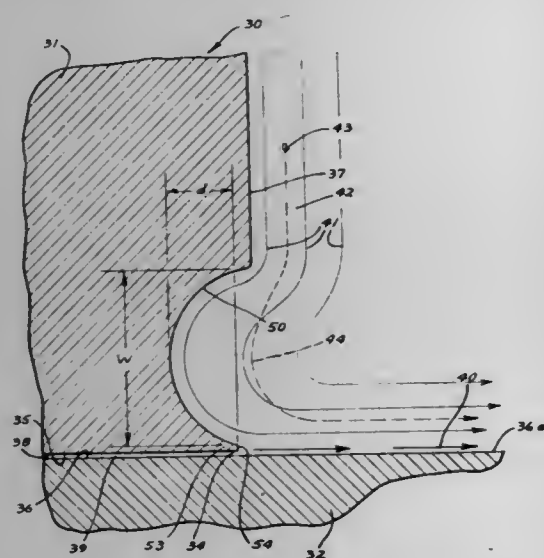
Harold E. G. Arneson, 2322 W. Lake of the Isles Blvs., Minneapolis, Minn.

Filed July 2, 1971, Ser. No. 159,225

Int. Cl. F16c 33/74

U.S. Cl. 308—5

5 Claims



A contaminant particle deflection groove in connection with an externally pressurized gas bearing assembly comprising a sleeve and a shaft with the exhaust perimeter thereof being at the end of said sleeve and the improvement herein

consisting of a groove in the face of said sleeve about said exhaust perimeter. The jet of gas exhausting from said exhaust perimeter of said sleeve along the exposed surface of said shaft entrains streams of ambient air and the contaminant particles carried by said air and both are deflected by means of said groove into a path parallel to said jet for dispersal prior to contact of said shaft by said particles of contaminants.

3,751,119

## AUXILIARY BEARING FOR MOUNTING A TURBINE SHAFT

Hans Bellati, Wettingen; Hans Huber, Niederrohrdorf, and Willi Rutli, Nussbaumen, all of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

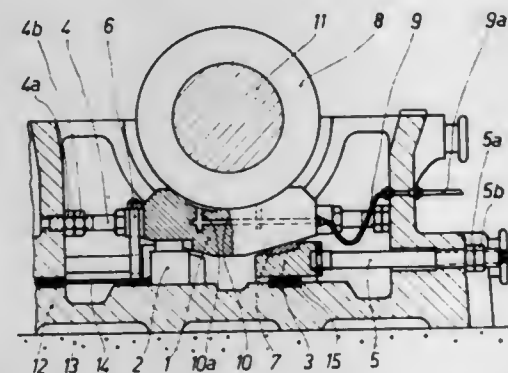
Filed Apr. 18, 1972, Ser. No. 245,241

Claims priority, application Switzerland, May 12, 1971, 7000/71

Int. Cl. F16c 17/16

U.S. Cl. 308—9

8 Claims



An auxiliary bearing structure for temporary use during installation of turbine shafting for temporarily supporting and aligning adjoining flanged ends of two shaft sections to be connected together at the flanges. The auxiliary bearing consists primarily of a bearing yoke located in the centroidal plane of the adjoining shaft sections below the end flanges which rest upon the bearing surface, the latter being pressure lubricated to permit turning of the shaft sections. The bearing yoke is vertically adjustable in the radial direction of the shafting in order to effect the desired alignment and can be fixed in the lateral direction after reaching the position of alignment. Means are also provided for holding the auxiliary bearing yoke in a "down" position out of contact with the shaft flanges while the turbine is in service.

3,751,120

## DEVICE FOR PROTECTING THE GUIDING PATH OF A MACHINE TOOL

Lothar Kietz, Freudenberg-Lindenberg, Germany, assignor to Kabelschlepp Gesellschaft mit beschränkter Haftung, Siegen, Germany

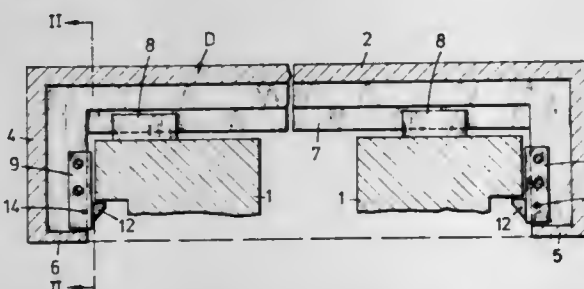
Filed Sept. 28, 1971, Ser. No. 184,495

Claims priority, application Germany, Sept. 29, 1970, P 20 47 794.5

Int. Cl. F16c 23/02

U.S. Cl. 308—3 A

5 Claims



A device for protecting the guiding path of a machine tool, which comprises a plurality of telescopically interengaging cover boxes each having a rear wall extending perpendicularly

with regard to the plane of the guiding path and by means of horizontal and vertical sliding means resting on the guiding path, the vertical sliding means being angle-shaped and include slidable nose means spring urged toward the guiding path and engaging the same from behind to maintain the cover boxes in engagement with the guiding path.

3,751,121

## SEGMENTAL CAGE FOR LINEAR AND LINEAR/ROTARY BEARINGS

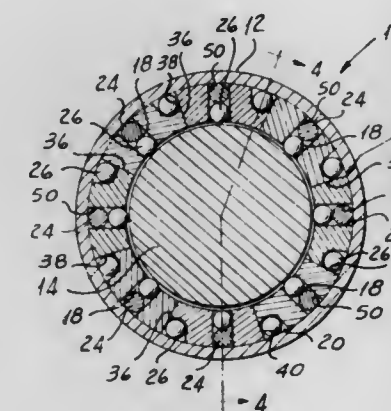
Ted Geffner, Merrick, N.Y., assignor to The Barden Corporation, Danbury, Conn.

Filed Sept. 17, 1971, Ser. No. 181,367

Int. Cl. F16c 29/06, 33/38

U.S. Cl. 308—6 C

11 Claims



A segmental cage for linear and linear-rotary bearings in which each of a plurality of identical cast cage segments comprises a body having cylindrical inner and outer surfaces and side edges lying in radial planes with an axially extending unloaded ball path-forming recess adjacent to one edge and with curved recesses adjacent its ends leading from the axial recess into an axially extending slot formed intermediate the segment edges with the slot adapted to receive a loading roller and so formed as to provide the loaded ball path and having a pair of axially spaced circumferentially extending lugs at the other edge adapted to extend into the curved recesses of an adjacent segment to define ball transfer paths for directing balls from the unloaded path to the loaded path.

3,751,122

## REPLACEABLE BUSHING FOR SANITARY CONVEYOR

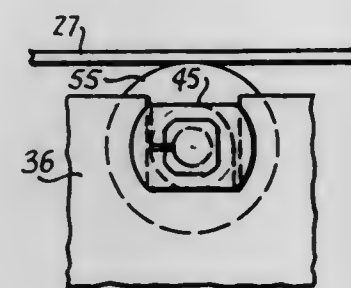
Alvin H. Dubay, Rt. 2, Box 3055, Vacaville, Calif.

Filed Dec. 6, 1971, Ser. No. 205,034

Int. Cl. F16c 25/00; B65g 39/02

U.S. Cl. 308—63

2 Claims



A sanitary conveyor for use with food processing machinery and including an endless belt conveyor system. The individual idler support rolls of the conveyor are mounted on bushings having a slip fit on a bracket so that they may be removed and replaced without the necessity of disassembling the conveyor completely.

3,751,123

## LOW MASS ROLLING ELEMENT FOR BEARINGS

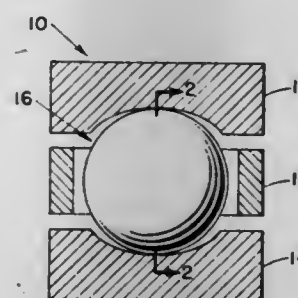
Richard J. Parker, North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 24, 1971, Ser. No. 201,904

Int. Cl. F16c 33/32

U.S. Cl. 308—193

6 Claims



A low mass rolling element has a lightweight core with a hollow center or is made of a low density material. The core is plated to provide a hard surface.

3,751,124

## STERN TUBE BEARING ARRANGEMENT FOR A PROPELLER SHAFT SUPPORTED BY A SPHERICAL ROLLER BEARING

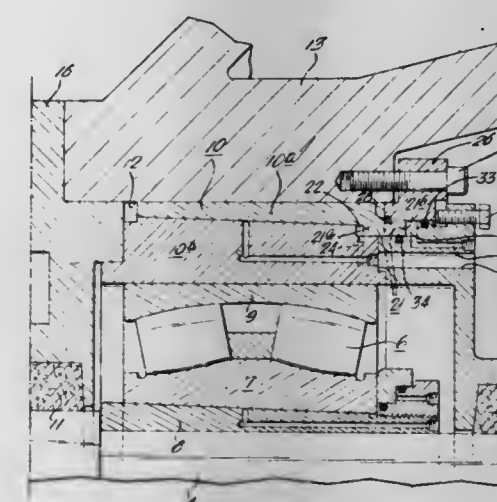
Carl George Hanson, and Folke Gunnar Bergling, both of Svedalen, Sweden, assignors to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands

Filed Sept. 29, 1971, Ser. No. 184,715

Int. Cl. F16c 23/08

U.S. Cl. 308—194

10 Claims



A stern tube bearing arrangement for a propeller shaft having a hub supported by a bearing assembly comprising an expansion sleeve assembly disposed between the bearing assembly and a cylindrical seat formed in a boss, said expansion sleeve assembly consisting of two interacting clamping sleeves which have tapered mating surfaces and which are movable axially relative to one another so that they are elastically deformed thereby expanding its outside diameter and decreasing its bore diameter to adjust the play between the bearing assembly and the seat, an annular member adjacent one axial end of one of said sleeves forming a circumferentially extending chamber, means for pressurizing said annular chamber thereby to effect axial movement of said clamping sleeves relative to one another.



3,751,125

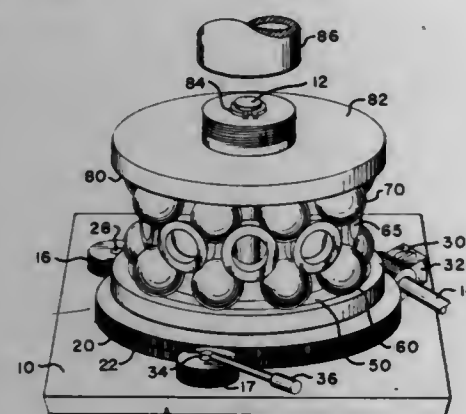
**KINEMATIC THRUST BEARING WITH BALLS AND ROLLERS**

Bradford Howland, Rm. 20-C-007, RLE-M.I.T., Cambridge, Mass., and Howard C. Howland, 205 Winston Drive, Ithaca, N.Y.

Filed July 12, 1971, Ser. No. 161,854  
Int. Cl. F16c 33/00

U.S. Cl. 308—206

10 Claims



A novel thrust bearing is disclosed in which rotation is accompanied by a minimum of axial motion by reason of the averaging of defects over the various elements making up the bearing. A first race is partially filled with about two-thirds of a full complement of balls, the number of balls being odd. These balls are spaced apart by an equal odd number of grooved rollers which are held up out of contact with the race by the balls. A second row of balls each engaging two of the rollers and an upper race complete the novel structure. The construction has no resistance to radial displacement or tilting and must be used in combination with radial bearings. The construction with an even number of rollers is unstable. The construction is shown for the introduction of controlled and very small amounts of cyclic irregularities by tilting of one race.

3,751,126

**EXTENDIBLE RUNNER**

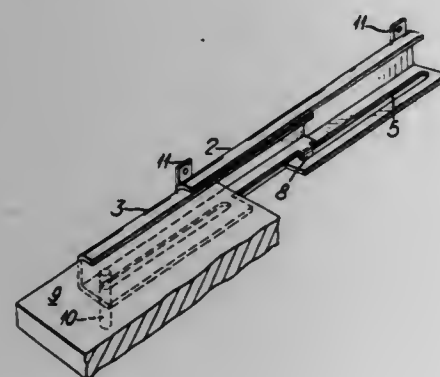
Leslie Gordon Hudson, Little Copped Hall, Epping, Essex, England

Filed June 22, 1971, Ser. No. 155,553  
Claims priority, application Great Britain, June 23, 1970, 30,420/70

Int. Cl. F16c 21/00

U.S. Cl. 308—3.6

8 Claims



The invention relates to a telescopic runner unit for supporting a shelf or other storage member on storage supports and includes means such as a lug on one member running in a slot on the other member so that the two telescopic members forming the unit are positively engaged and do not disengage laterally during use.

3,751,127

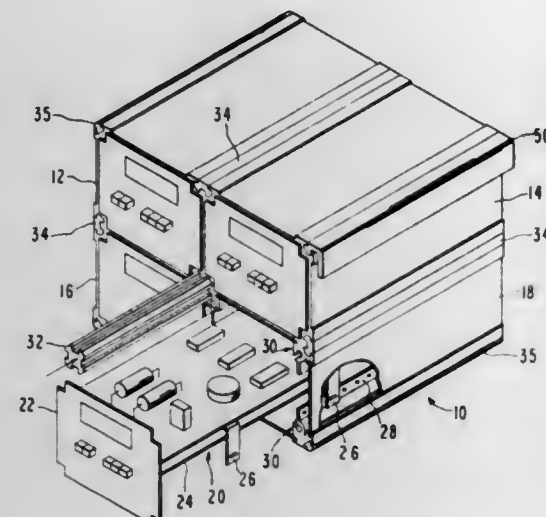
**MODULAR INSTRUMENT HOUSING**

David V. C. Black, Jr., Palo Alto; Richard E. Pospisil, and George A. Powell, both of Los Altos, all of Calif., assignors to Telecommunication Technology, Inc., Sunnyvale, Calif.

Filed Sept. 10, 1970, Ser. No. 71,069  
Int. Cl. F16b 12/00

U.S. Cl. 312—111

18 Claims



A modular instrument housing is formed from universal elongated corner edge members by use of combining members which are adaptable within combining member slots located along the length of the corner members. Panel receiving slots are also provided in the corner members for inserting panels to form the housing module surfaces. A single instrument housing can be formed of a plurality of modules can be combined together to form a composite instrument housing.

3,751,128

**DISPLAY CASE AND ASSEMBLY THEREOF**

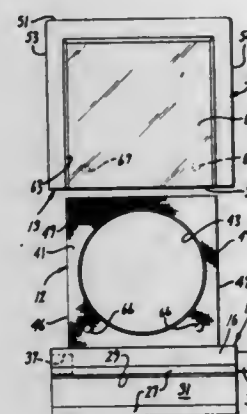
James R. Skinner, Cupertino, and Mark O. Ultz, Mountain View, both of Calif., assignors to M. U. Engineering & Mfg., Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 148,497, June 1, 1971, abandoned. This application Jan. 20, 1972, Ser. No. 219,235

Int. Cl. A47f 3/00

U.S. Cl. 312—114

25 Claims



Display case for an object of the type having spaced parallel generally planar first and second major surfaces having a member which is provided with an opening therein which is sized to receive the object to be displayed with the member having first and second major spaced apart parallel planar surfaces which are generally flush with the first and second major surfaces of the object placed within the opening and having an enclosure mounted on the member and generally enclosing the member with the enclosure having a side wall with an opening therein to permit the member to be inserted into and removed from the enclosure.

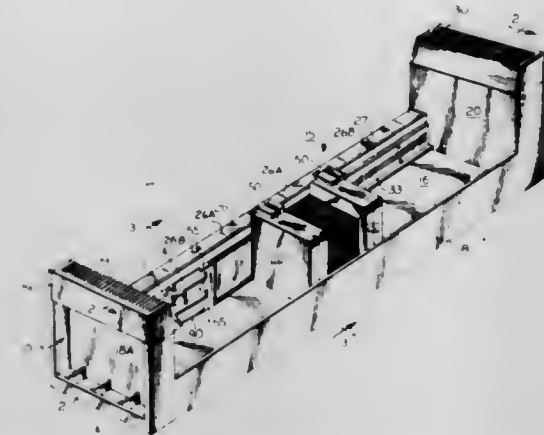
3,751,129  
CARD TRAY

David M. Wright, Shewsbury, and Carl J. Dean, Southbridge, both of Mass., assignors to Wright, Barry, Corporation, Watertown, Mass.

Filed Oct. 20, 1971, Ser. No. 190,927  
Int. Cl. H41b 63/00; B42f 9/00

U.S. Cl. 312—185

11 Claims



A plastic storage drawer or tray for data cards of documents provided with a positionable compressor or follower made of molded plastic elements. The drawer or tray supports a longitudinal guide track or channel, the compressor having integral track-engaging flanges and a releasable locking shoe for holding the compressor in adjusted position against the cards. The plastic compressor assembly encloses a pivoted locking lever carrying the locking shoe, and a spring normally urging the shoe against the longitudinal guide track. The locking shoe is shaped to permit the compressor or follower to be positioned without restraint toward the stack of cards in the tray. The guide track may comprise a metallic strip attached to one side wall of the drawer or tray. The bottom of the drawer is provided with reentrant shaped feet which cooperate with raised ledges on the top of the drawer to permit a series of drawers to be securely stacked one on the other vertically.

3,751,130

**APPARATUS AND CARRYING CASE ASSEMBLY**

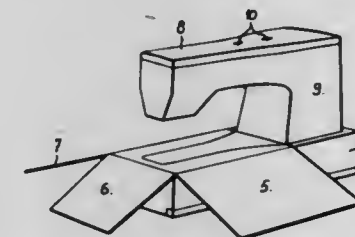
Marcel Fresard, Geneva, Switzerland, assignor to Nefina S.A., Fribourg, Switzerland

Filed Dec. 15, 1971, Ser. No. 208,082  
Claims priority, application Switzerland, Dec. 29, 1970, 19241/70

Int. Cl. A47b 95/02, 21/00; A47g 19/26

U.S. Cl. 312—244

3 Claims



The case has the general shape of a bell open at its lower portion to receive the apparatus. The case has a handle on its upper surface for carrying the apparatus housed inside the case, this handle being provided with means coupling it directly to the apparatus and held on the case by elastic means. The handle of the case is U-shaped and has two bayonet connectors housed in respective arms of the U. The upper portion of the apparatus has apertures to receive the ends of the bayonet connectors, the handle having at least one manipulating member for the bayonet connectors.

3,751,131

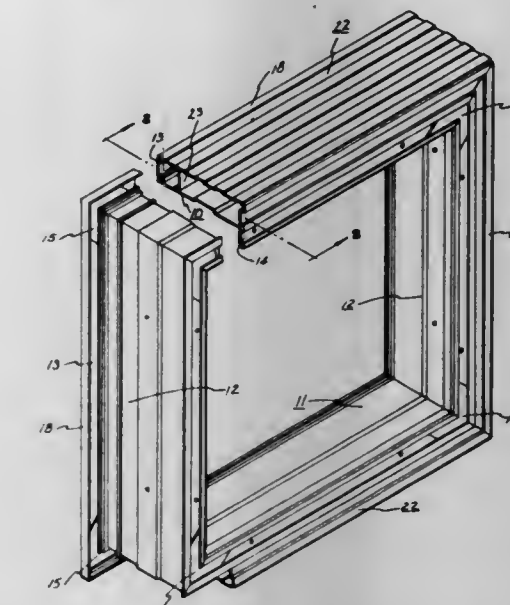
**RECTANGULAR WALL CABINET FOR RECESSED OR SURFACE MOUNTING**

Carl J. Denker, West Chester, and Ernest F. Ohlhauser, Cincinnati, both of Ohio, assignors to The Celotex Corporation, Tampa, Fla.

Filed Aug. 31, 1971, Ser. No. 176,501  
Int. Cl. A47b 67/02; A47f 5/08

U.S. Cl. 312—242

6 Claims



A rectangular cabinet, such as is used as an encasement for apartment type multiple mail box units or the like. The cabinet body is composed of top, bottom and side members mitercut from a strip of accurately dimensioned sheet material of special configuration, and assembled into a rectangular cabinet structure by means of miter reinforcing elements set into channels in abutting ones of said members, and secured in place. Said members provide the cabinet with a front flange to rest against the wall as a face frame to cover the opening in recessed mounting, and a back flange for securing the cabinet in place. The said members also provide fastening elements for engagement with collar pieces when the cabinet is to be surface mounted. The collar pieces are also mitercut from a strip of accurately dimensioned sheet material of a different configuration from the body strip, and are provided with cooperating fastening elements, whereby the collar pieces may be snapped in place on said cabinet to give it a finished appearance when surface mounted.

3,751,132

**OPTICAL APPARATUS FOR SYMBOL RECOGNITION COMPRISING A PLURALITY OF CHANNELS**

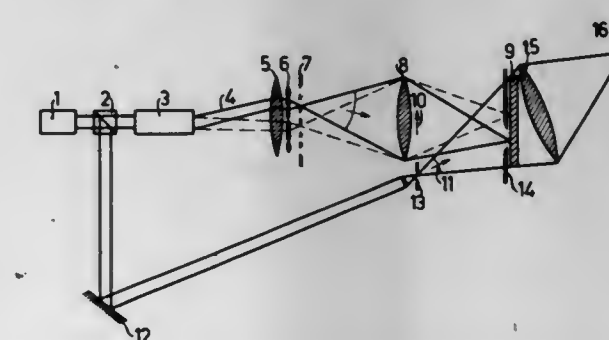
Gunther Croh, Alsterredder, Germany, assignor to U. S. Phillips Corporation, New York, N.Y.

Filed Jan. 28, 1971, Ser. No. 110,454  
Claims priority, application Germany, Jan. 30, 1970, P 20 04 263.1

Int. Cl. G02b 27/00

U.S. Cl. 350—3.5

6 Claims



The invention relates to an optical apparatus for symbol recognition comprising a plurality of channels which include



holographic filters. The Fourier spectrum of the symbol to be examined is produced in the plane of the various spatially separate filters by forming an image of a matrix of illuminated diaphragms in the filter plane, the individual diaphragms being illuminated, for example, mutually incoherently. The individual diaphragms of the matrix may be sequentially illuminated by means of an electronically controlled light deflector, for example a digital light deflector.

3,751,133

## COLOR SEPARATION OPTICAL SYSTEM

Hisashi Nishino, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

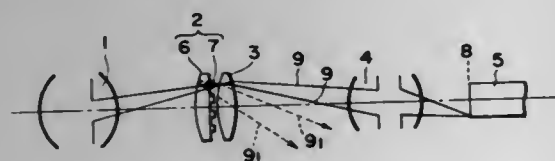
Filed May 11, 1971, Ser. No. 142,321

Claims priority, application Japan, May 13, 1970, 45/40672

Int. Cl. G02b 5/28

U.S. Cl. 350—54

13 Claims



A color separation optical system having a mosaic shaped color filter provided with a transparent base body and having a dichroic filter provided on one of its sides so as to improve its permeability and the spectral permeable characteristics and the other surface of the transparent base body is neither parallel nor concentric to the filter side. The light ray of the reflected light ray in said dichroic filter, which is reflected again by the back side of said transparent base body is stopped from entering the incident picture angle of the relay lens in the color separation optical system, preventing ghosts.

3,751,134

## TRACKING MOUNTS FOR CELESTIAL RAY DETECTING DEVICES

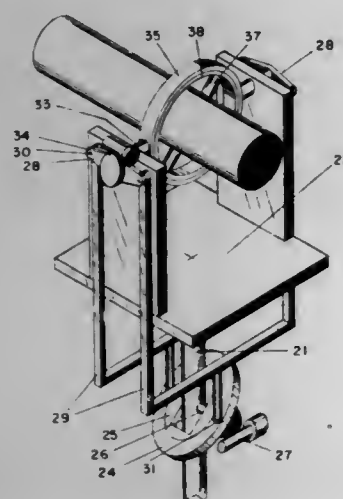
Elihu Hassell McMahon, 1870 Schieffelin Ave., Bronx, N.Y.

Filed Sept. 2, 1971, Ser. No. 177,356

Int. Cl. G02b 23/16

U.S. Cl. 350—83

12 Claims



Mounting assemblies for telescopes and similar celestial ray detecting devices are described in which the polar or right ascension bearing has been eliminated and replaced by a rotatable equatorial plate assembly. The declination bearing of the telescope cradle rides on a tracking arm which is maintained parallel to the plane of the plate assembly during rotation of the latter by a following rod. A precession carriage can be provided as the telescope cradle to permit greater versatility.

3,751,135

## REAR PROJECTION SCREEN

Erik Clausen, and Johannes Clausen, both of DK-4540 Farevejle, Denmark

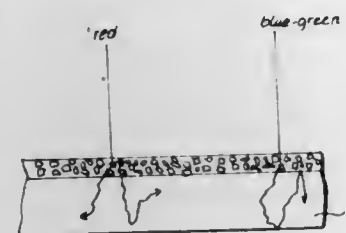
Filed June 23, 1972, Ser. No. 265,453

Claims priority, application Denmark, June 25, 1971, 3133/71

Int. Cl. G03b 21/60

U.S. Cl. 350—117

2 Claims



A screen for rear projection the image forming element which consists of a sheet having a thickness of 0.2 - 1.5 mm and consisting of opaline polymethyl methacrylate containing dispersed calcium and/or magnesium carbonate of a grain size less than 1  $\mu$ , said sheet either having a covering at the rear side consisting of a transparent lacquer having a thickness of 10 - 100  $\mu$  wherein glass particles having a grain size of 5 - 50  $\mu$  are dispersed or glass particles of said kind being dispersed in the material of which the sheet consists.

3,751,136

## VARIABLE FOCAL LENGTH ANAMORPHOTIC CINECAMERA SYSTEMS

Kurt Kirchhoff, Lullkamp 45, 2 Hamburg 53, Germany

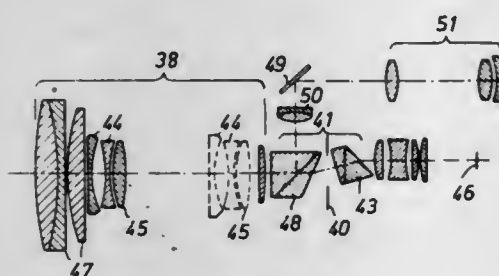
Filed Aug. 27, 1971, Ser. No. 175,513

Claims priority, application Germany, Sept. 1, 1970, P 20 43 193.0

Int. Cl. G02b 13/12, 15/16

U.S. Cl. 350—181

4 Claims



A variable focal length cinecamera system consisting of an afocal auxiliary lens system by means of which, through modification of the spacing between optical elements constituting the said lens system, the focal length of the system can be changed while the intercept length is maintained constant, and of a succeeding permanently installed basic lens focused at infinity. An afocal anamorphic system is provided between the afocal auxiliary lens system and the basic lens.

3,751,137

## LIQUID CRYSTAL DISPLAY DEVICE

Eugene T. Fitzgibbons, Anaheim, and Raymond P. Slowinski, La Habra, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Oct. 18, 1971, Ser. No. 189,991

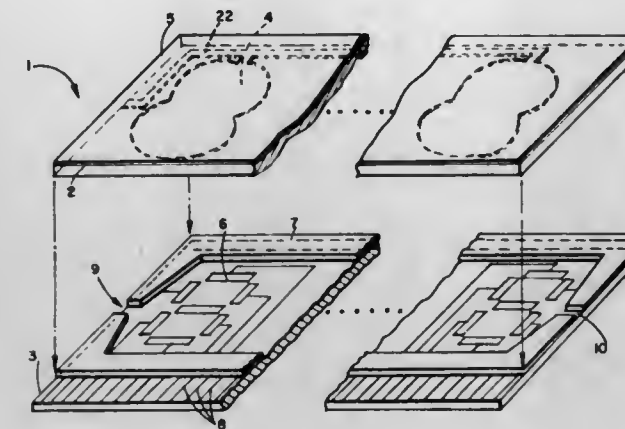
Int. Cl. G02s 1/16

U.S. Cl. 350—160 LC

4 Claims

The device has top and bottom plates including one projecting edge for supporting conductor input leads. The plates are separated as well as secured together by a glass frit raised border. A liquid crystal material is injected, via openings in the border along the edge of the two plates, into the space

between the two plates. Transparent and conductive segments comprising the display characters are formed on the inner surface of one of the plates. Conductive elements corresponding



to each of the display characters are formed on the inner surface of the opposite plate. A reflective type display includes a reflecting layer on the outer surface of the second plate.

3,751,138

## VARIABLE ANAMORPHIC LENS AND METHOD FOR CONSTRUCTING LENS

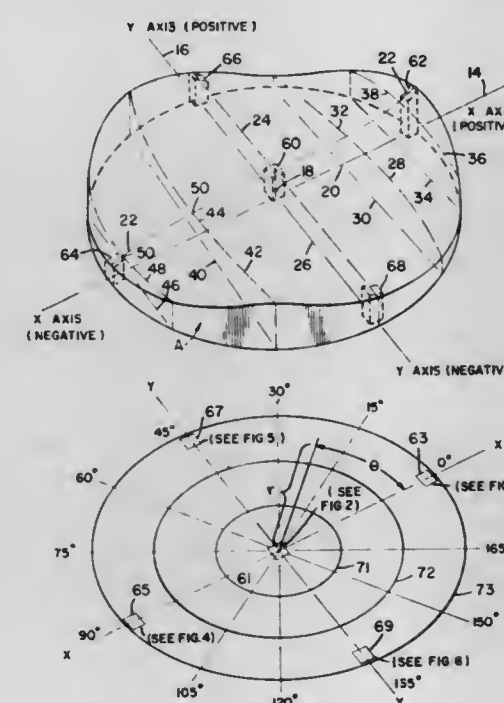
William E. Humphrey, Oakland, Calif., assignor to Humphrey Research Associates, Oakland, Calif.

Filed Mar. 16, 1972, Ser. No. 235,134

Int. Cl. G02b 3/04, 3/10, 13/08

U.S. Cl. 350—181

6 Claims



An anamorphic lens is disclosed which generates variable cylindrical lens power and variable cylindrical lens rotational alignment over incremental viewpoints chosen through its surface. Cylinder power and rotation is a function of the displacement distance and angle of a selected viewpoint segment from a neutral viewpoint segment through the lens. The disclosed lens element finds a preferred use in confronting relation to an identical lens element having complementary curvature. When identical lens elements are confronted, so as to provide an optical path of view through overlapping portions of the confronted lens elements, translational displacement of the confronted elements provides the same cylindrical lens power and cylindrical lens rotation over the entirety of the overlapped lens elements. Simplified methods of manufacturing the complex lens surface are disclosed.

3,751,139

## OPTICAL MOUNTING DEVICE FOR USE IN LASER SYSTEMS

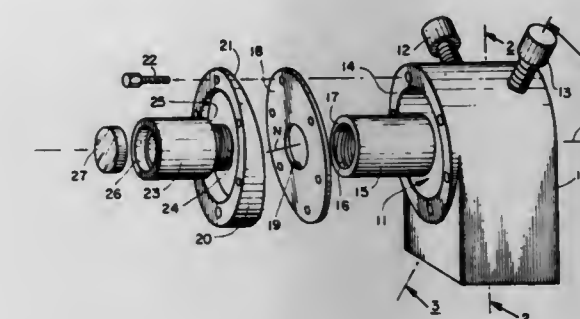
Edward Phillip Malherbe, Los Angeles, Calif., assignor to Union Carbide Corporation, New York, N.Y.

Filed July 12, 1971, Ser. No. 161,716

Int. Cl. G02b 7/02

U.S. Cl. 350—252

4 Claims



A rigid housing has a central passage axially aligned so that laser light in a system can pass through the passage. One end of the passage terminates in a flat smoothly machined peripheral surface lying in a given plane and supporting a metal diaphragm having a central opening. One end portion of a support tube is secured in the central opening of the diaphragm, the other end portion extending into the passage of the housing. Adjustment screws extending into the housing serve to apply forces to circumferentially spaced points on the other end of the support tube thereby enabling exact axial alignment of an optical device carried in the support tube with the axis of the laser system.

3,751,140

## OPTICAL DEVICE

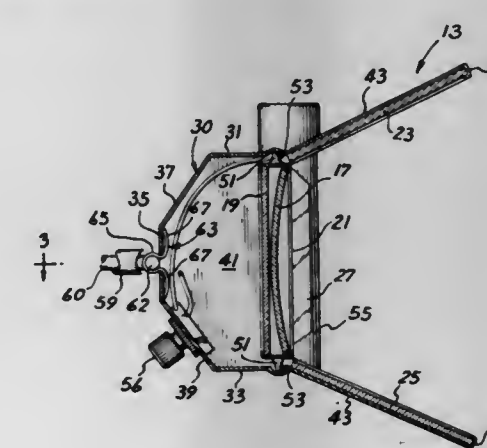
Milton Berlin, Forest Hills, and Lawrence M. Rheingold, Baldwin, both of N.Y., assignors to Templet Industries Inc., Plainview, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,403

Int. Cl. G02b 5/08

U.S. Cl. 350—305

7 Claims



A device which reflects magnified reflected images of the eyes of a viewer from each of a plurality of different angles of perspective.

3,751,141

## REMOTE ELECTRICALLY CONTROLLED TWO-WAY MIRROR

J. Murray Brown, Huntington, Mich., assignor to Electronics Enterprises, Inc., Detroit, Mich.

Filed Oct. 27, 1971, Ser. No. 192,829

Int. Cl. G02b 5/08

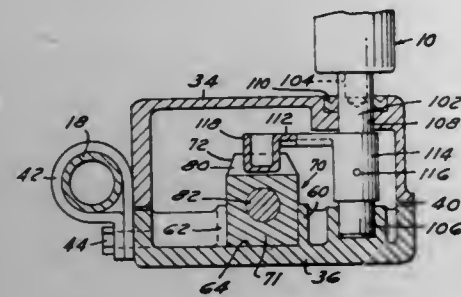
U.S. Cl. 350—289

11 Claims

The mirror assembly includes support structure for mounting on a vehicle. The support structure includes means for



pivotaly mounting a mirror thereon. Actuating mechanism driven by a reversible electric motor is provided for changing the angular adjustment of the mirror. The actuating mechanism is mounted within a sealed housing. A screw is



provided within the housing connected to the output of the motor. The screw engages and drives a nut. The nut is cammingly connected to a lever to cause swinging of the lever upon movement of the nut. The lever is, in turn, connected to the mirror for pivoting the mirror for adjustment purposes.

### 3,751,142 SYNCHRONIZING DEVICE

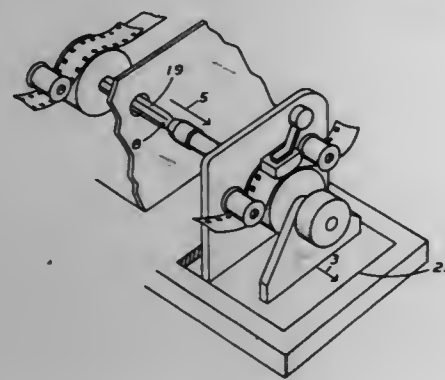
Gilbert Roller, 1 W. 67th St., New York, N.Y.

Continuation-in-part of Ser. No. 851,125, July 14, 1969, abandoned. This application Nov. 24, 1971, Ser. No. 201,681

Int. Cl. G03b 31/04

U.S. Cl. 352-12

10 Claims



This application discloses a device for synchronizing the movement of a recording tape with the movement of a section of motion picture film. The purpose of the synchronization is to correlate the sound on the recording tape with the pictures on the film. Two reeling members (one for the film and one for the recording tape) and a clutch to engage the two are provided. The reeling member for the film is positioned on a fixed support while the reeling member for the recording tape is positioned on a movable support. Each of the reeling members has one part of the clutch (a two part clutch) attached to it. When it is desired to synchronize the movement of the reeling members, the movable support is moved toward the stationary support to cause the two parts of the clutch to engage and couple the reeling members together.

### 3,751,143 SYNCHRONIZED SOUND AND PICTURE FILM RECORDING AND PROJECTION SYSTEM

Jon P. Rosenfeld, Arlington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed July 11, 1972, Ser. No. 270,772

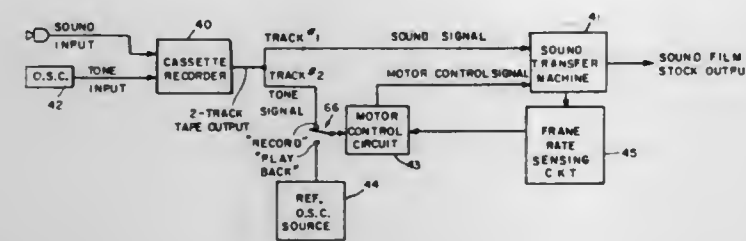
Int. Cl. G03b 31/00

U.S. Cl. 352-12

19 Claims

A sound motion picture film system in which the motion picture camera and the sound recorder means are operated as independent physical entities during the picture taking and sound recording process. The camera is synchronized to

produce a preselected frame rate, preferably at 24 frames per second, through appropriate self-containing synchronizing circuitry associated therewith. The sound is recorded on one track of a two-track magnetic tape the other track of which has a fixed frequency tone signal recorded thereon. The sound is re-recorded on sound film stock at the same frame rate as the picture film stock, the frame rate being controlled by self-



contained synchronizing circuitry using the tone signal as a reference signal. The picture film stock and the sound film stock can then be played back using appropriate projector and sound playback means which are operated in synchronism via circuitry driven by the same a-c line source. Accordingly, no interconnecting cables carrying synchronizing signals are required between the sound recording equipment and the camera during the picture taking process.

### 3,751,144 COPYING CINEMATOGRAPHIC FILM

Georg Greger, Munich, Germany, assignor to Constantin Film GmbH, Munich, Germany

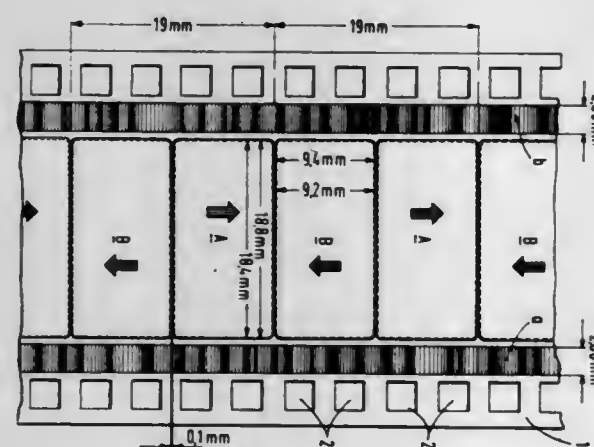
Filed June 3, 1971, Ser. No. 149,603

Claims priority, application Germany, June 9, 1970, P 20 28 373.2

Int. Cl. G03b 21/32

U.S. Cl. 352-38

3 Claims



A skip-frame film is produced starting with a broad screen negative film exposed in a conventional manner. The negative film is suitable for the production of wide screen copies in a conventional manner. The images occurring one after the other on the negative film are reduced optically without distortion so as to have a height equal to half the conventional four perforation transport step and an image breadth which allows the accommodation of two sound tracks, one along each edge of the film. The images are arranged in two alternating series. The first series are copied in a first copying operation. The following series is copied in a second copying operation with the film images moving in the opposite direction. Intermediate spaces between the individual images are omitted or filled in.

### 3,751,145 PHOTOGRAPHIC SYSTEM EMPLOYING AN IMPROVED FILM HANDLING CASSETTE AND CASSETTE- RECEIVING APPARATUS

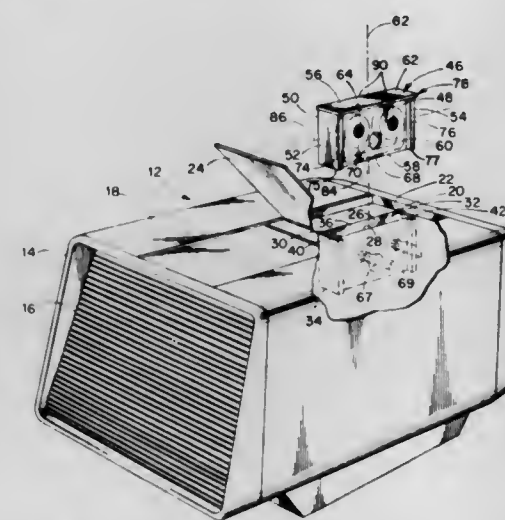
Henry J. Salvador, Hasbrouck, N.J., and James M. Conner, Mamaroneck, N.Y., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 13, 1971, Ser. No. 207,257

Int. Cl. G03b 23/02

U.S. Cl. 352-72

24 Claims



A photographic system including a motion picture film handling cassette and apparatus having a slot-like opening configured to slidably receive the cassette when it is arranged in a given predetermined orientation thereto. The cassette comprises a flat housing having a pair of opposed planar faces, with a rib-like protuberance extending across one of the faces near its trailing edge so as to prevent insertion of this edge in the slot, and at least one tactile discontinuity extending along one of the cassette faces to its leading edge which discontinuity is adapted to mate with a complementary discontinuity in one edge of the opening so as to guide the cassette into its operative location and in cooperation with the top rib prevents loading of the cassette except when it is oriented in one spacial relation to the apparatus. Additionally, the top rib is extended around the perimeter of the cassette to permit grasping of the cassette edge for removal from the apparatus and to provide a light baffle when the cassette is in its operative location.

### 3,751,146 CONTROL DEVICE FOR OVERLAP PHOTOGRAPHY IN MOTOR DRIVEN MOTION PICTURE CAMERA

Hiroshi Hirata, Osaka-fu, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

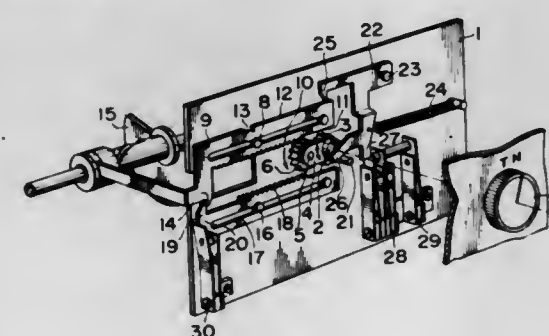
Filed Mar. 17, 1971, Ser. No. 125,058

Claims priority, application Japan, Mar. 17, 1970, 45/24991; Mar. 17, 1970, 45/24992

Int. Cl. G03b 21/36

U.S. Cl. 352-91

4 Claims



A control device to effect overlap photography in a motor driven motion picture camera sequentially operable to effect a fade-out photograph, a film rewinding, and a fade-in photograph.

By manually changing-over the camera to a fade-out photography, the fully opened shutter means is closed by the control device for taking a fade-out picture and is locked at the fully closed aperture. After locking of the shutter means is terminated, rewinding of the film in which the fade-out picture is taken is automatically actuated by the control device for preventing exposure of the rewinding film during film rewinding, and the power source is opened upon termination of film rewinding. Locking of the shutter means is released by the control device through a changing-over of the camera to a normal photographing for taking a fade-out photograph through a release operation of the camera.

### 3,751,147 TRICK PHOTOGRAPHING SYSTEM IN A MOTOR DRIVEN MOTION PICTURE CAMERA

Yukio Miki, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

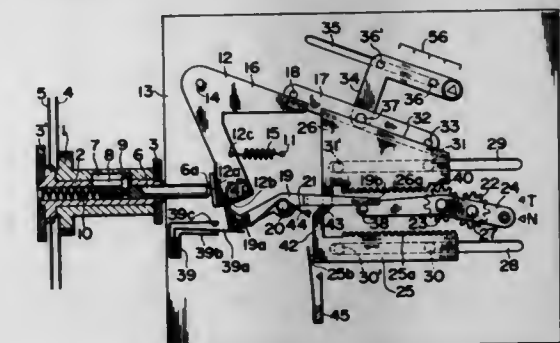
Filed Oct. 15, 1971, Ser. No. 189,503

Claims priority, application Japan, Oct. 20, 1970, 45/103599

Int. Cl. G03b 21/36

U.S. Cl. 352-91

4 Claims



A trick photographing system in a motor driven motion picture camera provided with a reversible overlap mechanism which comprises two time setting plates, a swing lever and an operating plate which is functional not only to open and close the shutter but also to make operative a switch for switching a motor circuit from the normal direction to the reverse direction or vice versa, whereby, a sequence a fade-out photographing, a film rewinding and a fade-in photographing is effected.

To change the trick photographing time in such a system, supporting point of the swing lever is made slidable along both sliding surfaces of one of said time setting plates and said operating plate.

### 3,751,148 CINEMATOGRAPHIC PROJECTOR

Louis Thevenaz, Les Rasses, Switzerland, assignor to Balex International S.A., Vaud, Switzerland

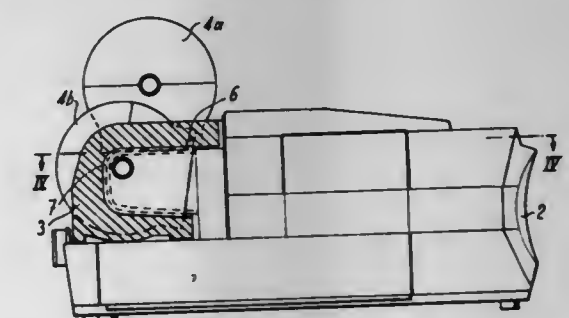
Filed Oct. 5, 1971, Ser. No. 186,285

Claims priority, application Switzerland, Oct. 19, 1970, 15389/70

Int. Cl. G03b 21/04

U.S. Cl. 352-123

11 Claims



A cinematographic projector comprises a light source, an objective, a film drive mechanism, a movable support for cas-



ettes containing a spool of film, a temporary receiving member for the projected film, and a control mechanism for these devices. The movable support of the cassettes is displaceable horizontally in a direction perpendicular to the optical axis of the objective and comprises vertical compartments juxtaposed in the direction of displacement of the movable support and open at their upper end. Each compartment includes adjacent one end of its open upper edge, a first support member around which the cassette can pivot and a second support member withdrawing when the compartment is placed in extension of the optical axis of the projector. The cassettes in waiting position above the compartments and resting on the first and second support members tilt into their respective compartment around the first support member and are placed in film delivery position when the compartment is brought into the extension of the optical axis of the projector.

3,751,149

## CAMERA SHUTTER CONTROL SYSTEM

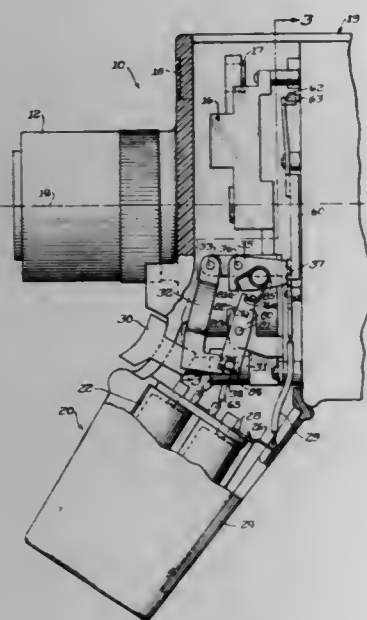
Arthur C. Mueller, Niles, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 3, 1972, Ser. No. 214,636

Int. Cl. G03b 1/00

U.S. Cl. 352-177

6 Claims



A shutter control system for controlling the exposure of film in a motion picture camera. The system includes shock absorbing apparatus for stopping the shutter in a selected position with minimum impact forces, and apparatus to drive the shutter to the selected position regardless of the point in the operating cycle at which the system is stopped by the camera user. The system further includes an over-center spring to eliminate camera chatter by positively locating the system components in either a run or a stopped position.

3,751,150

## AUDIO-VISUAL APPARATUS

Richard W. Roberts, Lombard, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 21, 1966, Ser. No. 559,247

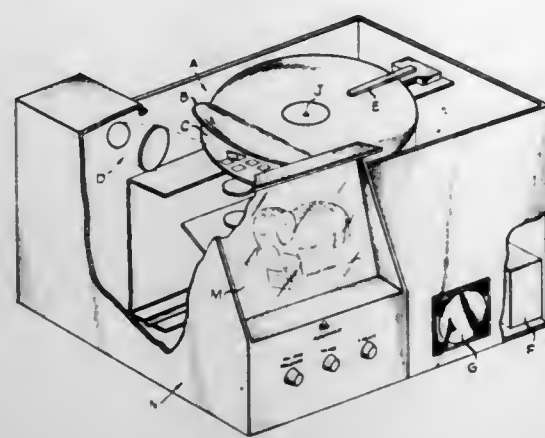
Int. Cl. G03b 21/00

U.S. Cl. 353-7

8 Claims

An audio-visual system utilizing an integrated audio and visual program unit, the latter including a record disc and a disc carrying projectable transparencies. The disc carrying images is either formed with or connected to a cam which is

adapted to cooperate with the cam follower controlling the position of the audio pick-up. For each position of the image



disc, there is a unique position of the audio pick-up relative to the record disc thereby assuring precise synchronization.

3,751,151

## AUDIO VISUAL DISPLAY APPARATUS

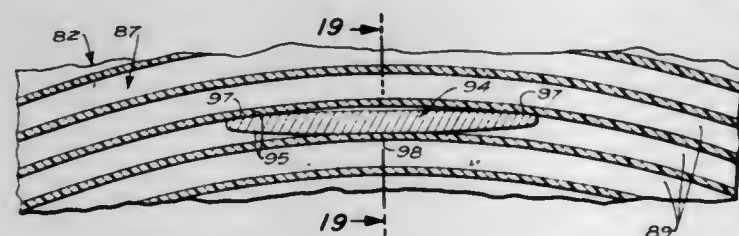
Tor H. Petterson, San Pedro, Calif., assignor to Hoffman Electronics Corporation, El Monte, Calif.

Continuation-in-part of Ser. No. 859,044, Sept. 18, 1969, abandoned, which is a continuation-in-part of Ser. No. 821,579, May 5, 1969. This application Mar. 1, 1971, Ser. No. 119,790

Int. Cl. G03b 31/06

U.S. Cl. 353-19

8 Claims



An audio and visual display apparatus which utilizes a cartridge having one or more picture transparencies surrounded by a rotatable recording disc including a drive track on one side and a sound track on the opposite side, the cartridge being insertable in a projector with the transparency in alignment with the optical axis of the projector. A drive wheel engages the drive track at three spaced points to maintain a predetermined azimuth relation between the sound track and the sensing element of a cooperating sound pickup unit. The rotatable recording disc of one embodiment having a mounting means so arranged as to permit translatory movement as well as rotary movement with respect to the transparency.

## ERRATUM

For Class 353-25 see:  
Patent No. 3,751,006

3,751,152

## MICROFILM READER APPARATUS WITH AUTOMATIC UPDATING DISPLAY MEANS

Louis P. Rinehart, Los Altos, Calif., assignor to R. A. Morgan Co., Inc., Palo Alto, Calif.

Filed Feb. 22, 1971, Ser. No. 117,521

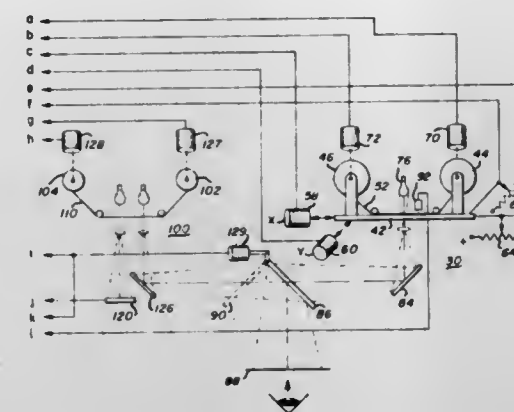
Int. Cl. G03b 23/08, 23/12

U.S. Cl. 353-26

7 Claims

A microfilm reader system for simultaneously scanning a first strip of film, containing a first set of data photographically stored thereupon, and a second strip of film, containing a second set of data for updating certain portions of the data

stored on the first film, to locate a particular image on each film and then preferentially display one of the images. The



system includes electronic data handling apparatus for enabling the automatic selection and display of a particular image in response to a particular input address signal.

3,751,153

## PROJECTOR

Morihisa Naito, Moriguchi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

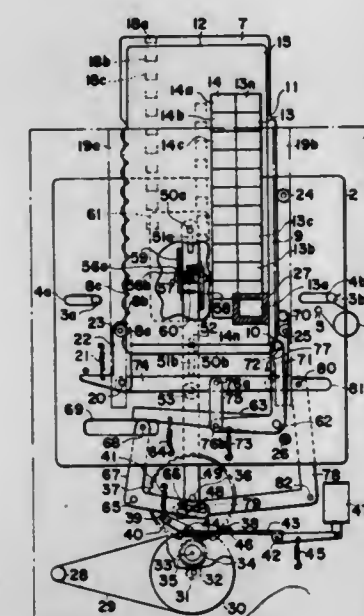
Filed Sept. 8, 1970, Ser. No. 70,161

Claims priority, application Japan, Sept. 18, 1969, 44/75618; Sept. 18, 1969, 44/75619; Sept. 18, 1969, 44/75620; Sept. 18, 1969, 44/75621; Sept. 18, 1969, 44/90389

Int. Cl. G03b 23/08, 21/00

U.S. Cl. 353-27

6 Claims



A projector wherein a magazine adapted to hold two or more rows of projectable films, each having a series of frames therein, is mounted on a movable plate in such a manner as to be movable in a first direction, that is, the longitudinal direction of the films as mounted in said magazine, said movable plate being movable in a second direction, that is, the direction perpendicular to said first direction, and the frames of said films are projected one after another successively on movement of said magazine in the first direction, movement of said movable plate in the second direction and return movement of said magazine in a direction opposite to said first direction.

3,751,154

AUTOMATIC RANGEFINDER ELECTRONIC CIRCUITRY  
Jerome A. Frazee, Palo Alto, and Howard E. Murphy, Redwood City, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

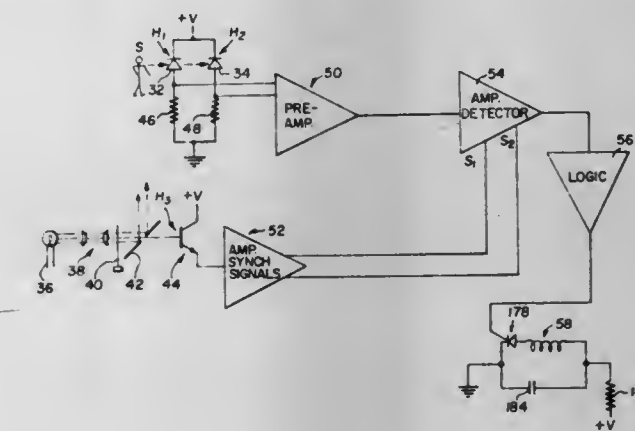
Continuation of Ser. No. 743,370, July 9, 1968, abandoned.

This application July 13, 1970, Ser. No. 56,196

Int. Cl. G01c 3/00

U.S. Cl. 356-1

5 Claims



This invention relates to automatic range finder circuitry for cooperative utilization with apparatus, such as a photographic camera or the like, using triangulation for range distance measurement, and having an automatic range finder mechanism. The apparatus is arranged to sweep a collimated light beam across a plane which includes a subject of interest, and the reflected light returning to the apparatus is imaged on spaced photoelectric transducers differentially connected to produce a varying electrical signal. The range finder mechanism includes a cam adapted to move as a function of the sweeping light beam. When the reflected light falls equally on the photoelectric transducers the range distance has been established.

The present invention supports this apparatus by providing circuitry for detecting the instant that the reflected illumination on the photoelectric transducers is equal, and for providing an output signal which is used to lock the cam against further displacement. The range distance intelligence, defined by the locked cam position, can then be utilized for any convenient purpose.

3,751,155

## PRE-DEVELOPMENT EXPOSURE ASSEMBLY

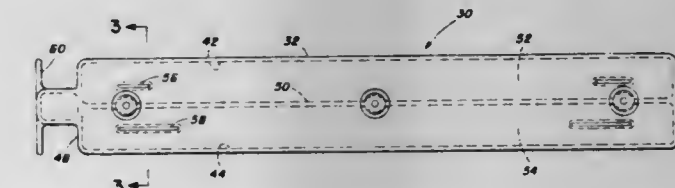
Karl E. Lechty, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1971, Ser. No. 214,245

Int. Cl. G03g 15/00

U.S. Cl. 355-3

3 Claims



A pre-development exposure assembly is provided within an electrostatic reproduction machine transverse to the photoconductive surface thereof to selectively expose side portions of the photoconductive surface in response to a signal generated by a switch responsive to the dimension of an image receiving member being transported therethrough.



# 3,751,156 ELECTROSTATIC COPYING APPARATUS WITH MEANS FOR PREVENTING CONTAMINATION OF TRANSFER MATERIAL

Roland Szostak, Gruenwald, and Wilm Krueger, Graefelfing,  
both of Germany, assignors to Agfa-Gevaert Aktien-  
gesellschaft, Leverkusen, Germany

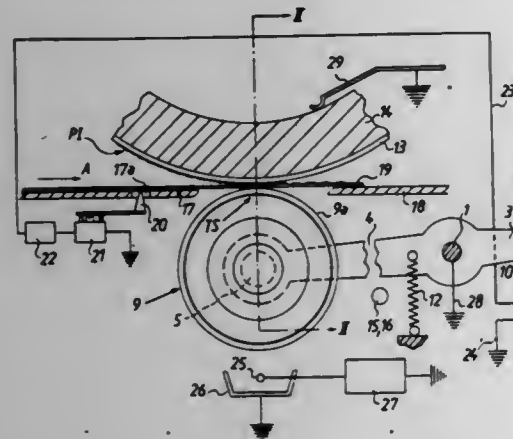
Filed Oct. 24, 1972, Ser. No. 300,376

Claims priority, application Germany, Oct. 21, 1971, P 21  
52 500.8

Int. Cl. G03g 15/00

U.S. Cl. 355—3

12 Claims



An electrostatic copying apparatus wherein an idler roller is movable toward and away from a rotary cylindrical xerographic surface carrying powder images for transfer onto a series of discrete sheets of transfer material. A scanning device is located upstream of the transfer station for powder images to effect a delay of the movement of roller toward the xerographic surface until the leading portion of an oncoming sheet is about to reach or reaches the transfer station and to effect a delay of the movement of roller away from the xerographic surface until the trailing portion of a sheet which is in the process of receiving a powder image is about to reach or moves only slightly beyond the transfer station. This insures that the powder images cannot be transferred onto the dielectric layer of the roller and prevents a contamination of the rear sides of next-following sheets.

# 3,751,157 ELECTROGRAPHIC PRINTER

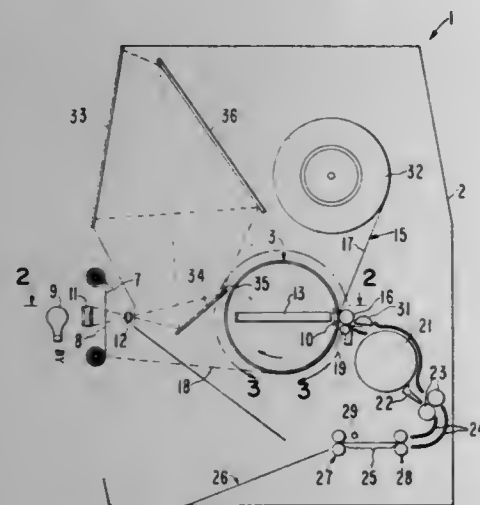
Floyd O. Johnson, Mountain View, Calif., assignor to Varian  
Associates, Palo Alto, Calif.

Filed Apr. 8, 1971, Ser. No. 132,386

Int. Cl. G03g 15/00

U.S. Cl. 355—3

9 Claims



In an electrostatic copying machine, a transparent cylindrical drum is coated with a layer of transparent conductive material, which serves as a conductive electrode, and which in

turn is coated with a photoconductive layer. Optical images to be printed are projected along the axis of the drum to a mirror which reflects them radially onto a thin strip portion of the inside of the photoconductive layer through the transparent layers. Charge is conducted through the illuminated photoconductor to form a charge image on a charge retentive recording web in contact with the outside surface of the drum. The charge image is developed to produce a print of the optical image to be printed.

# 3,751,158 ELECTROPHOTOGRAPHIC COPYING APPARATUS Shigehiro Komori, 14-40 Tsutsujigaoka Koloka, Yokohama, Japan

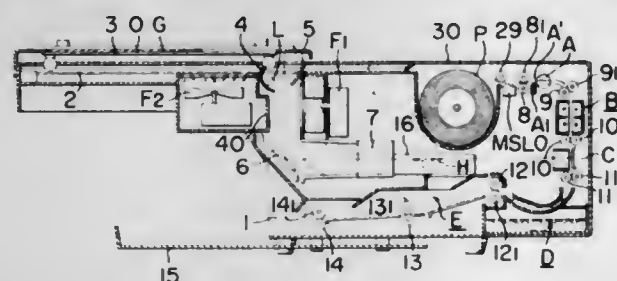
Filed Oct. 6, 1970, Ser. No. 78,390

Claims priority, application Japan, Oct. 14, 1969, 44/82028

Int. Cl. G03g 15/04; G03b 27/48

U.S. Cl. 355—8

6 Claims



An electrophotographic copying apparatus of the type having a reciprocally movable original supporting table and using a roll of photosensitive paper. The apparatus includes an actuator member provided on the original supporting table for setting an original on the supporting table in accordance with the size thereof, means for cutting the roll of photosensitive paper in accordance with the size of the original on the supporting table while a through-slit exposure is being effected, and means for stopping the original supporting table upon completion of the exposure, whereby the roll of photosensitive paper may be cut into sheets corresponding in size to the original with the aid of the actuator member and the stroke of the supporting table may be adjusted in accordance with the size of the original, thus achieving the copying operation at a greater speed.

# 3,751,159 REPRODUCTION SYSTEM

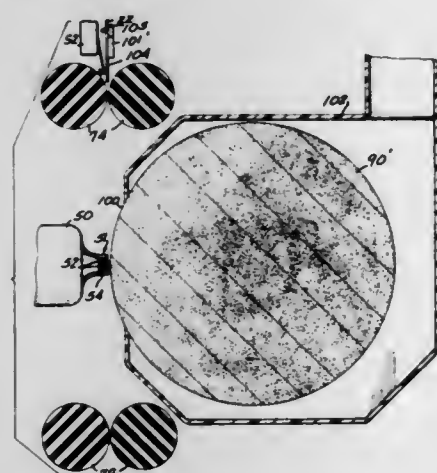
William G. Fisher, 1619 E. John Wesley Ave., College Park,  
Ga.

Filed May 19, 1971, Ser. No. 144,743

Int. Cl. G01d 15/06; G11b 5/30

U.S. Cl. 355—20

18 Claims



A machine for reproducing the visual image on documents onto a paper substrate including a television camera for

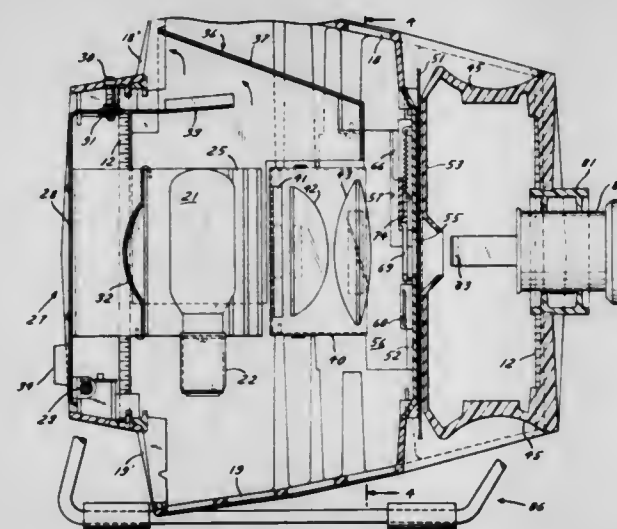
scanning the visual image on a document and converting the visual image into a corresponding electrical video signal; a cathode ray printing tube having a wire matrix; a control circuit electrically connecting the camera to the cathode ray tube to cause the wire matrix to be electrically charged in a pattern corresponding to the mirror image of the visual image on the document, a conveyor for selectively moving the paper substrate by and closely adjacent to the wire matrix to impose the electrical charge pattern from the wire matrix thereon, and a developer applying toner particles to that side of the paper substrate opposite the wire matrix to convert the electrical charge pattern imposed on the paper substrate into a visual image. The developer may include a cylindrical roll defining a driving surface for engaging the paper substrate at the wire matrix and forcing same across the wire matrix in contact with the wires of the matrix. A plurality of cameras with a corresponding number of printing cathode ray tubes may be used for reproducing multi-color copies. The control circuit may include microwave transmitting and receiving station to produce a facsimile system.

# 3,751,160 GENERAL ARRANGEMENT FOR PROJECTOR Eugene Martinez, Irvington-on-Hudson, N.Y., assignor to Robert H. Reibel, Croton-on-Hudson, N.Y., a part interest Continuation of Ser. No. 715,621, March 25, 1968, Pat. No. 3,520,599. This application Feb. 11, 1970, Ser. No. 10,346

Int. Cl. G03b 21/16, 21/00

U.S. Cl. 353—52

15 Claims



A projector having a molded plastic outer case which is supported by a curved steel stand which also serves as an elevating device and carrying handle. The projector can be tilted simply by sliding it up on the curved stand and locking it with two knobs. An electric lamp is mounted at a center location within the case and a pair of heat dissipating baffle plates are positioned on opposite sides of the lamp. A cover is positioned over the lamp and baffle plates to direct the cooling air rising adjacent the lamp toward the rear of the projector. A film advance mechanism is housed in the case and includes an arm which engages the film sprocket holes only during the advancing operation.

# 3,751,161 PHOTOGRAPHIC IMAGE TRANSFER APPARATUS Elliot Berman, Braintree, and Carl F. Ekman, Bedford, both of Mass., assignors to Itek Corporation, Lexington, Mass. Division of Ser. No. 38,221, May 18, 1970, Pat. No. 3,711,282. This application Mar. 15, 1972, Ser. No. 224,366

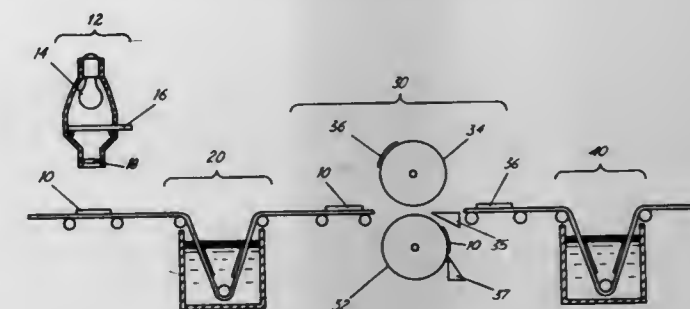
Int. Cl. G03b 27/32

U.S. Cl. 355—27

11 Claims

Processes and apparatus for producing an image and systems for practicing these processes comprising (1) exposing a copy medium comprising a photosensitive photoconduc-

tor to thereby activate the exposed portions thereof, (2) contacting this medium with image-forming materials which undergo an oxidation-reduction type reaction when contacted with the activated portions of the copy medium to thereby deposit on these portions an image which differs in solubility from the unreacted image-forming materials in the non-ex-



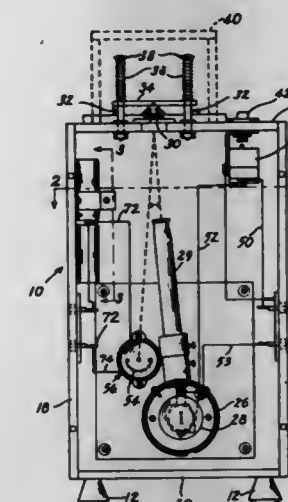
posed portions of the copy medium, and (3) contacting this copy medium with an image receiving medium in the presence of a solvent for the unreacted image-forming materials whereby the image-forming materials in the unexposed portions of the copy medium are transferred to the image-receiving medium to thereby establish a positive image-pattern in the image-receiving medium.

# 3,751,162 REFRACTOMETER AND REFLECTOMETER Richard H. Long, 1428 E. Park St., Grants Pass, Oreg. Filed Mar. 13, 1972, Ser. No. 234,025

Int. Cl. G01n 21/48

U.S. Cl. 356—30

5 Claims



An instrument is provided, primarily as a refractometer, and which has the unique capability of distinguishing and identifying finished gems and gem materials by their refractive index and/or ratio of reflected light to projected light, and for exposing spurious imitations. For gem stone analyzing purposes the instrument is based on the Fresnel formula, which requires a flat highly polished surface, the formula reading

$$n = (r - 1)^2 / (r + 1)^2$$

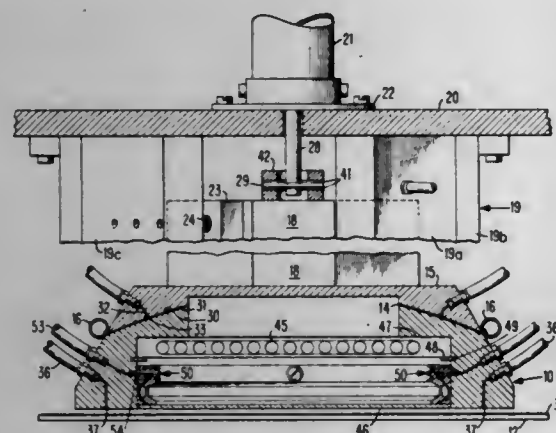
where  $n$  is the ratio of reflected light to projected light at normal incidence, and  $r$  is the index of refraction of the specimen being tested. If  $r$  and  $n$  are plotted as abscissas and ordinates, respectively, the resulting curve is almost linear in the crucial range between  $r = 1.5$  and  $r = 3$ , with slopes of 0.128 and 0.125, for the respective stated values of  $r$ . An electronic system is devised in which the read-out is proportional to  $n$ , and is substantially proportional to  $r$  throughout the range of interest. The light is necessarily projected upon a flat facet of the specimen a little off normal incidence, but this has little effect upon the read-out.



**3,751,163**  
**STEP AND REPEAT APPARATUS WITH GAS BEARING SUSPENSION**  
 William J. Sutton, Jr., Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.  
 Filed Feb. 24, 1972, Ser. No. 228,847  
 Int. Cl. G03b 27/20

U.S. Cl. 355—87

11 Claims

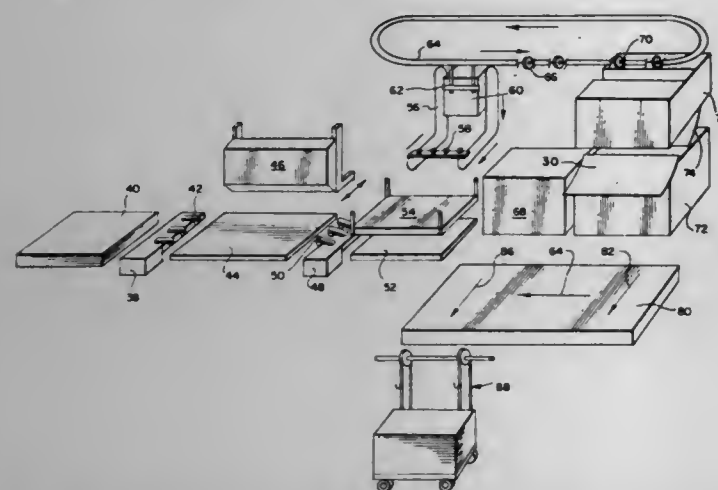


Apparatus for step and repeat exposure of a photosensitive plate which eliminates the necessity of removing the exposure head from the plate during stepping and thereafter repositioning the head for the next exposure. The exposure head has a planar bearing surface for movement adjacent the photosensitive plate and a curved bearing surface for engagement with a complementarily curved bearing surface of the exposure head support. Both the planar and curved bearing surfaces are provided with gas films therebetween in order to practically eliminate friction and allowing omnidirectional movement of the exposure head relative to the support. The gas film provided at the planar bearing surface of the support head is used to maintain the support head out of contact with the photosensitive plate to thereby allow relative movement in either of two coordinate directions parallel with the plate. This construction permits the exposure head to accommodate variations in the thickness of the photosensitive plate during movement under the head.

**3,751,164**  
**AUTOMATED APPARATUS FOR PHOTOCOMPOSING**  
 Wesley W. Miller, Wyncote; Gerold Litschi, Lansdale, and Warren A. Bixler, Warminster, all of Pa., assignors to W. R. Grace & Co., New York, N.Y.  
 Continuation-in-part of Ser. No. 830,972, June 6, 1969, Pat. No. 3,635,711. This application Apr. 12, 1971, Ser. No. 132,976  
 Int. Cl. G03b 27/30

U.S. Cl. 355—100

13 Claims



The disclosed invention is for an automated photocomposing apparatus. The apparatus includes (A) means for storing

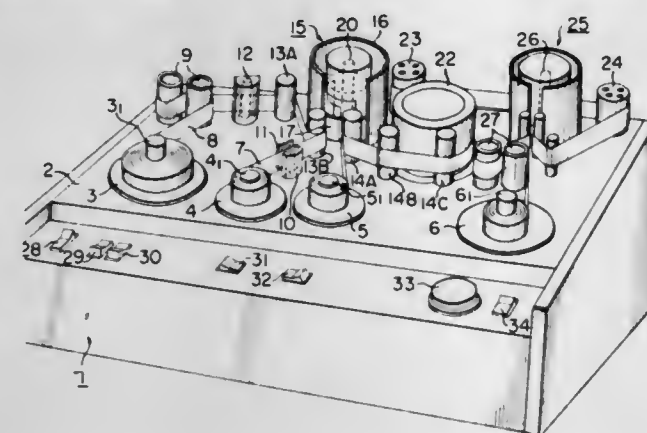
and supplying severed support sheets; (B) means for dispensing and leveling a liquid photocurable composition on a support sheet; (C) a housing having at one end an actinic light source and at the other end a support adapted to receive thereon a supported liquid photocurable composition which on exposure to actinic light through an image bearing transparency becomes selectively insolubilized in the exposed portions thereof; (D) a conveyor means for transferring photoexposed sheets from a horizontally disposed position to a vertically disposed position; (E) an etching bath energized by ultrasonic energy; (F) a washing bath; (G) an air drying station disposed adjacent the washing bath; and (H) a horizontally disposed photocuring station for finally curing the processed plate. A plurality of conveying means transfer sheets from location (A) to location (H) in automated sequence. The invention is especially useful in preparing a developable printing plate from a liquid photocurable composition.

**3,751,165**  
**PHOTOGRAPHIC CONTACT PRINTING DEVICE**  
 Mutsuhiro Inoue, Sagamihara, and Yoichi Takahashi, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 7, 1971, Ser. No. 150,679  
 Claims priority, application Japan, June 12, 1970, 45/50855; June 25, 1970, 45/55793; July 24, 1970, 45/64861  
 Int. Cl. G03b 27/10

U.S. Cl. 355—108

11 Claims



An apparatus for duplicating an image-bearing original film onto an unsensitized copy film while continuously moving the two films. The apparatus includes main exposure device for projecting the images of the original film upon the copy film to thereby reproduce the images on the copy film, a feed mechanism for feeding the two films at the same speed into the main exposure device, detecting elements for detecting the density of the images of the original film, an auxiliary exposure device for providing a uniform exposure to the surface of the copy film, and control members associated with the detecting elements for controlling the auxiliary exposure provided by the auxiliary exposure device in accordance with the detection output of the detecting elements, whereby the copy film is subjected to a uniform auxiliary exposure in accordance with the image density of the original film, thereby forming latent copy images of a uniform density on the copy film irrespective of the image density of the original film.

**3,751,166**  
**COMMAND GUIDANCE TRANSMITTER SYSTEM**  
 George W. Starkey; Robert L. Sitton; Jimmy R. Duke, and Walter E. Miller, Jr., all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

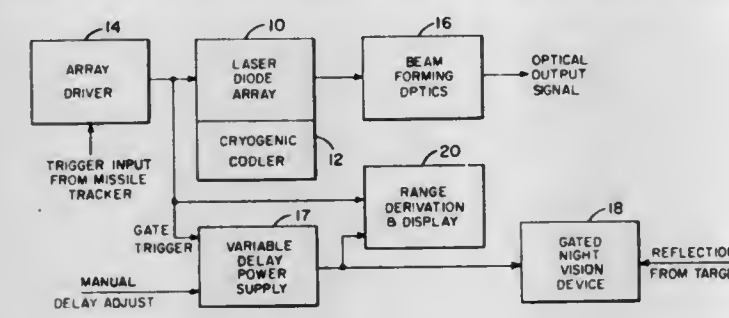
Filed June 3, 1971, Ser. No. 149,801  
 Int. Cl. G01c 3/08

U.S. Cl. 356—5

1 Claim

A command guidance, ranging, and night vision system is provided which utilizes a single optical source. A gallium arse-

nide laser diode array generates pulses of optical energy in response to high frequency modulation by a transistor driver. The laser array is cryogenically cooled allowing diode array operation at high average power and enhancing the output wavelength. An image intensifier tube with a gating power source therefor is synchronized with the array output pulse,

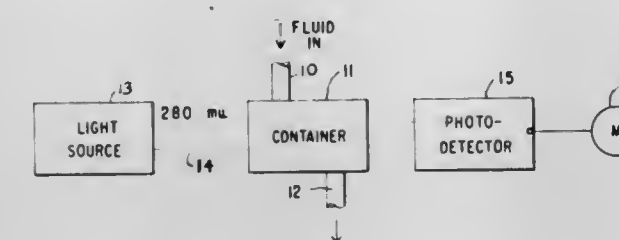


being gated on only when the reflected return signal is expected, sometime after the array output pulse is transmitted. The night vision intensifier tube is used in conjunction with the diode array by an operator to locate a target. When a target is located the gating capability of the night vision device is used to determine the range from the operator to the target.

**3,751,167**  
**METHOD AND APPARATUS FOR CONTINUOUS MONITORING OF DISSOLVED ORGANICS**  
 George Claus, 130 Sundance Road, Stamford, Conn.  
 Filed Feb. 23, 1971, Ser. No. 118,059  
 Int. Cl. G01n 21/26, 21/34

U.S. Cl. 356—51

16 Claims



The amount of dissolved organic material in a solvent medium is measured by passing light radiation of 280 millimicron wavelength through the medium. The amino acid Tyrosine within the medium absorbs radiation of this wavelength. By measuring the absorbence of the radiation, the concentration of Tyrosine is determined and the amount of organic material can be calculated by the known proportional relationship of Tyrosine to total organic matter.

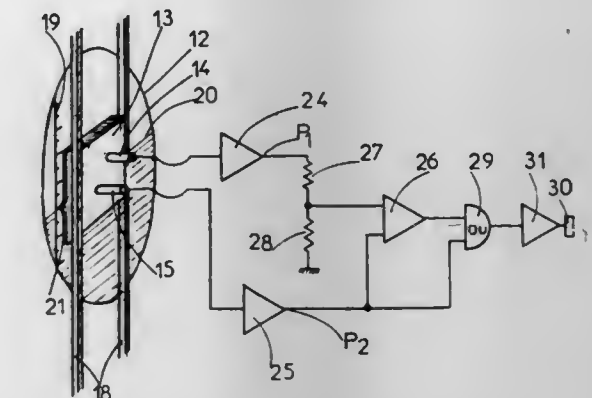
**3,751,168**  
**INDICATING APPARATUS FOR THE VARYING CONCENTRATION OF A SOLUTION**  
 Helenio Llop, Cretell, and Pierre Lefort, Fontenay-sous-Bois, both of France, assignors to Societe D'Optique Precision, Electronique et Mecanique-Sopelem, Paris, France  
 Filed May 11, 1971, Ser. No. 142,276  
 Int. Cl. G01n 21/46; G05b 1/00

U.S. Cl. 356—135

1 Claim

There is described an apparatus for producing an electrical signal related to the varying concentration of a solution, for example a sugar solution. Light is inclinedly directed upon a surface of a prism which is in contact with the solution, so that light falling on one side of a boundary line, the position of which is a function of the concentration of the solution, is transmitted into the solution while light falling on the other side of this boundary line is totally reflected. The reflected light is directed towards an assembly including two photocells which are spaced apart in the direction of movement of the

boundary as the solution concentration varies. The outputs of the two photocells are combined in a difference amplifier to yield a signal denoting that the solution concentration has

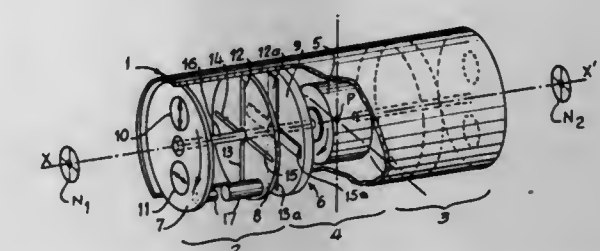


reached a predetermined value dependent upon the position in said direction of movement to which the assembly is adjusted.

**3,751,169**  
**METHODS FOR DETERMINING THE POSITION OF A POINT IN SPACE RELATIVE TO A GEOMETRICAL LINE DEFINED BY AT LEAST TWO OF ITS POINTS AND INSTALLATION FOR PERFORMING SAME**  
 Andre Fornerod, Cully, Switzerland, assignor to Tamper Inc., West Columbia, S.C.  
 Filed Dec. 21, 1970, Ser. No. 99,987  
 Claims priority, application Switzerland, Dec. 26, 1969, 19203/69  
 Int. Cl. G01b 11/26

U.S. Cl. 356—152

3 Claims



There is provided a method and an apparatus for levelling and aligning railroad track by determining the position of a point on the track to be corrected relative to a geometrical line defined by at least two other points located on either side of the normal dropped from the point to be corrected on to the geometrical line. Each of the points defining the geometrical line is represented by a light source illuminating the point to be corrected and angular measurement apparatus fixed at the point to be corrected, for measuring the angles formed between the axis of the measuring apparatus and the axis of each of the light beams from the light sources.

**3,751,170**  
**METHOD AND APPARATUS FOR POSITIONING BODIES RELATIVE TO EACH OTHER**  
 Tsuneo Hidaka, Niiza, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan  
 Filed Mar. 6, 1972, Ser. No. 232,054  
 Claims priority, application Japan, Mar. 11, 1971, 46/12815  
 Int. Cl. G01b 11/26, 11/24

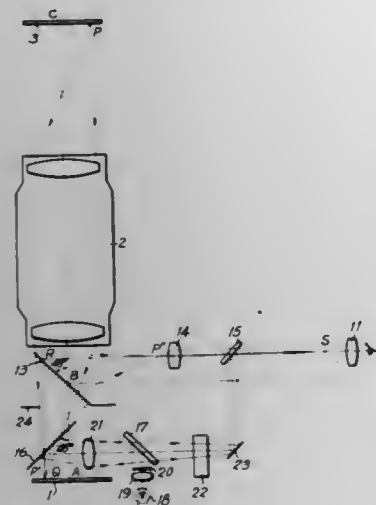
U.S. Cl. 356—172

12 Claims

A method and apparatus for positioning with respect to each other a pair of bodies such as a mask having a predetermined pattern thereon and a wafer onto which the pattern is to be printed. These bodies are respectively situated in parallel focal planes and a reference point on the body in one focal



plane has an image thereof projected onto the body in the second focal plane, this latter body having a positioning point which is to coincide with this image when the bodies are properly positioned with respect to each other. A second image of the reference point is projected to an observation

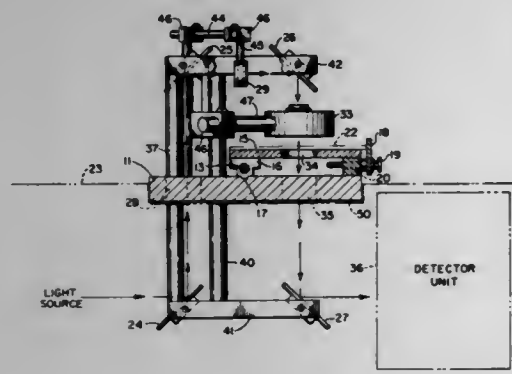


point, and an image of the image of the reference point on the body at the second focal plane is also projected to the observation point, so that the operator may observe at the observation point when the positioning point is located in coincidence with the image of the reference point on the body at the second focal plane.

**3,751,171**  
**APPARATUS FOR ADAPTING A SPECTROPHOTOMETER TO PERFORM THE FUNCTION OF A DENSITOMETER**  
Elvin Hughes, Jr., 3550 Nicholson Dr., No. 2083, Baton Rouge, La., and Robert V. Nauman, 864 Diron Cir., Baton Rouge, La.

Filed Jan. 5, 1971, Ser. No. 104,030  
Int. Cl. G01n 21/16  
U.S. Cl. 356-244

8 Claims



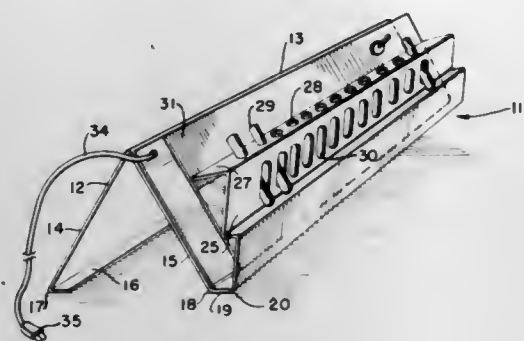
A lightweight, inexpensive device for adapting a spectrophotometer to perform the functions of a densitometer, including means for directing the light source from a spectrophotometer through a photographic plate, and means for moving the photographic plate across the beam of light.

**3,751,172**  
**VIEWING RACK**  
Lamont J. Seitz, and Eduardo V. Miranda, both of Huntington Beach, Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Mar. 24, 1972, Ser. No. 237,824  
Int. Cl. G01n 21/16

U.S. Cl. 356-244

3 Claims



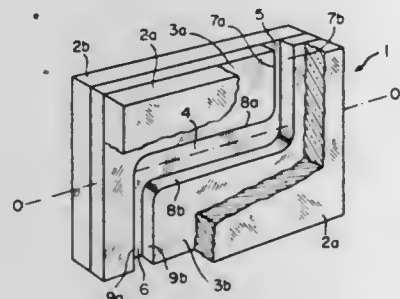
A rack constructed from a single blank is folded or bent into a shape to accommodate a plurality of test tubes. The rack may include an elongated light source to backlight a series of test tubes.

**3,751,173**  
**FLOWTHROUGH CUVETTE**  
Manuel C. Sanz, Grand Lancy, and Georges Revillet, Onex, both of Switzerland, assignors to Micromedic Systems, Inc., Philadelphia, Pa.

Filed Aug. 24, 1972, Ser. No. 283,308  
Int. Cl. G01n 1/10

U.S. Cl. 356-246

20 Claims



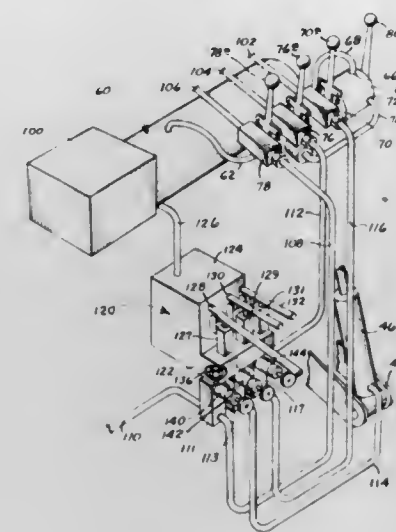
The invention relates to optical cuvettes of the throughflow type and to the production thereof. The cuvette comprises a stratified block composed of at least three layers which together define a space constituting a doubly-bent continuous passage with a central elongated cavity communicating with two transverse branch-channels extending to the cuvette surface. An intermediate layer consists of a pair of transparent plates having oppositely arranged inner edges which are shaped in accordance with the path of said passage and are rounded off between the central cavity and the transverse channels, to provide streamline flow in the passage. Two lateral layers consist of plates which respectively close off the passage on either side thereof, between the shaped inner edges of said pair. The invention further provides a manufacturing method wherein two plate-edges are shaped in accordance with the profile of the doubly-bent passage and are oppositely arranged at a given distance to form an intermediate layer on to which two lateral plates are then mounted to close off the passage on either side thereof.

**3,751,174**  
**HYDRAULIC SYSTEM FOR PAVER**  
Jack D. Layton, Salem, Ore., assignor to Layton Manufacturing Co., Salem, Ore.

Filed Aug. 10, 1971, Ser. No. 170,550  
Int. Cl. E01c 19/20

U.S. Cl. 404-108

8 Claims



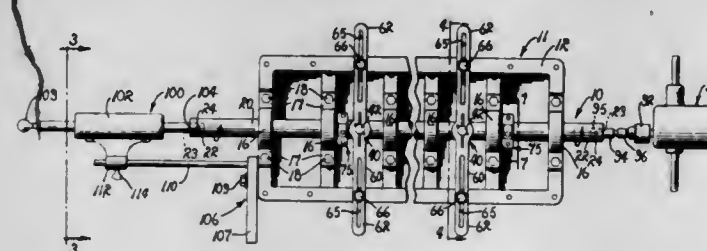
A paver having hitch arms adapted to be brought together to couple it to a towing vehicle, a gate raisable to open up discharge from the paver, and a lift actuatable to lift a screed in the paver from the ground. A hydraulic motor is provided for actuating each of the above under power. Manually operated pump mechanism drawing fluid from a reservoir is actuatable to supply fluid under pressure to each of said hydraulic motors. An electrically operated or driven pump having an intake connected to said reservoir and a system of selector valve and control valves provides for the supply of pressure fluid to each of such hydraulic motors by electrically energized means. Check valves associated with the manually operated pump mechanism, and check valves associated with the control valves supplied by the electrically driven pump permit the operation of either the manually operated pump mechanism or the electrically powered pump without interference of such operation by the pumping instrumentality which is inactive.

**3,751,175**  
**PORTABLE LINE BORING BAR ASSEMBLY**  
Daryl G. Brooks, Fresno, Calif., assignor to Porta-Tool Incorporated, Clovis, Calif.

Filed Nov. 5, 1970, Ser. No. 87,178  
Int. Cl. B23b 41/12

U.S. Cl. 408-72

7 Claims



A portable line boring bar assembly for in-line boring the main bearing bores of an engine block for re-establishing their precise concentricity and axial alignment longitudinally of such a block providing an elongated boring bar for extension longitudinally through the bores of the block having centering means slidably mounted on the bar for temporary wedging engagement in selected bores of the block precisely to center the bar relative to the bores with bar support means releasably mounted on the block in spaced relation to the bores to hold

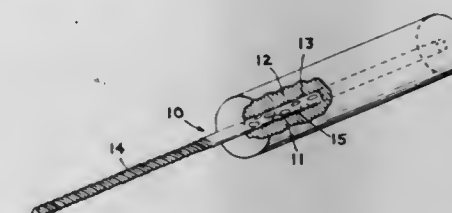
the bar in said centered position during powered rotation and axial feeding movement of the bar in the block and including pre-set bore cutting means adapted to be releasably mounted in any desired location along the boring bar adjacent to said bores in the block. The assembly is readily portable and suitable for "in the field" utilization.

**3,751,176**  
**COMPOSITE BIT**  
John Von Hollen, Cedar Grove, N.J., assignor to Von Hollen Tool Company, Inc., Cedar Grove, N.J.

Filed Dec. 21, 1970, Ser. No. 99,844  
Int. Cl. B23b 51/00

U.S. Cl. 408-144

11 Claims



A composite bit or drill having a material working section adhesively connected to an enlarged gripping section. The material working section includes generally a cutting, grinding or finishing portion and continuous therewith a shank portion and is made of hard, abrasion resistant, heat resistant, durable alloys. The gripping section has a relatively large mass and large outer diameter with respect to the material working section and has an accurately formed longitudinal bore therein for receiving the shank of the material working section the adhesive connection between the material working section and the gripping section will not prevent heat transfer between these elements. Adhesive materials for connecting the cutting section to the gripping section may be anaerobic adhesives, epoxy adhesives, cyanoacrylate adhesives and other compounds depending on the bond strength required and the heat transfer characteristics established between the material working section, the gripping section of the bit and the chucking means for holding the composite bit or drill.

Additionally, for forming a composite bit or drill there is provided a gripping element or jacket having a longitudinal bore formed to receive drills or the like type tools within a predetermined range of sizes to permit the bit or drill to be fitted and adhesively connected in the bored jacket elements in any type of work shop where such tools are used.

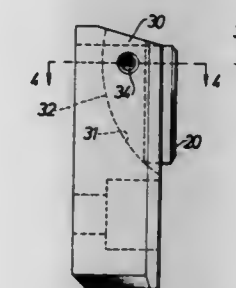
**3,751,177**  
**GUIDE PAD MOUNTING ON A DRILL BIT**  
Kurt Heinrich Albert Erich Faber, Sandviken, Sweden, assignor to Sandvik Aktiebolag, Sandviken, Sweden

Filed Nov. 20, 1970, Ser. No. 91,296  
Claims priority, application Sweden, Nov. 24, 1969, 16082/69

U.S. Cl. 408-200

Int. Cl. B23b 51/00

7 Claims



A drill has a guide pad pivotally mounted on it, on that the guide pad may adapt itself to the surface of a hole wherein the drill is being operated.

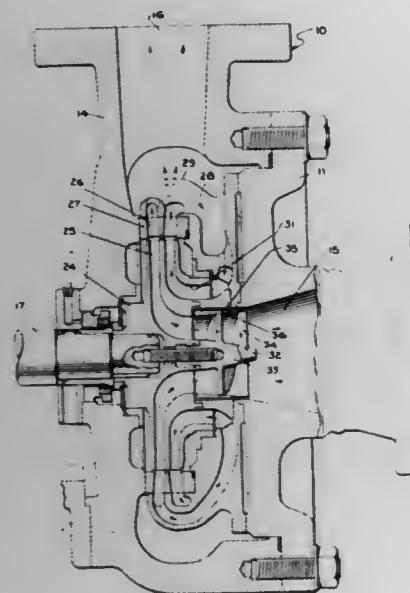


3,751,178  
PUMP

James J. Paugh, Palmer, Mass., and Theodore J. Pollari, Brooklyn, Conn., assignors to Warren Pumps, Inc., Warren, Mass.

Filed Oct. 6, 1971, Ser. No. 186,909  
Int. Cl. F01d 1/12

U.S. Cl. 415-56



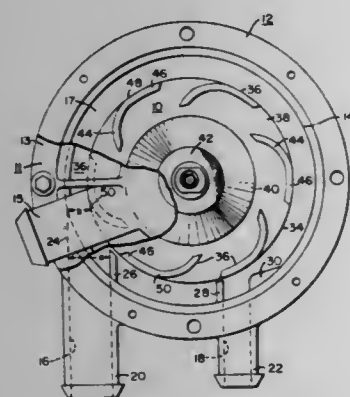
A centrifugal pump having a screw-type suction inducer located in the inlet passage and having a dual-stage pumping section.

3,751,179  
BI-DIRECTIONAL CENTRIFUGAL PUMP

William A. Wassmann, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 26, 1971, Ser. No. 166,096  
Int. Cl. F04d 29/22, 29/44

U.S. Cl. 415-152 A



An impeller for a bi-directional single impeller centrifugal pump characterized by a blade configuration capable of pumping water at different capacities from a common pump cavity to either of two outlets depending upon the direction of rotation of the impeller. The capacity of the pump is generally much larger through one outlet than the other. In order to prevent unwanted discharge through the higher capacity opening when the impeller is rotating to pump through the other opening, each of the impeller blades includes a blocking segment at the discharge end of the blade which is defined by a circumferential extension of the blade having a center of curvature at essentially the axis of rotation of the impeller and extending for a distance from the blade discharge end.

3,751,180  
VANE RINGS

James MacDonald Cameron, St. Lambert, Quebec, Canada, assignor to United Aircraft of Canada Limited, Longueuil, Quebec, Canada

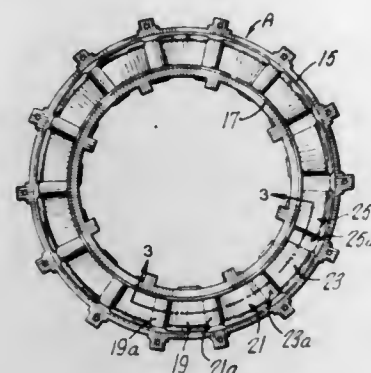
Filed July 6, 1971, Ser. No. 159,879

Claims priority, application Great Britain, Dec. 8, 1970, 58,329/70

U.S. Cl. 415-195

Int. Cl. F01d 9/02

4 Claims



One piece cast metal vane rings of the same shroud diameter and number of vanes but of different throat areas are made using a pattern assembled from several pattern pieces in which the vanes have different angles to the axis of the vane ring shroud. A set of pattern pieces of two or three different angles can thus provide for a number of different throat areas, thus avoiding having to prepare, in a large number of different sizes, expensive molds for making pattern pieces for molds of the same diameter but differing throat areas.

## 3,751,181

FAN FOR COOLING AUTOMOTIVE VEHICLE ENGINE  
Masaharu Hayashi, Ichinomiya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi Pref., Japan

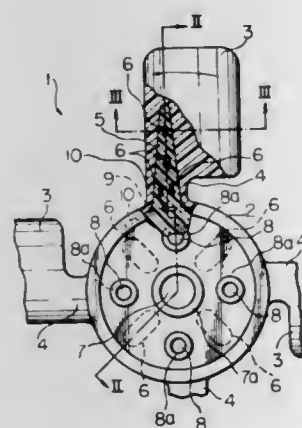
Filed Jan. 28, 1971, Ser. No. 110,553

Claims priority, application Japan, Jan. 31, 1970, 45/10347

Int. Cl. F01d 5/28

U.S. Cl. 416-132

3 Claims



A fan adapted for cooling the automotive vehicle engines and formed of molded plastic material, comprising hub portion and blades securely attached thereto, said blades being formed of thermoplastic material whereas said hub portion being formed of relatively stiff fiber reinforced thermoset plastic material, arms extending from the hub portion into the corresponding blades to form insert members, said thermoplastic material of which the blades are formed extending from the hub portion to cover the arms extending from the hub portion, and holes formed in the arms and the hub portion to provide a firm bond for the thermoplastic material.

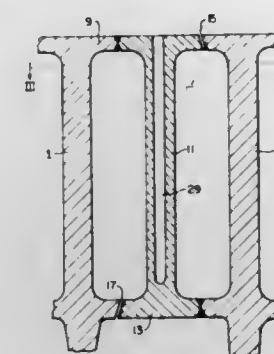
3,751,182  
GUIDE VANES FOR SUPERSONIC TURBINE BLADES  
Robert O. Brown, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1971, Ser. No. 173,486

Int. Cl. F01d 5/22

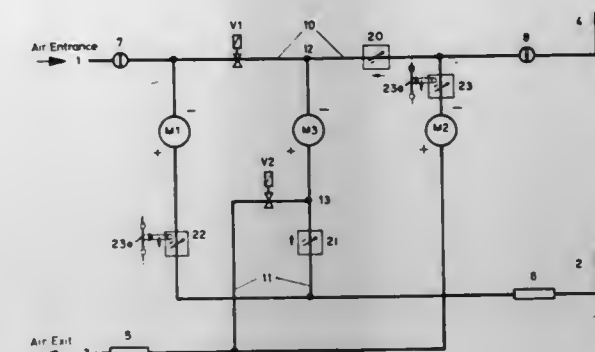
U.S. Cl. 416-193

4 Claims



Guide vanes are installed between blades of the last stage of blading of a large steam turbine to form converging-diverging openings to minimize losses in this portion of the turbine. The guide vanes are fastened to adjacent blades through a shroud ring and through a lashing ring to connect the blades in such a manner as to reduce vibration and allow thermal expansion of the rotating blade assembly.

range consisting of a stand-by blower, of two controlled valves and of four back-pressure valves is provided for increasing the operational reliability. Upon failure of one of the main blowers the supervisory elements associated with the

3,751,183  
INTERBLADE BAFFLE AND DAMPER

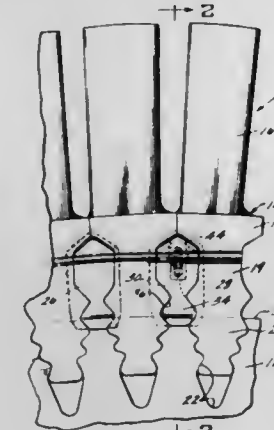
Herbert E. Nichols, and Harvey W. Mason, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 2, 1971, Ser. No. 204,049

Int. Cl. F01d 5/10

U.S. Cl. 416-220

2 Claims



A baffle and damper assembly includes end plates for closing the opening between adjacent blade shanks, a connecting member extending between the end plates, retaining means to lock the assembly to its adjacent blades against the urging of centrifugal force, and at least one damper weight movably secured to the connecting member and adapted to bear against the blade platforms under the urging of centrifugal force.

3,751,184  
PNEUMATIC TUBE SYSTEM WITH STAND-BY BLOWER  
Fritz Buchwald, and Dieter Pienkny, both of Berlin, Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 10, 1971, Ser. No. 197,328

Claims priority, application Germany, Nov. 23, 1970, P 20 57 557.9

Int. Cl. F04b 41/06

U.S. Cl. 417-4

4 Claims

In a pneumatic tube system comprising one blower each for the vacuum intake air and the compressed air, a stand-by ar-

main blowers serve to switch on the stand-by blower as well as the respective controlled valve. The corresponding back-pressure valves are opened or closed automatically by the air stream as produced by the stand-by blower.

3,751,185  
MANOMETER CONTROL

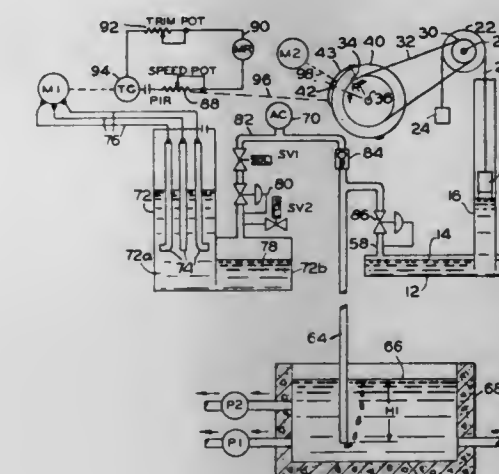
Mayo Gottliebson, and Charles Faes, both of Corvallis, Oreg., assignors to Flomatch Co., Inc., Corvallis, Oreg.

Filed Oct. 4, 1971, Ser. No. 186,043

Int. Cl. F04b 41/06

U.S. Cl. 417-7

14 Claims



A liquid manometer control has a reservoir connected to a source of air pressure and to a bubbler tube, the lower end of which projects into the liquid within a wet well. A vented float tube extends upwardly from an open lower end within the reservoir and contains a float which moves upon fluctuations in liquid level within the float tube as determined by changes in the level of liquid in the wet well. A counterweighted chain connected to the float translates float movement via sprockets and chain to rotary motion of a cam wheel or drum having cam-type actuators on its periphery. These cams actuate switches or potentiometers which in turn provide pilot signals for starting and stopping pumps, controlling the speed of pumps, opening and closing valves and operating other devices as desired, as a function of the liquid level in the wet well. In an illustrated embodiment, the liquid level in the wet well determines the level of liquid in the float tube, which in turn controls the starting and stopping of a pair of pumps and the level of liquid in a liquid rheostat to determine the speed of one of such pumps. The pumps in turn control the level of liquid in the wet well.



3,751,186

## HYDRAULIC SOLIDS CONVEYANCE

Basil Wayland Green, Johannesburg, Republic of South Africa, assignor to Edward L. Bateman Limited, Braamfontein, Transvaal, South Africa

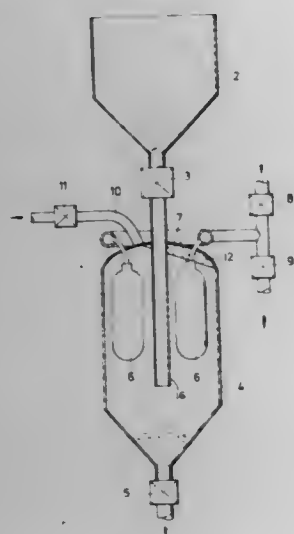
Filed June 24, 1971, Ser. No. 156,429

Claims priority, application Republic of South Africa, U.S. Cl. 417-240 June 25, 1970, 70/4372

Int. Cl. F04b 15/02; F04f 1/06; F04b 45/00

U.S. Cl. 417-118

2 Claims



Mined ore is pumped by means of a pumping vessel fed from a settling tank. The latter discharges into the vessel through a central pipe going to the foot of the vessel. Around the pipe and above the lower end of the pipe there are a series of inflatable balloons. Pumping is effected by inflating the balloons. Oneway valves control the inlets and the outlets from the vessel. As the balloons are inflated the inlet valve closes and the outlet valve opens. When they are deflated the reverse happens.

3,751,187

## APPARATUS FOR EMPTYING SEWAGE OR WASTE FACILITY OF A BOAT

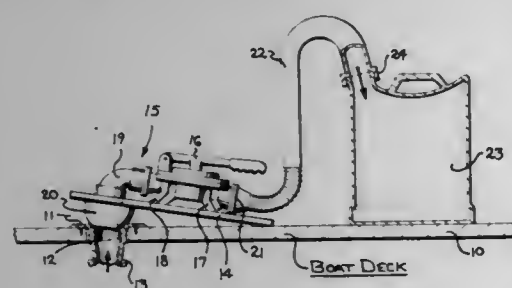
William D. Williams, Mahwah, N.J., assignor to Aquology Systems, Inc., Bristol, R.I.

Filed Nov. 11, 1971, Ser. No. 197,655

Int. Cl. F04b 21/00

U.S. Cl. 417-234

1 Claim



Apparatus for emptying the sewage or waste facility of a boat which is equipped with a deck plate having a hole in communication with the boat's sewage collecting system. The apparatus includes a foot-receiving mounting platform on which is a manual pump provided with an inlet duct extending to the underside of the platform. A compressible elastomeric sealing annulus surrounds the inlet duct and can be compressed between the under side of the mounting platform and the deck plate by foot pressure to create an effective liquid-tight seal, such foot pressure also stabilizing the apparatus during pumping operation. The outlet of the pump is connected by a tube to a portable collecting tank.

3,751,188

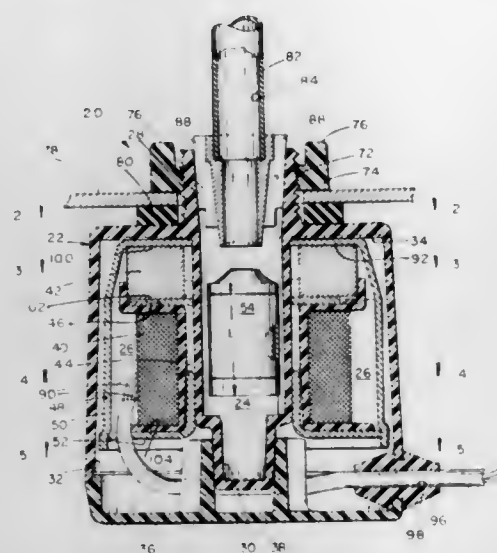
## VALVELESS PUMP

Allan H. Willinger, 56 Gall Dr., New Rochelle, N.Y., and Melvin R. Kennedy, 1853 Diamondale Dr., Carson, Calif.

Filed Aug. 23, 1971, Ser. No. 173,784

Int. Cl. F04b 17/04; F04f 7/00

12 Claims



A valveless pump comprising a housing, the latter including first and second chambers separated from one another. Each of the chambers has a closed end and an open end the latter being adjacent the closed end of the other. The second chamber is of annular extent and surrounds the first chamber. A magnetic assembly for generating a magnetic field extends in the second chamber, whereas a fluid ejecting magnetically-responsive hollow piston is freely disposed in the first chamber for axial displacement in the latter. A fluid inlet channel communicates with both first chamber and internally with the hollow piston, whereas a fluid outlet channel communicates with the first chamber for receiving fluid ejected by the piston.

3,751,189

## DEVICE FOR CLOSING A MOULD CAVITY

Karl Magerle, Kunsnacht, Switzerland, assignor to Tubmatic Inter AG, Zug, Switzerland

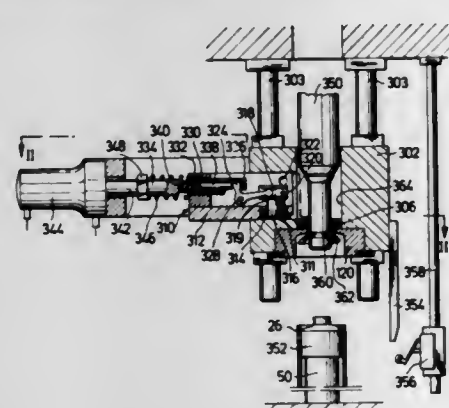
Filed Aug. 17, 1971, Ser. No. 172,500

Claims priority, application Switzerland, Aug. 21, 1970, 12520

U.S. Cl. 425-258

Int. Cl. B29h 5/02

21 Claims



A device for closing a mould cavity having an aperture leading into the hollow space of the cavity, said device comprising at least one mandrel which can be introduced into the hollow space of the cavity from the opposite side of the aperture, a slide allocated to the mould cavity and capable of being moved at right angles to the mandrel and which in one terminal position blocks off the aperture into the hollow space of the cavity, a punching die which passes through the aperture

when the hollow space of the cavity is closed, said punching die being arranged on the side of the slide in relation to the mould cavity and movable both transversely and parallel in relation to the longitudinal axis of the mandrel.

3,751,190

## SELF REGULATING FLUID PUMP

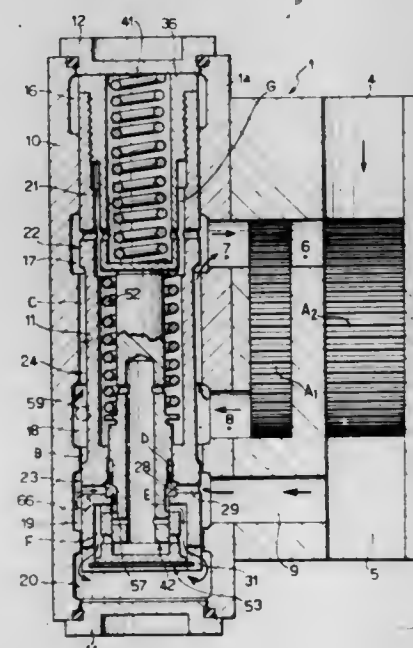
Carlo Cecchi, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed Nov. 15, 1971, Ser. No. 198,909

Int. Cl. F04b 49/08

U.S. Cl. 417-288

1 Claim



A fluid pressure pump of the type in which fluid is pumped by pairs of rotating gears, in which there are provided two pairs of gears and a control valve for by-passing one pair of gears if the delivery pressure of the pump exceeds a threshold value. This reduces the fluid flow through the pump and allows it to create a higher delivery pressure without requiring more power from the input shaft. The control valve is of the slide type and operates to short circuit the delivery side of one of the pairs of gears to its own induction side so that this pair of gears is inoperative when the valve is moved to its intervention position. The main slide of the valve has an auxiliary slide which enables the main slide to operate with a snap action to avoid hunting.

3,751,191

## HYDRAULIC PUMP AND COOLER UNIT

Carl W. Mott, Jr., La Grange Park, and Tommy A. Midlesworth, Hinsdale, both of Ill., assignors to Mott Corporation, La Grange, Ill.

Filed Feb. 2, 1971, Ser. No. 111,954

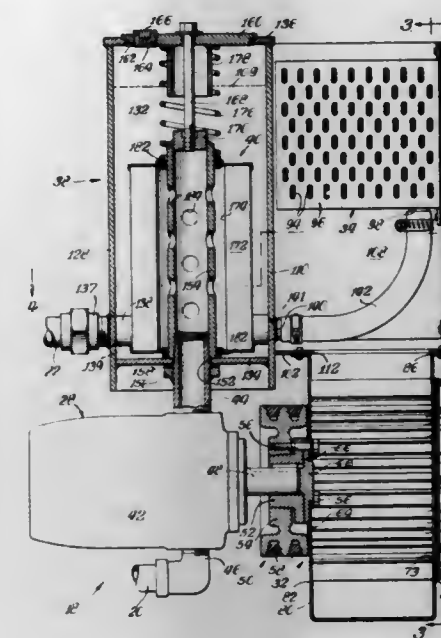
Int. Cl. F04b 39/12

U.S. Cl. 417-313

12 Claims

An arrangement of a hydraulic pump and cooler unit for a hydrostatic drive mechanism, the unit comprises pump means, blower means, duct means, and heat exchanger means. The pump means and blower means are mounted on a single shaft so that they are coaxial and have common drive means. The heat exchanger means is located within the duct means, and

both of said means are located directly above the blower means. The unit may include a reservoir means arranged side-



by-side with the duct means and above the pump means. Said reservoir means may also include filtering means therein.

3,751,192

## SUBMERSIBLE PUMP DRIVE SYSTEM

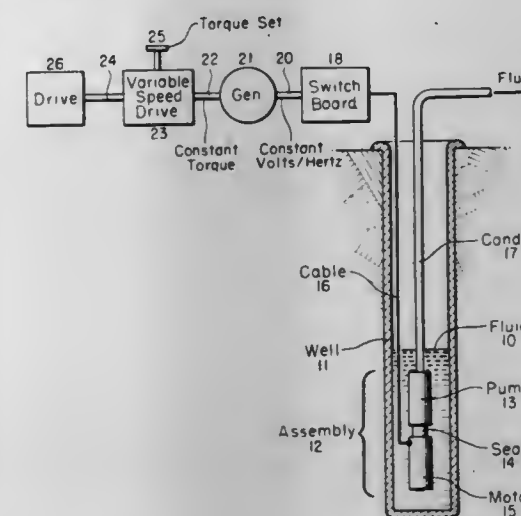
Clinton A. Boyd, Tulsa, Okla., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Apr. 12, 1971, Ser. No. 132,942

Int. Cl. F04b 35/04; H02p 7/00

U.S. Cl. 417-411

7 Claims



A pump is coupled with a motor in a deep well to remove fluid of variable density. The downhole motor is energized from an electrical generator which produces substantially constant volts/hertz output energy. The generator has an input shaft to which a constant torque is applied from a variable drive unit. As the fluid becomes lighter, the downhole motor speeds up and the generator produces an increase in both frequency and voltage amplitude to maintain system efficiency.

3,751,193

## ROTARY ENGINE WITH INTERMESHED DISKS INCORPORATING ADJUSTABLE GEAR STRUCTURE

William B. McCall, 1447 E. Town & Country Ln., Phoenix, Ark.

Filed Sept. 1, 1971, Ser. No. 177,061

Int. Cl. F01c 1/08; F04c 1/14, 17/04

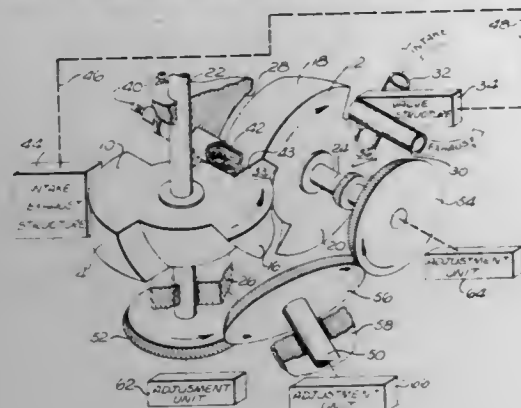
U.S. Cl. 418-107

3 Claims

A gearing system is disclosed for a rotary engine of the type in which a pair of intermeshed, segmented rotors are sup-



ported in perpendicular relationship to develop spaces of compression and expansion therebetween for operation as an engine, compressor or the like. The rotors are supported on shafts which are somewhat transversely offset, the axes of which lie in spaced apart parallel planes. Each rotor carries a



beveled gear wheel, the two being engaged by a third beveled gear wheel supported in intermediate relationship. As disclosed herein, the individual gear wheels are adjustable to accommodate wear of individual members while preserving the critical relationship required therebetween.

3,751,194

# ROTARY DEVICES OPERATED BY PRESSURIZED-FLUID

Jean Pierre Marcel, 20, rue E. Roux, Ruelle 16, France

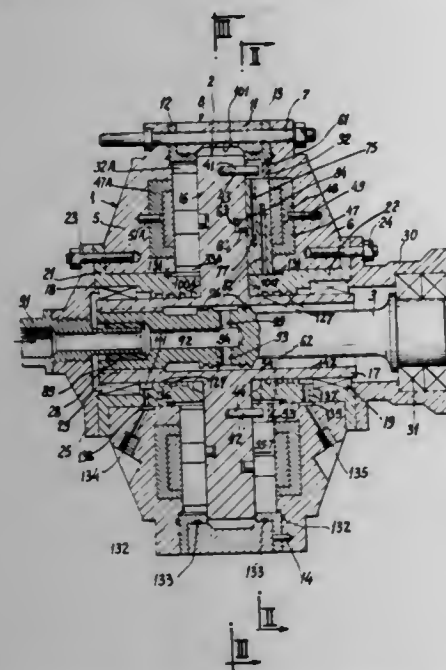
Filed Jan. 11, 1972, Ser. No. 217,001

Claims priority, application France, Jan. 14, 1971, 7101087; Mar. 9, 1971, 7108052

Int. Cl. F01c 1/00

U.S. Cl. 418-217

7 Claims



A rotary pressurized-fluid device usable as a pump, compressor or motor, comprises two coaxial units of revolution which can rotate one relative to the other around their common axis, one of these two units having at least one mobile piston in at least one cylinder formed from an annular groove of the other unit, coaxial with the latter, and divided into work-chambers by mobile partitions which slide in grooves, and which are subjected to the action of cams carried by the first unit, an inlet orifice and an outlet orifice for the fluid communicating respectively with two orifices located one on each side of said piston, the device including means suitable for effecting communication of the space contained between one face of a mobile partition and the wall of the cylinder with the space contained between one face of said partition opposed to the first-mentioned face, and of the same area, and a face of the groove, so that said opposed faces of each mobile partition are permanently subjected to the same pressure.

## 3,751,195 HEAT-TREATING-FURNACE ROLL AND METHOD OF HEAT-TREATING METAL STRIP THEREWITH

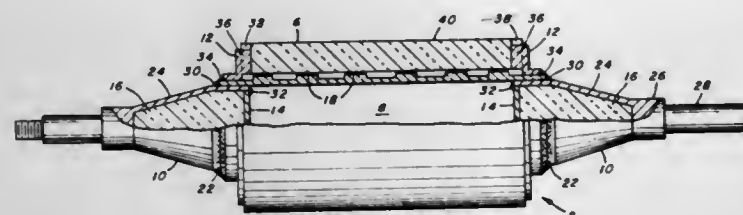
Roland B. Snow, Mount Lebanon Twp., Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 113,183, Feb. 8, 1971, abandoned. This application Aug. 18, 1971, Ser. No. 172,947

Int. Cl. F26b 9/00

U.S. Cl. 432-8

12 Claims



Roll of the invention includes a roll body of metal and a sleeve, made up of fused silica particles sinter bonded with colloidal silica or cement, or a mixture of fused silica particles and particles of other oxides sinter bonded with colloidal silica or cement, or sinter bonded fireclay granules, fixedly surrounding the roll body. Method of the invention consists of the steps of supporting strip which is being heat-treating at a temperature above 1000°F by a surface consisting of sintered fused silica particles, sintered fused silica mixed with other oxide particles, or sintered fireclay granules to inhibit formation of accretions on the supporting surface.

3,751,196

# APPARATUS FOR MAKING A CONCRETE COLUMN FORM

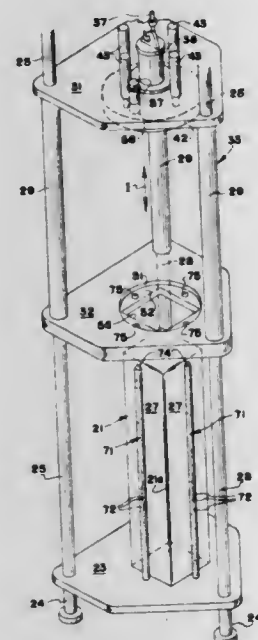
David C. Cannon; Walter E. Johnson, and Richard W. Turnage, all of Hartsville, S.C., assignors to Sonoco Products Company, Hartsville, S.C.

Division of Ser. No. 727,967, May 9, 1968, abandoned. This application Dec. 9, 1970, Ser. No. 96,497

Int. Cl. B29d 27/04

U.S. Cl. 425-4

6 Claims



This invention relates to forms for molding concrete columns and more particularly to a method and apparatus for producing a form for pouring concrete columns of any desired cross-sectional shape.

## 3,751,197 APPARATUS FOR PRODUCTION OF POLYMERIC FOAM

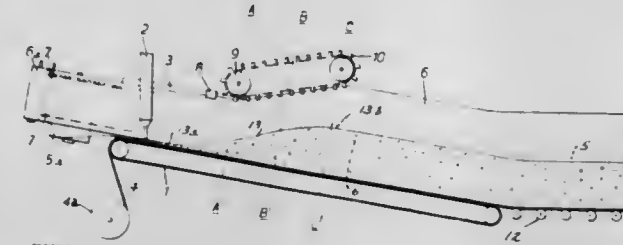
Nicholas George Petzetaris, Athens, Greece, assignor to Hellenic Plastics and Rubber Industry N.M. Pelzetakis, S.A., Athens, Greece

Continuation-in-part of Ser. No. 867,218, Oct. 17, 1969, Pat. No. 3,719,734, which is a continuation-in-part of Ser. No. 738,962, June 21, 1968, abandoned, which is a continuation-in-part of Ser. No. 591,550, Nov. 2, 1966, abandoned. This application Jan. 26, 1971, Ser. No. 109,906

Int. Cl. B29d 27/04

U.S. Cl. 425-4

22 Claims



Apparatus for producing polymeric foam blocks (known as "buns") with a substantially flat upper surface. A mixture of, e.g. polyurethane, foam-forming reactants is moved along a trough-shaped conveyor where the reactants are confined during foaming by side and bottom surfaces moving with the expanding foam material. The side surfaces of the conveyor include thin flexible lining material which moves downstream with the expanding foam material and is simultaneously moved upwardly in the foaming region along with the rising surface of the foam material so as to maintain the side margins of the upper surface of the foam at substantially the same height as the central portion of the upper surface of the foam. The downstream and upward movement of the lining material is effected by mechanism which is adjustable to compensate for variations in the location and rate of expansion of the foam so as to ensure that the upper surface of the foam is maintained flat.

3,751,198

# CAKE ICING MACHINE

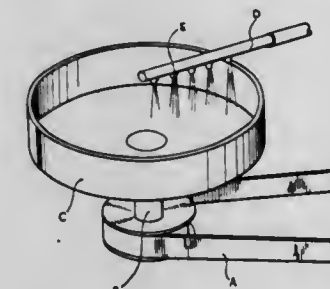
Giovanni Tanara, Parma, Italy, assignor to Foodice Engineering Italiana S.p.A., Parma, Italy

Filed Oct. 1, 1970, Ser. No. 77,302

Int. Cl. A01j 21/00, 25/12; A21c 9/04; A23g 1/20; A47j 43/20; B28b 7/38; B29c 1/00

U.S. Cl. 425-100

33 Claims



Machine for making cakes which comprises a base, a main plate mounted to rotate about a vertical axis with respect to said base, a plurality of molds, each mounted to rotate about an individual vertical axis carried by said main plate, said axes being equally spaced one from the other and located in a ring concentric with the axis of said main plate, means for imparting intermittent rotary motion to said main plate, means for rotating at least some of said molds about their individual axes during periods when said main plate is stationary, at least one supporting arm mounted on said base which supports a plurality of nozzles and which extends over the path travelled by said molds when said main plate is rotated, and means for introducing icing into said nozzles, during periods when the main plate is stationary.

3,751,199

# PRESSURE KILN SEAL

Luke Alexander Toft, Swansea, Wales, assignor to The International Nichel Company, Inc., New York, N.Y.

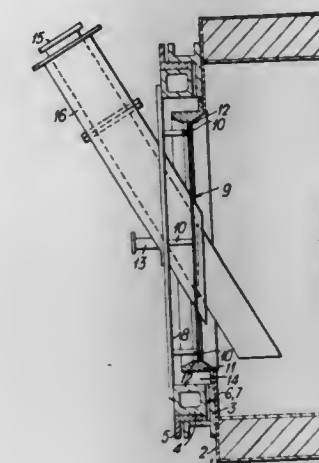
Filed May 31, 1972, Ser. No. 258,397

Claims priority, application Great Britain, June 2, 1971, 18,662/71

Int. Cl. F27b 7/24

U.S. Cl. 432-115

2 Claims



A rotary kiln having a metal-to-metal seal between its rotary and stationary parts is provided with means for preventing the outward passage of dust-laden gas from the kiln into the gap between the mating surfaces of the seal.

3,751,200

# APPARATUS FOR MAKING A TWO COLOR RUBBER SOLE BY INJECTION MOLDING AND APPLYING UNITING PRESSURE

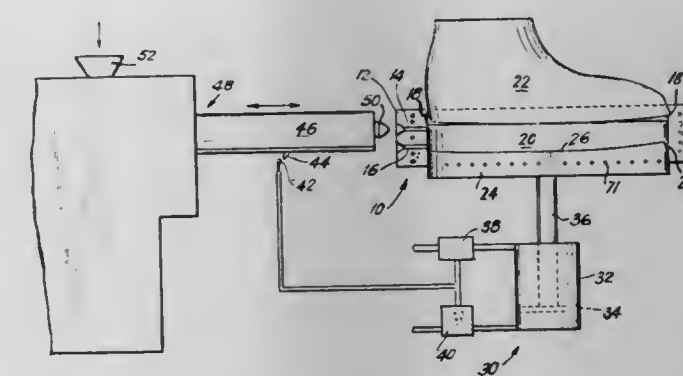
John F. Borisuck, and Ruben A. LaChall, both of Naugatuck, Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,457

Int. Cl. B29f 1/12; B29h 3/14

U.S. Cl. 425-119

7 Claims



An article of footwear having a two-color rubber sole construction, and a method and apparatus for manufacturing the article. The sole construction includes a midsole-foaming component having foaming surrounding and engaging an outsole component which is vulcanized to the midsole-foaming component. The rubber used for the midsole-foaming component has a higher modulus than the rubber used for the outsole component. The higher modulus rubber is injected into a mold cavity having a volume considerably greater than the volume of the injected rubber, and a movable sole plate spreads the injected rubber against the underside of a lasted upper. The sole plate has a peripheral shoulder which determines the lower end and inner surface of the foaming. The lower modulus rubber is also injected into a mold cavity of considerably greater volume. The sole plate is again advanced toward the lasted upper to spread the outsole rubber against the midsole rubber to be vulcanized thereto.



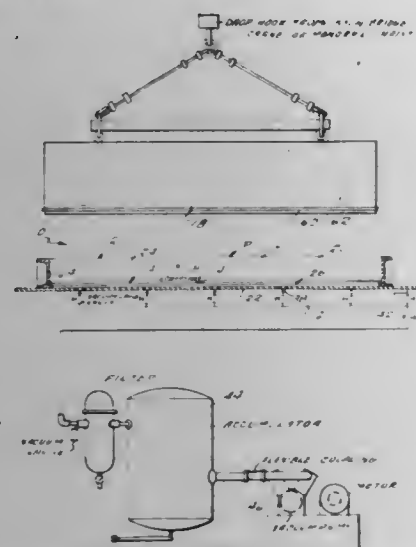
3,751,201

## APPARATUS FOR CASTING SLAB-FACED PANELS

Paul S. Kelsey, Delray Beach, Fla., assignor to The Susquehanna Corporation, Alexandria, Va.  
Division of Ser. No. 49,152, June 23, 1970. This application  
May 18, 1972, Ser. No. 254,439  
Int. Cl. B28b 3/10, 23/00

U.S. Cl. 425—123

10 Claims



A casting box having at least one vacuum line connection through its floor is provided with a laminated insert plate which includes a resilient upper layer provided with one vacuum line opening for each slab, and which incorporates conduits extending from the openings to communication with the casting box floor. A placement grid having individual cells for receiving individual slabs is received in the casting box on the insert plate upper layer. After a slab has been placed in each cell a heavy seater is lowered onto the slabs to force them into sealing contact with the insert plate resilient upper layer and a vacuum is drawn through the casting box floor to hold the slabs so tightly against the insert plate resilient upper layer that the layer bulges up between adjacent slabs. The seater is removed; then the placement grid is withdrawn with the assistance of removable lateral shims and a settable composition such as concrete is poured into the casting box upon the slabs. The panels so formed have slabs set therein with simulated semi-flush concave joints. A modified device for production of panels faced with slabs on both sides is also disclosed.

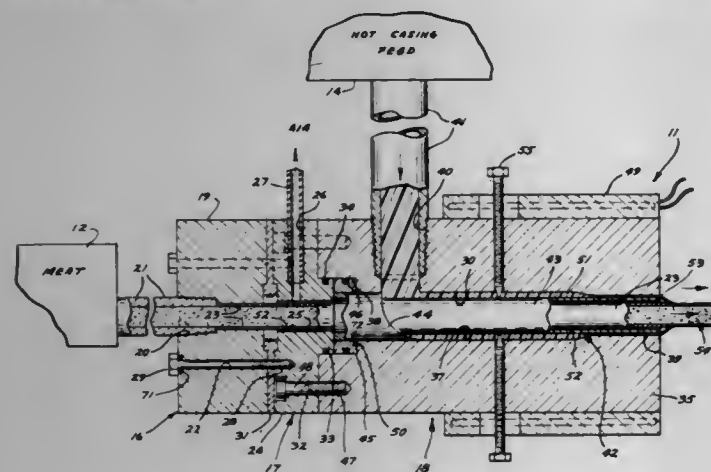
3,751,202

## COEXTRUSION APPARATUS

Paul E. Coleman; John T. Haub; Joseph T. Sullivan, and Dennis L. Pommer, all of Minneapolis, Minn., assignors to General Mills, Inc., Minneapolis, Minn.  
Filed Apr. 15, 1971, Ser. No. 134,165  
Int. Cl. A22c 1/102

U.S. Cl. 425—133

9 Claims



Method and apparatus is disclosed for coextruding a heat sensitive material such as meat and a hot plastic casing material such as of protein.

3,751,203

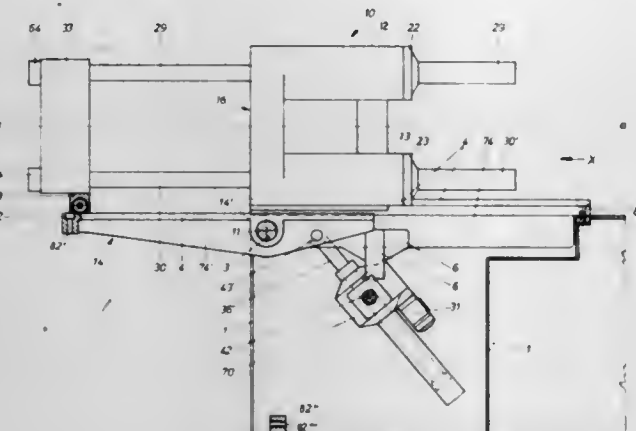
## APPARATUS FOR INJECTION MOLDING

Karl Hehl, Siedlung 183, Lossburg/Wurttemberg, Germany  
Filed June 25, 1971, Ser. No. 156,856  
Claims priority, application Germany, July 2, 1970, P 20 32 789.3

U.S. Cl. 425—190

20 Claims

Int. Cl. B29f 1/00



An injection molding apparatus including a clamping unit, a supporting frame and a driving device for pivoting the supporting frame and the clamping unit engaged therewith, wherein in one embodiment the supporting frame includes a clamping unit stabilizing arm and in another embodiment a part of the clamping unit is utilized as a stabilizing arm, and wherein in one embodiment the driving device is a hydraulic type actuator and in another embodiment the driving device is a manually actuatable spindle.

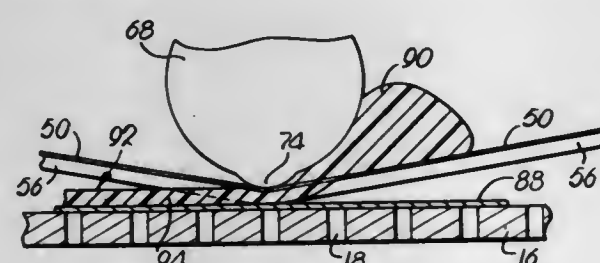
3,751,204

## APPARATUS FOR SCREEN MOLDING THREE-DIMENSIONAL OBJECTS

Harold L. Baker, Kansas City, Mo., assignor to Rayette-Faberge Inc., New York, N.Y.  
Division of Ser. No. 806,419, March 12, 1969, Pat. No. 3,658,977. This application Dec. 21, 1970, Ser. No. 100,292  
Int. Cl. B29d 9/08

U.S. Cl. 425—127

1 Claim



Three-dimensional objects are molded by advancing a special squeegee member along a flexible screen or the like to which a perforated mold is affixed, and pressing the mold into progressive engagement with a substrate, while at the same time, causing the squeegee to force the molding material through the screen and into the mold cavity, the mold stripping automatically and cleanly from the deposited material behind the squeegee as it is advanced.

3,751,205

## APPARATUS FOR FORMING AND HANDLING ROOF TILES

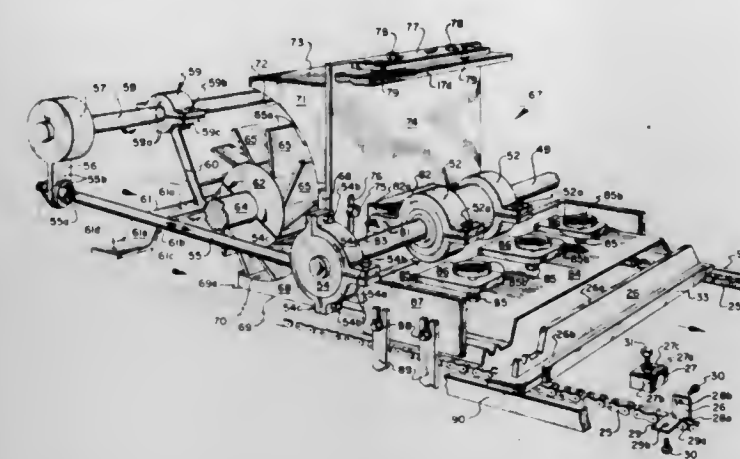
Dan H. Patten, Jr., 4020 E. Washington St., Phoenix, Ariz.  
Filed Apr. 20, 1972, Ser. No. 245,794  
Int. Cl. B28b 13/00

U.S. Cl. 425—253

4 Claims

An automated machine for fabricating roof tiles and the like from a mortar of cement type constituent materials. The

fabricating machine is composed of a number of individual mechanical components that perform steps in forming and



finishing roof tiles on pallet forms continuously conveyed through the machine.

## ERRATUM

For Class 425—258 see:  
Patent No. 3,751,189

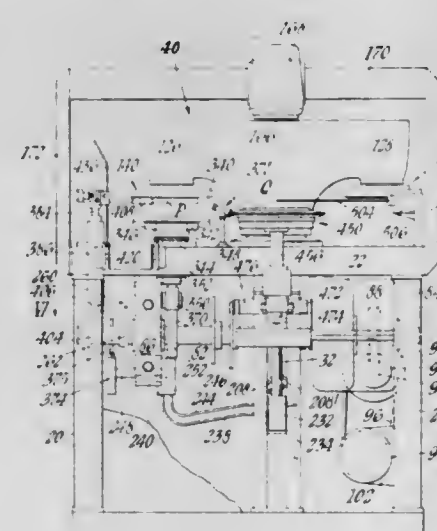
3,751,206

## MACHINES FOR USE IN THE MANUFACTURE OF POTTERY WARE

Arthur Bradshaw; Frank W. Meadows, and Harold Peake, all of Stoke-on-Trent, England, assignors to Service (Engineers) Limited, Staffordshire, England  
Continuation of Ser. No. 769,797, Oct. 23, 1968, abandoned.  
This application Mar. 10, 1971, Ser. No. 122,818  
Int. Cl. B28b 5/08

U.S. Cl. 425—264

3 Claims



The invention relates to machines for making articles or ceramic ware, e.g., flatware of china, porcelain or earthenware, from moist clay comprising automatic means for cutting a piece from an extruded column of clay, pressing the piece so that its thickness is reduced by at least one third, transferring the piece to a rotatable mould so that it covers a central portion thereof, and, while rotating the mould, further reducing the thickness of the piece and spreading it over the remaining mould surface by means of a rotating roller shaping tool.

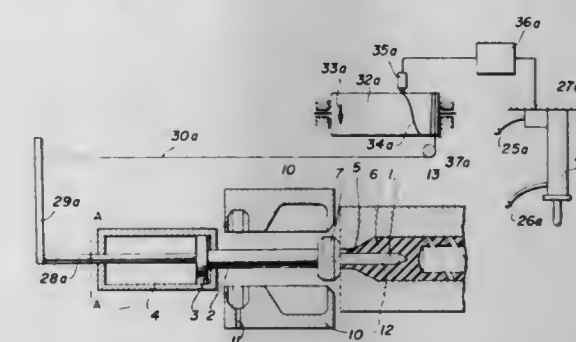
3,751,207

## APPARATUS FOR BLOW MOLDING

Johannes Mehnert, Mendenuber Sieburg, Germany, assignor to Siemens Slegener Maschinenbau Gesellschaft mit beschränkter Haftung, Bundesrepublik, Germany  
Continuation-in-part of Ser. No. 862,796, Oct. 1, 1969, abandoned. This application Mar. 10, 1972, Ser. No. 233,437  
Int. Cl. B29d 23/03

U.S. Cl. 425—326

15 Claims



This invention relates to apparatus for molding and, more particularly, to apparatus for the fabrication of hollow bodies from thermo-plastic material wherein, during a first fabrication step, the piece is pre-fabricated and, in a second step, the piece is positioned within a mold to form the hollow body by blowing until the hollow body reaches the desired shape.

3,751,208

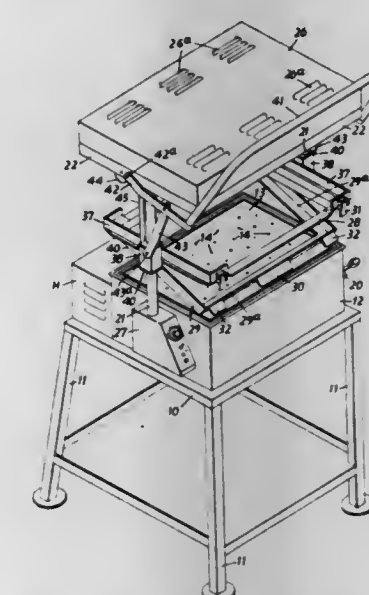
## VACUUM FORMING MACHINE

Paul Steabben Hepworth, Leicester, England, assignor to H. Upchurch & Co., Limited, Leicester, England  
Filed June 21, 1971, Ser. No. 154,886  
Claims priority, application Great Britain, June 20, 1970, 30,051/70

U.S. Cl. 425—388

6 Claims

Int. Cl. B29c 17/04



A machine for vacuum forming plastics sheets has a perforated mould platform above a vacuum reservoir. A valve is operable to place the holes in the platform in communication with the reservoir. Heating means are located above the platform. A carrier frame is movable up and down between the heating means and the mould platform. This frame carries at its underside a clamping frame to receive a plastics sheet. The clamping frame, which is at least partially separable from the carrier frame, is clampable to the latter by adjustable toggle clamps. The carrier frame is movable by a handle first upwards to present a sheet to the heating means and then downwards to clamp the clamping frame in an airtight manner upon the platform with the softened sheet drawn in an airtight manner over a mould.



3,751,209

**EXTRUSION DIE WITH CHanneled DIE ENDPLATES**

Anthony J. Schreiber, Philadelphia, Pa., assignor to Standard Oil Company, Chicago, Ill.

Filed Apr. 2, 1971, Ser. No. 130,634  
Int. Cl. B29d 7/04

U.S. Cl. 425-461

4 Claims



A flat film extrusion die comprising: a body having (1) means defining an inlet recess; (2) a longitudinally extending passageway communicating with said recess; (3) an extrusion manifold in flow communication with said inlet passageway extending substantially the entire width of the die; and (4) opposed wall portions in flow communication with said manifold which form an extrusion passageway leading from said manifold; a set of lips forming an elongated extrusion orifice extending substantially the entire width of the die with said set of lips in communication with said extrusion passageway; two channeled die endplates, one attached to each end of said body encapsulating said manifold, extrusion passageway and die lips, each channeled die endplate comprising a base plate having a principal cavity and a channel leading therefrom, said principal cavity being aligned with the respective ends of the manifold and said channel being aligned with the respective ends of said extrusion passageway.

3,751,210

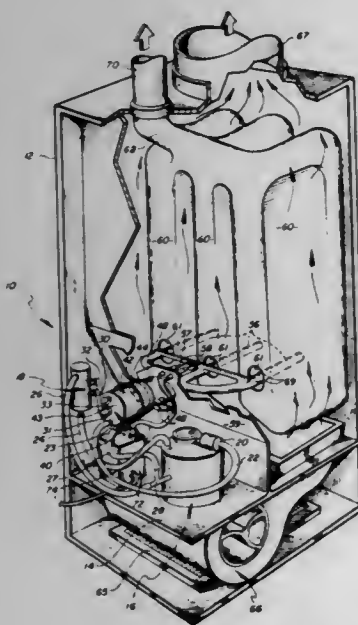
**TWO-STAGE VAPORIZING FUEL OIL BURNER**

Robert S. Babington, McLean, Va., and Wallace W. Velie, Woodland Hills, Calif., assignors to North American Rockwell

Filed July 13, 1971, Ser. No. 162,075  
Int. Cl. F23d 1/44

U.S. Cl. 431-237

14 Claims



The device achieves vaporization of liquid fuel such as fuel oil in the "free stream" by burning a small percentage of the fuel on the fringes of a spray of atomized droplets. A small

pilot flame is maintained within a housing and is supplied by one of a pair of atomizers to vaporize fuel being injected into the same housing from the second atomizer. The heated chamber within the housing thus vaporizes all of the fuel. Both atomizers induce sufficient air through aspiration ports in the housing to premix fuel and air. The fuel ejected from the pilot atomizer experiences a reduction of droplet size through use of a long cone which deflects and collects a portion of the fuel spray. The gaseous fuel is subsequently burned in a primary combustion chamber downstream of the vaporization housing.

3,751,211

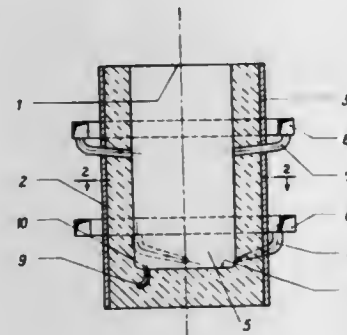
**METHOD FOR BURNING LIQUIDS**

Alexandre Rasconi, Chemin de la Fauvette 4b, 1012 Lausanne, Switzerland

Division of Ser. No. 875,631, Nov. 12, 1969, abandoned. This application July 21, 1971, Ser. No. 164,498  
Int. Cl. F23i 9/00

U.S. Cl. 431-9

1 Claim



Liquid fuels such as hydrocarbon fuels are burned in an upright cylindrical chamber by introducing the liquid in a continuous stream into a peripheral zone at the bottom of the chamber, and simultaneously introducing air in a direction downwardly inclined and inclined away from the center of the chamber so as to create a vortex motion of the air in the chamber thereby to atomize the fuel.

3,751,212

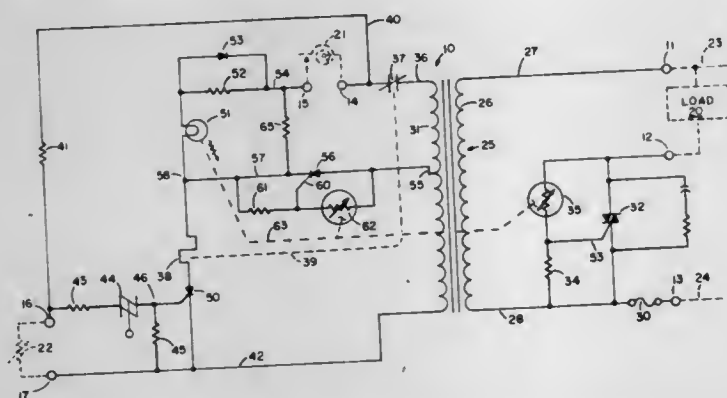
**FUEL BURNER CONTROL SYSTEM**

Roland L. Hron, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 29, 1972, Ser. No. 267,270  
Int. Cl. F23n 5/08

U.S. Cl. 431-69

10 Claims



An all solid state control system which is adapted to be connected to a fuel burner is disclosed that uses a pair of solid state switches each having a radiation responsive gating means that is responsive to a single radiation generator means. The first solid state switching means is gated "on" to energize the fuel burner or load, while the second radiation responsive gating means is gated "on" to continuously energize the radiation generator means to act as a latching mechanism to hold the system energized. The radiation generator means is initially energized through a flame responsive circuit and thermostat to initiate operation of the system.

3,751,213

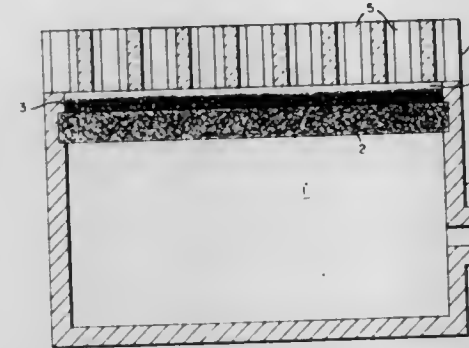
**HIGH INTENSITY RADIANT GAS BURNER**

Donald Maurice Sowards, Ashbourne Hills, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 19, 1971, Ser. No. 200,498  
Int. Cl. F23d 13/12

U.S. Cl. 432-328

14 Claims



A radiant heat gas burner comprising a radiant element formed of a refractory ceramic honeycomb, and a porous gas injection block formed of refractory fibers can be operated at high turn-down ratios and at high temperatures. Still higher operating temperatures can be reached when the combustion chamber is either completely or partially filled by refractory fibers.

**ERRATA**

For Classes 432-8 and 432-115 see:  
Patents Nos. 3,751,195 and 3,751,199

3,751,214

**METHOD OF AND APPARATUS FOR CONVEYING GRANULAR MASSES IN TUBULAR TREATING CHAMBERS**

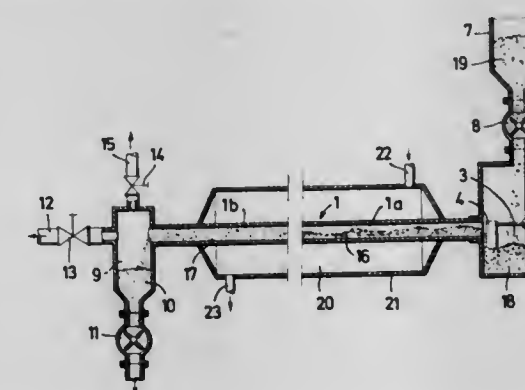
Werner Wenzel; Friedrich H. Franke, and Mohammed Meraikib, all of Aachen, Germany, assignors to Rheinische Braunkohlenwerke AG, Cologne and Werner Wenzel, Aachen, both of Germany

Filed Apr. 2, 1971, Ser. No. 130,701  
Claims priority, application Germany, Apr. 2, 1970, P 20 15 791.9

U.S. Cl. 432-15

Int. Cl. B65g 53/04

14 Claims



Solid fuel, such as granular raw brown coal, is moved through an approximately horizontally disposed tubular heat treating chamber (reaction tube) by means of a carrier fluid, the flow of which is periodically interrupted or at least decreased by periodically closing a fluid discharge valve disposed downstream of the reaction tube. During the closed periods of the valve, at least one part of the granular material

settles in the tube and, when the valve is opened, the material is rendered turbulent by the initial thrust of the carrier fluid as the latter resumes its periodic effective flow.

3,751,215

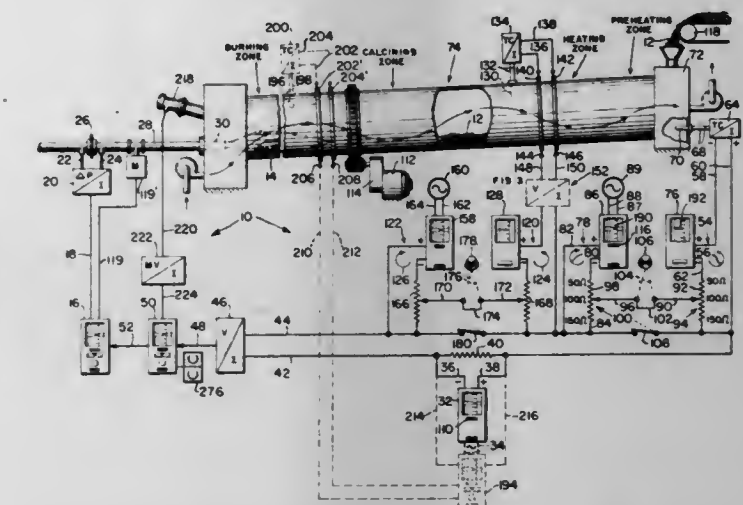
**DEVIATION PROPORTIONAL ANALOG PULSE CONTROLLING APPARATUS**

Ernest Hucke, Glenside, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 12, 1972, Ser. No. 262,017  
Int. Cl. F27b 7/00

U.S. Cl. 432-49

10 Claims



An automatic timer actuator relay is operably connected to continuously and alternately hold a switch of a transmitting controller in an automatic memory output signal tracking position only for a brief period of time and to hold the switch in a manual memory signal retention position for a much longer period of time so that the output deviation proportional error signal (P.V.-S.P.) that this controller is transmitting to a master cascade controller as a set point input signal can only occur over extremely short and widely spaced intervals of time during which a process is being controlled.

3,751,216

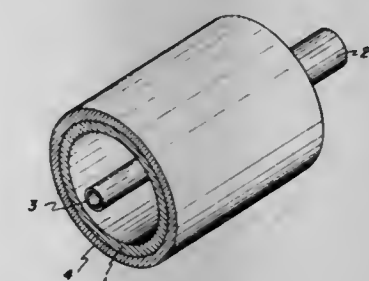
**FUSER ROLL ASSEMBLY**

Paul M. Gregory, Cheltenham, England, assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 26, 1971, Ser. No. 202,495  
Int. Cl. G03g 5/00

U.S. Cl. 432-62

4 Claims



A fuser roll assembly for use in a xerographic copying machine including a cylindrical roll formed of aluminum and having an electric heating element disposed along its longitudinal axis. A substantially cylindrical shell, formed of stainless steel, is slidably mounted about the roll when the heating element is deenergized; energization of the heating element causing said roll to diametrically expand so the outer surface of the roll firmly engages the inner surface of the shell.



3,751,217

## ROTARY KILN PRECOOLER CONSTRUCTION

Werner Schossler, 473 Ahlen, and Otto Heinemann, 4722 Ennigerloh, both of Germany, assignors to Polysius AG, Graf-Galen-Strasse, Germany

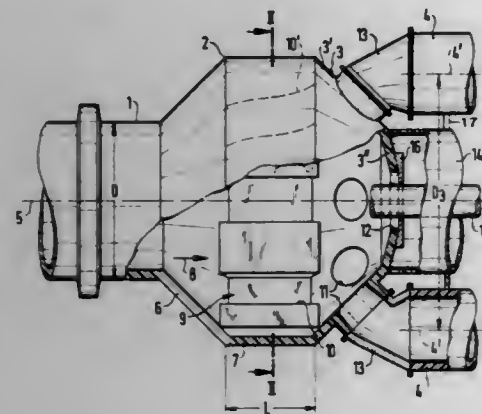
Filed Feb. 3, 1972, Ser. No. 223,150

Claims priority, application Germany, Feb. 25, 1971, P 09 065.3

Int. Cl. F27b 7/38

U.S. Cl. 432-80

11 Claims



A pre-cooler for a rotary kiln comprises a hollow body having a flared inlet for connection to the discharge end of a rotary kiln, a cylindrical central portion of greater diameter than that of the kiln, and a tapered outlet having circumferentially spaced cooling tubes arranged on a circle having a diameter less than that of the central portion. The central portion preferably includes a liner having grooves extending between the inlet and the outlet.

3,751,218

## APPARATUS FOR EXPANDING RESIN

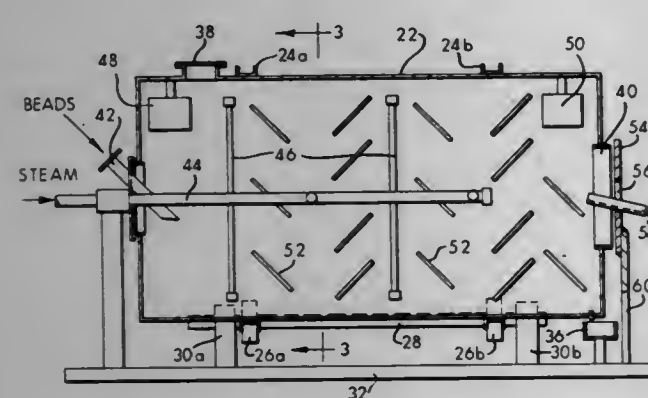
Edward L. Cherson, Waltham, Mass., assignor to Artisan Industries Inc., Waltham, Mass.

Filed Aug. 27, 1971, Ser. No. 175,548

Int. Cl. F27b 15/00; F26g 11/02

U.S. Cl. 432-134

25 Claims



An apparatus for the production of low-density expandable resin beads, which apparatus comprises: a vessel to contain the beads; an inlet to introduce beads to be expanded into the interior of the vessel; an outlet to discharge from the vessel the beads after expansion to the desired density; means to rotate the vessel and to move the beads in a path from the inlet to the outlet of the vessel; and means to heat the beads while in the vessel from one state to another desired expanded state. Baffles are spaced apart from the interior wall of the vessel, and the baffles which are in the path of the beads are adapted to control the residence time of the beads as they move from the inlet to the outlet end of the vessel, and to maintain the beads as they move from the inlet to the outlet in a substantially uniform condition of expansion.

3,751,219

## ANNEALING FURNACE SEAL

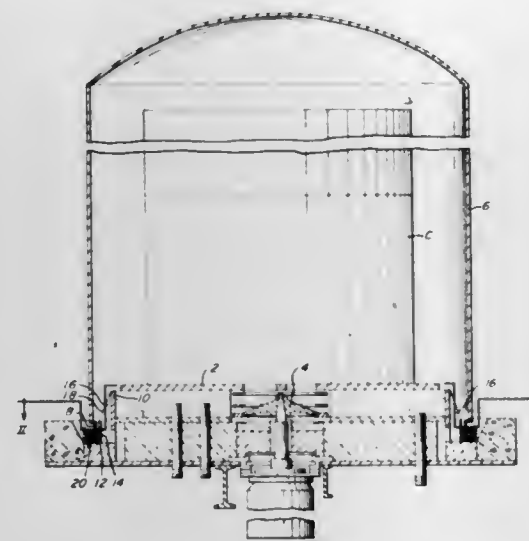
Fred L. Kitchel, Valparaiso, Ind., assignor to United States Steel Corporation

Filed Oct. 28, 1971, Ser. No. 193,348

Int. Cl. F26b 25/00; F26d 23/00; C21d 1/12

U.S. Cl. 432-257

15 Claims



A seal for eliminating or reducing air infiltration into an inner cover of a steel annealing furnace includes a tube of stainless steel mesh filled with a woven ceramic blanket, preferably arranged in a roll. The bottom of the inner cover rests on the tube.

3,751,220

## FLUID DELIVERY SYSTEM FOR ROTARY KILN

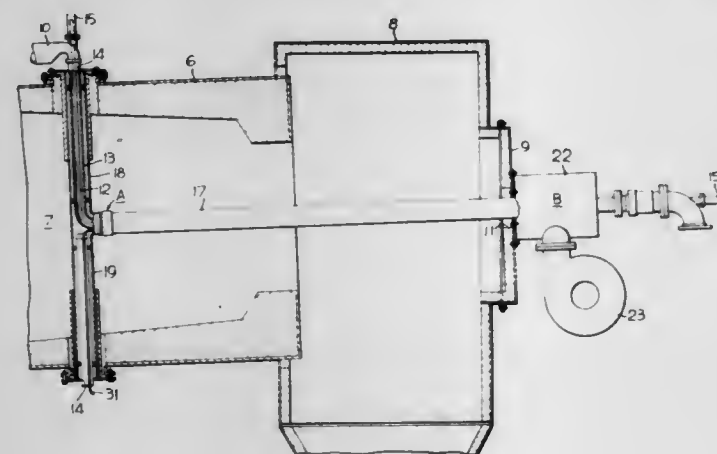
Eugene F. Rossi, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 24, 1972, Ser. No. 309,529

Int. Cl. F27b 7/36

U.S. Cl. 432-115

5 Claims



A rotary kiln is disclosed with a stationary hood mounted concentrically over the material feed end of the kiln. Fuel nozzles are mounted on the outer surface of the kiln shell and are connected to a manifold also mounted on the outer surface of the kiln shell. A fuel delivery tube connected to the manifold projects radially inwardly to the interior of the kiln and then axially outwardly through the hood to the exterior of the kiln for connection to the fuel supply. A cooling air pipe surrounds the portion of the fuel tube located in the interior of the kiln. Air is forced through the pipe to cool the fuel. A flexible ball joint is provided in the cooling pipe to compensate for any misalignment between the rotating axis of the kiln and the stationary axis of the hood.

## CHEMICAL

3,751,221

## CURING AND PRETANNAGE OF HIDES

Don S. Elvrum, 6233 Saylin Ln., Los Angeles, Calif.

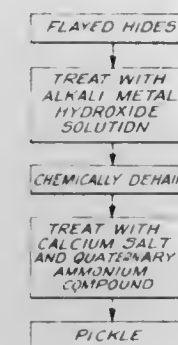
Division of Ser. No. 654,432, July 19, 1967, Pat. No.

3,574,517. This application July 2, 1970, Ser. No. 51,982

Int. Cl. C14c 1/06, 1/08, 1/02

U.S. Cl. 8-94.16

8 Claims



Hides may be cured and pretanned by: treating raw hides with a sodium hydroxide solution so as to react the lipid material in order to cause formation of soaps, limited attack on protein material present in the hides, and swelling of the collagen in the hides; adding sodium chloride to the sodium hydroxide solution in order to enable this salt to be taken up from the solution by the hides, causing an increase in the strength of the swollen collagen; dehairing the hides; treating the hides with sodium sulphite solution so as to add strength to the swollen collagen; treating the hides with a mixture of quaternary ammonium salt, and a calcium salt in order to precipitate any soaps present and to place the ammonium salt within the remaining hide material and to separate facia tissue from the remaining hide material; and pickling the hides with an acid solution so as to effect a size reduction and strengthening of the swollen collagen. If desired, the hides may be bated prior to being pickled. The so-cured hides have properties which are related to the properties of the ammonium salt. The resulting hides can be further treated in accordance with conventional tanning practices.

3,751,222

## PROCESS OF CLEANING CLOTH

Michel Rene Roger Gobert, Courbevoie, France, assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 817,197, April 17, 1969, abandoned, and a continuation of Ser. No. 6,942, Jan. 29, 1970, abandoned. This application Dec. 13, 1971, Ser. No.

207,684

Int. Cl. D06l 3/02

U.S. Cl. 8-111

12 Claims

Detergent composition for soaking or washing containing organic detergent, enzyme and hydroxylamine compound or hydrazine compound. Peroxygen compound may also be present.

3,751,223

## METHOD FOR TREATING TEXTILE MATERIAL WITH A LIQUID

Niels Rudolf Bergholtz, Kinna, Sandfallsstigen, Sweden

Filed Mar. 24, 1972, Ser. No. 237,678

Claims priority, application Sweden, Mar. 24, 1971, 3797/71

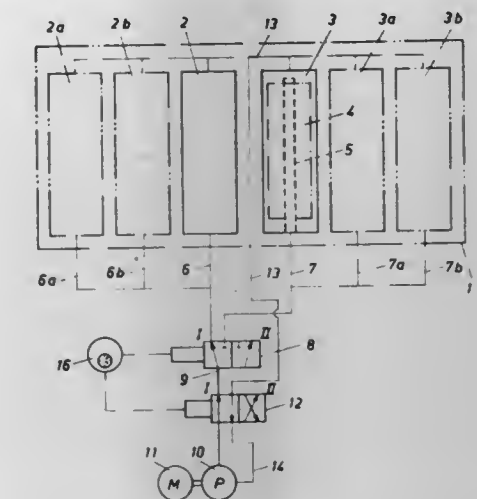
Int. Cl. B05c 8/02

U.S. Cl. 8-155.1

6 Claims

In dyeing processes the velocity of the dyeing liquid when passing through the material to be treated is important. The

forcing of the liquid through the material imposes a heavy load upon the pump, and it has been found, that a more uniform dyeing is obtained with less expenditure of power if the dyeing apparatus is provided with at least two compartments into which the bulk of material to be treated may be placed in two smaller batches. The two compartments are alternately con-



nected to the pump, in such a manner that one compartment will always contain flowing liquid while the other contains liquid at rest. The term for switching over may be selected with respect to the material to be treated and the type of dyestuff, but each period of activity should be sufficient long to permit a complete substitution of the liquid within the compartment.

3,751,224

## METHOD AND APPARATUS FOR A CONTINUOUS FLUID TREATMENT OF FIBROUS MATERIALS

Peter Martin Wackerle, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Germany

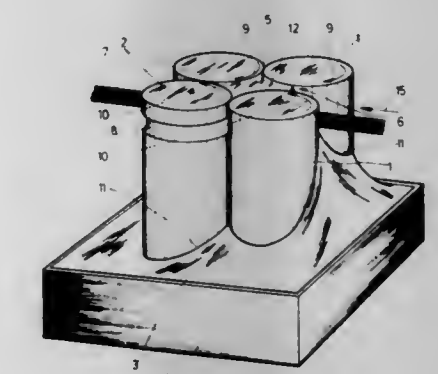
Filed Dec. 20, 1971, Ser. No. 210,031

Claims priority, application Germany, Dec. 23, 1970, P 20 63 374.3

Int. Cl. B05c 3/04, 3/132

U.S. Cl. 8-151

23 Claims



In treating fibrous materials with a fluid medium, such as for cleaning or impregnating the fibers, the material is moved along a path of travel through a chamber in which the fluid medium flows under pressure in a vortical pattern. Due to the vortical flow, the fluid medium flows in counterflow relationship to the fibrous material for at least a part of its path of travel through the chamber. Further, at the same time it passes in counterflow relationship, the fluid medium also flows transversely into the fibrous material. The chamber can be defined laterally by two pairs of vertically extending rotating rolls. The rolls in one pair are spaced apart and form an inlet gap



through which the fibrous material passes into the chamber, while at least one of the rolls in the other pair has a circumferentially extending groove through which the material exits from the chamber. The rolls in each pair rotate in opposite directions to one another in developing the vortical flow of the fluid medium.

3,751,225

### STERILIZING WITH LIQUID SPRAY CONTAINING OZONE

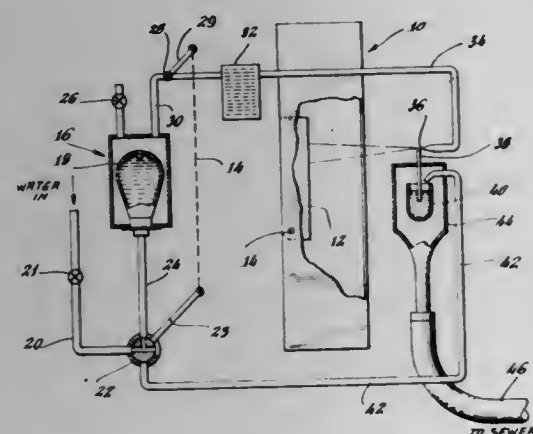
Eskil L. Karlson, Stamford, Conn., assignor to Pollution Control Industries Inc., Stamford, Conn.

Filed Mar. 2, 1970, Ser. No. 15,551

Int. Cl. A611 3/00

U.S. Cl. 21—91

1 Claim



Ozone carrying mist is employed to sterilize the interior of an enclosure including surfaces and objects therein. Closing movement of a movable wall portion of the enclosure actuates timing means and provides substantially simultaneous flows of predetermined amounts of ozone and water which are mixed to form a mist and injected into the enclosure. Electrical circuitry controlled by the timing means then actuates means for exhausting ozone from the enclosure and drying the wetted surfaces therein.

3,751,226

### BACKFLOW TEST FOR OIL CONCENTRATION

Robert J. Hesse, North Olmsted, Ohio, and Robert F. Farmer, Baltimore, Md., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 13, 1971, Ser. No. 188,446

Int. Cl. G01n 33/24

U.S. Cl. 23—230 EP

5 Claims

The concentration of oil phase fluid in subterranean reservoir is measured by injecting slugs of aqueous liquid containing a preferentially water soluble tracer (i.e., distinctive material) that reacts within the reservoir to form a tracer material that is relatively oil soluble and is partitioned between the oil and water phase fluids.

3,751,227

### REACTIVE WASTE GAS TREATING DEVICE

Philip W. Robinson, 7831 Seventh St., Downey, Calif.

Filed Nov. 4, 1971, Ser. No. 195,733

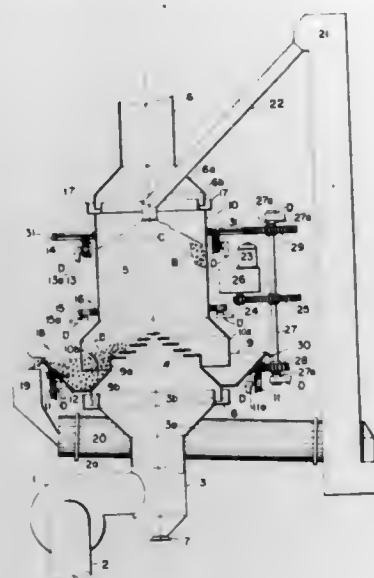
Int. Cl. B01j 9/10, 1/22

U.S. Cl. 23—260

11 Claims

A waste gas treating device in which a bed of relatively large size particled material which is chemically reactive to at least a portion of the components in the gas is subjected to movement as a stream of waste gas that is to be treated flows therethrough. The particled material is so chosen that it may be disposed to define a porous bed through which the waste gas flows to form layers of nonvolatile salts on the exterior surfaces of the particled material.

An ideal particled material for this purpose is crushed limestone that is but slightly soluble in water, but which reacts with waste gases containing certain acids and acid-forming components such as the various oxides of sulfur and nitrogen to form salts thereon. The movement of the particled material in the bed is such that it is constantly recycled, and during the recycling operation may, if desired, be subjected to washing to



remove films of salts therefrom. The constant movement of the particles of the material relative to one another also tends to remove the films of formed salts on the exterior surface thereof by abrasive action. Thus, the particles due to the washing and abrasive action has fresh surfaces exposed to the reactive waste gases, and optimum removal of the reactive components from the waste gas is achieved.

3,751,228

### APPARATUS FOR REFORMING HYDROCARBONS UNDER PRESSURE

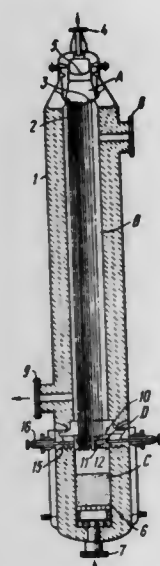
Vladimir Petrovich Semenov, Vodkovsky pereulok, 4/6, kv. 69, Moscow, U.S.S.R.

Filed Dec. 16, 1970, Ser. No. 98,546

Int. Cl. B01j 9/04

U.S. Cl. 23—289

1 Claim



An apparatus for reforming hydrocarbons under pressure comprising a heat-exchange chamber incorporating reaction tubes for effecting a process of primary reforming and a shaft chamber for effecting a process of secondary reforming located at the open ends of the reaction tubes. The heat-exchange chamber is separated from the shaft chamber by a double transverse partition having walls forming an intermediate chamber for supplying gaseous reagents. This intermediate chamber is completely isolated from the heat-exchange chamber and is in communication with the shaft chamber.

3,751,229

### CONTROL OF REACTION ZONE SEVERITY BY RESPONSE TO OCTANE NUMBER OF EFFLUENT LIQUID AT REACTION PRESSURE

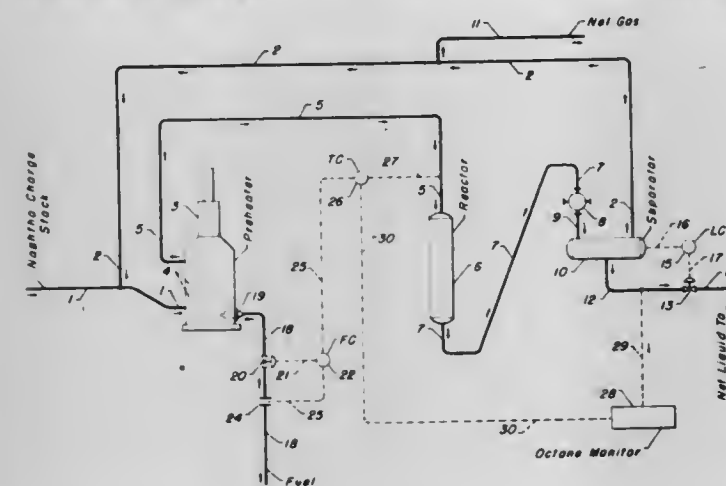
Walter A. Bajek, Lombard, and James H. McLaughlin, La Grange, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 868,460, Oct. 22, 1969, abandoned. This application Sept. 3, 1971, Ser. No. 177,801. The portion of the term of this patent subsequent to Mar. 14, 1989, has been disclaimed.

Int. Cl. B01j 9/04; C10g 35/04; G01n 33/00

U.S. Cl. 23—253 A

14 Claims



An improved control system for adjusting and controlling reaction zone severity in a continuous flow hydrocarbon conversion process, wherein a hydrocarbon charge stock is passed through a reaction zone at conversion conditions comprising elevated temperature and pressure, and the resulting product effluent is separated into a vapor phase and into a liquid phase comprising gasoline boiling range hydrocarbon constituents. A sample of liquid phase effluent is continuously passed without intervening depressurization into a hydrocarbon analyzer which adjusts the reaction severity, and preferably heat input to the reaction zone, in response to the octane number of the liquid phase of the effluent. The octane measurement is effected by an analyzer comprising a stabilized cool flame generator with a servo-positioned flame front which provides a real time output signal indicative of sample octane number.

3,751,230

### EXHAUST GAS CONTROL IN FLAME IONIZATION DETECTORS

Kurt Hofmann, Hergershausen, Germany, assignor to Hartmann & Braun, Messund Regeltechnik, Frankfurt, Germany

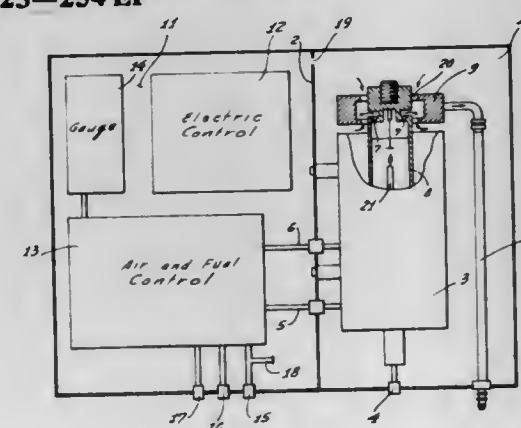
Filed Aug. 2, 1971, Ser. No. 167,998

Claims priority, application Germany, Aug. 6, 1970, G 70 29 598.6

Int. Cl. G01n 31/12

U.S. Cl. 23—254 EF

4 Claims



Flame ionization detector having a burner inside of a tube, the tube having cover means provided for connection to an ex-

3,751,231

### APPARATUS FOR USE IN TREATING FLUIDS

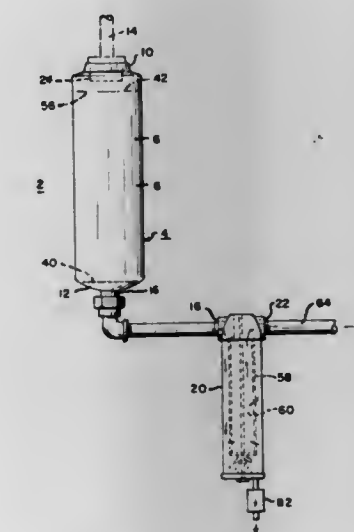
Albert Niedzielski, 802 Michigan Blvd., Erie, Pa.

Filed Jan. 21, 1971, Ser. No. 108,387

Int. Cl. B01j 1/08

U.S. Cl. 23—260

1 Claim



Apparatus for supporting a bed of granular material through which fluid under pressure is continuously passed including an upright elongated vessel, means for diffusing incoming fluid to the vessel, a screen assembly for supporting the bed of granular material and a collecting chamber formed in the bottom of the vessel beneath the screen assembly.

3,751,232

### MEANS FOR EFFECTING A MULTIPLE STAGE CONTACT OF A REACTANT STREAM

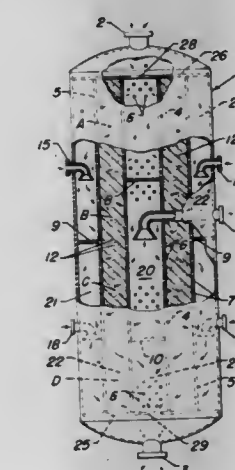
Henry C. Borre, Mt. Prospect, Ill., and Wayne N. Root, Statesville, N.C., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 14, 1971, Ser. No. 106,512

Int. Cl. B01j 9/04; C07c 15/10

U.S. Cl. 23—288 R

1 Claim



Method and apparatus for effecting a multiple stage contact to a reactant stream such as a multistage dehydrogenation of ethylbenzene to styrene. The reaction feed stream is passed alternately in outward and inward radial flow directions through a plurality of adjacent annular reaction zones and withdrawn



from intermediate reaction zones and channeled to mixing zones longitudinally adjacent the next successive annular reaction zones. A heat exchange medium is introduced into such mixing zones in a manner effecting both a downstream flow thereof to the next reaction zone and mixing with the reactant stream.

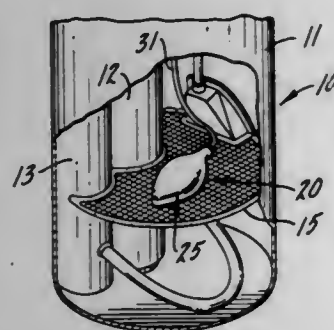
### 3,751,233 SALT INDICATOR IN A WATER CONDITIONING DEVICE

Edward J. Tischler, St. Paul, Minn., assignor to Ecodyne Corporation, Chicago, Ill.

Filed Dec. 2, 1970, Ser. No. 94,467  
Int. Cl. G08b 13/10

U.S. Cl. 23—272

10 Claims



A regenerating mineral indicator including a detector mechanism to determine whether or not there is a predetermined quantity of mineral resting on a mineral support platform and signal means to warn the operator that either the mineral level is low or bridging has occurred. The detector mechanism includes a gas inflated bladder supported on the platform and a conduit having one end in communication with the bladder and the other end in communication with signal means. Various signal means are disclosed which are actuated by the change in pressure in the bladder.

### 3,751,234 FUEL OIL SLUDGE DISPERSANT COMPOSITION

Alan Douglas Adams, Newark, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed Feb. 2, 1971, Ser. No. 112,065  
Int. Cl. C101 1/22

U.S. Cl. 44—66

7 Claims

Sludges which normally form in fuel oil are maintained in a suspended state by the addition of a sludge dispersant composition comprising a partially esterified polyethoxylated or propoxylated aniline-formaldehyde resin having low molecular weight.

### 3,751,235 GASOLINE COMPOSITION

Walter F. Schoen, South Holland, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Continuation-in-part of Ser. No. 753,832, July 31, 1968, abandoned, which is a continuation of Ser. No. 528,777, Feb. 21, 1966, abandoned, which is a continuation-in-part of Ser. No. 413,303, Nov. 23, 1964, abandoned. This application May 21, 1970, Ser. No. 39,564

Int. Cl. C101 1/18, 1/26, 1/30

U.S. Cl. 44—58

11 Claims

Gasoline compositions containing an additive for reducing the amount of deposits formed in engine intake manifolds and on the intake valve tulips. The compositions contain the base gasoline and as an additive, a heavy distillate naphthenic oil, and, preferably, also a gasoline-soluble nickel, cobalt, chromium or zinc organophosphate.

### 3,751,236 SLUDGE DISPERSANT COMPOSITIONS

Alan D. Adams, Newark, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

Filed June 10, 1971, Ser. No. 151,964  
Int. Cl. C101 1/26

U.S. Cl. 44—66

7 Claims

Sludges and fine particulate matter which normally accumulate in petroleum distillate products are maintained in a suspended state by the addition of a dispersant which comprises an amine neutralized condensation product of a partial fatty acid-phosphoric acid ester of a polyoxyethylene or polyoxypropylene ether of a polyol having four to six carbon atoms. Compositions having from one to eight polyoxyalkylene groups, one to four fatty acid ester groups, and one to two phosphoric acid groups per mol of polyol are particularly useful as ashless fuel oil sludge dispersants.

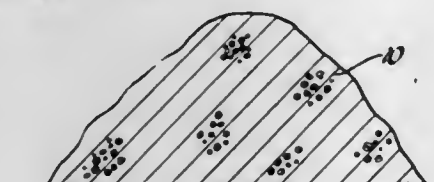
### 3,751,237 ABRASIVE COMPOSITION OF TETRAGONAL GERMANIUM DIOXIDE

Walter A. Albers, Jr., Northville, and Don E. Swets, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 28,772, April 15, 1970, Pat. No. 3,696,357. This application June 17, 1971, Ser. No. 154,007  
Int. Cl. B24d 3/02

U.S. Cl. 51—309

3 Claims



The abrasive qualities of tetragonal germanium dioxide are described, along with compositions and articles made with a tetragonal germanium dioxide abrasive. Techniques for using tetragonal germanium dioxide as an abrasive are also described.

### 3,751,238 METHOD OF CHEMICALLY STRENGTHENING A SILICATE ARTICLE CONTAINING SODA

Peter Grego, and Robert G. Howell, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Feb. 25, 1970, Ser. No. 14,219  
Int. Cl. C03c 15/00, 21/00; B01d 59/40

U.S. Cl. 65—30

10 Claims

This invention relates to the treatment of a silicate glass article to develop strengthening compressive stresses within a surface layer on the article by introducing potassium ions into the glass surface layer in exchange for sodium ions. It is more particularly concerned with an improved method of treatment to increase the depth of ion exchange within the glass surface within a given time while maintaining the central tension in the article at a relatively low level.

### 3,751,239 HERBICIDAL COMPOSITIONS CONTAINING N-(1,1-DIALKYL-3-CHLOROACETONYL) BENZAMIDES

Patrick J. McNulty, Wyndmoor; Colin Swithenbank, Perkaskie; Kenneth L. Viste, Warminster, and William C. Von Meyer, Willow Grove, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 829,084, May 29, 1969, Pat. No. 3,661,991. This application Apr. 19, 1971, Ser. No. 135,388  
Int. Cl. A01n 9/20

U.S. Cl. 71—118

9 Claims

Biocidal compositions which contain as the active ingredient a compound belonging to the class of N-(1,1-dialkyl-

3-mono(di- and tri)-chloroacetyl)-3-(or -3,4-, -3,5- or -3,4,5-) substituted benzamides and their use in controlling plant growth and phytopathogenic fungi.

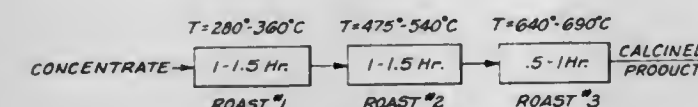
### 3,751,240 METHOD OF ROASTING COPPER SULPHIDE CONCENTRATES AND ORES

George E. Green, Tucson, Ariz., assignor to Banner Mining Company, Tucson, Ariz.

Filed June 7, 1971, Ser. No. 150,664  
Int. Cl. C22c 1/16, 15/08

U.S. Cl. 75—1

3 Claims



A method of roasting copper-iron-sulphide ore concentrate or mixture, wherein the ratio of sulphur values to copper values is preferably at least one, to yield a calcined product, for the separation and recovery of copper values by acid leaching and electrolytic deposition, having at least 99 percent of its copper values soluble in dilute sulphuric acid and no more than 10 percent of the iron values soluble in dilute sulphuric acid. The method comprises oxidizing the concentrate in the following three step reaction sequence: 1) 1-1.5 hours at a temperature between about 280° and about 360°C; 2) 1-1.5 hours at a temperature between about 475° and about 540°C; and 3) 0.5-1.0 hour at a temperature between about 640° and about 690°C.

### 3,751,241 METHOD FOR PRODUCING WEATHER-RESISTANT SUPERFLUXED METALLIZED PELLETS FROM IRON- BEARING FINES AND A SUPERFLUXED METALLIZED PELLET PRODUCED THEREBY

James L. Sloughfy, and Lloyd V. Fegan, Jr., both of Allentown, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 28, 1970, Ser. No. 101,740  
Int. Cl. C21b 1/08, 1/28, 3/04

U.S. Cl. 75—3

14 Claims

A method for producing weather-resistant superfluxed metallized iron pellets from iron-bearing fines. A mix containing about 56 percent to about 85 percent iron-bearing fines, about twelve percent to about 40 percent flux material and about 3 percent to about 4 percent solid reductant is prepared. The mix is balled. A charge of balls, a flux and a solid reductant in a weight ratio of 100 pounds:5 pounds:100/200 pounds respectively is placed in one end of a rotary kiln. The charged materials are heated to about 1,900° F. for a time sufficient to calcine the flux materials and to reduce 90 percent of the iron to the ferrous state. The charged materials are further heated to a temperature range of about 2,000° F. to about 2,200° F. for a time sufficient to reduce about 80 percent to about 99 percent of the iron to the metallic state. The pellets are cooled to below 300° F. and discharged from the kiln.

The weather-resistant superfluxed metallized iron pellets contain about 40 percent to about 80 percent total iron, of which not less than about 80 percent is in the metallic state, about 12 percent to about 40 percent of calcium oxide and/or magnesium oxide, a slag phase containing 3 percent to 10 percent silica, about 0.5 percent to about 2.5 percent alumina, the remainder incidental impurities. The pellets have a base to acid ratio of about 2.5/1 to about 7/1. The pellets have an impervious shell of metallic iron and particles of calcium oxide and magnesium oxide surrounded by the metallic iron. The core of the pellets contains metallic iron, some iron oxide, calcio-magnesio wustite and a slag phase. The pellets are bonded by an interlocking of the metallic iron lattice, the slag phase and calcio-magnesio wustite. The calcium oxide and magnesium oxide are in a stable form.

### 3,751,242 PROCESS FOR MAKING CHROMIUM ALLOYS

Knuppel Helmut, Sulzbach-Rosenberg; Karl Brotzmann, Sulzbach-Rosenberg, all of Germany, assignors to Eisenwerk-Gesellschaft Maximilian-shutte m.b.H., Sulzbach-Rosenberg, Germany

Filed Apr. 2, 1970, Ser. No. 25,267

Claims priority, application Germany, Apr. 2, 1969, P 19 16 945.0

Int. Cl. C21c 5/34

U.S. Cl. 75—49

4 Claims

A process for making a chromium alloy containing from about 10 percent to about 30 percent chromium and the remainder essentially iron comprises refining a pig iron melt containing chromium in a converter by blowing oxygen jets into the melt under the melt surface in the converter, the oxygen jets each being surrounded by a sheath of a jacket gas such as propane which is slow to react with the melt in order to protect the lining of the converter and the nozzles through which the oxygen jets are blown. The pig iron itself may contain the chromium or the chromium may be added to the melt in the form of a chromium alloy after an initial refinement of the pig iron melt in the converter and in this case further refinement by the introduction of the jacketed oxygen jets into the melt takes place after the chromium has been added. After the oxygen blowing there may be a final blow using jets of argon in place of the oxygen.

### 3,751,243 PROCEDURE FOR QUENCHING DROSS

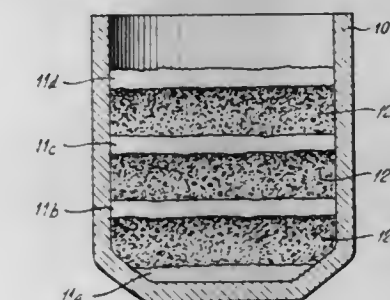
Melvin Elliott McLeod, Arvida, Quebec, Canada, assignor to Acan Research and Development Limited, Montreal, Quebec, Canada

Filed Jan. 8, 1971, Ser. No. 104,961

Int. Cl. C22b 7/00, 7/04, 21/00

U.S. Cl. 75—63

6 Claims



For quenching dross skimmed from a molten aluminum surface, the dross is placed in a container in successive layers separated by layers of particulate salt. Heat is taken up from the dross not only in elevating the temperature of the salt, but also as heat of fusion of the salt. The salt used may comprise one or more components of a salt flux suitable for employment in subsequent procedures to recover free metal from the dross.

### 3,751,244 AUSTENITIC HEAT RESISTING STEEL

Tohru Mimino; Kazuhisa Kinoshita; Isao Minegishi, and Takayuki Shinoda, all of c/o Gijutsu Kenkyusho, Nippon Kokan Kabushiki Kaisha, 2730 Minamiwatarida cho, Kawasaki, Japan

Continuation-in-part of Ser. No. 773,786, Nov. 6, 1968, abandoned. This application Dec. 14, 1970, Ser. No. 97,854

Int. Cl. C22c 39/20

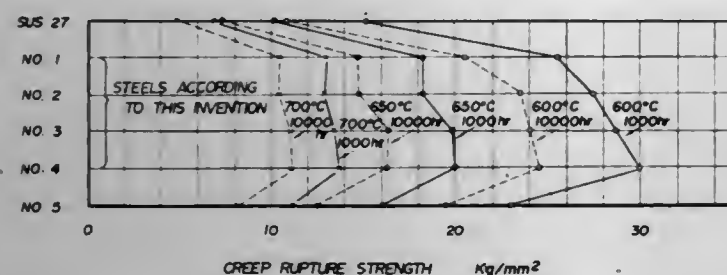
U.S. Cl. 75—128 G

5 Claims

Cr-Ni type austenitic heat resisting steel having about twice the heat resistibility of common stainless steel is provided by the addition of 0.001 to 0.30 percent by weight Ti, 0.001 to



0.30 percent by weight Nb + Ta, and 0.0001 to 0.05 percent by weight B to a well-known Cr-Ni type steel composition for



elevated temperature service, and maintaining a specified balance of  $[\text{Ti} + 0.5 (\text{Nb} + \text{Ta})]$  to C and a specified balance of Ti to  $[\text{Ti} + 0.5 (\text{Nb} + \text{Ta})]$ .

3,751,245

### METHOD OF MAKING AUSTENITE TYPE STAINLESS STEEL

Masazi Uemura, Amagasaki, and Yasuteru Yamada, Nishinomiya, both of Japan, assignors to Sumitomo Metal Industries, Limited, Osaka City, Japan

Continuation-in-part of Ser. No. 840,610, July 8, 1969, abandoned. This application Feb. 24, 1972, Ser. No. 229,103  
Int. Cl. G03c 33/00; B22d 13/00

U.S. Cl. 75—130.5

2 Claims

A method for rotary casting of austenitic stainless steels. When rotarily cast, steel ingots are likely to crack on the surface. In order to prevent cracking, it is desirable to adjust the Nickel balance to within a certain value. In stopping the rotation, ghost rings can be prevented by a gradual deceleration of the speed of rotation.

3,751,246

### PHOTOCONDUCTIVE ELEMENTS EMPLOYING N-VINYL CARBAZOLES HAVING FUSED CONDENSED ARENIC RING STRUCTURES

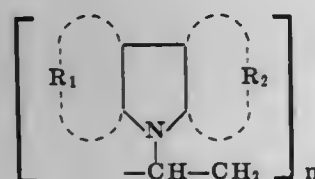
Helen C. Printy, Cleveland, and Evan S. Baltazzi, Northfield, both of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 698,420, Jan. 17, 1968, abandoned. This application Sept. 7, 1971, Ser. No. 178,368  
Int. Cl. G03g 5/06

U.S. Cl. 96—1.5

19 Claims

Organic photoconductive materials which are N-vinyl carbazoles having fused condensed arenic ring structures having the following general formula:



in which R<sub>1</sub> and R<sub>2</sub> are fused condensed arenic ring structures having from four to 12 carbon atoms and n is an integer greater than 1. The material may be used in the monomeric form dispersed in a resin binder and applied to a base support or polymerized forming a photoconductive film when applied to a suitable support.

3,751,247

### PHOTOCONDUCTIVE COMPOSITIONS CONTAINING FERROCENE-CONTAINING ALDEHYDE POLYMERS

David W. Swan, Harlow, England, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 8, 1971, Ser. No. 132,592

Claims priority, application Great Britain, Apr. 8, 1970, 16758

Int. Cl. G03g 5/06

U.S. Cl. 96—1.5

14 Claims

This invention relates to photoconductive compositions which become permanently conductive when exposed to actinic radiation. The compositions comprise a ferrocene-containing polymer in intimate association with another compound, which is preferably one containing halogen atoms, the composition forming a conductive reaction product when exposed to actinic radiation. These compositions are useful in the preparation of photoconductive layers which can be used in image reproduction processes particularly to copy finely detailed originals giving continuous tone copies.

3,751,248

### METHOD OF SELECTIVE MULTILAYERED ETCHING

James Emanuel Goell, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 826,436, May, 1969, abandoned. This application Dec. 27, 1971, Ser. No. 212,798

Int. Cl. G03c 5/00

U.S. Cl. 96—36.2

8 Claims

A method for selectively etching a workpiece to different depths with a single multicolored photomask. In particular, the multicolored mask is used to selectively expose separate layers of photoresist. The separate layers of photoresist are developed, and then selectively removed after performing a desired masking function. This method is particularly useful in fabricating resistor-conductor patterns for integrated circuits.

3,751,249

### PHOTOTHERMIC SILVER HALIDE ELEMENT CONTAINING A BIS-BETA-NAPHTHOL REDUCING AGENT AND A 1,3-DIHYDROXY-BENZENE REDUCING AGENT

Gary Lynn Hiller, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,464

Int. Cl. G03c 5/26, 1/04

U.S. Cl. 96—50 R

24 Claims

In photosensitive materials for processing with heat, a combination of a bis-beta-naphthol reducing agent with a 1,3-dihydroxybenzene reducing agent, such as 2,4-dihydroxybenzaldehyde or 2,4-dihydroxybenzophenone, provides surprisingly increased relative speed, maximum density and exposure latitude. This combination of reducing agents can be used in photosensitive and thermosensitive materials for processing with heat. These materials can contain addenda commonly employed in photosensitive materials such as activator-toning agents, stabilizers or stabilizer precursors, sensitizing dyes and the like.

3,751,250

### METHOD FOR PHOTOEXPOSING A COATED SHEET PRIOR TO ETCHING

John Joseph Moscony, Lancaster, and Ronald Lester Kennard, Landisville, both of Pa., assignors to RCA Corporation, New York, N.Y.

Filed May 8, 1972, Ser. No. 251,384

Int. Cl. G03c 5/00

U.S. Cl. 96—36

6 Claims

A method for photoexposing a coated sheet in a vacuum printing frame employs at least one glass plate including a photographic master pattern in the central area thereof, and peripheral areas having surfaces that have been sandblasted, etched, or otherwise removed to a depth of at least 0.003 inch.

### 3,751,251 METHOD FOR PREPARING BLEACH-FIX REGENERATOR CONCENTRATE

John J. Surash, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 1, 1972, Ser. No. 231,003

Int. Cl. G03c 5/26, 5/32, 5/38

U.S. Cl. 96—50 A

10 Claims

A method is described for preparing bleach-fix regenerator concentrates which remain free of crystallized precipitate after prolonged storage and which are useful in the regeneration of photographic bleach-fix solutions which employ a ferric salt of an aminopolycarboxylic acid as a bleaching agent and a thiosulfate as a fixing agent.

The method comprises the steps of:

- dissolving an aminopolycarboxylic acid and thiosulfate ion in an aqueous alkaline medium; and
- adding sufficient gaseous sulfur dioxide to the solution of (a) to lower the pH thereof to between about 5.4 and 6.0.

3,751,252

### PHOTOTHERMOGRAPHIC ELEMENT AND PROCESS

Gale E. Smith, and Paul Hartman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,932

Int. Cl. G03c 1/60, 1/72

U.S. Cl. 96—63

17 Claims

Hydroxamic acid reducing agents in a photothermographic element or process for developing a latent image with heat provide a developed image having increased maximum density. They can be employed in an oxidation-reduction image forming combination wherein the hydroxamic acid is used as the reducing agent. Addenda employed in photothermographic elements and processes, such as activator-toning agents, sensitizing dyes and stabilizer precursors can be employed with the hydroxamic acid reducing agents.

### 3,751,253 FILM PACKAGE

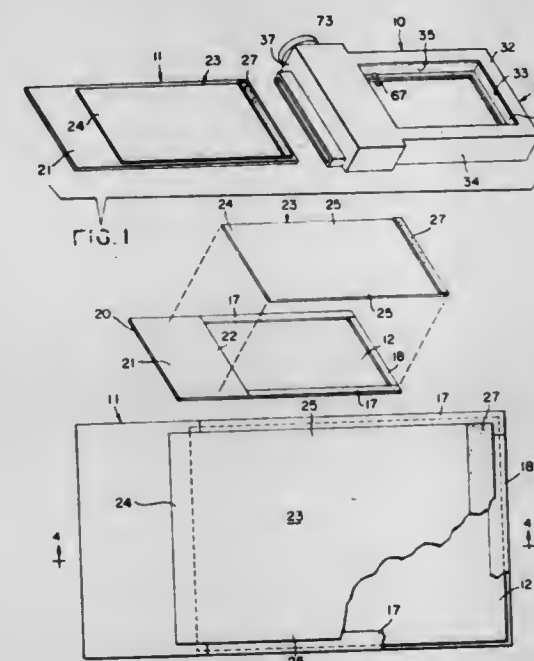
Mark J. Cohn, 123 S. Berkley Sq., Atlantic City, N.J. Division of Ser. No. 788,731, Jan. 3, 1969, Pat. No. 3,613,545.

This application June 3, 1971, Ser. No. 149,606

Int. Cl. G03c 3/00; G03b 17/26; G03c 1/00

U.S. Cl. 96—67

6 Claims



A housing for holding film in operative association with a camera, the housing having an edge slot for insertion and withdrawal of the film, a pressure roll in the housing for rolling

engagement with the film package upon insertion and withdrawal thereof, and a coiling roll in the housing engageable with a film package upon insertion to open the package for exposure within the camera and to close the film package upon withdrawal from the housing.

3,751,254

### PHOTOGRAPHIC FILM UNIT

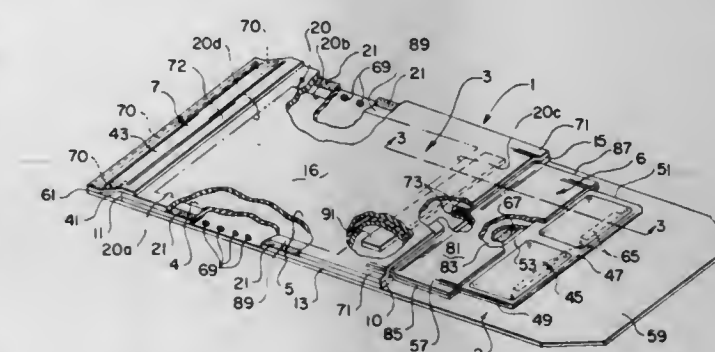
Hubert Nerwin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,465

Int. Cl. G03c 1/48

U.S. Cl. 96—76 R

31 Claims



A photographic film unit of the self-processing type includes preregistered photosensitive and process elements mounted on a carrier sheet having a cooperating pod for supplying a fluid processing composition to the preregistered elements and a trap for receiving and retaining any excess processing composition from the elements. The preregistered elements are easily separable from the carrier sheet, pod, and trap, the pod and trap being permanently coupled to the carrier sheet for convenient disposal after processing. An extension of the pod is interposed between the leading ends of the preregistered elements to direct the processing composition between the elements, and a coating of cohesive cement is provided on the interior surface of each of those ends to couple the two together after the processing composition has passed between them. A coating of cohesive cement is also provided on the interior surfaces of the pod extension to seal the extension closed after the processing composition has passed through it.

3,751,255

### PHOTOSENSITIVE AND THERMOSENSITIVE ELEMENT, COMPOSITION AND PROCESS

Burton D. Wilson; Grant M. Halst, both of Rochester, and Ismael A. Olivares, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,933

Int. Cl. G03c 5/00, 5/30, 1/42

U.S. Cl. 96—66 R

19 Claims

Sulphydroxamic acids are active developing agents for photographic silver salts in strongly alkaline solutions. They form super additive mixtures with other silver halide developing agents. They may be incorporated in silver halide emulsions and they can be activated by immersion in alkali or by application of heat. They may be used in chemical or physical development such as in diffusion transfer processing.

3,751,256

### FLUID RECEIVING MEANS

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,046

Int. Cl. G03c 1/48

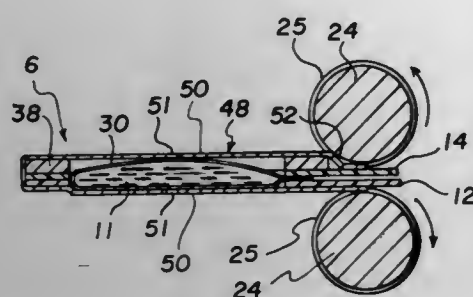
U.S. Cl. 96—76 C

10 Claims

An improved fluid receiving structure or trap for use with a self-processing photographic film unit or the like. The trap is



best adapted for use in composite or integral film units in which it is permanently locatable entirely within the borders of the unit, making unnecessary its separation from the unit



after processing. The trap comprises an inflatable bladder constrained by a substantially non-crushable framing structure.

3,751,257

## POLYAMIDE-DIAZO RESIN COMPOSITION

Keith E. Dahlman, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 16, 1971, Ser. No. 134,615

Int. Cl. G03c 1/52; G03f 7/02

U.S. Cl. 96-91 R

14 Claims

An oleophobic composition suitable as the ink-receptive areas for printing plates comprising as a dried coating at least 50 percent by weight of light-sensitive diazo resin and no more than 50 percent by weight of a polyamide resin. The printing plate so provided is developed by an aqueous solution of a wetting agent which removes unexposed portions of the diazo-polyamide resin coating without any substantial effect on the exposed portions.

3,751,258

## AUTOSTEREOGRAPHIC PRINT ELEMENT

Donald J. Howe, and John C. Hoppe, both of Spencerport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1970, Ser. No. 85,214

Int. Cl. G03c 1/84

U.S. Cl. 96-81

10 Claims

Autostereographic prints are made by photographic means in which a transparent support having one surface lenticulated carries on the opposite surface at least one radiation-sensitive layer such as a silver halide emulsion layer over which the sensitive layer farthest from the support is coated a highly reflective layer such as one containing titanium dioxide pigment, which is preferably permeable to the processing baths required to process the radiation-sensitive layer.

3,751,259

## PHOTOPOLYMERIZABLE COPYING COMPOSITION

Sigrid Bauer, Hahn/Tanus; Kurt-Walter Klupfel, Wiesbaden-Sonnenberg, and Raimund Josef Faust, Wiesbaden-Blebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Blebrich, Germany

Filed June 2, 1971, Ser. No. 149,396

Claims priority, application Germany, June 4, 1970, P 20 27 467.3

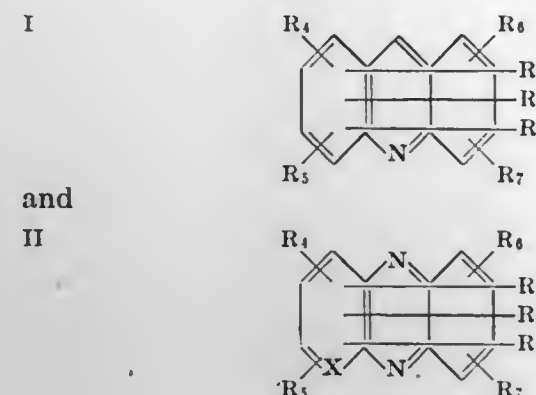
Int. Cl. G03c 1/70

U.S. Cl. 96-115 P

5 Claims

This invention relates to a photopolymerizable copying composition comprising at least one binder, at least one

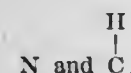
polymerizable compound and at least one photoinitiator having one of the formulae:



in which R<sub>1</sub>, R<sub>2</sub>, and R<sub>3</sub> are selected from the group consisting of hydrogen, halogen, alkyl, alkoxy, aryl, aryloxy, amino, acylamino, and aralkenyl groups,

R<sub>4</sub>, R<sub>5</sub>, R<sub>6</sub> and R<sub>7</sub> are H or annelated benzene rings, with no more than two annelated benzene rings being present per molecule, however, and

X is selected from the group consisting of



3,751,260

## PROCESS FOR TEXTURIZING MICROBIAL CELLS BY INDUCED CELL LEAKAGE

Cavit Akin, Oakbrook, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Jan. 20, 1971, Ser. No. 108,144

Int. Cl. A23j 3/00

U.S. Cl. 99-14

15 Claims

Protein-containing single cell micro-organisms are prepared into texturized products by a process in which an aqueous slurry of protein-containing microbial cells is first mixed with a surface active agent to chemically promote partial leakage of inner cell components through the cell walls, after which the leaked inner cell components are separated from residual protein-containing cell debris and the residual cell debris treated first with a gelatinizing agent for a time sufficient to gelatinize the cell debris and then with a precipitating agent to induce texture formation in the gelatinized cell debris.

The texturized protein products prepared by the process are suitable for use as additives to or substitutes for natural foods and for use as bio-degradable containers, packaging materials or utensils.

3,751,261

## VITAMIN B-ENRICHED FOODS TRANSFORMED FROM SEED GERMS AND ENDOCERMIS

Seizo Tatara, Funabashi, Japan

Filed Nov. 13, 1970, Ser. No. 89,505

Int. Cl. A23i 1/30

U.S. Cl. 99-11

3 Claims

The gist of the present invention resides in a production method of nutrified foods particularly vitamin B<sub>12</sub>-enriched foods transformed from the seed germs, endodermis and medulla of vegetables characterized by blending crushed powders mainly constituting of vegetable seed germs and endodermis, to which vegetable medulla may be added if desired, further added with compounds of trivalent iron, calcium and magnesium and the like, blended and kneaded with an aqueous solution containing a small amount of an

ammonium cobalt complex salt of an organic oxygenated acid and the like, or if desired, with said aqueous solution added with an iodine compound and fresh milk, sterilizing on heating by steaming, followed by cultivating thereon an edible mold and yeast to effect digestion and transformation into edible and nutrified foods.

3,751,262

## RUMINANT FEED SUPPLEMENT

Yuoh Ku, Basking Ridge, and Paul W. Simon, Millington, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

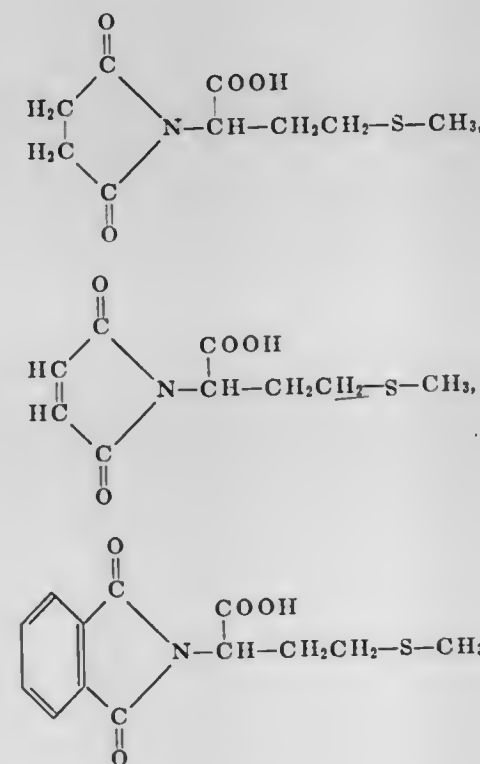
Filed June 30, 1970, Ser. No. 51,348

Int. Cl. A23k 1/22; A61k 27/00

U.S. Cl. 99-2 ND

4 Claims

A ruminant feed containing from about 0.02 to about 5.0 weight percent of an imide resistant to digestion in the rumen but digestible in subsequent regions of the ruminant gastrointestinal tract, said imide being a member selected from the group consisting of:



3,751,263

## FOAM REDUCTION DURING PREPARATION OF BEER

Ronald David Hall, Burton-on-Trent, England, assignor to Allied Breweries (UK) Limited, Staffordshire, England

Filed Feb. 1, 1971, Ser. No. 111,753

Claims priority, application Great Britain, Feb. 2, 1970, 4,934/70

Int. Cl. C12c 11/04

U.S. Cl. 99-31

13 Claims

Foaming is reduced during the preparation of beer by adding to wort or beer a silicone antifoam material, followed by removing the antifoam material by contacting the beer with an adsorbent whereby foaming capability is restored to the beer.

3,751,264

## PRESERVATION OF BEER

Frede B. Strandkov, North Caldwell, N.J., assignor to The F. & M. Schaefer Brewing Company, Brooklyn, N.Y.

Filed July 13, 1971, Ser. No. 162,257

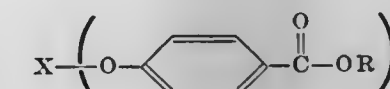
Int. Cl. C12h 1/00

U.S. Cl. 99-48

8 Claims

Undesirable microbial growth in beverages, particularly in malt beverages is prevented by serially admixing with the beverage

A. a compound of the formula



wherein X is hydrogen, alkali metal or alkaline earth metal,

n is an integer equal to the valence of X, and

R is a heptyl radical,

and

B. pyrocarbonic acid diethyl ester.

3,751,265

## SHORTENING FOR HIGHLY AERATED CREAMY FROSTINGS

Paul Seiden, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 30, 1971, Ser. No. 214,484

Int. Cl. A23g 3/00

U.S. Cl. 99-139

4 Claims

A shortening for use in highly aerated creamy frostings comprises: (a) a liquid glyceride such as partially hydrogenated soybean oil, (b) propylene glycol monostearate, (c) partial esters of polyglycerol, and (d) polyoxyethylene sorbitan tristearate.

3,751,266

## PRODUCTION OF ISOMERIZED HOP EXTRACTS

Yoshiro Kuroiwa; Eiichi Kokubo; Koichiro Aramaki, and Hiroshi Uehara, all of Takasaki, Japan, assignors to Kirin Beer Kabushiki Kaisha, a/k/a Kirin Brewery Co., Ltd., Tokyo-to, Japan

Filed July 22, 1970, Ser. No. 57,298

Claims priority, application Japan, July 24, 1969, 44/58556

Int. Cl. C12c 9/02

U.S. Cl. 99-50.5

6 Claims

To an aqueous alkali extract containing iso- $\alpha$ -acids, prepared by subjecting hops to extraction of  $\alpha$ -acids therefrom and isomerization thereof in an aqueous alkali, an acid is added to adjust the pH value of the extract to a value of from 4.0 to 5.7 thereby to cause precipitation of coexisting impurity materials existing in dissolved state, whereas the iso- $\alpha$ -acids remaining in dissolved state, and the resulting precipitate is removed, whereupon an isomerized hop extract of high iso- $\alpha$ -acid utilization is produced without any harmful organic solvent.

3,751,267

## MATERIAL TREATING METHOD

Norman H. Sachnik, Houston, Tex., assignor to Range Engineering Development Corporation, Ft. McKavett, Tex.

Filed Aug. 19, 1971, Ser. No. 173,066

Int. Cl. F27b 15/00

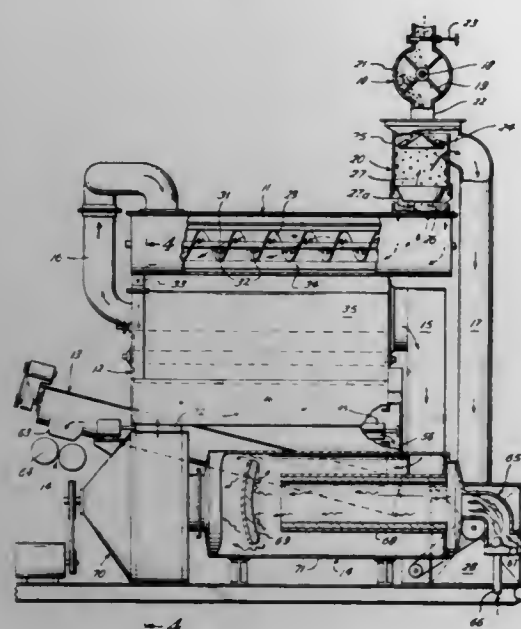
U.S. Cl. 99-81

14 Claims

This patent discloses a method for treating material such as grain, manure, alfalfa, lightweight aggregate, etc. Hot air circulates throughout the entire system. Heat is first added where



desired to the product in a preheater. Additional heat is then added in a heater section where the material is further heated



and material such as grain may be popped if desired. The grain may then be passed through conventional rollers.

3,751,268

#### METHOD OF COATING FOOD PRODUCTS WITH UNGELATINIZED UNMODIFIED HIGH AMYLOSE STARCH PRIOR TO DEEP FAT FRYING

Eric M. Van Patten, Tinley, and James A. Freck, Naperville, both of Ill., assignors to American Maize-Products Company, New York, N.Y.

Filed Jan. 14, 1972, Ser. No. 217,998  
Int. Cl. A231 1/12

U.S. Cl. 99-100

9 Claims

A process for preparing deep fried foods and especially french fried potatoes is disclosed. The french fries are coated with 0.1 to 1.5 percent of an unmodified ungelatinized high amylose starch having an amylose content of at least 50 percent. The resulting product has improved texture and absorbs less oil than french fries prepared by conventional methods.

3,751,269

#### IMPARTING ONIONY FLAVOR TO FOODSTUFFS WITH THIO-COMPOUNDS

Michael H. Brodnitz, Matawan; John V. Pascale, Old Bridge, and Manfred H. Vock, West Orange, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 13,816, Feb. 24, 1970, Pat. No. 3,686,323. This application Jan. 7, 1971, Ser. No. 104,758. The portion of the term of this patent subsequent to Aug. 22, 1989, has been disclaimed.  
Int. Cl. A231 1/26; C07c 151/00

U.S. Cl. 99-140 R

4 Claims

Onion flavoring compounds, including thioalkanal-S-oxides and alkyl alkene thiosulfonates, methods for preparing and using such compounds, and compositions so obtained.

3,751,270

#### SUGAR COMPOSITIONS CONTAINING AGLYCONIC DIHYDROCHALCONES

George P. Rizzi, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sept. 30, 1970, Ser. No. 76,974  
Int. Cl. A231 1/26

U.S. Cl. 99-141 A

19 Claims

Sweetening compositions comprising a natural sugar co-dissolved with certain aglyconic dihydrochalcones.

3,751,271

#### SINTERED FILTER HAVING STRAIGHT HOLES THERE THROUGH

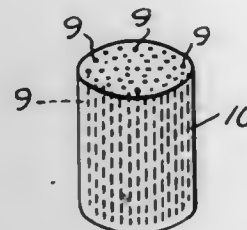
Takashi Kimura; Hiroshi Hamamoto; Azusa Majima; Yoji Awano; Yukio Inaguma, and Mitsuo Tomatsu, all of Nagoya-shi, Aichi-ken, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed May 11, 1971, Ser. No. 142,166

Claims priority, application Japan, May 12, 1970, 45/40824  
Int. Cl. C04b 35/10; B22f 3/10

U.S. Cl. 106-40 R

6 Claims



A sintered metal, or ceramic filter having parallel, straight holes of uniform diameter and with smooth inner surfaces passing therethrough is formed by sintering a green compact about a large number of straight wires arranged parallel to one another. Upon application of heat at a sintering temperature above the melting point of the wire material and less than the melting point of the sintering powders, the wires are absorbed into the pores of the sintering powders and leave holes of the same shape and size as the original wires in the resulting sintered filter.

3,751,272

#### COLORLESS P<sub>2</sub>O<sub>5</sub> GLASS WITH ANOMALOUS DISPERSION IN SHORT WAVELENGTH REGION

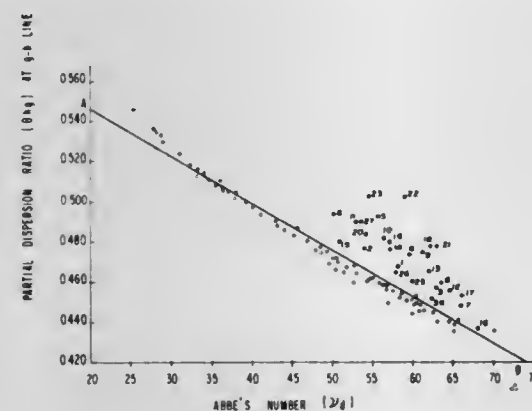
Tetsuro Izumitani, and Isao Masuda, both of Tokyo, Japan, assignors to Hoya Glass Works, Tokyo, Japan

Filed Mar. 2, 1971, Ser. No. 120,232

Claims priority, application Japan, Mar. 2, 1970, 45/17757  
Int. Cl. C03c 3/02, 3/16

U.S. Cl. 106-47 Q

7 Claims



A glass having an anomalous dispersion consisting of, by weight, calculated as the component oxides of said glass, from 38 to 70% P<sub>2</sub>O<sub>5</sub>, from 1.0 to 5.0% B<sub>2</sub>O<sub>3</sub> and from 1 to 10% Al<sub>2</sub>O<sub>3</sub> as glass-forming materials, wherein the sum of the amount of said B<sub>2</sub>O<sub>3</sub> and Al<sub>2</sub>O<sub>3</sub> is from 2 to 15%; from 4 to 38% BeO, from 2 to 17% MgO, from 0 to 10% ZnO, from 1 to 8% CaO, from 0 to 10% SrO and from 0 to 3% As<sub>2</sub>O<sub>3</sub> as glass

modifiers, wherein the sum of the amount of said BaO, MgO, ZnO, CaO, SrO and As<sub>2</sub>O<sub>3</sub> is 51 to 60%; and from 0.05 to 4.0%, based on the total weight of said glass-forming materials and said glass modifiers, of TiO<sub>2</sub>.

metal alkoxide. The ingredients are uniformly blended and in use the mixture is exposed to air in the form desired, usually a thin coating. Upon exposure to the moisture in air, drying occurs with the formation of very hard finishes which are highly crack resistant.

3,751,273

#### BURNED BASIC REFRACTORY AND BATCH THEREFOR

Michael A. Nelson, Jeffersonville, Ind.; Robert F. Patrick, Louisville, Ky., and Thomas M. Wehrenberg, Jeffersonville, Ind., assignors to Corhart Refractories Company, Louisville, Ky.

Filed June 22, 1971, Ser. No. 155,624  
Int. Cl. C04l 35/42, 35/48

U.S. Cl. 106-57

13 Claims

Compacted and burned refractory body made from size-graded particulate batch mixture of chemical grade (Transvaal) chromite grain with low-silica content, periclase grain, fused grain of magnesia-chemical grade chromite and containing 40-58% MgO, and ZrO<sub>2</sub>-yielding material. Chromite grain forms 10-35% of batch as -10+150 mesh particles, with less than 12% thereof being -100 mesh. The periclase grain and fused grain form three particle fractions: 25-60% of batch being coarse -4+20 mesh composed of (as percent of batch) 5-60% fused grain and 0-40% periclase grain, 0-30% of batch being intermediate -10+35 mesh, and 15-60% of batch being fine -35 mesh, of which periclase grain is at least 10% of batch. The total +28 mesh particles of chromite grain and periclase grain constitute 4% to less than 50% of batch. ZrO<sub>2</sub>-yielding material is -65 mesh particles in amounts sufficient to provide 0.5-7% ZrO<sub>2</sub> based on whole batch. Body burned at 1,650° C. or higher characterized by modulus of rupture at 1,340° C. consistently above 1,750 psi and as high as 2,000 psi or higher.

3,751,276

#### REFRACTORY LAMINATE BASED ON NEGATIVE SOL OR SILICATE AND POSITIVE SOL

James N. Beyer; Earl P. Moore, Jr., and Robert L. Rusher, all of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 49,916, June 25, 1970, abandoned. This application June 1, 1971, Ser. No. 148,956  
Int. Cl. C04b 35/14

U.S. Cl. 106-38.3

11 Claims

A rapid process for forming a refractory laminate on the surface of a support structure which comprises dipping the surface alternately, in either order, in (1) a bath comprising a sol of negatively charged colloidal particles and/or a solution of an alkaline ionic silicate and (2) a bath comprising a sol of positively charged colloidal particles, until a laminate of the desired thickness is built up on the surface. In order to increase the rate of laminate build up, particulate refractory material can be included in the baths and/or the coated surface can be stuccoed between dips. Interaction between the negatively charged colloidal particles or silicate and the positively charged colloidal particles results in a setting action which immobilizes the coatings as they are applied, thus making it unnecessary to dry between dips. The process is particularly suited for making expendable, refractory shell molds for precision investment casting of metals by the so-called "lost-wax" technique.

3,751,277

#### TABLET COATING PROCESS AND COMPOSITION

James E. Small, Sheridan, Ind., and Sampson F. Jeffries, Newport Beach, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 799,984, Feb. 17, 1969, abandoned. This application Mar. 24, 1971, Ser. No. 127,786  
Int. Cl. C08b 27/22

U.S. Cl. 106-213

8 Claims

A composition for coating tablets and other individual dosage forms comprising a sugar, hydrolyzed cereal solids, starch, a solid polyethylene glycol and a liquid polyhydroxy organic compound is disclosed. The composition can be employed to coat tablets by applying aqueous solutions thereof to the tablets and drying the solvent.

3,751,278

#### METHOD OF TREATING ASPHALT

Stephen H. Alexander, St. Louis, Mo., assignor to Tosco-Lion, Inc., El Dorado, Ark.

Continuation of Ser. No. 31,779, April 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 489,061, Sept. 21, 1965, abandoned. This application Mar. 6, 1972, Ser. No. 232,202  
Int. Cl. C08h 13/00; C09d 3/24

U.S. Cl. 106-273 R

10 Claims

The method of treating asphalt by mixing without air-blowing a vacuum distilled asphalt and a mixture of phosphoric acids having an H<sub>2</sub>PO<sub>4</sub> equivalent of greater than 100 percent concentration at elevated temperatures and the asphalt compositions thus prepared having significantly increased viscosity.

3,751,275

#### INORGANIC PROTECTIVE COATINGS

Aaron Oken, 805 E. Matson Run, Wilmington, Del.

Filed Jan. 26, 1971, Ser. No. 109,935  
Int. Cl. C04b 7/02

U.S. Cl. 106-90

11 Claims

New compositions of matter are provided which are substantially inorganic in composition and which are strongly resistant to deterioration by the action of light, air and/or water. The compositions are anhydrous mixtures of a silicate ester and a hydraulic cement, and such mixtures may contain a catalyst. The silicate ester may be an ethyl polysilicate and the moisture reactive filler may be a material such as portland cement. The alkaline catalyst may be a material such as an alkali



3,751,279

# PIGMENT COMPOSITIONS AND PROCESS FOR PREPARING THEM

Theodor Papenfuss; Rolf Rehberg, both of Niederhofheim, Taunus, and Ernst Spietschka, Oberauroff, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Brunning, Frankfurt/Main, Germany

Filed Apr. 15, 1971, Ser. No. 134,473

Claims priority, application Germany, Apr. 16, 1970, P 20 18 168.4

Int. Cl. C07d 7/42; C09b 67/00

U.S. Cl. 106—288 Q

5 Claims

Pigment compositions of resins and xanthene dyestuffs, which are prepared by dissolving the dyestuff salt with the addition of alkali in an organic solvent miscible with water or in an organic amine, dissolving in this solution such a resin which can be precipitated again by addition of an acid, or adding such a solution of such a resin in one of the said solvents, mixing the mixture thus obtained with an aqueous acid and recovering the pigment composition precipitated. The pigment compositions according to the invention are distinguished by an extraordinary good brilliance of the prints produced therewith. They are extremely easy to disperse in printing varnishes and therefore especially valuable in use.

3,751,280

# METHOD OF PRODUCING A PHOTOGRAPHIC FILM BASE HAVING A SUBBING LAYER

Mohanlal Shantaram Nerurkar, and Paul Ernest Dawson, both of Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 1, 1971, Ser. No. 111,749

Claims priority, application Great Britain, Feb. 6, 1970, 5,794/70

Int. Cl. B29d 7/24; B44d 1/14; G03c 1/84

U.S. Cl. 117—7

9 Claims

Coating of biaxially oriented polyester films with a subbing composition including a polymeric and a water-permeable component such as gelatin before the film is fully oriented.

3,751,281

# METHOD FOR PREPARING A DIMENSIONALLY STABLE WAXED POLYETHYLENE SHEET

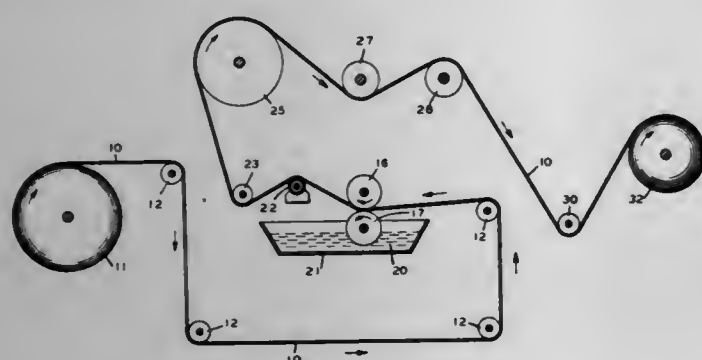
James Thomas Peterson, Oshkosh, Wis., and Mitsuo Shida, Barrington, Ill., assignors to American Can Company, Greenwich, Conn., by said Peterson and Chemplex Company, Rolling Meadows, Ill., by said Shida, part interest to each

Filed Feb. 17, 1972, Ser. No. 227,192

Int. Cl. B05c 3/107

U.S. Cl. 117—7

7 Claims



This invention relates to a method for applying a wax coating to one or both sides of a polyethylene-based film which eliminates a hitherto troublesome problem of dimensional stability of the overwaxed film. More specifically, this invention provides a method for producing a waxed polyethylene film having a degree of dimensional stability heretofore not achieved.

3,751,282

# METHODS FOR COLOR PRINTING AND ARTICLES MADE THEREBY

Neal N. Massa, Brooklyn, N.Y., assignor to Chroma Printing Corp., New York, N.Y.

Filed July 8, 1971, Ser. No. 160,923

Int. Cl. B44c 3/02

U.S. Cl. 117—13

6 Claims

Methods of color printing of solid areas to create a frosted or shimmering effect including the combining of a layer of colored ink with a layer of finely divided white pigment, optionally supplemented by a small amount of finely divided metallic pigment. In one of the methods, the ink layer is first deposited, and the white pigment layer is applied thereover, using a bronzing machine in which the amount of white pigment applied is carefully controlled to prevent opacity. In another method, the white pigment layer is first applied, and is overprinted with a transparent colored ink.

3,751,283

# ARMORED METAL TOOLS AND PRODUCTION THEREOF

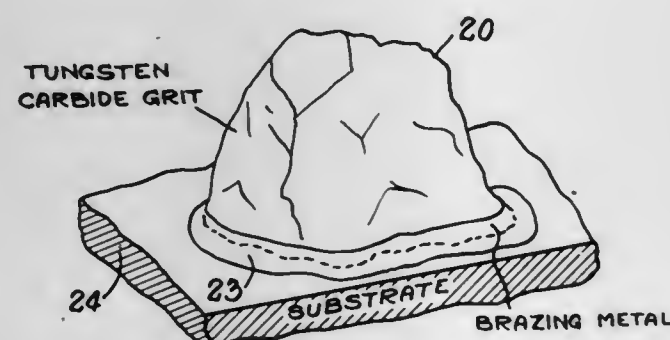
Chester H. Dawson, Danbury, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Division of Ser. No. 813,426, April 4, 1969, abandoned. This application Mar. 8, 1971, Ser. No. 122,213

Int. Cl. C23c 3/00

U.S. Cl. 117—22

1 Claim



Armored tools and production thereof comprising a structural base member composed of a base metal, having at least a surface portion embodying a tough, wear-resistant and abrasive, armoring coating produced in situ from abrasive particles of hard, high melting material selected from the group consisting of metal carbides, borides, nitrides, silicides and mixtures thereof, individually precoated with a fluxing agent and with particles of a lower melting brazing metal, said brazing metal particles precoated on said abrasive particles, respectively, being fusion bonded to each other to their respective abrasive particles and to said base metal thereat in weldments individual to said abrasive particles, and partially embedding and anchoring said abrasive particles therein, respectively, with said abrasive particles projecting beyond said embedding matrix metal weldments to form a multiplicity of sharp cutting edges.

3,751,284

# TONE-ON-TONE RESIN BONDED PIGMENTING OF FLOCK PRINTED FABRIC WITH LOW TEMPERATURE AIR DRYING

Richard J. Lyons, Taylors, S.C., and Luis G. Egger, New York, N.Y., assignors to United Merchants and Manufacturers, Inc., New York, N.Y.

Filed July 2, 1971, Ser. No. 159,215

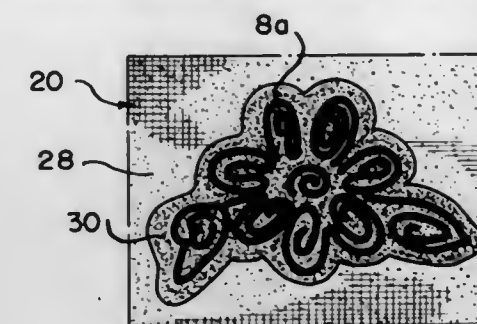
Int. Cl. D06q 1/00

U.S. Cl. 117—28

3 Claims

Differentiated or multi-toned dyeing effects are obtained on flock-printed fabrics by impregnating said fabrics with a

dyestuff solution or dispersion, then drying at room temperatures. By control of the rate of drying a ring of a more concen-



trated dyeing surrounding a less concentrated dyed area produced at relatively high rates of speed.

3,751,285

# PROCESS FOR THE PRODUCTION OF REPROGRAPHIC MATERIALS BY DEPOSITING A LIGHT-SENSITIVE LAYER BY EVAPORATION

Hans Ruckert, Wiesbaden-Schierstein; Heinz Kramer, Wiesbaden-Bierstadt, and Gustav Aguste, Rudesheim, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Bierbrich, Germany

Filed Sept. 27, 1971, Ser. No. 184,299

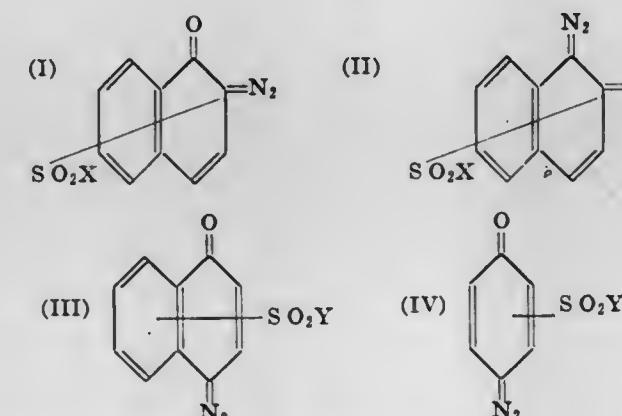
Claims priority, application Germany, Sept. 29, 1970, P 20 47 816.4

Int. Cl. G03c 1/76, 1/94, 1/54

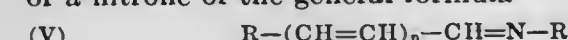
U.S. Cl. 117—34

12 Claims

This invention relates to a process for the production of reprographic copying materials which comprises applying a light-sensitive layer to a support by evaporation at reduced pressure, the layer comprising at least one light-sensitive quinone diazide sulfonic acid derivative of the general formulae



or a nitron of the general formula



↓

O

in which.

X is selected from the group consisting of an alkoxy group having one to 10 carbon atoms, a cycloalkoxy group having five to 12 carbon atoms, an aryloxy group having six to 15 carbon atoms, or an amine group derived from a primary or secondary amine containing alkyl groups having one to 10 carbon atoms, cycloalkyl groups having five to 12 carbon atoms or aryl groups having six to 14 carbon atoms as substituents at the nitrogen or from a mononuclear N-heterocyclic compound,

Y is selected from the group consisting of an aryloxy group having six to 15 carbon atoms, or

an amine group derived from a primary or secondary amine containing alkyl groups having one to 10 carbon atoms, cycloalkyl groups having five to 12 carbon atoms or aryl groups having six to 14 carbon atoms as substituents at the nitrogen or from a mononuclear N-heterocyclic compound, R and R' are mononuclear aromatic groups, and n is 0 or 1.

3,751,286

# THERMOGRAPHIC TRANSFER SHEET AND PROCESS OF COPYING THEREWITH

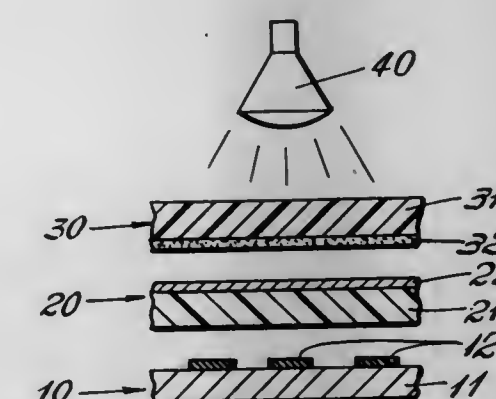
Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Filed July 12, 1971, Ser. No. 161,763

Int. Cl. B41m 5/22

U.S. Cl. 117—36.2

10 Claims



Thermographic transfer sheet and method for making and using same. Transfer sheet comprises a plastic film foundation carrying a thin, non-transferable imaging layer comprising a crystalline, vaporizable aromatic acid, a film-forming binder material and an inert solid particulate filler material. The filler material impedes crystal growth and disrupts the continuity of the layer whereby the aromatic acid vapors are liberated under the effect of heating.

3,751,287

# METHOD FOR INCORPORATING AN ADHESION PROMOTER INTO A POLYMERIC SUBSTRATE

Frederick Lawrence Baier, High Bridge, and Edward Matthew Joffe, Summit, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 11, 1971, Ser. No. 152,369

Int. Cl. B44d 1/092; B32b 27/18

U.S. Cl. 117—47 A

8 Claims

A treating solution and method for incorporating an adhesion promoter containing at least one allylic hydrogen into a polymeric substrate, which bath is in an aqueous reactive mixture of a hydroxyl or halogen substituted low molecular weight organic compound and a dehydrating or dehydrohalogenating agent such that the reaction thereof forms the desired adhesion promoter. This solution and method are useful in plastic metal plating.

## ERRATUM

For Class 117—111 see: Patent No. 3,750,746



# 3,751,288 SOLIDIFYING A THIN LAYER OF METAL ON PLASTIC FILM

Turner Alfrey, Jr.; Raymond Douglas Behr, and Douglas Stewart Chisholm, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

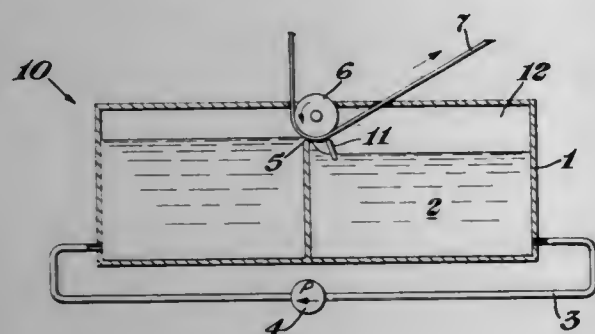
Continuation of Ser. No. 818,533, April 23, 1969, abandoned.

This application June 23, 1971, Ser. No. 156,122

Int. Cl. C23c 1/00

U.S. Cl. 117-114 B

3 Claims



Thin layers of lead, tin and other low melting metals are solidified on plastic film without destroying the integrity of such film by contacting a rapidly moving plastic film with the molten metal.

# 3,751,289 METHOD OF PREPARING SURFACES FOR ELECTROPLATING

Donald A. Arcilesi, Detroit, Mich., assignor to M & T Chemicals Inc., Greenwich, Conn.

Filed Aug. 20, 1971, Ser. No. 173,645

Int. Cl. C23c 3/00

U.S. Cl. 117-130 R

26 Claims

This invention relates to adherent copper films formed by immersion, or electrolytically on metallic objects from an aqueous solution of (1) a nonoxidizing acid, (2) a copper salt of a nonoxidizing acid, and (3) a polyether exhibiting at least 5 ether oxygen atoms per molecule; to processes for coating said films; and to compositions for the deposition of said adherent copper films.

# 3,751,290 NONWOVEN FABRICS

Remo Santacella, and Edwin C. Sherburne, both of Wilmington, Del., assignors to ICI America Inc., Wilmington, Del.

Filed June 18, 1971, Ser. No. 154,685

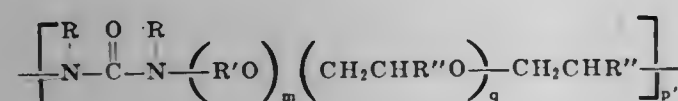
Int. Cl. B32b 27/12; C09d 3/50

U.S. Cl. 117-140 A

7 Claims

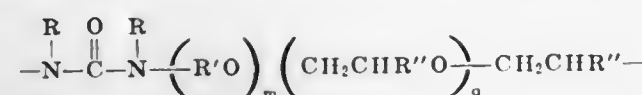
A process for binding nonwoven textiles by impregnating a nonwoven textile with a liquid application medium containing a polymer selected from the group consisting of

1. a polyurea polymer characterized by the generalized formula

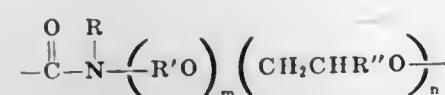


wherein  $m$  is 0 or 1,  $q$  is an integer from 1 to 13,  $p'$  is an integer from 3 to 100,  $\text{R}'$  is an alkylene group containing from 3 to 5 carbon atoms, each  $\text{R}''$  is independently hydrogen or methyl and each  $\text{R}$  is independently selected from the group consisting of H and  $\text{CH}_2\text{OH}$ , with the proviso that at least one  $\text{R}$  is  $\text{CH}_2\text{OH}$  and

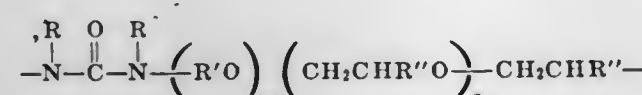
2. polyureaurethane polymers characterized by the generalized formula  $(\text{A})_x$  wherein  $x$  is an integer from 2 to 100 and each  $\text{A}$  is independently selected from the group consisting of



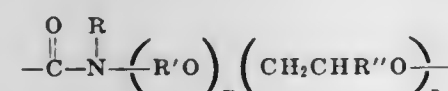
and



wherein  $m$  is 0 or 1,  $n$  is an integer from 2 to 14,  $q$  is an integer from 1 to 13,  $\text{R}'$  is an alkylene group having from 3 to 5 carbon atoms, each  $\text{R}''$  is independently hydrogen or methyl, and each  $\text{R}$  is independently selected from the group consisting of hydrogen and  $\text{CH}_2\text{OH}$ , with the proviso that at least one  $\text{A}$  is



and at least one  $\text{A}$  is



and with the further proviso that at least one  $\text{R}$  is a  $\text{CH}_2\text{OH}$  group.

# 3,751,291 FIRE RESISTANT ASPHALT ROOFING

John F. Schroeder, Wilmette, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Continuation of Ser. No. 742,524, July 5, 1968, abandoned.

This application Mar. 3, 1971, Ser. No. 120,747

Int. Cl. D06n 5/00; C09k 3/28

U.S. Cl. 117-126 R

3 Claims

A fire-resistant roof covering comprising a mineral wool felt base saturated with asphalt and containing 50-70 percent mineral wool, said base being coated with a composition consisting of about 49 percent asphalt, about 40 percent ground trap rock filler and about 11 percent asbestos.

# 3,751,292 MULTILAYER METALLIZATION SYSTEM

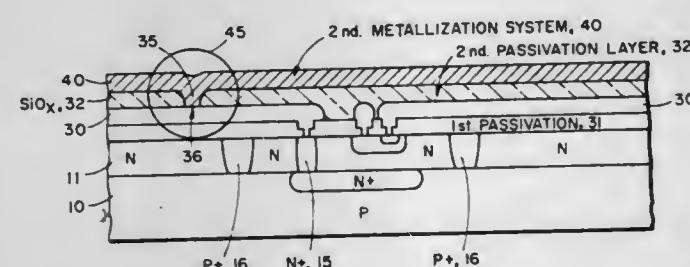
Lowell S. Kongable, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 20, 1971, Ser. No. 173,542

Int. Cl. B44d 1/18

U.S. Cl. 117-212

9 Claims



There is disclosed a multilayer metallization system for use with medium scale and large scale integrated circuits in which

titanium-platinum-gold beam leads are used in all of the metallization systems over the integrated circuit. A method is described in which successive metallization system are stacked one on top of another with passivation in between, in which the gold top portion of an underlying beam lead is contacted by a gold portion of the beam lead immediately thereabove. The method includes as an important step, removing the platinum and titanium of an overlying beam lead from an underlying passivation layer in the vicinity of a via hole in the passivation layer prior to the formation of this hole. This is followed by the formation of the via hole and the deposition of gold both over the platinum layer and into the via hole so as to contact the gold top portion of an underlying beam lead thereby forming a gold-gold interface. The method described permits the formation of multilayered Au-Pt-Ti beam lead structures which preserve the beam lead hermetic seal, which preserve the ohmic contact qualities of the beam lead structure, and which permit the stacking of the Au-Pt-Ti beam leads without the necessity of exotic processing or interfacing materials necessary to prevent peeling and poor ohmic contact.

# 3,751,293 METHOD FOR REDUCING INTERDIFFUSION RATES BETWEEN THIN FILM COMPONENTS

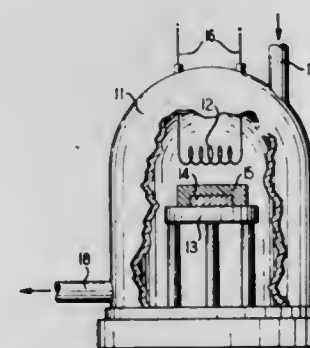
Henry C. Theuerer, New York, N.Y., and Paul A. Turner, Murray Hill, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 4, 1969, Ser. No. 813,421

Int. Cl. C23c 13/02; D21h 1/18

U.S. Cl. 117-217

5 Claims



A method for reducing interdiffusion rates between thin film conductive components. The method comprises vacuum depositing the conductive films at a partial pressure of 10-70 microns in the presence of an inert gas (e.g., Argon).

# 3,751,294 BRUSHES FOR ELECTRICAL APPARATUS AND METHODS FOR THEIR MANUFACTURE

Georgy Nikolaevich Fridman, Leninsky prospekt, 67, kv. 40; Abram Samuilovich Flalkov, Kutuzovsky prospekt, 17, kv. 95; Yakov Gilleevich Davidovich, prospekt Mira, 190a, korp. 9, kv. 46; Irina Dmitrievna Ivanova, Polyarnaya ul., 6a, kv. 10, all of Moscow; Ljudmila Petrovna Sysoeva, Sadovy per., 3kv. 17, Elektrougli; Abram Yakovlevich Gluskin, ul. Scherbakovskaya, 58, kv. 18, Moscow; Rimm Zigangirovich Galiskarov, Rostokinsky proezd, 2/26, kv. 4, Moscow; Esfir Lvovna Liberman, Volgogradsky prosp., 10, kv. 17, Moscow, and Vera Stepanovna Pomortseva, Svobodny prosp., 4, kv. 25, Moscow, all of U.S.S.R.

Continuation-in-part of Ser. No. 749,390, Aug. 1, 1968, abandoned. This application June 9, 1971, Ser. No. 151,432

Int. Cl. B44d 1/02

U.S. Cl. 117-226

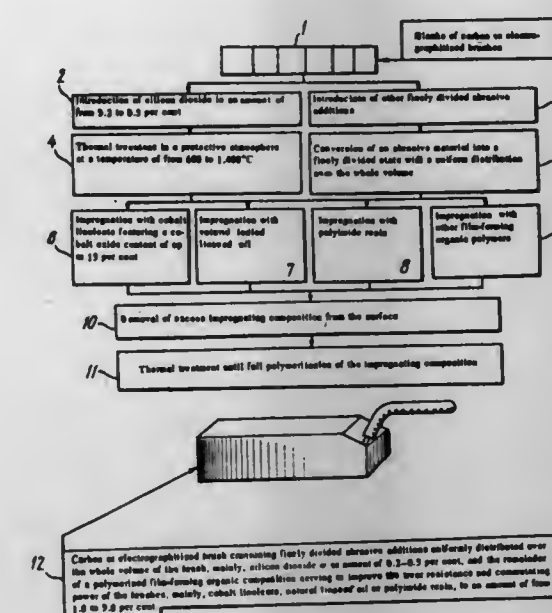
4 Claims

This invention relates to brushes for electrical apparatus and to methods for manufacturing same.

Carbon and electrographitized brushes for electrical apparatus include, according to the invention, finely divided

abrasive additions uniformly distributed throughout the whole volume of the brushes, mainly, in the form of silicon dioxide, and film-forming organic polymers, such as cobalt linoleate or polyimide resins, in a polymerized state.

The method for manufacturing said brushes consists in that brush blanks are subjected to combination treatment, for



which purpose into the blanks are introduced uniformly throughout the whole volume thereof finely divided abrasive additions, mainly, in the form of silicon dioxide, whereupon the brush blanks are impregnated with solutions of film-forming organic polymers with subsequent thermal treatment until full polymerization of the impregnating composition.

# 3,751,295 PLASMA ARC SPRAYED MODIFIED ALUMINA HIGH EMITTANCE COATINGS FOR NOBLE METALS

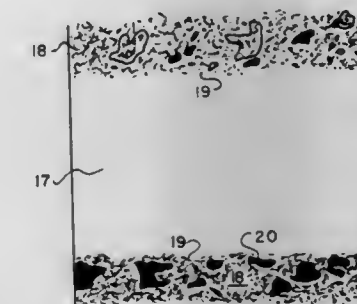
Jack L. Blumenthal, Los Angeles; David F. Carroll, Torrance, and John R. Ogren, La Palma, all of Calif., assignors to The United States Atomic Energy Commission, Washington, D.C.

Continuation-in-part of Ser. No. 695,796, Jan. 4, 1968. This application Nov. 5, 1970, Ser. No. 87,055

Int. Cl. C23c 3/04, 7/00

U.S. Cl. 117-227

1 Claim



A method of applying a controlled emittance to a noble metal selected from the group including ruthenium, rhodium, palladium, osmium, iridium and platinum, and intra-alloys thereof. The coating is applied by plasma arc spraying modified alumina on a surface of one of the noble metals group, the alumina being modified by having a hydrochloric acid washed alumina powder contain a dispersion of a noble metal black selected from the above group.

A cladding of one of the group of noble metals above, having a layer of plasma arc sprayed modified alumina bonded on at least one surface thereof, the alumina being modified as indicated in the above method.



3,751,296

**ELECTRODE AND COATING THEREFOR**

Henri Bernard Beer, Kalmthout, Belgium, assignor to Chem-nor Aktiengesellschaft, Vaduz, Liechtenstein  
Division of Ser. No. 702,695, Feb. 2, 1968, Pat. No. 3,632,498.  
This application May 19, 1971, Ser. No. 144,906

Claims priority, application Great Britain, Feb. 10, 1967, 6,490/67 The portion of the term of this patent subsequent to Jan. 4, 1989, has been disclaimed.

Int. Cl. B01k 3/04, 3/06

U.S. Cl. 117-230

9 Claims



An electrode for use in an electrolytic reaction. The electrode has an electrically conductive base, preferably of a film-forming metal, the outside of which is a conductive material other than a film-forming metal, such as a layer of oxide of the base metal, and which is resistant to the electrolyte. At least a portion of the surface of said base has a coating of a mixed crystal material consisting essentially of at least one oxide of a film-forming metal and at least one oxide of a platinum group metal.

3,751,297

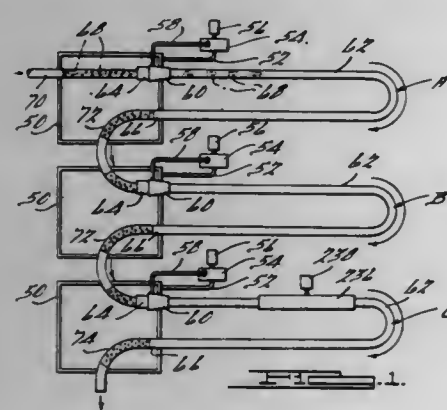
**METHOD FOR SIMULTANEOUS FLUID PROCESSING AND CONVEYING**

Louis J. Minbiolo, Jr., Detroit; Chester G. Clark, Grosse Pointe Woods, and John W. Neumann, Birmingham, all of Mich., assignors to Oxy Metal Finishing Corporation, Warren, Mich.

Division of Ser. No. 774,923, Nov. 12, 1968, Pat. No. 3,664,354. This application Mar. 6, 1972, Ser. No. 232,116  
Int. Cl. B05c 3/08; B08b 3/08, 3/10; B67c 1/00

U.S. Cl. 134-30

17 Claims



A method for simultaneously treating and conveying workpieces and an apparatus for practicing the method by which a rapidly moving confined stream of a treating fluid is formed into which workpieces are introduced for entrainment and conveyance thereby and are subsequently extracted from the stream and thereafter successively introduced, if desired, into separate succeeding streams in an ordered sequence, thereby performing a multiple-stage treatment of the workpieces.

3,751,298

**THERMAL, RECHARGEABLE ELECTROCHEMICAL CELL HAVING LITHIUM MONOALUMINIDE ELECTRODE AND LITHIUM TETRACHLOROALUMINATE ELECTROLYTE**

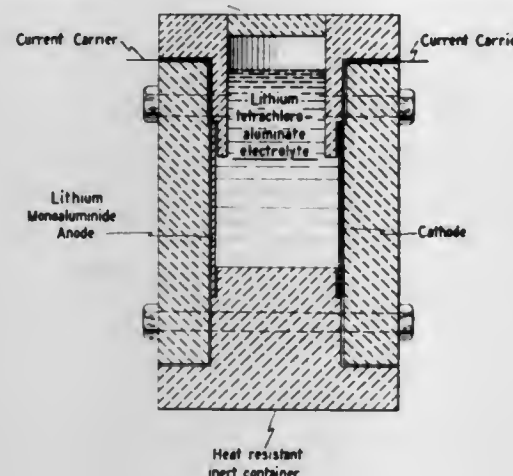
Seymour Senderoff, Fairview, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed May 21, 1971, Ser. No. 145,703

Int. Cl. H01m 21/14

U.S. Cl. 136-6 F

6 Claims



Thermal, rechargeable electrochemical cells are disclosed which have, in the charged condition, a lithium monoaluminate anode and a lithium tetrachloroaluminate electrolyte. The cathode can be any suitable material.

3,751,299

**METHOD OF MANUFACTURING BATTERY PLATES**

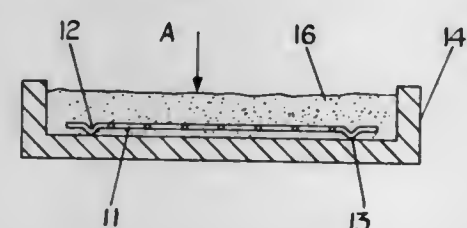
John Henry McNab, Solihull, England, assignor to Joseph Lucas (Industries Limited, Birmingham, England)  
Filed May 10, 1971, Ser. No. 141,819

Claims priority, application Great Britain, May 28, 1970, 25,668/70

Int. Cl. H01m 35/08

U.S. Cl. 136-9

3 Claims



In a method of manufacturing a battery plate for an electric storage battery a conductive grid is placed into a mould, the grid being provided with a plurality of projections so that the surface of the grid adjacent the mould is spaced from the mould and the metal from which the plate is to be formed is inserted in powder form into the mould so as to cover the grid and fill the spaces between the grid and the mould. The powder in the mould is treated with an acid which firstly removes the oxide film from the particles of the powder secondly causes the powder to swell, the particles of the powder becoming united with each other and the grid by cold welding. The swollen powder is finally pressed to the required size.

3,751,300

**METHOD FOR MANUFACTURING A CADMIUM OXIDE ELECTRODE WITH A RESIN FIBER**

Shohei Yamamoto, Toyonaka; Jun Watanabe, Osaka; Susumu Hosoi, Neyagawa, and Akira Hirano, Osaka, all of Japan, assignors to Matsushita Electric Industries Co., Ltd., Osaka, Japan

Continuation of Ser. No. 782,264, Dec. 9, 1968, abandoned.

This application June 8, 1971, Ser. No. 151,134

Int. Cl. H01m 43/04

U.S. Cl. 136-24

1 Claim

An alkaline battery which comprises a sheet-like negative electrode consisting of a fibrous substance having a powder of active material and if necessary a powder of electrically conductive material attached thereto, and which is large in discharge capacity and long in service life, and has an excellent overcharging characteristic particularly when the said alkaline battery is of the closed-type.

3,751,301

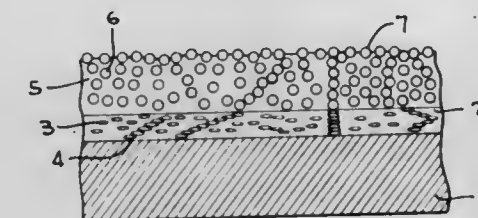
**RESERVE BATTERY ELECTRODES USING BONDED ACTIVE MATERIALS**

Timothy J. Kilduff, Greenbelt, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 847,906, Aug. 6, 1969, Pat. No. 3,629,007. This application July 13, 1970, Ser. No. 54,273  
Int. Cl. H01m 39/00

U.S. Cl. 136-26

4 Claims



Reserve battery electrodes and a method for preparing said electrodes wherein a metal support body is coated with a substantially non-corrodable electrically conductive material and then over-coated with an active material, for example, lead dioxide, dispersed in a resinous binder. The non-corrodable electrically conductive underlayer is applied in an amount sufficient to prevent corroding of the metal support body and sufficient to prevent formation of an interfacial resistance barrier between the metal support body and the subsequently applied coating. The electrically conductive material is applied to the support body in admixture with a thermosetting resin. Alternatively, the metal support body is flash-plated with a metal which is either inert to oxidation when in contact with the active material or forms a conductive oxide in contact with the active material. In the first embodiment, the active material is applied to the first layer in admixture with a thermosetting resin. Activation time can be reduced by applying dry lead-dioxide particles to the surface of the active material.

3,751,302

**GENERATING ALTERNATING AND DIRECT ELECTRIC CURRENTS BY MODIFIED FUEL CELLS**

Carsten Ingeman Johnsen, 26 LeBrun Ave., Amityville, L.I., N.Y.

Filed Apr. 20, 1970, Ser. No. 30,097

Int. Cl. H01m 27/00

U.S. Cl. 136-86 E

5 Claims

The activity of a fuel cell is improved by using secondary electrodes to intensify ion-transport between fuel cell electrodes and rotating of the fuel cell to produce oscillating electric pulsations.

3,751,303

**ENERGY CONVERSION SYSTEM**

Emil Kittl, Locust, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 3, 1971, Ser. No. 149,419

Int. Cl. H01l 15/02

11 Claims

U.S. Cl. 136-89  
An energy conversion system is provided for converting thermal radiation energy into electricity. The system includes a source of thermal energy and a silicon cell spaced from the thermal energy source. A radiating solid material is positioned between and spaced from the thermal energy source and the silicon cell. The radiating solid material is capable of radiating a major portion of the heat received from the thermal energy source in the spectral band where the silicon cell shows its maximum spectral response. An interference filter is positioned between the radiating solid material and the silicon cell. The interference filter has its maximum reflectivity in the strongest emission band regions of the radiating solid material which are outside the maximum spectral response band of the silicon cell. The interference filter also has its highest transmission in the wavelength region where the silicon cell has good spectral response.

This invention relates to an energy conversion system for converting thermal radiation energy to useful electrical energy.

3,751,304

**STABILIZATION OF BORON PHOSPHATE SULFURIC ACID GELS**

Royce E. Biddick, Edina, Minn., and John B. Ockerman, Levittown, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 24, 1971, Ser. No. 118,485

Int. Cl. H01m 9/04

U.S. Cl. 136-158

1 Claim

A method is described for preventing the release of liquid from a sulfuric acid boron phosphate gel used in water activated lead acid storage batteries, and more particularly the addition of an excess amount of aluminum metal, magnesium or lithium aluminum hydride to this gel.

3,751,305

**ADJUSTABLE SPRING-LOADED TEMPERATURE SENSING DEVICE**

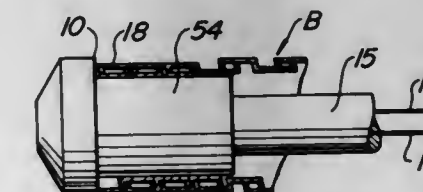
David A. Huebscher, Maple Heights, Ohio, assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed Mar. 10, 1971, Ser. No. 122,961

Int. Cl. H01v 1/02

U.S. Cl. 136-221

6 Claims



An adjustable spring-loaded temperature sensing device includes a flexible armored cable which is utilized as a spring for biasing a tip portion of a temperature sensing unit into operative position.



3,751,306

## SEMICONDUCTOR ELEMENT

Norbert Schink, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

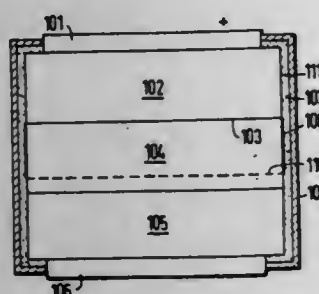
Filed Dec. 3, 1969, Ser. No. 881,751

Claims priority, application Germany, Dec. 24, 1968, P 18 16 841.7; Dec. 4, 1968, P 18 12 556.9

Int. Cl. H0113/12

U.S. Cl. 148—33.3

44 Claims



A semiconductor element with a semiconductor body with pn-junction at the surface. At least the pn-junction is provided with an insulating layer. The insulating coating contains bivalent lead ions, and an additive whereby an oxide coat at the surface of the semiconductor body becomes permeable to bivalent lead ions. The additive contains fluorine ions or phosphate ions.

3,751,307

## THERMAL-MECHANICALLY PROCESSED LOW-ALLOY STEEL

Bill N. Briggs, Santa Ana, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 26, 1972, Ser. No. 247,643

Int. Cl. C22c 29/00, 39/20

U.S. Cl. 148—36

3 Claims

Disclosed is a low carbon-low alloy content steel which is highly responsive to thermal-mechanical processing with air hardening capability. The steel is compatible process-wise with typical tool steels useful in the impact layer of armor. The alloy steel of this invention yields a high toughness material useful as the backing material for the impact layer of armor.

3,751,308

## FLEXIBLE EXOTHERMIC MAT AND METHOD OF USE

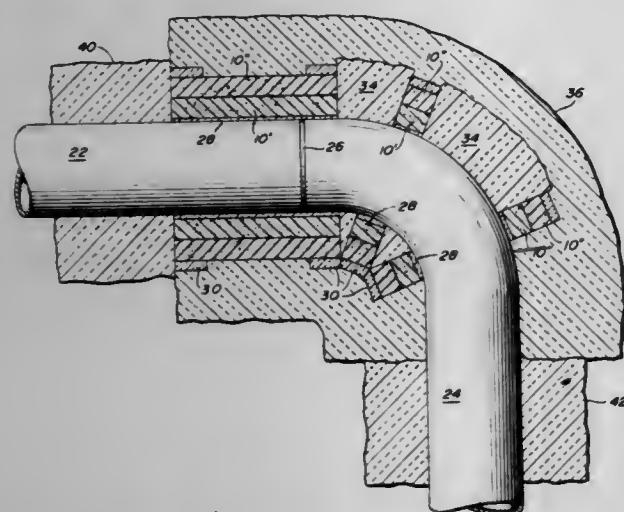
Harold F. Bishop, and James R. Deck, both of Conneaut, Ohio, assignors to Exomet, Incorporated, Conneaut, Ohio

Filed July 19, 1971, Ser. No. 163,722

Int. Cl. B23k 23/00; C21d 9/08

U.S. Cl. 148—127

5 Claims



An exothermic charge is secured to a flexible backing material forming an elongated mat. Grooves in the mat

tending from the surface of the charge to the backing material allow the mat to be placed over a regular shape such as a pipe to provide a covering blanket of exothermic charge. The flexible mat is particularly useful in combination with insulation and other accessories for exothermically annealing welded pipe and the like in the field.

3,751,309

## THE USE OF A GLASS DOPANT FOR GAP AND ELECTROLUMINESCENT DIODES PRODUCED THEREBY

Lincoln Derick, Colonia; Andrew Stephen Jordan, Short Hills, both of N.J.; Hans Willem Verleur, Reading, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 29, 1971, Ser. No. 128,998

Int. Cl. H0117/38, 7/40

U.S. Cl. 148—171

10 Claims

$Zn(PO_3)_2$ , as a low melting point glass, is used as the zinc and oxygen doping source in the growth of the p-type region of gallium phosphide electroluminescent diode material. It is a relatively low vapor pressure liquid above 872°C permitting intimate contact with the GaP containing melt and rapid solution therein during crystal pulling or liquid phase epitaxial crystal growth.

3,751,310

## GERMANIUM DOPED EPITAXIAL FILMS BY THE MOLECULAR BEAM METHOD

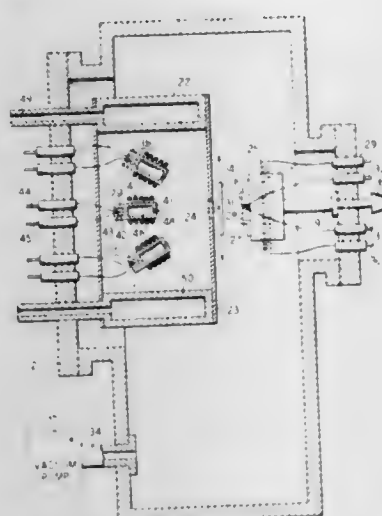
Alfred Yi Cho, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 25, 1971, Ser. No. 127,926

Int. Cl. H0117/36; C01b 31/36; C23c 11/00

U.S. Cl. 148—175

11 Claims



Single crystal thin films of Group III(a)-V(a) compounds grown by the molecular beam epitaxy method are doped during growth with germanium. Generally, the Group IV dopants such as tin and silicon produce n-type crystals. However, germanium produces either n-type or p-type crystals depending on whether the growth surface structure is stabilized in the Group V(a) element or the Group III(a) elements, respectively, which in turn depends on both the substrate temperature and the ratio of the Group V(a) element to Group III(a) elements in the molecular beam.

3,751,311

## GELATION OF HYDRAZINE AND HYDRAZINE-TYPE ROCKET FUELS

Eugene M. Vander Wall, Citrus Heights, and James M. Lucas, El Dorado Hills, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed July 27, 1967, Ser. No. 658,982

Int. Cl. C06c 1/02

U.S. Cl. 149—36

7 Claims

This patent describes novel gelled hydrazine-type fuels suitable for use in rockets, missiles and the like. The gelling agents are quaternary ammonium salts of polyacrylic acid.

3,751,312

## FLUORINATED OXIDANT COMPOUNDS CONTAINING A FLUORAMINO GROUP

Charles D. Wright, White Bear Lake; Joseph La Mar Zollinger, Woodbury Township, Washington County; Ronald A. Mitach, Falcon Heights, and Douglas H. Dybvig, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

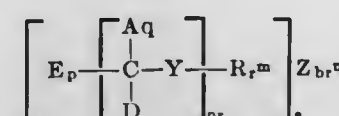
Filed May 29, 1963, Ser. No. 286,881

Int. Cl. C06b 15/00; C07c 87/22

U.S. Cl. 149—109

18 Claims

1. A compound of the formula:



wherein the expression inside the outer brackets represents a first ion and Z represents a second ion of opposite charge from the first ion, and

A is selected from the class consisting of fluorine and difluoramino groups,

E is selected from the class consisting of fluorine, difluoramino, perfluoroalkyl, difluoramino-substituted perfluoroalkyl, difluoramino-substituted perfluoroalkyl-fluoramino and



groups,

D is selected from the class consisting of  $-NF_2$ ,  $-NFH$  and  $-NF$ ,

Y is selected from the class consisting of  $-O-$ ,  $-N=CH-$ ,  $-O-N=CH-$ ,



and  $-NX-$ ,

X is selected from the class consisting of hydrogen and alkyl groups containing not more than six carbon atoms,

R is selected from the class consisting of mono-, di- and tri-covalent ionic charge bearing groups,

a and b each have values from 1 to 3,

m and n are the ionic charges of the individual first and second ions and have integer values from  $-3$  to  $+3$ ,

p is the covalence of R,

r is the covalence of E and q is 0-1;

provided that ma equals  $-nb$ , that when r is 2, p is 1 and that when D is  $=NF$ , q is 0.

3,751,313

## METHOD OF FORMING RIFLING IN A GUN BARREL BY CHEMICAL MILLING

Josepe D. Di Benedetto, Moline, Ill., and Walter M. Kisner, Davenport, Iowa, assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 23, 1971, Ser. No. 173,996

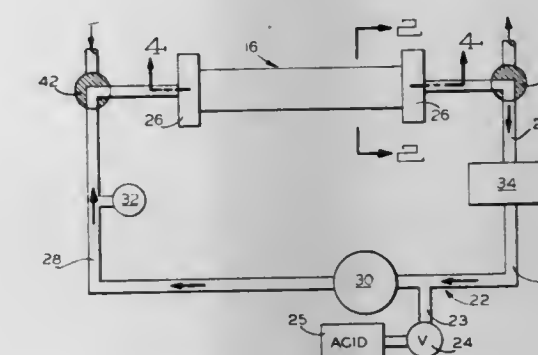
Int. Cl. C23g 3/04

U.S. Cl. 156—16

4 Claims

A method of forming rifling, including that of a gain twist configuration, by the chemical milling process in the bore of a

barrel which may include a liner of a refractory material. A template rod made of an acid resistant material which is radially compressible and which has a diameter slightly greater than that of the bore is pressed thereinto so that liquid tight contact is made between the surfaces of the rod and bore. A plurality of spiral channels and uninterrupted areas are formed in the rod to image the desired rifling configuration. A



closed circulatory system delivers fluid acid to one end of the channels, and the rifling grooves formed thereby, and after passing therethrough returns the acid to the pump for recirculation. A pressure gage between the pump and barrel may be used in lieu of an elapsed time for chemical reaction to indicate when the rifling grooves are formed to the desired depth.

3,751,314

## SILICON SEMICONDUCTOR DEVICE PROCESSING

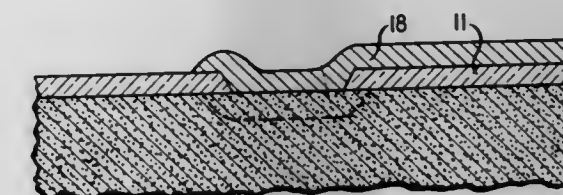
Lillian Ann Rankel, Piscataway, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 1, 1971, Ser. No. 158,787

Int. Cl. H0117/50, 7/44

U.S. Cl. 156—17

5 Claims



Silicon semiconductor devices containing boron doped regions are produced using borosilicate glass as a doping source and silica glass as a masking layer. After the device is heated to produce boron diffusion into the silicon surface, a preferential etchant is used to remove the borosilicate glass while leaving the masking layer substantially in place for use in subsequent processing steps. The etchant is an aqueous solution of HF and HNO<sub>3</sub>.

3,751,315

## METHOD FOR THE MANUFACTURE OF THERMALLY INSULATED SANDWICH TYPE BUILDING

Javier Vidal Sario, Pamplona (Navarra), Spain, assignor to Perfil En Frio, S.A., Pamplona, Spain

Filed Mar. 31, 1970, Ser. No. 24,128

Claims priority, application Spain, Feb. 28, 1970, 377,036

Int. Cl. B32b 31/06, 31/12

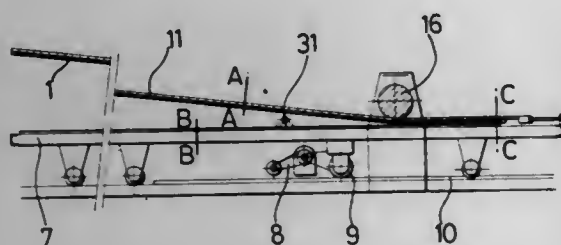
U.S. Cl. 156—71

5 Claims

Apparatus for discontinuously manufacturing a thermally insulated sandwich type building panel and method of fabricating it. The composite panel has two outer pre-formed planar shells with marginal transverse flanges having a small part thereof returned generally to define a further marginal



co-planar flange on each which is generally parallel to the main plane of the basic planar shells. The two shells preferably have their inner surfaces pretreated to give a better bond with the plastic, and are supported in a manner with the open cavities and marginal co-planar flanges in face to face relation by one being moved into superposed relation to the other by suitable support and conveying apparatus. The supports to reenforcingly hold the shells are such as to permit the shells to



be expanded apart only to a predetermined extent responsive to a previously introduced reactive plastic material into the lower shell, which plastic expands when subjected to heat. Accordingly, a unitary building panel is evolved which embodies a thermal and accoustical core or nucleus which also thermally separates the metallic exterior panels from one another to ultimately provide a building having improved thermal resistant and accoustical characteristics.

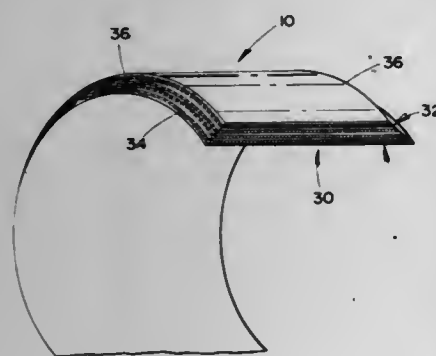
### 3,751,316 METHOD OF MAKING BREAKER BANDS FOR PNEUMATIC TIRES

Richard M. Menough, and Robert W. Cuddigan, both of Denver, Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Jan. 28, 1971, Ser. No. 110,688  
Int. Cl. B29h 17/28, 17/30

U.S. Cl. 156-127

9 Claims



An improved method of making breaker bands for pneumatic tires which includes spiraling successive sheets of rubberized tire cord fabric or material over a building drum to form a sleeve of desired diameter and circumferentially cutting the sleeve into breaker bands of desired width.

### 3,751,317 METHOD OF FORMING A TABLE FROM A SINGLE BLANK OF HEAT-BENDABLE SHEET MATERIAL

James V. Galloway, 190 Sheridan Rd., Winnetka, Ill.

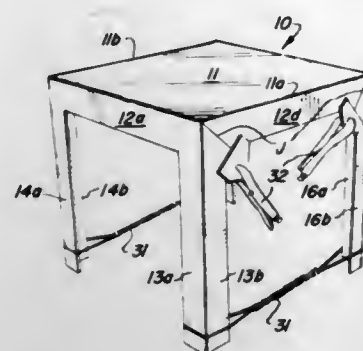
Filed May 17, 1971, Ser. No. 143,824  
Int. Cl. A47b 13/00; B29d 27/10

U.S. Cl. 156-196

3 Claims

A table construction is provided which is formed from a single substantially H-shaped blank of thermoplastic material. The table includes a multi-cornered top delimited by a depending skirt and a plurality of depending legs disposed at predetermined corners of said top. Each leg is provided with a

pair of elongated angularly disposed flange sections, one of said flange sections being integral with a segment of the de-



pending skirt and the other flange section being secured to and forming a mitre joint with an edge of a second segment of the depending skirt.

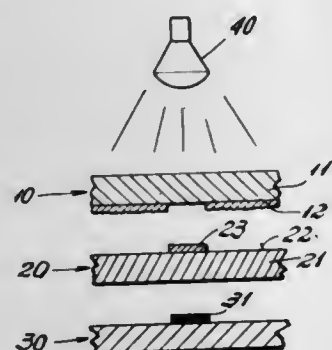
### 3,751,318 THERMOGRAPHIC TRANSFER PROCESS

Douglas A. Newman, Glen Cove, N.Y., assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,132  
Int. Cl. B32b 31/26; B41m 5/26

U.S. Cl. 156-234

5 Claims



Thermographic transfer duplication process employing novel thermographic transfer sheets having a heat-transferable layer comprising discrete particles which are capable of softening and adhering to a copy sheet at thermographic temperatures.

### 3,751,319 METHOD FOR MAKING SIGNS AND OTHER ARTISTIC WORKS

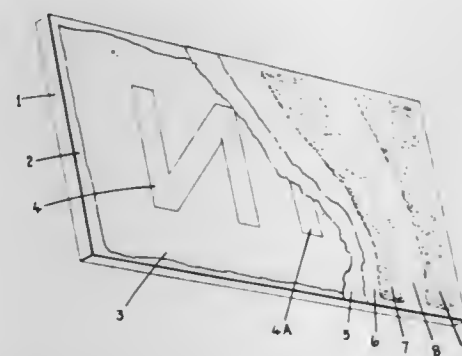
Patrick Hart Green, Willowdale, and George Wilbert Foster, Streetsville, both of Ontario, Canada, assignors to Mond International Limited, Pembroke, Bermuda

Filed Mar. 8, 1971, Ser. No. 121,993

Claims priority, application Canada, June 2, 1970, 26647  
Int. Cl. B29c 21/00; G09f 7/00

U.S. Cl. 156-242

9 Claims



Signs and other artwork are made with a clear facing layer of polyester resin protecting one or more coloured pattern

layers. The pattern layers are applied by silk screening after the facing layer has cured to at least a tack free condition. At the rear is applied a background layer of polyester resin and a stiff glass fibre backing layer.

### 3,751,320 COMPOSITE PRESSURE SENSITIVE ADHESIVE SHEET STRUCTURE AND PROCESS OF MAKING THE SAME

Homer G. Buck, 803 S. Rimpau Ave., Los Angeles, Calif.

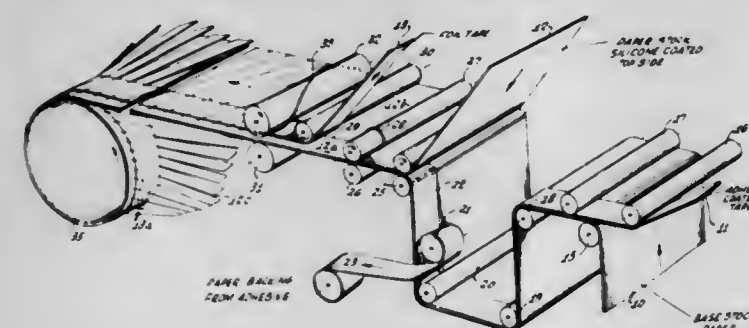
Division of Ser. No. 36,209, May 11, 1970, Pat. No. 3,663,343.

This application Feb. 11, 1972, Ser. No. 225,668

Int. Cl. B32b 31/00

U.S. Cl. 156-268

5 Claims



A process in which a carrier strip has a release coated web marginally secured thereto, the latter releaseably adherently mounting a longitudinally extending tape having a pressure sensitive adhesive on its underside. The release coated strip is longitudinally severed with the line of severance being spanned by the adhesive coated tape. Subsequently, the combined span of the tape and a marginal portion of the release coated stock that is freely superposed on the carrier strip, are transversely slit defining a plurality of discrete pressure sensitive adhesive backed sections of tape, each provided with a corresponding tab by means of which each discrete section of tape can be peeled from the composite structure for application to another article. The process produces a roll of individually dispensable, pressure sensitive adhesive tape sections, each with its corresponding tab being so angularly related to the length of the composite structure as to facilitate winding up of the product, in the process of manufacture, to protectively enclose the tabs between successive coils of the carrier strip. Upon unwinding of the roll through a specially adapted guide means of a dispensing apparatus, each tab is individually projected out of the plane of the carrier strip to provide clearance for grasping a free end of the tab stripping the associated adhesive backed sheet article from the roll. The carrier strip and tape may have different characteristics of light reflectivity, controlling an automatic feed system for the dispensing apparatus, cooperatively associated with a photoelectric light cell or the like.

### 3,751,321 AUTOMATIC LABELING MACHINE WITH "NO LABEL" AUTOMATIC STOP

Gilbert M. Hagemann, Franksville, and William F. Stremke, Jr., Racine, Wis., assignors to Reliance Electric Company, Toledo, Ohio

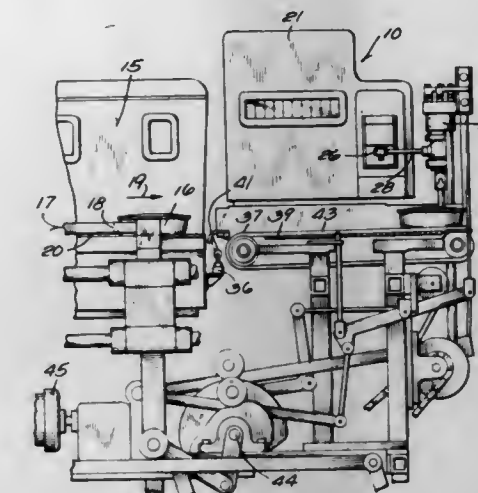
Filed Apr. 26, 1971, Ser. No. 137,407

Int. Cl. B32b 31/00; B65c 9/08

U.S. Cl. 156-352

6 Claims

A device for interrupting movement of packages and stopping operation of an automatic labeling machine includes a vacuum sensing switch in communication with the vacuum actuated label carrying nozzle which carries printed labels in the course of their transfer from the label printer toward the package. The vacuum sensing switch is electrically connected to a circuit which is coupled to the motor which actuates a package conveyor



and its suction port is thus exposed to atmosphere, instead of being closed off by the label, the machine motor is de-energized.

### 3,751,322 LABEL TRANSPORTING DEVICE FOR A PRICE CALCULATING SCALE

Hans-Dieter Schulz, Breitscheid, Germany, assignor to Espera-Werke Aktiengesellschaft, Duisburg, Germany

Filed June 23, 1971, Ser. No. 155,860

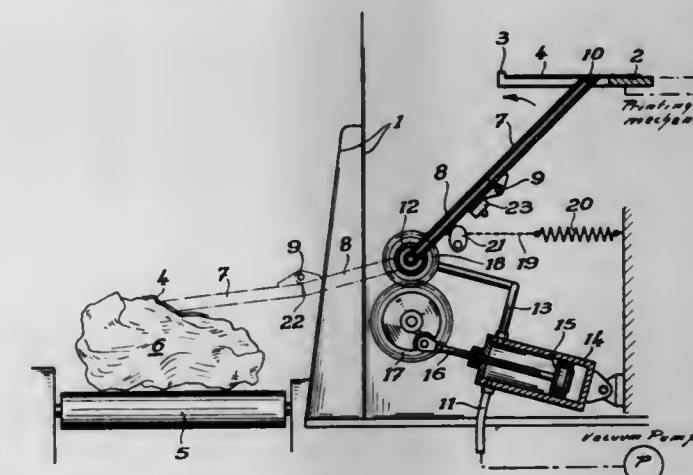
Claims priority, application Germany, June 24, 1970,

P 20 31 193.7

Int. Cl. F16p 3/12; G01g 13/00

U.S. Cl. 156-360

7 Claims



A label transporting device for use in connection with calculating scales, according to which pivotable suction pipe means is pivotable into a label receiving position for picking up a label and then is shifted into a label applying position for applying the picked up label to weighed goods, said suction pipe means being vented when said suction pipe means has applied the label to the goods to release said label.

### 3,751,323 APPARATUS FOR PRODUCING A CONTOURED NECK TOWEL

Samuel H. Cowen, Southfield, Mich., assignor to Chemed Corporation, Cincinnati, Ohio

Original application Jan. 29, 1970, Ser. No. 6,782, now Patent No. 3,619,816. Divided and this application June 9, 1971, Ser. No. 151,420

Int. Cl. B31b 1/00

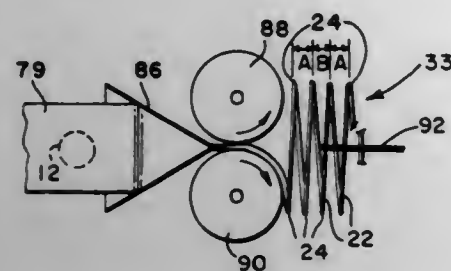
U.S. Cl. 156-463

3 Claims

A contoured neck towel is disclosed which is formed of a thin, flexible laminate having a layer of absorbent



paper and a layer of liquid-impervious plastic material. A method is disclosed for consecutively forming a multiplicity of contoured neck towels, each of which includes a readily removable generally semicircular section. The



apparatus hereof includes a first rotatable cylinder having a perforating member thereon and a second rotatable cylinder spaced therefrom for supporting a laminated sheet portion to be perforated.

3,751,324

**HIGH SPEED LABELING SYSTEM**

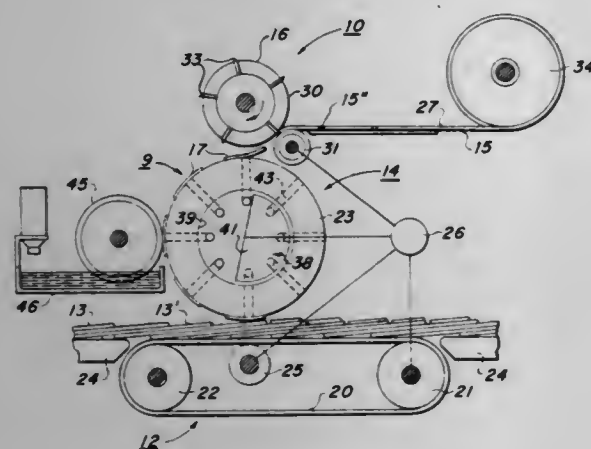
Albert G. Enskat, Barrington, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 16, 1970, Ser. No. 98,780

Int. Cl. B32b 31/00

U.S. Cl. 156—521

1 Claim



A high speed addressing machine for transferring labels or information therefrom to articles such as envelopes. The addressing machine includes a transport for supplying articles to be labeled in shingled or overlapping relationship to the machine, a label transfer wheel provided with individual groups of closely spaced vacuum holddown ports to enable a succession of closely spaced labels to be supported by the transfer wheel and carried by the transfer wheel to the articles, and a high speed cutter for separating labels from an uncut label supply into individual labels for use by the transfer wheel. As an alternate arrangement, the transfer wheel may be provided with vacuum port groups staggered along the transfer wheel periphery to accommodate a multi-row label supply.

3,751,325

**APPARATUS FOR THE MANUFACTURE OF CORRUGATED BOARD**

Ake Evald Edkvist, 3 Rosenvagen, Staffanstorps, Sweden

Filed Aug. 28, 1970, Ser. No. 67,770

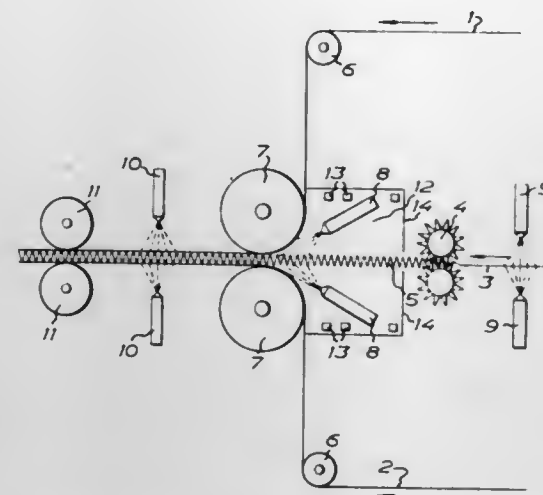
Int. Cl. B31f 1/22; B32b 31/04

U.S. Cl. 156—550

2 Claims

A method and an apparatus for the manufacture of corrugated board from at least one liner and one corrugated medium comprises joining the layers together as they run between rolls which rotate about their longitudinal axes. To permit a high speed of manufacture and to ensure very low consumption of material serving

adhesively to bond the layers of the corrugated board together, use is made of a molten material which is solid at room temperature, said molten material being applied ahead of the layer joining rolls, as viewed in the direc-



tion in which the layers are introduced between the rolls, to the surface of the liner facing the corrugated medium and/or to the surface of the corrugated medium facing the liner.

3,751,326

**HARD TRANSPARENT SHEET-LIKE MATERIAL OR COATING**

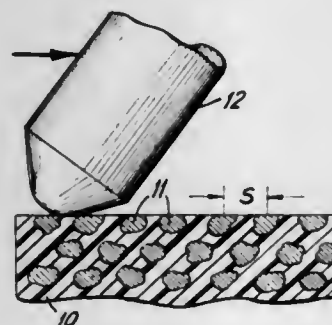
Alvin M. Marks, 166—35 9th Ave., Whitestone, N.Y. 11357

Continuation of abandoned application Ser. No. 672,903, Oct. 4, 1967. This application July 14, 1971, Ser. No. 162,694

Int. Cl. B32b 19/02

U.S. Cl. 161—5

22 Claims



A composition of matter is disclosed for producing a hard sheet or coating of composite material comprising a matrix of plastic material having dispersed therethrough finely divided hard particles having a hardness of at least 5, for example, preferably about 9.5, on the Moh's scale. The hard particles may be controlled at a size such that light may be transmitted through the sheet with little or no apparent light scatter. Where transparency is not a criterion, the average particle size may range broadly over the range of about 0.001 to 10 microns.

3,751,327

**MODULAR CARPET SYSTEM**

Douglas L. Hausler, 520 De Narvaez Drive, Sarasota, Fla. 33577

Filed Aug. 19, 1971, Ser. No. 173,001

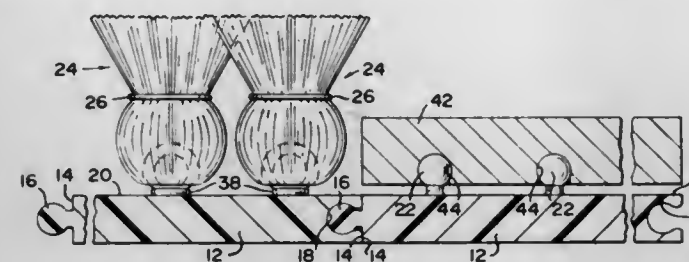
Int. Cl. B32b 3/14, 7/06

U.S. Cl. 161—40

10 Claims

A modular floor covering system comprising a plurality of base mats removably connected together by means of a plurality of alternately and successively arranged indentations and projections formed along the outer peripheral

edge of each mat and correspondingly configured such that the projection of one mat is removably mounted within the indentations of an adjacently positioned and connected mat. Surfacing, either in the form of substantially flexible or resilient tufts or substantially rigid tile members are secured to the upper planar surface of the



mat by means of a plurality of fingers extending upwardly from the planar surface of the mats so as to engage a socket located in the surfacing, wherein either the tufts or the rigid tiles are spaced in predetermined relation to one another so as to substantially cover the upper planar surface of the base mats.

3,751,328

**CORRUGATED POLYETHYLENE TEREPHTHALATE FILM AND PREPARATION THEREOF**

Walter L. Roberts, Hickory, and Paul F. Burch, Conover, N.C., assignors to Superior Cable Corporation, Hickory, N.C.

No Drawing. Filed Oct. 13, 1965, Ser. No. 495,718

Int. Cl. B31f 1/20; B32b 3/28

U.S. Cl. 161—133

8 Claims

Corrugated polyethylene terephthalate film is provided having a coefficient of friction of less than about 0.40. Before corrugation, the film may be biaxially oriented and heat set at a temperature of 180° to 220° C. and with the thickness being less than about 10 mils, preferably 1–3 mils. The corrugation can be accomplished by shaping at 100° to 175° C. (preferably, 120° to 140° C.) between coating rotating surfaces, preferably maintained at the same temperature. The coefficient of friction is preferably reduced to below 0.35.

3,751,329

**POROMERIC MATERIALS**

Giorgio Fonzi, Saronno, Teo Paleologo, Milan, and Giorgio Toso, Gallarate, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed June 30, 1971, Ser. No. 158,609

Claims priority, application Italy, July 1, 1970, 26,848/70

Int. Cl. B32b 3/26

U.S. Cl. 161—159

8 Claims

Poromeric materials, particularly leather substitutes, have a non-woven backing and a microporous polyurethane film facing, the intermediate layer being a foam coagulated from a dispersion containing more than 45% resin by weight and air in a volumetric ratio dispersion to air of 1:2 to 2:1.

3,751,330

**RAILROAD BRAKE SHOES**

Richard H. Gilbert, Bergen, N.J., assignor to Abex Corporation, New York, N.Y.

Filed Mar. 15, 1971, Ser. No. 123,994

Int. Cl. F16d 69/02

U.S. Cl. 161—165

1 Claim

The tendency of a railroad brake shoe of the composition shoe type, as distinguished from the cast metal type, to fracture and separate from its backing is diminished by interposing between the shoe and the back an intermediate support layer characterized by a strip of rubber containing reinforcing cords.

3,751,331

**ADHERING TEXTILES AND METALS TO RUBBER AND PRODUCT**

Ivo Dane, Leverkusen, Guido Fromandi, Schildgen, Paul Blankenstein, Cologne-Riehl, Erwin Muller, Leverkusen, Helmut Freytag, Cologne-Stammheim, and Wolfgang Huther, Cologne-Mulheim, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Sept. 19, 1966, Ser. No. 580,205, now abandoned. Divided and this application May 25, 1970, Ser. No. 40,370

Claims priority, application Germany, Oct. 2, 1965, F 47,344

Int. Cl. B32b 5/02, 5/16, 15/06

U.S. Cl. 161—83

13 Claims

Bonding of rubber to textiles or metals utilizing a vulcanizable rubber containing a formaldehyde donor, a formaldehyde acceptor and a finely dispersed silica filler.

3,751,332

**BICOMPONENT SELF-CRIMPING MODACRYLIC TEXTILE FIBER**

Fred F. Chen, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 7, 1972, Ser. No. 232,514

Int. Cl. D02g 1/00

U.S. Cl. 161—176

7 Claims

Bicomponent textile fibers comprising mixtures of an acrylonitrile-vinylidene chloride copolymer, a poly(N-isopropyl acrylamide) homopolymer, and a cellulose ester. These fibers are characterized by their self-crimping properties.

3,751,333

**NUCLEAR REACTOR CORE MONITORING SYSTEM**

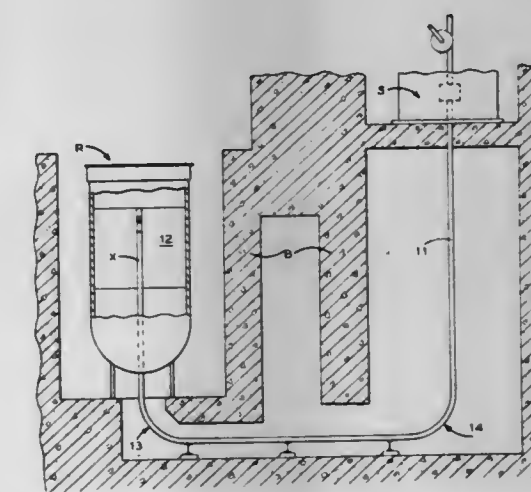
Carl N. Drummond, 731 Custer Drive 24502; Richard T. Bybee, 1212 Cedar Hills Drive 24502; Fred L. Mason, 524 Oakridge Blvd. 24502; and Herbert J. Worsham, Jr., 1909 McGuffey Lane 24503, all of Lynchburg, Va.

Filed June 11, 1970, Ser. No. 45,468

Int. Cl. G21c 17/10

U.S. Cl. 176—19 R

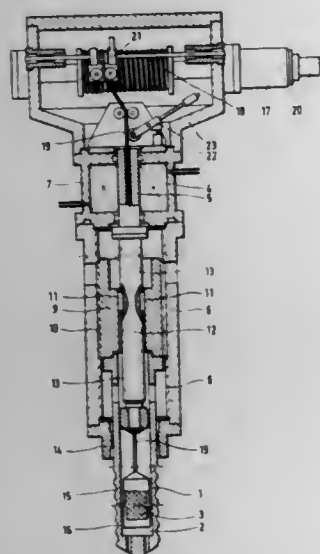
8 Claims



A nuclear reactor core monitoring system in which the neutron flux and/or temperature at locations along a passage extending through the core are sensed by detectors in an elongated instrumentation assembly inserted into the passage from a handling station outside the core region. The instrumentation assembly is laterally flexible so that it can negotiate bends in the passage. A hollow tube is included in the assembly for insertion therein of a standard neutron detector for periodically calibrating the other detectors.

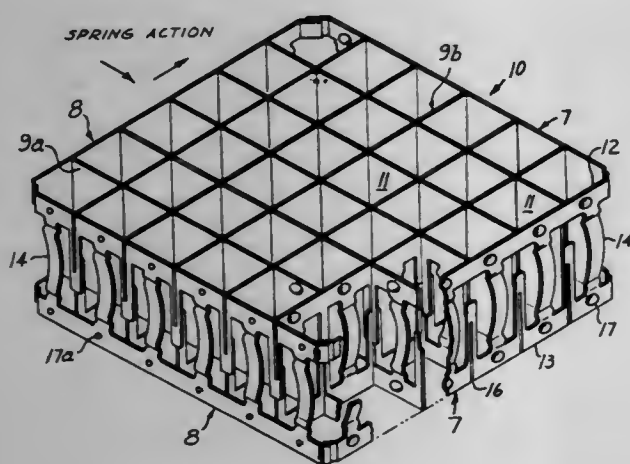


**3,751,334**  
**METHOD OF AND APPARATUS FOR CONTROLLING A NUCLEAR REACTOR**  
 Walter Sturmer, Mannheim, and Hubert Handel, Burstadt, Germany, assignors to Brown Boveri/Krupp Reaktorbau GmbH, Cologne, Germany  
 Filed July 7, 1971, Ser. No. 160,468  
 Claims priority, application Germany, Apr. 23, 1971, P 21 19 895.8  
 Int. Cl. G21c 7/12  
 U.S. Cl. 176—36 R



For the control and shut-down of the fission reaction in a pebble bed nuclear reactor where ball-shaped operating elements including fuel elements are arranged in a pile, a tubular casing is arranged to be rotated as it moves axially through the pile, and an absorber element is positioned within the casing. A cable is attached to the absorber element and to a winch or similar device for selectively positioning the absorber element within the casing. The exterior surface of the casing is shaped so that it passes through the pile without causing undue stress in the ball-shaped elements.

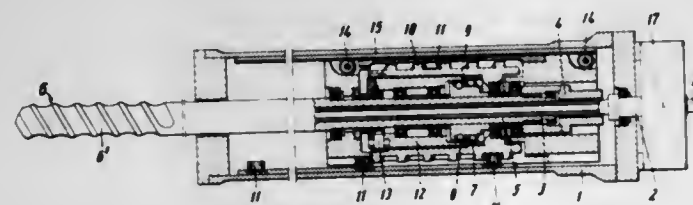
**3,751,335**  
**NUCLEAR REACTOR FUEL ELEMENT SPACER ASSEMBLY**  
 W. Keith Eggert, Concord, Calif., assignor to Continental Oil Company, Ponca City, Okla.  
 Filed June 1, 1970, Ser. No. 41,966  
 Int. Cl. G21c 3/34  
 U.S. Cl. 176—78



A nuclear reactor fuel element spacer arrangement has a fuel element supporting and spacing means in the form of individual cells through which respective fuel rods extend. The cells have a number of sides, some of which are provided with leaf spring members protruding into

the cell and others of which are provided with knobs such that the fuel rod in each cell is resiliently gripped between the springs and the knobs in a manner to restrict lateral motion of the fuel rods.

**3,751,336**  
**CONTROL DEVICE FOR PEBBLE-BED NUCLEAR REACTORS**  
 Antonio Angelini, Mannheim, Hubert Handel, Burstadt, Heinz Landwehr, Edingen, Josef Schoning, Hambrücken, Bernd Schwenk, Heddeshelm, Gerhard Ruck, Ludwigshafen-Oggersheim, and Karlheinz Hammelmann, Jülich, Germany, assignors to Hochttemperatur-Reaktorbau GmbH, Cologne, and Kernforschungsanlage Jülich GmbH, Jülich, Germany  
 Filed Dec. 18, 1969, Ser. No. 886,152  
 Claims priority, application Germany, Dec. 20, 1968, P 18 15 916.5; Sept. 13, 1969, P 19 46 540.8  
 (Filed under Rule 47(a) and 35 U.S.C. 116)  
 Int. Cl. G21c 7/10  
 U.S. Cl. 176—36 R



A control device for regulating a pebble-bed nuclear reactor including an absorber rod movable longitudinally to displace reactor core elements, said rod having at least one helical groove formed on the exterior of that part of the rod which penetrates the core. Drive means are provided whereby both longitudinal and rotary movements may be imparted to the rod, the movements being such as to act in conjunction with the sense of the helical groove so to facilitate insertion and/or withdrawal of the rod by assisting the displacement of core elements.

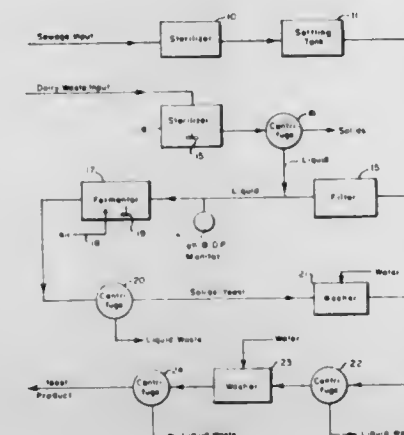
**3,751,337**  
**PROCESS FOR PRODUCING CELLS OF MICROORGANISMS**  
 Katsunobu Tanaka, Kazuo Kimura, and Masaki Yamamoto, Machida, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan  
 No Drawing. Continuation of abandoned application Ser. No. 803,420, Feb. 28, 1969. This application Nov. 1, 1971, Ser. No. 194,483  
 Int. Cl. C12b 1/00  
 U.S. Cl. 195—28 R

The present disclosure is directed to a process for producing microorganism cells using microorganisms having a gaseous hydrocarbon-assimilating property and belonging to the genera *Nocardia*, *Corynebacterium* and *Brevibacterium* which comprises culturing said microorganisms in an aqueous nutrient medium, under aerobic conditions in the presence of at least one gaseous hydrocarbon as the main carbon source, and isolating and recovering the resultant microorganism cells thus produced. The gaseous hydrocarbons include ethane, propane and butane.

**3,751,338**  
**PROCESS FOR PRODUCING YEAST**  
 Kenneth Barton Farris, 1057 Morewood Ave., Pittsburgh, Pa. 15213  
 Filed May 3, 1971, Ser. No. 139,736  
 Int. Cl. C12c 11/00

U.S. Cl. 195—82  
 The specification discloses a process for the production of yeast utilizing as a growth medium for yeast organisms,

a non-chlorinated, sterilized and filtered sewage effluent, in which the pH is in the range 5.0 to 8.0 and the osmotic pressure is in the range .05 M to 1.5 M NaCl. Fermentation of yeast species *Saccharomyces cerevisiae* and *Candida utilis* individually or in combination, and of yeast species *Endomycopsis fibuliger* in combination with either



one or both of the aforesaid species is conducted under aerobic conditions at a temperature in the range of 20° to 35° C. for a period of from 12 to 30 hours. Centrifugation of the fermented liquid separates out the solid yeast particles from liquid waste. Repetitive washing and centrifugation provides for purification of the final end product.

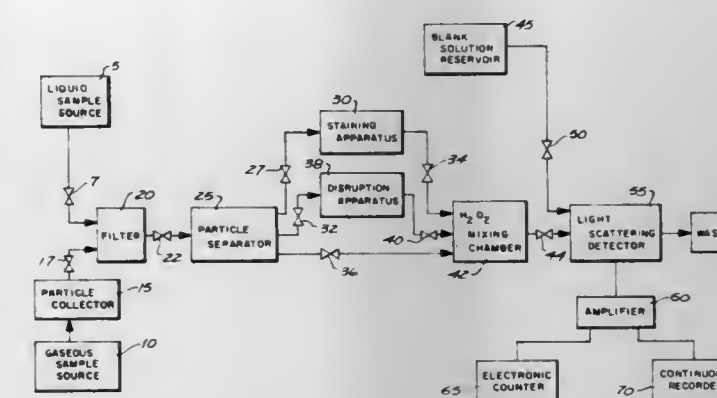
**3,751,339**  
**PROCESS FOR PREPARING CHLORAMPHENICOL ANALOGUES**  
 Takeo Suzuki and Haruo Honda, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan  
 No Drawing. Filed Apr. 26, 1971, Ser. No. 137,695  
 Claims priority, application Japan, Apr. 28, 1970, 45/35,902  
 Int. Cl. C12d 13/00  
 U.S. Cl. 195—96

The present invention relates to a process for preparing analogues of chloramphenicol, characterized by culturing a microorganism capable of producing D-threo-2-propionamido-1-p-nitrophenyl-1,3-propanediol (hereinafter designated as Substance A) and/or D-threo-2-isobutyramido-1-p-nitrophenyl-1,3-propanediol (hereinafter designated as Substance B), under aerobic conditions in a culture medium containing assimilable carbon sources to form and accumulate said analogues of chloramphenicol therein and isolating and recovering the same therefrom.

**3,751,340**  
**METHOD FOR DETECTING THE PRESENCE AND CONCENTRATION OF HEME-CONTAINING PARTICLES AND HEAVY METAL IONS IN FLUID MEDIA**  
 Samuel Witz, Los Angeles, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.  
 Filed May 6, 1971, Ser. No. 140,685  
 Int. Cl. C12k 1/00

U.S. Cl. 195—103.5 R  
 Disclosed is a method and apparatus for detecting, in fluid media, the presence and concentration of heme-containing particles, such as microorganisms, and heavy metal ions. The detection is accomplished by observing the light scattered by bubbles of oxygen formed by the catalytic decomposition of hydrogen peroxide by the ions or by the heme found in the particles. Microorganisms not naturally possessing heme may be detected by this

method by preliminarily staining them with the enzyme catalase. The scattered light is detected by a photocell,



the frequency and amplitude of whose output is a function of the concentration of the contaminant.

**3,751,341**  
**RECEPTACLE HAVING A DISTENDABLE SIDEWALL**  
 Lamont J. Seltz, Huntington Beach, and Robert W. Bruen, South Laguna, Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.  
 Filed May 25, 1971, Ser. No. 146,730  
 Int. Cl. C12k 1/00  
 U.S. Cl. 195—139



A round receptacle is disclosed having a distendable sidewall wherein a gelled culture medium is located in the bottom of the receptacle. The receptacle is an improved sterility tester and/or microorganism detector for surfaces, and more particularly for direct contact with surfaces which are relatively flat.

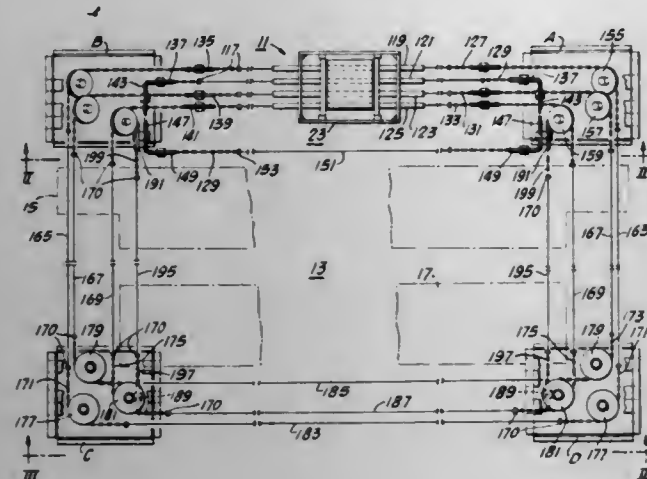
**3,751,342**  
**REVERSING MECHANISM FOR COKE OVEN BATTERY**  
 Ward F. Gidick, West Newton, Pa., assignor to Koppers Company, Inc.  
 Filed Dec. 30, 1970, Ser. No. 102,853  
 Int. Cl. C10b 5/12, 21/10; F16k 11/00  
 U.S. Cl. 202—141

A reversing mechanism for a coke oven battery includes a movable reversing plate, a locking plate, and a plurality of bars coacting with the reversing plate and connecting to actuator rods which are connected to the fuel and air valves



of the coke oven battery. A fluid actuated cylinder moves the reversing plate to reverse the heating cycle, and a fluid

assembly through pretreatment areas, chrome plating areas and post-treatment areas and providing in the coating area



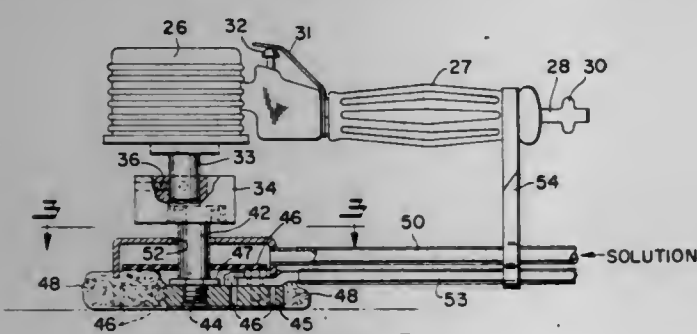
actuated cylinder moves the locking plate to change the type of fuel burned in the heating flues.

3,751,343

### BRUSH ELECTROPLATING METAL AT INCREASED RATES OF DEPOSITION

Andrew J. Macula, 6051 Fry Road, Brookpark, Ohio 44142; John T. Macula, 1013 Kenilworth 44113; and Benno A. Schwartz, Jr., 3278 W. 157th St. 44111, both of Cleveland, Ohio  
Filed June 14, 1971, Ser. No. 152,802  
Int. Cl. B01k 3/00; C23b 5/48, 5/76  
U.S. Cl. 204—15

16 Claims



An improvement in the brush electroplating of metal in which appreciably increased rates of metal deposition are realized as compared to deposition rates previously obtained. In one form, the present brush apparatus includes a tool having an anode and a porous dielectric cover on the anode adapted to be wet by electrolyte and moved over a workpiece. During electroplating of metal, rapid relative movement takes place between the cover and the anode and preferably between the cover and both the anode and the cathode workpiece.

3,751,344

### METHOD OF CARRYING OUT CONTINUOUS THICK CHROME PLATING OF BARS

Sergio Angelini, Via M. F. Quintiliano 15, Milan, Italy

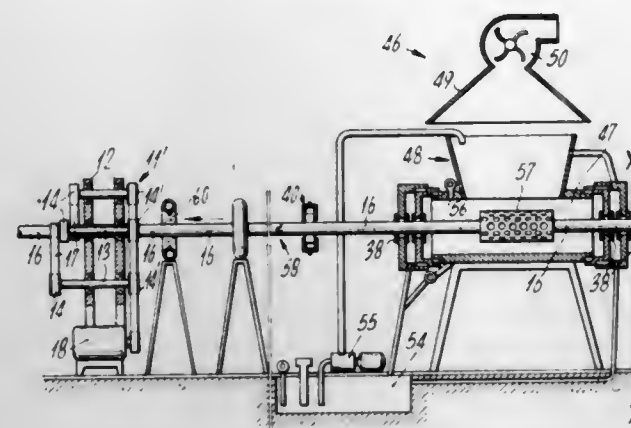
Filed Nov. 13, 1970, Ser. No. 89,428  
Claims priority, application Italy, Nov. 15, 1969, 24,464/69

Int. Cl. B01k 3/00; C23b 5/56, 5/58

U.S. Cl. 204—28

7 Claims

Method and apparatus are provided for the continuous thick chrome plating of bar, wire, or tube, both externally and internally, which provides providing a continuous series of said bars, wires, or tubes, passing said continuous



either an anode or a cathode with the continuous assembly acting as the other electrode.

3,751,345

### METHOD OF PRODUCING A MAGNETIC STORAGE MEDIUM

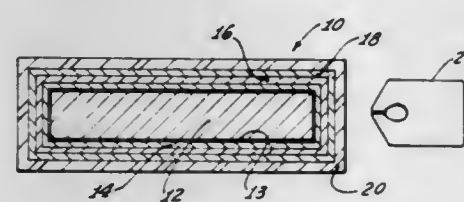
George E. Wilhelm and Stanley S. Nagy, Studio City, and Moon T. Hahn, Santa Monica, Calif., assignors to Sperry Rand Corporation

Original application Mar. 10, 1969, Ser. No. 805,573, now Patent No. 3,595,630. Divided and this application July 9, 1971, Ser. No. 161,328

Int. Cl. C23f 5/50, 5/52, 17/00

U.S. Cl. 204—29

15 Claims



A magnetizable storage member is formed from a substrate and thin layers deposited on the substrate. The thin layers include an element having properties of initially being non-magnetic and of becoming magnetizable when subjected to heat at a particular elevated temperature. A thin chemically inert layer is disposed between the thin magnetizable layers. The magnetizable layers may be nickel and the chemically inert layer may be gold. The magnetizable storage member is provided with magnetic properties corresponding to those provided by a storage member having iron oxide layers. A hard, thin, non-magnetic protective coating may be disposed on the storage member and may be made from a silicone.

The storage member is formed from the different layers discussed above and is then baked at the particular elevated temperatures to make the storage member magnetizable.

3,751,346

### COMBINED PLATING AND HONING METHOD AND APPARATUS

Myron P. Ellis, Royal Oak, and Richard J. Gavasso, Detroit, Mich., assignors to Micromatic Industries, Inc., Detroit, Mich.

Filed Aug. 16, 1971, Ser. No. 172,120

Int. Cl. B23p 1/00, 1/02; C23b 5/56

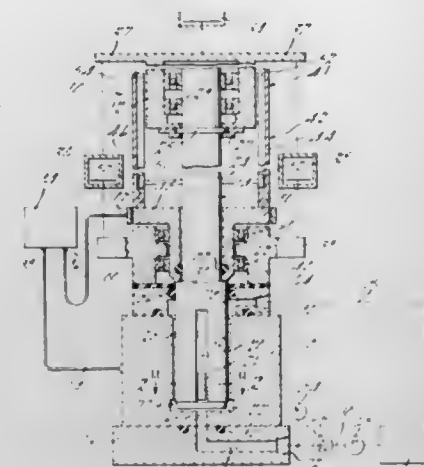
U.S. Cl. 204—26

6 Claims

A combined plating and honing method and apparatus utilizing and incorporating a rotatable sleeve type anode and a plurality of honing stones mounted for coaxial rotation with and reciprocation relative to the sleeve type anode, the anode being rotatable relative to a cathodic

work surface to effect plating thereon and the honing stones being movable into engagement with the plated

used as one of the electrodes in an electrolysis, in which said electrolysis is carried out in a bath containing hydroxides or salts of alkaline earth metals and employing alternating current power source.



surface to simultaneously and/or sequentially mechanically hone such surface.

3,751,347

### REDUCTION AND CONTROL OF TRIVALENT CHROMIUM IN HEXAVALENT CHROMIUM PROCESSING SOLUTIONS

John Kraljic, North Syracuse, N.Y., Winslow H. Hartford, Charlotte, N.C., and Millard F. Good, Liverpool, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 26, 1971, Ser. No. 137,307

Int. Cl. C23b 5/06; C01g 21/00, 37/14

U.S. Cl. 204—51

9 Claims

A process for reducing the quantity of trivalent chromium in hexavalent chromium processing solutions, which involves agitating a solution containing the trivalent chromium with lead dioxide at a temperature of at least 40° C. and separating the resulting insoluble lead compounds from the solution.

3,751,348

### ALKALINE BRIGHT ZINC ELECTROPLATING

Paul J. Szilagyi, Maple Heights, Ohio, assignor to Enthone, Incorporated, New Haven, Conn.

No Drawing. Filed June 14, 1971, Ser. No. 153,049

Int. Cl. C23b 5/10

U.S. Cl. 204—55 Y

23 Claims

Bright zinc is electrodeposited from alkaline noncyanide or cyanide zinc electrodepositing baths comprising an alkaline solution containing a source of zinc ions and an effective amount, as a brightening agent, of a bath-soluble reaction product obtained by the reaction of melamine with formaldehyde, an acyclic amine having two or more functional groups and an epihalohydrin or a glycerol chlorohydrin. The melamine-formaldehyde-acyclic amine-epihalohydrin reaction product or melamine-formaldehyde-acyclic amine-glycerol chlorohydrin reaction product is usually utilized as brightener in the alkaline zinc baths in combination with an aromatic aldehyde as an additional brightening agent.

3,751,349

### METHOD FOR ELECTROLYTICALLY FORMING A COATING OF TITANIUM-ALKALINE EARTH METAL COMPOUND OXIDE

Hiroshi Nozaki, Chiba, and Masaki Yamazaki, Ueda, Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Filed Mar. 24, 1971, Ser. No. 127,648

Claims priority, application Japan, Mar. 27, 1970, 45/25,270

Int. Cl. C23b 11/02

U.S. Cl. 204—56 R

4 Claims

A method for forming a coating of titanium-alkaline earth metal compound oxide on the surface of titanium

3,751,350

### PROCESS FOR COLORING AN ALUMINUM ANODIC OXIDE FILM

Shigeru Ueki, Kasukabe, Japan, assignor to Kabushiki Kaisha Aiden, Tokyo, Japan

Filed Mar. 3, 1972, Ser. No. 231,529

Int. Cl. C23b 9/02

U.S. Cl. 204—58

5 Claims

A process for coloring aluminum anodic oxide films in which aluminum or an aluminum alloy with an anodic oxide film is used as a cathode and is alternately subjected, in an acidic electrolyte containing metallic salts, to a direct current electrolysis from 0.2 a./dm.<sup>2</sup> to 2 a./dm.<sup>2</sup> and an alternating current electrolysis from about 1 v. to about 5 v.

3,751,351

### ELECTROLYTIC CELL FOR RECOVERING METAL FROM A SOLUTION CONTAINING IONS THEREOF, AND METHOD FOR OPERATING SAME

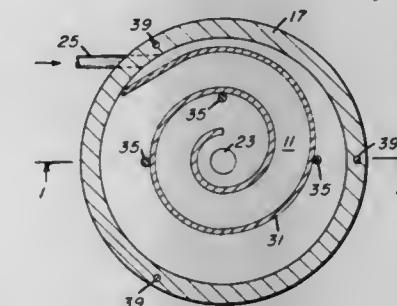
John S. Zankowski, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,196

Int. Cl. C22d 1/02; C23b 5/26

U.S. Cl. 204—109

11 Claims



An electrolytic cell comprises spaced parallel flat anode and cathode, an annular wall of dielectric material between the two and forming an internal chamber, a spiral partition of dielectric material in the chamber, an inlet for electrolyte solution adjacent one end of the spiral, and an outlet for electrolyte solution adjacent the opposite extremity of the spiral. The spiral partition can be self supporting, or supported by posts which add to turbulence. In a preferred modification two of such cells are provided having the cathode as a common wall. In one cell the inlet is at the outer end of the spiral and the outlet is at the inner end and through the center of the cathode, thus forming the inlet of the second cell, with the outlet from the second cell being at the outer end of the spiral.

3,751,352

### METHOD OF DEOXIDIZING STAINLESS STEEL AND ELECTROPOLISHING OF MOLYBDENUM

George R. Blair, Culver City, and Sherman R. Keller, Valinda, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

No Drawing. Application June 22, 1970, Ser. No. 48,551, which is a continuation-in-part of abandoned application Ser. No. 721,153, Apr. 15, 1968. Divided and this application Mar. 2, 1972, Ser. No. 282,197

Int. Cl. C23b 3/00

U.S. Cl. 204—145 R

4 Claims

A method of electropolishing workpieces as molybdenum electrodes and grids and removal of oxidation on



stainless steel, with a current density on the order of 0.9 to 5 amperes per sq. inch in a voltage range in the order of 15 to 90 volts, using an anhydrous acetic acid based bath containing about 10 percent sulfuric acid. The process is relatively free of various hazards common to the electro-polishing of metals, e.g. high cell voltage, excessive metal loss and dangerous electrolyte compositions.

3,751,353

# PROCESS FOR THE MANUFACTURE OF 2-CHLORETHANEPHOSPHONIC ACID DI-CHLORIDE

Hans-Jerg Kleiner, Bad Soden, Taunus, and Sigurd Rosinger, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany  
No Drawing. Filed Mar. 26, 1971, Ser. No. 128,536  
Claims priority, application Germany, Jan. 19, 1971, P 21 02 264.0

Int. Cl. B01j 1/10

U.S. Cl. 204—158 HE 8 Claims  
Preparation of 2-chlorethanephosphonic acid dichloride by the reaction of ethanephosphonic acid dichloride with a chlorinating agent in the presence of high-energy rays.

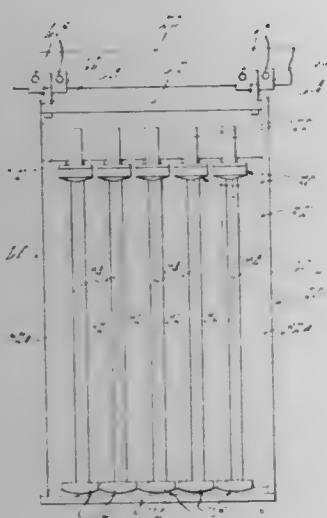
3,751,354

# ELECTROPLATING CELL INCLUDING MAGNETIC MEANS TO COUPLE CONCAVE WORKPIECES TO A PLATING RACK

Hugh F. Jones, Ann Arbor, Mich., assignor to Federal-Mogul Corporation  
Filed Sept. 27, 1971, Ser. No. 183,754  
Int. Cl. B65g 49/00

U.S. Cl. 204—198

9 Claims



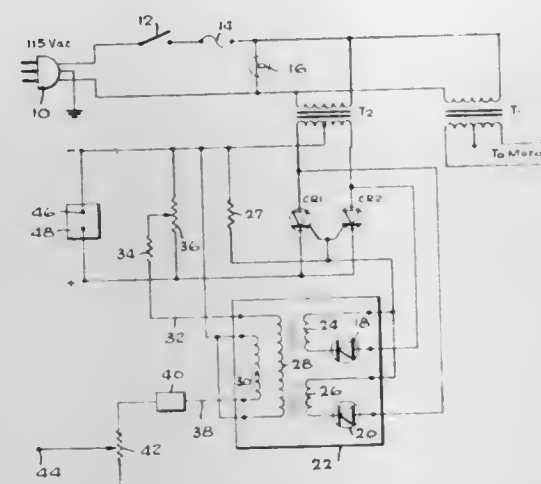
An apparatus and process for electroplating the arcuate concave surfaces of workpieces, such as precision shell-type half bearings, employing a cell adapted to be immersed in an electrolyte and a work rack including a panel on which one or a plurality of semicylindrical workpieces are magnetically coupled with the concave surfaces thereof in aligned communication with an elongated slot therethrough and with the end edges thereof disposed in abutting bearing contact against the one face of the panel. Electrification of the workpieces while immersed in the electrolyte and supported in the cell is performed in a manner whereby a substantially uniform electroplating is obtained on the concave surface of the workpieces while the rear convex surfaces thereof are shielded and remain substantially devoid of any metallic deposit thereover.

# CONTROL CIRCUIT FOR AN ELECTROLYTIC CELL

Harold Mandroian, La Canada, Calif., assignor to Atek Industries, Inc., North Hollywood, Calif.  
Filed Feb. 8, 1971, Ser. No. 113,398  
Int. Cl. B01k 3/00; C22d 1/12

U.S. Cl. 204—228

14 Claims



A control circuit for an electrolytic cell in which a positive feedback loop is utilized to increase the voltage across and the current through the electrolyte as the conductivity of the electrolyte increases.

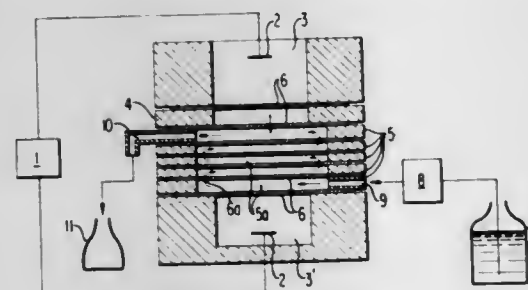
3,751,356

# METHOD AND APPARATUS FOR ELECTROEXTRACTION

Yasumitsu Takeya and Nobutaka Tsunakawa, Tokyo, Japan, assignors to Daiichi Seiyaku Co., Ltd., Chuo-ku, Tokyo, Japan  
Filed Dec. 22, 1970, Ser. No. 100,730  
Int. Cl. B01d 13/02

U.S. Cl. 204—299

4 Claims



A method of electroextraction which comprises the steps of placing a sample into a sample chamber, simultaneously filling said chamber and two electrode vessels with a carrier solution, applying a voltage between the electrodes in such a manner that the test component flows through a multistage separation chamber, and supplying a carrier solution into the multistage separation chamber to extract the test component from the sample chamber through a dialysis membrane into the multistage separation chamber, then to an outlet. The electroextraction apparatus utilized in this process comprises a D.C. power supply, positive and negative electrodes connected to the power supply, two electrode vessels each containing an electrode, a sample chamber adjacent to one of the electrode vessels and separated therefrom by a dialysis membrane, a multistage separation chamber disposed adjacent to the sample chamber and between the sample chamber and the other electrode vessel, each stage being separated from

the adjacent stage by dialysis membranes with a port provided in the membranes between each stage with the multistage separation chamber being separated from the sample chamber on the one side and the other electrode vessel on the other side by dialysis membranes, a source of carrier solution, a constant flow pump for feeding the carrier solution into the multistage separation chamber, and an outlet from the multistage separation chamber.

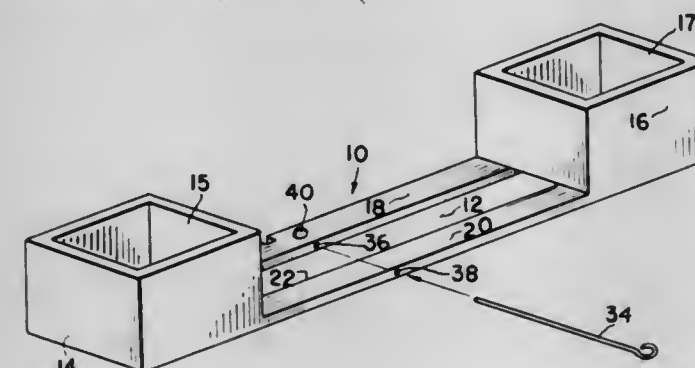
3,751,357

# ELECTROPHORESIS SYSTEM AND GEL FRAME

Stephen D. Rains, Henrietta, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.  
Filed May 24, 1971, Ser. No. 146,387  
Int. Cl. B01k 5/00

U.S. Cl. 204—299

20 Claims



A gel frame for use in chemical analysis and, particularly, for electrophoresis testing, utilizing buffer chambers having a migration portion positioned therebetween, a wire-like element traversing the migration portion and a gel situated in the migration portion extending to or into the buffer chambers to engage a gel or a buffer solution for use in the chemical analysis.

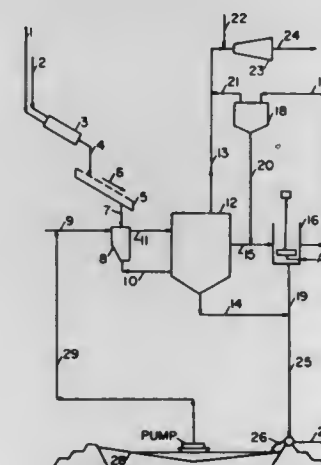
3,751,358

# FREEZE-THAW SEPARATION OF SOLIDS FROM TAR SANDS EXTRACTION EFFLUENTS

Orrin M. Elliott, Media, Pa., assignor to Great Canadian Oil Sands, Limited, Toronto, Ontario, Canada  
Filed Jan. 19, 1972, Ser. No. 219,039  
Int. Cl. C10g 1/04

U.S. Cl. 208—11

14 Claims



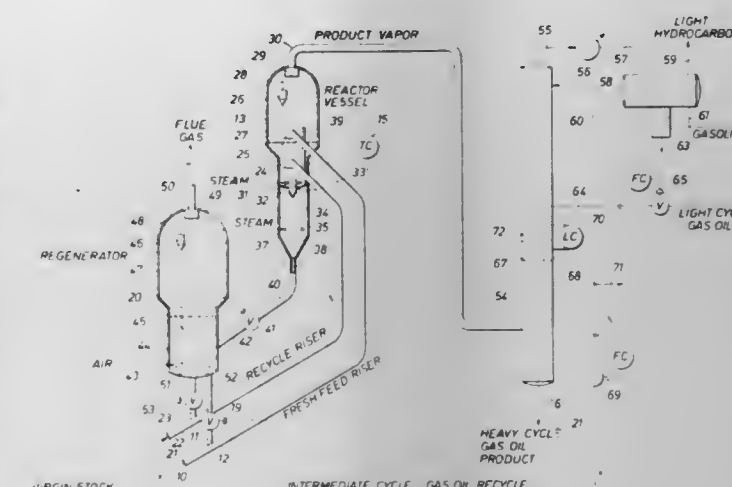
This specification discloses treatment of water discharged from a hot water process for separating bitumen from tar sands. The treatment comprises agglomerating clay dispersed in the water, alternately freezing and thawing the water into a sludge layer and a clarified water layer. The clarified water layer is substantially reduced in clay content compared to the water discharged from the hot water process and is suitable for recycle or discard.

# CONVERSION OF HYDROCARBONS

Dorrance P. Bunn, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.  
Filed Sept. 27, 1971, Ser. No. 183,905  
Int. Cl. C10g 13/14

U.S. Cl. 208—155

3 Claims



A fluidized catalytic cracking process for the conversion of hydrocarbons comprising a reaction zone, a regeneration zone and a product fractionation zone. A selected product distribution, such as between gasoline and light cycle gas-oil, is maintained by recovering light cycle gas-oil at a selected rate from the product fractionation zone, and controlling hydrocarbon conversion in the reaction zone to maintain a set rate for a heavy cycle gas-oil recycle stream. The gasoline product is recovered from the product fractionation zone at the rate it is produced. Process control means for operating the process in the above manner are disclosed.

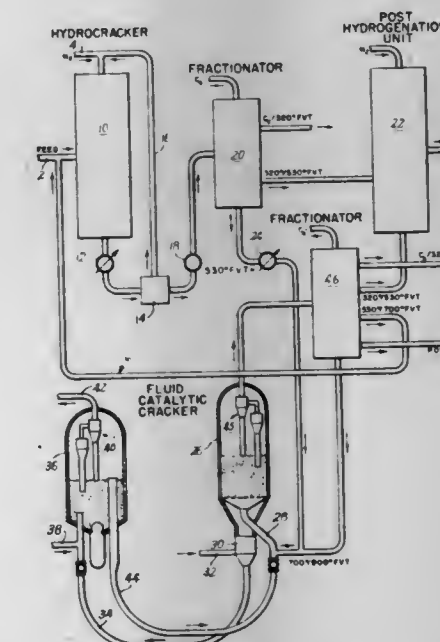
3,751,360

# PROCESS FOR PREPARING JET FUEL

Jerome Bernstein, Berkeley Heights, and Walter Weissman, Rockaway, N.J., assignors to Esso Research and Engineering Company  
Filed Apr. 13, 1971, Ser. No. 133,489  
Int. Cl. C10g 37/06

U.S. Cl. 208—61

11 Claims



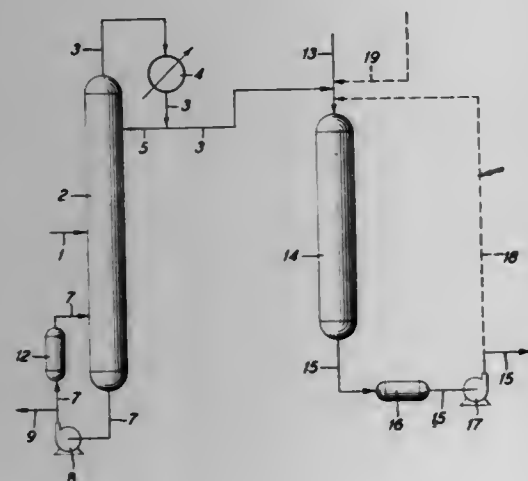
Process for producing jet fuel is provided comprising hydrocracking at least a portion of a hydrocarbon stream boiling in the gas oil range in a hydrocracking zone while



in contact with hydrogen and a hydrocracking catalyst, fractionating the effluent from the hydrocracking zone to recover a 320°/530° FVT jet fuel precursor and a 530° FVT+ bottoms stream; hydrogenating said 320°/530° FVT precursor to obtain jet fuel; catalytically cracking the 530° FVT+ stream in a catalytic cracking zone to obtain an additional 320°/530° FVT jet fuel precursor stream and gasoline; and hydrogenating said jet fuel precursor stream to obtain jet fuel.

3,751,361

**PROCESS FOR UPGRADING DRIPOLENE**  
Edward G. Caffisch, South Charleston, Robert G. Keister, Scott Depot, Denvil E. Reed, Jr., Charleston, and Kenneth D. Williamson, St. Albans, W. Va., assignors to Union Carbide Corporation, New York, N.Y.  
Filed Oct. 8, 1971, Ser. No. 187,691  
Int. Cl. C10g 9/12  
U.S. Cl. 208—255 SS 10 Claims



A process for providing a high octane blending component for gasoline from dripolene feedstocks, containing at least five percent by weight of at least one dimer of the group consisting of dicyclopentadiene and the methyl derivatives thereof, one codimer formed from members of the group consisting of cyclopentadiene and the methyl derivatives thereof, or one codimer of the group consisting of cyclopentadiene and the methyl derivatives thereof with conjugated dienes having 4 to 10 carbon atoms comprising the following steps:

(a) Introducing the feedstock into a distillation zone wherein the temperature at the bottom of the zone is in the range of about 120° C. to about 300° C.;

(b) Passing the bottoms from the distillation zone through a separate heating zone associated therewith having a temperature in the range of about 120° C. to about 400° C. at a velocity of about five to about fifteen feet per second to provide a liquid phase and a vapor phase;

Wherein, in steps (a) and (b), the dimers or codimers defined above and present in the process are substantially cracked to the corresponding monomers thereof;

(c) Introducing the phases of step (b) into the distillation zone wherein said vapor phase becomes part of the overhead distillate and said liquid phase becomes part of the bottoms;

(d) Introducing the overhead distillate into a hydrogenation zone under hydrogenating conditions, said conditions being such that the zone is essentially incapable of hydrogenating aromatic hydrocarbons, and hydrogenating said overhead distillate to provide a high octane blending component rich in cyclic hydrocarbons having one five-membered ring and no more than one double bond;

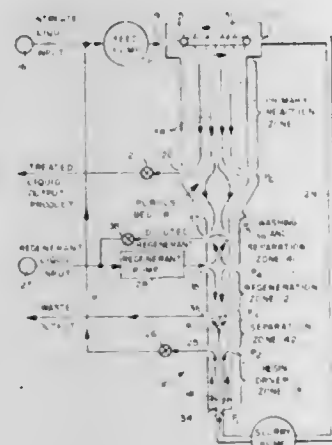
Providing that (i) each of the aforementioned zones is essentially oxygen-free; and (ii) the residence time of the feedstock and its derivatives in the process prior to step

(d) is limited to the time in which no more than fifty percent by weight of the total cyclopentadiene and methyl derivatives thereof produced in the process dimerizes; and  
(e) Recovering the high octane blending component.

3,751,362

### CONTINUOUS FLUID-SOLID CONTACT PROCESS

Ain A. Sonin, Boston, and Ronald F. Probst, Brookline, Mass., and Josef Schwartz, Haifa, Israel, assignors to Avco Corporation, Cincinnati, Ohio  
Filed July 8, 1971, Ser. No. 160,601  
Int. Cl. B01d 15/02  
U.S. Cl. 210—33 17 Claims



This invention relates generally to fluid-solid contact processing systems, and, more particularly, to such systems as may be useful in ion exchange processes, which processes operate in a truly continuous manner and employ continuously moving porous beds for providing the fluid-solid reaction, regeneration, and washing operations, as desired, and which utilize unique means for isolating the fluid flow between operation zones thereof to provide high flow rates for the processed output products involved.

3,751,363

### PIPE THREAD LUBRICANT STABILIZED WITH ORGANIC SULFIDES

Raymond Rohde and Marvin M. Johnson, Bartlesville, Okla., assignors to Phillips Petroleum Company  
No Drawing. Filed Feb. 9, 1971, Ser. No. 114,042  
Int. Cl. C10m 5/16, 5/22  
U.S. Cl. 252—19 6 Claims

Pipe thread lubricants comprising mineral oil, metal dust selected from lead, zinc, or alloys thereof, and alkaline earth metal soap and containing a stabilizing amount of an organic sulfide having the formula  $R-S_n-R^1$  wherein R and  $R^1$  are hydrocarbon radicals of 2 to 20 carbon atoms and n is an integer of from 2 to 4.

3,751,364

### METHOD OF PROTECTING METAL SURFACES AGAINST ABRASIVE WEAR IN PUMPS WITH POLYQUATERNARIES

Thomas J. Bellos, Kirkwood, Mo., assignor to Petrolite Corporation, Wilmington, Del.  
No Drawing. Filed Apr. 15, 1971, Ser. No. 134,457  
The portion of the term of the patent subsequent to May 9, 1989, has been disclaimed  
Int. Cl. C10m 1/18, 1/32  
U.S. Cl. 252—49.3 6 Claims

Solutions of water soluble and/or dispersible polyquaternary, polymerized, oxyalkylated amines not only offer protection against abrasive wear to submerged metal surfaces, such as in submersible oil well pumps, but also through their anti-bacterial and corrosion inhibiting action offer protection against corrosion and bacterial deteriora-

tion of the pump. In addition, because of increased water viscosity, they also reduce foaming and cavitation during pumping.

3,751,365

**CONCENTRATES AND CRANKCASE OILS COMPRISING OIL SOLUTIONS OF BORON CONTAINING HIGH MOLECULAR WEIGHT MANNICH REACTION CONDENSATION PRODUCTS**  
Edmund J. Piasek, Chicago, and Robert E. Karl, Batavia, Ill., assignors to Standard Oil Company, Chicago, Ill.  
No Drawing. Application Apr. 14, 1969, Ser. No. 816,125, now Patent No. 3,704,308, which is a continuation-in-part of application Ser. No. 502,368, Oct. 22, 1965, now Patent No. 3,539,633. Divided and this application Jan. 7, 1972, Ser. No. 216,272  
Int. Cl. C10m 1/54  
U.S. Cl. 252—49.6 5 Claims

Oil solutions of boron-containing derivative of products of Mannich reaction by condensation of reactants (1) a high molecular weight alkyl-substituted hydroxyaromatic compound whose alkyl substituent has upward from 40 to 20,000 carbon atoms, (2) a lower alkyl-substituted phenol whose alkyl group has 2 to 20 carbon atoms, (3) an amine which contains a  $HN<$  group, and (4) an aldehyde in the respective molar ratio of

1.0:0.0-0.7:0.1-10:1.0-10,

wherein the boron content of said derivative of the Mannich reaction expressed as a boron to nitrogen weight ratio (B/N) is in the range of 0.1-5.5:1.0 and said boron derivative is present in weight concentrations of 0.05 to 70 percent as solute in mineral oil of the lubricating oil types. Such oil solutions are useful as crankcase lubricating compositions, or as concentrates for fortifying used crankcase lubricating composition and for preparation of crankcase lubricating compositions. Such solutions provide detergency, dispersancy and antioxidant properties necessary for crankcase oil function under high severity engine operation.

3,751,366

### PROCESS FOR PREPARING FERRITE AND GARNET RAW MATERIALS FOR MICROWAVE APPLICATIONS

Steve H. Bomar, Jr., Atlanta, Ga., and Robert B. Clem, Huntsville, and Richard L. Buckelew, Arab, Ala., assignors to the United States of America as represented by the Secretary of the Army  
Filed June 4, 1971, Ser. No. 149,966  
Int. Cl. C04b 35/26, 35/40  
U.S. Cl. 252—62.57 8 Claims

A novel process for preparing ferrite and garnet materials by mixing desired metal salts in the form of aqueous solutions, spray drying said aqueous solutions to form a powdery material, presintering the powdery material in an air or oxygen atmosphere to convert the material to mixed oxides having a ferrimagnetic crystal structure, in some cases milling the presintered material to break up the particles, molding into the desired form the resulting powder whether milled or not, and last, sintering the formed material by heating to the desired temperature for sintering.

3,751,367

### COMPOSITIONS COMPRISING BORON COMPOUNDS AND POLYPHENYL THIOETHERS

Frank S. Clark and Loren W. Bannister, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.  
No Drawing. Filed July 29, 1971, Ser. No. 167,463  
Int. Cl. C09k 3/00  
U.S. Cl. 252—78 15 Claims

Compositions comprising polyphenyl thioethers, polyphenyl ethers-thioethers or mixtures thereof and a triphenylboroxin exhibit improved corrosiveness toward copper and silver without loss of oxidative stability. Such compositions are useful as functional fluids.

3,751,368

**COMPOSITIONS COMPRISING BORON COMPOUNDS AND POLYPHENYL THIOETHERS**  
Frank S. Clark and Loren W. Bannister, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.  
No Drawing. Filed July 29, 1971, Ser. No. 167,466  
Int. Cl. C09k 3/00  
U.S. Cl. 252—78 9 Claims

Compositions comprising polyphenyl thioethers, polyphenyl esters-thioethers or mixtures thereof and a diphenylborinic anhydride exhibit improved corrosiveness toward copper and silver without loss of oxidative stability. Such compositions are useful as functional fluids.

3,751,369

### DETERGENT COMPOSITIONS

Vincent Lamberti, Upper Saddle River, and Robert Reardon, Tenafly, N.J.  
No Drawing. Original application Feb. 25, 1971, Ser. No. 118,972. Divided and this application July 24, 1972, Ser. No. 274,378  
Int. Cl. C11d 1/08  
U.S. Cl. 252—89 11 Claims

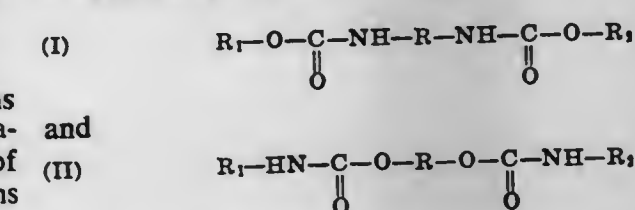
The use of exo-cis-1,4-endoxo-allycyclic-2,3-dicarboxylates such as sodium exo-cis-1,4-endoxocyclohexene-2,3-dicarboxylates and derivatives thereof as builders in detergent compositions.

3,751,370

### LOW-FOAMING RINSING WASHING AND CLEANING COMPOSITIONS

Hans-Josef Stimberg, Wesel-Obrighoven, Joachim Galinke, Dusseldorf-Holthausen, and Edmund Schmadel, Mettmann, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany  
No Drawing. Filed Aug. 27, 1971, Ser. No. 175,772  
Claims priority, application Germany, Aug. 31, 1970, P 20 43 086.8  
Int. Cl. C11d 7/54  
U.S. Cl. 252—102 7 Claims

Low-foaming rinsing, washing and cleaning compositions comprising (A) from 90% to 99.9% by weight of at least one compound selected from the group consisting of anionic surface-active agents, amphoteric surface-active agents, non-ionic surface active agents, polymeric phosphates and complex-forming compounds, and (B) from 0.1% to 10% by weight of at least one foam inhibitor diurethane selected from the group consisting of diurethanes of the formula



wherein R represents a divalent hydrocarbon having from 2 to 20 carbon atoms and  $R_1$  and  $R_2$  represent monovalent hydrocarbons having from 8 to 30 carbon atoms.

3,751,371

### SCALE FORMATION INHIBITING PROCESS USING SILICON-CONTAINING AMINOMETHYL PHOSPHONATES

Derek Redmore, Ballwin, and Frederick T. Welge, Webster Groves, Mo., assignors to Petrolite Corporation, Wilmington, Del.  
No Drawing. Original application Oct. 12, 1970, Ser. No. 80,124, now Patent No. 3,716,569. Divided and this application Oct. 2, 1972, Ser. No. 294,204  
Int. Cl. C02b 5/00  
U.S. Cl. 252—175 5 Claims

Silicon-containing aminomethyl, or substituted aminomethyl, phosphonic acids and derivatives thereof. The silicon atom is silicone functional (i.e. has a  $-SiO-$  group) and is also attached to an alkyleneamino group



which may have one or more amino groups (i.e. an alkyleneamino group having at least one N—H group) capable of reacting with a carbonyl compound (i.e. aldehyde or ketone) and phosphorous acid, or a derivative thereof, to form aminomethyl phosphonic acid. All, or less than all, of the N—H groups may be converted to aminomethyl phosphonic acids. The silicon-aminomethyl phosphonic acids may be monomeric, polymeric, or copolymeric. They are useful, for example, as corrosion inhibitors, scale inhibitors, water clarifiers and for other uses.

3,751,372

# SCALE AND CORROSION CONTROL IN CIRCULATING WATER USING POLYPHOSPHATES AND ORGANOPHOSPHONIC ACIDS

David C. Zecher, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed June 18, 1971, Ser. No. 154,592  
Int. Cl. C02b 5/00, 5/04, 5/06

U.S. Cl. 252—181

12 Claims

Provides a composition and method for conditioning circulating water to reduce corrosion and/or scale accumulation on metal. The composition includes (1) certain water soluble in organic polyphosphates or their corresponding acids or (2) phosphorylated polyols together with (3) certain water soluble organophosphonic acids or their corresponding salts. Component (3) synergistically increases the efficiency of components (1) and (2). The method includes introducing the components into the water periodically, but preferably continuously, either separately or in combination.

3,751,373

# PETROLEUM SULFONIC ACID FOAM CONTROL COMPOSITION AND ITS USE

Hillel Lieberman, Andalusia, and Anthony J. Graffeo, Willow Grove, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

No Drawing. Filed Dec. 29, 1970, Ser. No. 102,553  
Int. Cl. B01d 17/00

U.S. Cl. 252—321

13 Claims

The present invention is directed to a composition and its use for the control of foam in aqueous systems and in particular pulp and paper making systems. The method generally comprises adding to the aqueous system a composition comprising a water-insoluble organic liquid, an ester of polyethylene glycol, a petroleum sulfonic acid and a tallow fatty acid and/or tallow fatty alcohol.

3,751,374

# DISUBSTITUTED CYCLOHEXANE POLYMER COMPOSITIONS

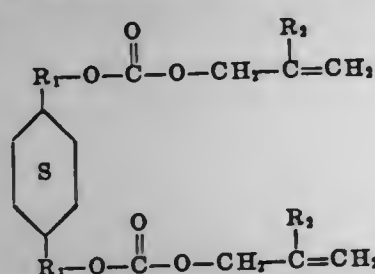
David A. Berry, Columbus, and Gilbert M. Gynn, Hilliard, Ohio, assignors to Dart Industries Inc.

No Drawing. Original application July 22, 1969, Ser. No. 843,831, now Patent No. 3,679,727. Divided and this application June 24, 1971, Ser. No. 156,495  
Int. Cl. C08g 45/18

U.S. Cl. 260—17.4 CL

8 Claims

Disubstituted cyclohexane compositions designated as either bis(2-alkylallylcarbonyldioxy) 1,4-dialkylene cyclohexane or bis(2-arylallylcarbonyldioxy) 1,4-dialkylene cyclohexane represented by the formula:



wherein R<sub>1</sub> is a lower alkyl and R<sub>2</sub> is hydrogen or an alkyl, aryl, aralkyl or alkaryl hydrocarbon radical, are useful in the production of polymers and copolymers. Compositions containing these polymers and copolymers when combined with the proper filler have outstanding stain resistance as well as excellent impact resistance and other strength properties when compared with prior art compositions recognized as outstanding for use in dinnerware.

3,751,375

# STABILIZATION OF POLYURETHANE COMPOSITIONS AND RESINS USED TO PREPARE POLYURETHANE COMPOSITIONS

Newell R. Bender, Cuyahoga Falls, and Ronald B. Spacht, Hudson, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 34,537, May 4, 1970, now abandoned. This application Feb. 29, 1972, Ser. No. 230,489

Int. Cl. C08g 51/58

U.S. Cl. 260—2.5 BB

5 Claims

Polyurethane compositions, including polyurethane foam compositions, and resins from which said compositions are prepared, said compositions and resins being stabilized against degradation and discoloration by having incorporated therein phenolic antioxidants such as the reaction product of phenol and dicyclopentadiene, said reaction products having been subsequently alkylated with an olefin such as isobutylene.

3,751,376

# IONIC POLYMERS

Jean-Pierre Quentin, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

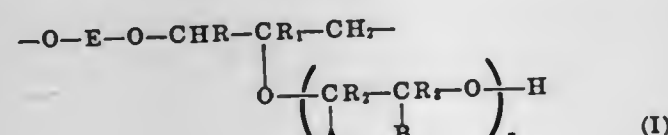
No Drawing. Filed June 16, 1971, Ser. No. 153,895  
Claims priority, application France, June 18, 1970, 7022514

Int. Cl. C08g 23/10

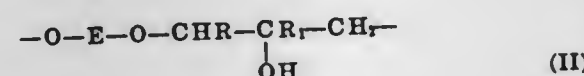
U.S. Cl. 260—2.1 R

14 Claims

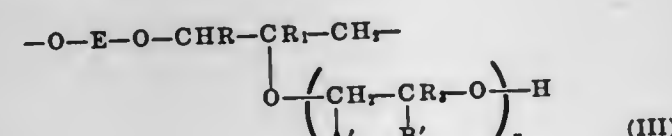
Shaped or unshaped ionic polymers are provided which comprise recurring units of formula



alone or with recurring units of formula



and/or formula

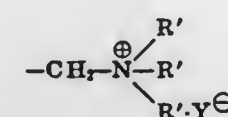


in which

each of R, R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub>, which may be the same or different, represents a hydrogen atom or a methyl radical, E represents a divalent radical derived by removing the phenolic OH groups from a polynuclear diphenol in which the hydroxyl groups are attached to different nuclei,

x and y are positive numbers,

one of A and B represents a hydrogen atom and the other represents a radical of formula



in which Y<sup>⊖</sup> is an anion and each of the symbols R', which may be the same or different, represents a monovalent or divalent organic radical, or at least two of the radicals together form a single divalent or trivalent radical, all the valencies carried by the R' groups being satisfied by nitrogen atoms of groups —CH<sub>2</sub>—N<sup>⊖</sup>, and one of A' and B' represents a hydrogen atom and the other represents the —CH<sub>2</sub>X group, wherein X is a halogen atom.

These polymers have utility as anti-static agents, in improving the dye affinity of natural and synthetic polymers and as ion-exchange membranes.

3,751,377

# METHOD FOR THE PREPARATION OF PLASTIC FOAM

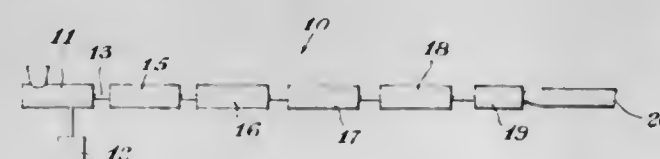
Morgan D. Buckner, Magnolia, Ark., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 19, 1971, Ser. No. 173,310

Int. Cl. B29d 27/02; C08f 33/02, 47/10

U.S. Cl. 260—2.5 E

5 Claims



Thermoplastic foam is prepared by extrusion and injection of a fluid blowing agent into the heat plastified mass. The improvement is the inclusion of an interfacial surface generator; that is, motionless in-line mixer, whose mixing, under conditions of stream-line flow, can be considered independent of throughput. Foams of reduced density and increased homogeneity are obtained. Lower power is required, together with simplified equipment and reduced maintenance thereof.

3,751,378

# INHIBITING PREVULCANIZATION OF RUBBER WITH POLYFUNCTIONAL METHACRYLATE MONOMERS AS CROSS-LINKING COAGENTS WITH PEROXIDES

George F. Cowperthwaite, Hatboro, John A. Cornell, Philadelphia, and John Edgar Lohr, Jr., Chester, Pa., assignors to Sartomer Industries, Inc., Essington, Pa.

No Drawing. Filed Mar. 31, 1971, Ser. No. 130,002

Int. Cl. C08f 15/18

U.S. Cl. 260—4

3 Claims

Prevulcanization of elastomer is inhibited by incorporating critical amounts of N-nitroso diphenylamine or N,N'-dinitroso-para-phenyl diphenylamine as retarder, normally 0.2–2.0% based on the parts of elastomer, in polyfunctional acrylate cross-linking monomer which is liquid at mixing temperatures and serves to plasticize the rubber and is used in amounts of about 2 to 30 parts per 100 parts of elastomer. In the presence of about 5 to 30% of the retarder in the monomer, the liquid acrylate cross-

linking monomer provides long Mooney scorch time but still permits efficient cross-linking to provide superior vulcanizates as compared with straight peroxide vulcanizates. This facilitates control of vulcanization during injection molding, extrusion, compression molding and calendaring.

3,751,379

# REGENERATION OF A COKE-DEACTIVATED BIMETALLIC CATALYST

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Apr. 12, 1971, Ser. No. 133,403

Int. Cl. B01j 11/18; C10g 35/06

U.S. Cl. 252—415

30 Claims

A deactivated hydrocarbon conversion catalyst, which is a combination of a platinum group component, a group IV–A metallic component, and a halogen component with a porous carrier material and which has been deactivated by deposition of carbonaceous materials thereon during a previously contacting with a hydrocarbon charge stock at an elevated temperature, is regenerated by the sequential steps of: (1) burning carbon therefrom at a relatively low temperature with a gas stream containing halogen or a halogen-containing compound, H<sub>2</sub>O, and a relatively small amount of O<sub>2</sub>, (2) treating the resulting partially regenerated catalyst at a relatively higher temperature with a gas stream containing a halogen or a halogen-containing compound, H<sub>2</sub>O, and a relatively higher amount of O<sub>2</sub>, (3) purging O<sub>2</sub> and H<sub>2</sub>O from contact with the resulting catalyst, and (4) subjecting the resulting catalyst to contact with a substantially sulfur-free hydrogen stream at reduction conditions. Key features of the disclosed method are: (1) presence of water and halogen in the gas stream used in the carbon-burning step and in the oxygen-treating step, (2) careful control of the temperature during each step, (3) maintenance of the halogen content of the catalyst at a relatively high level during the entire regeneration procedure, and (4) careful control over the composition of the gas streams used in the various steps thereof.

3,751,380

# METHOD OF PREPARING A CATALYST

Mark J. O'Hara, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,342

Int. Cl. B01j 11/40, 11/74

U.S. Cl. 252—439

6 Claims

A method of preparing a hydrotreating catalyst for the conversion of C<sub>7</sub>-insoluble asphaltene and sulfurous components in a residual oil. The catalyst comprises a refractory inorganic oxide carrier material impregnated with a metal of Groups VI–B and VIII. Improved activity and stability results from novel oxidizing and reducing procedures prior to sulfiding of the catalyst.

3,751,381

# DYED ALBUMEN-COHN FRACTION III-LIPID MIXTURES SERUM LIPID ASSAY STANDARD

Robert E. Megraw, Morristown, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Apr. 27, 1971, Ser. No. 137,953

Int. Cl. G01n 33/16

U.S. Cl. 252—408

3 Claims

The present invention relates to a diagnostic aid which comprises a reference standard obtained from a lipid rich fraction of human blood serum which contains predetermined amounts of total lipids, cholesterol, triglycerides, phosphatides, free fatty acids and optionally, glucose.



**3,751,382**  
**ENZYMATIC INDICATOR AND METHOD OF MAKING IT**  
 Stellan Ljungberg, Lidingo, and Karl Olof Alm, Vaxjo, Sweden, assignors to Food Control AB, Malmo, Sweden. Continuation-in-part of abandoned application Ser. No. 19,033, Mar. 12, 1970. This application Dec. 17, 1971, Ser. No. 209,232.  
 Claims priority, application Sweden, Mar. 13, 1969, 3,471/69; Denmark, Nov. 12, 1971, 5,553/71.  
 Int. Cl. G01n 31/14

**U.S. Cl. 252-408** 11 Claims  
 An enzymatic indicator and a method of making the indicator which comprises the enzyme urease, the substrate urea, a pH-responsive indicating substance, optionally a buffer, and, for changing and adjusting the time-temperature-responsive function of the indicator at low temperatures, glycerol.

**3,751,383**  
**METHOD OF PREPARING A CATALYST FOR THE HYDROREFINING OF RESIDUAL OILS**  
 Mark J. O'Hara, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
 No Drawing. Filed Dec. 6, 1971, Ser. No. 205,339.  
 Int. Cl. B01j 11/22, 11/40

**U.S. Cl. 252-455 R** 5 Claims  
 A method of preparing a hydrorefining catalyst for the conversion of C<sub>7</sub>-insoluble asphaltenes and sulfurous components in a residual oil. The catalyst comprises a refractory inorganic oxide carrier material impregnated with a metal of Groups VI-B and VIII. Improved activity and stability results from novel calcining procedures.

**3,751,384**  
**ORGANOLITHIUM-POLYAMINE COMPOSITIONS**  
 Arthur W. Langer, Jr., Watchung, N.J., assignor to Esso Research and Engineering Company  
 No Drawing. Continuation-in-part of application Ser. No. 825,384, May 16, 1969, now Patent No. 3,536,679, and a continuation-in-part of application Ser. No. 690,054, Dec. 13, 1967, and a continuation-in-part of application Ser. No. 886,008, Dec. 17, 1969, and a continuation-in-part of application Ser. No. 886,009, Dec. 17, 1969, and a continuation-in-part of application Ser. No. 690,076, Dec. 13, 1967; said Ser. No. 825,384, which is a continuation-in-part of application Ser. No. 589,240, Oct. 25, 1966, now Patent No. 3,451,988, and which is a continuation-in-part of application Ser. No. 266,188, Mar. 19, 1963, now abandoned; said Ser. No. 690,054, which is a continuation-in-part of application Ser. No. 560,110, June 24, 1966, now abandoned, and which is a continuation-in-part of application Ser. No. 505,976, Nov. 1, 1965, now abandoned, and which is a continuation-in-part of application Ser. No. 359,434, Apr. 3, 1964, now Patent No. 3,458,856, and which is a continuation-in-part of application Ser. No. 266,188, Mar. 19, 1963. This application Oct. 15, 1970, Ser. No. 81,181.

The portion of the term of the patent subsequent to June 24, 1986, has been disclaimed.  
 Int. Cl. C07c 87/20, 87/34, 87/54

**U.S. Cl. 252-431 N** 1 Claim  
 Graft polymers are prepared by contacting an anionically polymerizable monomer such as butadiene with a polymer-Li<sup>+</sup>tertiary chelating polyamine complex such as polystyrene-Li<sup>+</sup>tetramethyl ethanediamine.

**3,751,385**  
**MANGANESE FERRITE OXIDATIVE DEHYDROGENATION CATALYSTS**  
 Harold E. Manning, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.  
 No Drawing. Filed Oct. 7, 1970, Ser. No. 78,956.  
 Int. Cl. B01j 11/22, 11/26; C07c 5/18

**U.S. Cl. 252-447** 8 Claims  
 The presence of 1 to 20 weight percent carbon black in a manganese ferrite oxidative dehydrogenation catalyst

improves the yields from oxidative dehydrogenation reactions employing such catalyst. The presence of about 5 wt. percent carbon black in a manganese ferrite containing chromium as a promoter result in up to 7.3% absolute increase in yield in the oxidative dehydrogenation of isoamylene as compared to the catalyst prepared under the same conditions without carbon black.

**3,751,386**  
**CATALYST FOR PURIFICATION OF WASTE GASES**  
 Edgar Koberstein, Alzenau, and Eduard Lakatos, Hurth-Hermulheim, Germany, assignors to Laporte Industries Limited, London, England, and Deutsche Gold- und Silber-Scheideanstalt, Frankfurt, Germany  
 No Drawing. Filed Apr. 13, 1971, Ser. No. 133,721.  
 Claims priority, application Germany, Apr. 17, 1970, P 20 18 378.2.  
 Int. Cl. B01j 11/22

**U.S. Cl. 252-465** 21 Claims  
 Catalyst compositions are provided containing aluminum oxide and from 50% to 90% by weight of oxide of copper, chromium and nickel, which may optionally be doped with Group II-A metal compounds, the oxide of nickel amounting from 2% to 20% by weight of the catalyst. The catalysts are manufactured by mixing powdered calcined oxide of copper and chromium with aluminum oxide or aluminum oxide hydrate, forming catalyst granules from the mixture and then impregnating the granules with a nickel compound which on calcination will form the catalyst. The catalysts are used in the oxidative purification of waste gases particularly motor vehicle exhaust gases.

**3,751,387**  
**SELF-SUPPORTING STRUCTURES FOR NUCLEAR RADIATION SHIELDS AND BINDERS THEREFOR**  
 William Cornelius Hall, Central Valley, and John Merriam Peterson, Rock Tavern, N.Y., assignors to Chemtree Corporation, Central Valley, N.Y.  
 No Drawing. Filed Apr. 13, 1971, Ser. No. 133,751.  
 Int. Cl. C04b 35/68; G21c 11/00; G21f 1/10

**U.S. Cl. 252-478** 17 Claims  
 A composition is provided which is adapted for producing a self-supporting structure and particularly a nuclear radiation shield. The composition includes a mixture of at least two solid materials and a solvent for one or more of these materials admixed with the mixture of solid materials. The solvent employed may be water or an organic compound, or the like. The solute may be inorganic or an organic compound and preferably sucrose. The other solid material or materials are substances that have good attenuating characteristics for nuclear radiation of various types and energy levels, particularly for neutrons and gamma (or X-ray) radiation. These substances contain atoms such as hydrogen, which are effective in reducing neutron energy by elastic scatter; atoms such as carbon, which are efficient in moderating higher energy neutrons to thermal neutron energy levels; atoms such as lithium, boron and gadolinium, which are good elements for the capture of thermalized neutrons; and atoms of heavy metals such as lead, tungsten and depleted uranium, which have good attenuating characteristics for gamma and X-ray radiation. There is also provided a method for forming a self supporting structure which comprises admixing sucrose or other soluble material with a second solid material, a solvent for the sucrose or its substitute being employed. The ingredients are mixed to obtain preferably a saturated solution of the solute and a product of mortar consistency. This product is shaped and cured to form a self-supporting structure.

#### ERRATA

For Classes 260-17.4 thru 260-4 R see:  
 Patents Nos. 3,751,374 and 3,751,378

**3,751,388**  
**MODIFIED POLYPHENYLENE OXIDE COMPOSITION CONTAINING A FATTY ACID BISAMIDE EITHER ALONE OR IN ADMIXTURE WITH A METAL SALT OF A FATTY ACID**  
 Minoru Tabana, Suita, Takuzo Okumura, Takatsuki, and Kiyoshi Yasuno, Ibaragi, Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan.  
 No Drawing. Continuation-in-part of application Ser. No. 115,799, Feb. 16, 1971. This application Feb. 14, 1972, Ser. No. 226,268.  
 Claims priority, application Japan, Feb. 19, 1970, 45/14,585.  
 Int. Cl. C08g 43/02

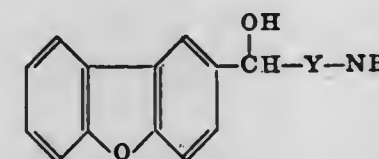
**U.S. Cl. 260-23 S** 11 Claims  
 A modified polyphenylene oxide composition with improved processability comprising a modified polyphenylene oxide, which is prepared by polymerizing at least one unsubstituted or substituted styrene compound in the presence of a polyphenylene oxide with or without a rubbery polymer, and an additive selected from the group consisting of a fatty acid bisamide and a mixture of the fatty acid bisamide and a metallic salt of a fatty acid. Said composition has a low molding temperature and an improved moldability. The mold releasing property and the surface appearance of the molded articles are also satisfactory.

**3,751,389**  
**THERMALLY HARDENABLE COMPOSITIONS**  
 Tetsuya Hotta, Reiho Takabe, and Sadao Nishita, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Nihonbashi Horidome-cho, Chuo-ku, Tokyo, Japan.  
 No Drawing. Continuation of abandoned application Ser. No. 11,903, Feb. 16, 1970. This application Feb. 28, 1972, Ser. No. 230,044.  
 Int. Cl. C08f 45/52; C08c 11/68

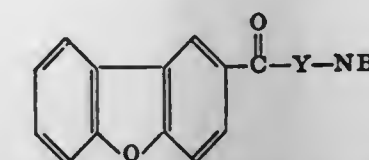
**U.S. Cl. 260-28.5 B** 6 Claims  
 A thermosetting composition is disclosed which is capable of providing molded products having high hardness and high softening point which comprises:  
 (a) 25-84.5 parts by weight of petroleum-cracked pitch obtained by subjecting petroleum or a petroleum product to thermoc cracking at a temperature of 700° C., or higher and separating the lighter fractions and constituents having a lower distillation point than 400° C., from the cracked residual mixture,  
 (b) 10-40 parts by weight of a rubber having unsaturated double bonds,  
 (c) 5-30 parts by weight of sulfur, and  
 (d) 0.5-5 parts by weight of a vulcanization accelerator, said pitch having a hydrogen to carbon atomic ratio of less than 1.0 and the total parts by weight of all constituents amounting to approximately 100.

**3,751,390**  
**SUBSTITUTED DIBENZOFURAN**  
 Harvey B. Hopps, West Allis, Wis., Dennis Jackman, University, Miss., and John H. Biel, Lake Bluff, Ill., assignors to Aldrich Chemical Company Inc., Milwaukee, Wis.  
 No Drawing. Continuation-in-part of application Ser. No. 693,765, Dec. 27, 1967, which is a continuation-in-part of application Ser. No. 605,995, Dec. 30, 1966, which in turn is a continuation-in-part of application Ser. No. 462,066, June 7, 1965, all now abandoned. This application May 19, 1971, Ser. No. 145,070.  
 Int. Cl. C07d 31/28

**U.S. Cl. 260-297 T** 8 Claims  
 Compounds of the formula



which possess hypotensive activity and are useful for treating hypertension in mammals and compounds of the formula



which are useful as intermediates in the preparation of the foregoing hypotensive agents and also in some cases exhibit hypotensive, sedative and muscle relaxant activity and processes for the preparation of the foregoing compounds. In the foregoing formulae, NB is a primary or secondary amino radical and Y is (lower)alkylene.

**3,751,391**  
**ZINC OXIDE-POLY(ACRYLIC ACID) SURGICAL CEMENTS**  
 Dennis Clifford Smith, Markham, Ontario, Canada, assignor to National Research Development Corporation, London, England.  
 No Drawing. Continuation of application Ser. No. 836,991, June 26, 1969, which is a continuation-in-part of application Ser. No. 692,711, Dec. 22, 1967. This application Oct. 28, 1971, Ser. No. 193,533.

The portion of the term of the patent subsequent to Apr. 11, 1989, has been disclaimed.  
 Int. Cl. A61k 5/00; C08f 29/34

**U.S. Cl. 260-29.6 M** 10 Claims  
 Dental cements are prepared by mixing a surgical grade metal oxide powder with a water-soluble polymer of acrylic acid and water to give a plastic mass that rapidly hardens. The cements thus produced have greater adhesion and cause less irritation than conventional zinc phosphate cements.

**3,751,392**  
**PROCESS OF FOAMING POLYURETHANES WITH INORGANIC HYDRATED METAL SALTS**  
 Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.  
 No Drawing. Filed Apr. 24, 1972, Ser. No. 246,922.  
 Int. Cl. C08g 22/44

**U.S. Cl. 260-2.5 AB** 6 Claims  
 Polyurethane foams are prepared employing as the blowing agent an inorganic hydrated metal salt characterized as having a solubility in anhydrous ethanol at 20° C. of less than 1.2 grams/100 grams of ethanol and which exhibits a weight loss of at least about 5% when subjected to a temperature of 115° C. for 30 minutes. The blowing is due to the steam developed from the removal of a portion of the water of hydration and not from CO<sub>2</sub> as a result of reaction of such removed water with the isocyanate. When the inorganic hydrated metal salt is not a hydrated alkali metal aluminate, the use of a heavy metal carboxylate catalyst is essential to obtain foaming by steam rather than CO<sub>2</sub>.

**3,751,393**  
**RADIATION-SENSITIVE POLYMERS PREPARED FROM HYDROXYL CONTAINING POLYMERS AND 4-AZIDOSULFONYL-PHTHALIC ANHYDRIDE**  
 Adnan A. R. Sayigh and Fred A. Stuber, North Haven, and Henri Ulrich, North Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.  
 No Drawing. Filed May 10, 1971, Ser. No. 142,042.  
 Int. Cl. C08g 5/18, 33/00

**U.S. Cl. 260-49** 4 Claims  
 Radiation-sensitive polymers are prepared by reacting a polymer having a free hydroxyl group in the molecule with 4-azidosulfonylphthalic anhydride. The polymers so obtained contain free carboxy groups which can be converted to water soluble salts. The polymers are useful



for chemically bonding basic dyestuffs to non-dyereceptive substrates (e.g. polyolefins) by coating the substrate with the polymer, exposing the coated substrate to irradiation to bond the coating to the substrate and then contacting the irradiated coating with a basic dyestuff which bonds to the coating via the free carboxylic groups therein. The irradiation can be carried out imagewise to obtain continuous tone images. Bonding of the radiation-sensitive polymers to substrates can also be used to make photoresists and also to render hydrophilic a variety of substrates which ordinarily are hydrophobic.

3,751,394

# SELF-EXTINGUISHING POLYAMIDE MOULDING COMPOSITIONS

Karl Heinz Hermann, Krefeld Bockum, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Filed Sept. 23, 1971, Ser. No. 183,267  
Claims priority, application Germany, Sept. 23, 1970, P 20 46 832.0

Int. Cl. C08g 51/06, 51/10, 51/56

U.S. Cl. 260—37 N

2 Claims

Self-extinguishing polyamide moulding compositions comprising a polyamide and as flame-retarding additives 0.5 to 25% by weight of at least one halogen-containing tin compound.

3,751,395

# CASTING MATERIALS FOR DENTAL PURPOSES CONTAINING A BIS-ETHYLENE-IMINE COMPOUND CAPABLE OF BEING CROSSLINKED

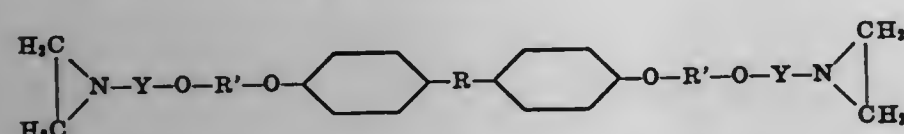
Werner Schmitt and Robert Purrmann, Starnberg, Peter Jochum, Pilsensee, and Wolf-Dietrich Zahler, Haar, near Munich, Germany, assignors to Espe Fabrik Pharmazeutischer Präparate G.m.b.H., Seefeld, Bavaria, Germany  
No Drawing. Application July 3, 1967, Ser. No. 650,588, now Patent No. 3,634,400, which is a continuation-in-part of abandoned application Ser. No. 288,538, June 17, 1963. Divided and this application Aug. 18, 1971, Ser. No. 172,927

Claims priority, application Germany, June 20, 1962, E 23,068; Jan. 20, 1967, E 33,247  
Int. Cl. C07d 23/06

U.S. Cl. 260—37 N

3 Claims

The present invention relates to material for making casts for dental purposes, which material substantially comprises bis-ethylene-imine compounds capable of being cross-linked and having the formula



wherein R is an alkylidene radical with 1-6 carbon atoms, a cycloalkylidene radical or an SO<sub>2</sub> radical; R' an alkylene radical having 2-6 carbon atoms or a cycloalkylene radical, and Y an acyl radical of a carboxylic acid with 2-6 carbon atoms, which may also be substituted by an aromatic substituent.

3,751,396

# REINFORCED POLYALKYLENE TEREPHTHALATE MOLDING RESIN HAVING REDUCED BURNING PROPERTIES IN THIN SECTIONS

John S. Gall, North Haledon, N.J., assignor to Celanese Corporation, New York, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 46,823, June 16, 1970. This application Nov. 27, 1970, Ser. No. 93,511

Int. Cl. C08g 51/04

U.S. Cl. 260—40 R

24 Claims

Improved product for eliminating dripping of flaming particles during burning of articles less than about 1/8

inch in thickness and molded from an intimate blend of polypropylene terephthalate or polybutylene terephthalate, a reinforcing agent, wherein the reinforcing agent comprises particles having a length to diameter ratio of less than about 50:1, an aromatic halide and a group Vb metal containing compound. Dripping of flaming particles is eliminated by incorporating into the intimate blend of supplementary reinforcing agent having a length to diameter ratio of greater than about 50:1.

3,751,397

# PROPYLENE POLYMER COMPOSITION CONTAINING GLASS FIBERS

Kazuki Muto, Otake, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan  
No Drawing. Filed June 14, 1971, Ser. No. 153,122  
Claims priority, application Japan, June 5, 1970, 45/48,064

Int. Cl. C08f 45/10

U.S. Cl. 260—41 AG

3 Claims

A glass fiber-reinforced propylene polymer composition comprising a modified propylene polymer having grafted thereto both styrene and maleic anhydride, and glass fibers treated with an aminotrialkoxy silane compound, and optionally an olefin polymer as a third component. The composition has high tensile modulus of elasticity and stress at bending yield point. Maleic anhydride can be grafted at a high ratio in the presence of styrene.

3,751,398

# SPRAY DRYING PROCESS

Klaus J. Dahl, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 115,824, Feb. 16, 1971. This application Jan. 17, 1972, Ser. No. 218,483

Int. Cl. C08g 33/00, 53/00

U.S. Cl. 260—47 R

11 Claims

Poly (aromatic ketones) and poly (aromatic sulfones) prepared by boron trifluoride-catalyzed Friedel-Crafts condensation in hydrogen fluoride are recovered from polymerization media by spray drying hydrogen fluoride solutions of the same which contain substantial proportions of liquid sulfur dioxide, preferably from about 90 to 99% volume. At least a portion of the SO<sub>2</sub> may be present during polymerization, e.g., 50% by volume. Product spray dried with SO<sub>2</sub> is lighter in color and contains less fluorine than that arising from spray drying with HF alone, and enjoys superior heat stability in the melt as

compared to product recovered by precipitation in a non-solvent. The polymer may be employed, e.g., in electrical insulation.

3,751,399

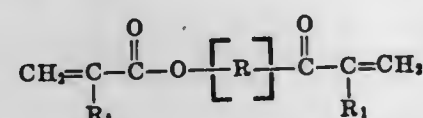
# POLYACRYLATE RESIN COMPOSITIONS

Henry L. Lee, Jr., San Marino, and Donald G. Stoffey, Hacienda Heights, Calif., assignors to Lee Pharmaceuticals, South El Monte, Calif.  
No Drawing. Filed May 24, 1971, Ser. No. 146,467  
Int. Cl. A61k 5/02; C09k 3/00

U.S. Cl. 260—47 UA

28 Claims

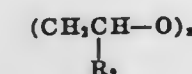
Compositions of aromatic and alicyclic polyacrylate compounds comprising from 25% to 90% by weight of a polyacrylate of the formula:



wherein

R<sub>1</sub> is hydrogen or alkyl of 1 to 4 carbons; and R is:

(a)



wherein x is an integer of 1 to 5, and R<sub>2</sub> is hydrogen or an alkyl of 1 to 4 carbon atoms;

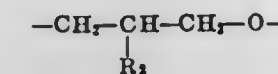
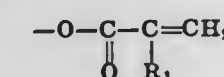
(b) CH<sub>2</sub>(CH<sub>2</sub>)<sub>y</sub>CH<sub>2</sub>O, wherein y is an integer of 1 or 2;

(c)



or

(d)

wherein R<sub>3</sub> is OH orand R<sub>1</sub> has the same meaning as above;

and 10 to 75% by weight of an aromatic or alicyclic polyacrylate compound are utilized in various dental restorative applications. A particularly suitable composition is one comprising BIS-GMA and triethylene glycol dimethacrylate.

3,751,400

# HIGH IGNITION TEMPERATURE POLYMERS SUBSTITUTED WITH HALOGEN SUBSTITUTED AROMATIC GROUPS

Timothy P. Crennan, Lenox, Mass., and Donald B. G. Jaquiss, New Harmony, Ind., assignors to General Electric Company

No Drawing. Continuation-in-part of application Ser. No. 28,180, Apr. 13, 1970, which is a continuation of application Ser. No. 532,870, Mar. 9, 1966, both now abandoned. This application July 29, 1971, Ser. No. 167,484

Int. Cl. C08g 17/13, 51/58

U.S. Cl. 260—47 XA

8 Claims

High ignition temperature aromatic carbonate polymers derived from dihydric phenols containing terminal bromine substituted aromatic group and contain 3-5 halogen atoms. The polymers are prepared by reacting bisphenol-A, phosgene and pentabromophenol, for example.

3,751,401

# VULCANIZABLE COMPOSITIONS CONTAINING CYANOISOTHIAZOLYL BIS(DITHIOCARBAMATES)

John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

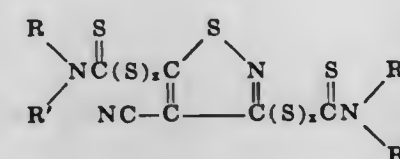
No Drawing. Continuation-in-part of application Ser. No. 861,137, Sept. 25, 1969. This application Oct. 4, 1971, Ser. No. 186,484

Int. Cl. C08f 27/06

U.S. Cl. 260—79.5 B

13 Claims

Cyanoisothiazolyl bis(dithiocarbamates) of the formula



wherein R and R' individually are alkyl, cycloalkyl, or aryl, and R and R' together with the nitrogen atom form a heterocycle, and x is one or two which are useful for accelerating the vulcanization of rubber.

3,751,402

# PROCESS FOR THE RECOVERY OF RUBBERY POLYMERS IN CRUMB FORM

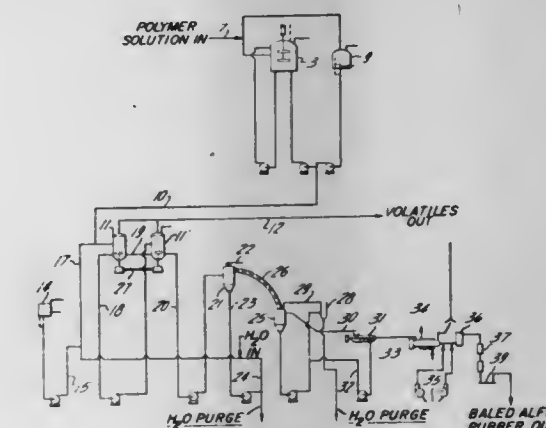
Leo H. Broering, Fort Wright, Ky., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of abandoned application Ser. No. 839,332, July 7, 1969, which is a continuation-in-part of application Ser. No. 815,723, Apr. 14, 1969, now Patent No. 3,535,296. This application June 1, 1971, Ser. No. 149,043

Int. Cl. C08d 5/02, 5/04

U.S. Cl. 260—82.1

15 Claims



A process is provided for the preparation of rubbery polymers in satisfactory crumb form that can be readily handled and processed, from polymer formed in a reaction solution in an inert, volatile, nonaqueous solvent, in the presence of an alkali metal catalyst which hydrolyzes in water to form an alkaline solution. The process comprises precipitating the polymer from the reaction solution in the presence of water by subjecting the polymer solution to steam-stripping to volatilize and remove unreacted monomer, volatile low polymer and solvent in the presence of an anionic surfactant and a nonionic surfactant and thereafter recovering the rubbery polymer crumb.

3,751,403

# RAPID ANIONIC POLYMERIZATION OF VINYL AROMATIC MONOMERS

Junji Hara, Kamakura, Yoshiharu Nakazima, Yokohama, and Yoshitoshi Honjo, Kamakura, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,511

Claims priority, application Japan, Sept. 22, 1970, 45/83,204

Int. Cl. C08f 19/02

U.S. Cl. 260—88.2 C

16 Claims

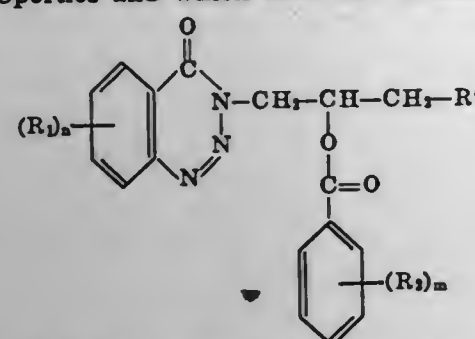
An aromatic vinyl monomer containing an organo alkali metal anionic catalyst can be rapidly polymerized without the debilitating effects of heat of polymerization if anionic polymerization is initiated by heating at least one small local area to a temperature over 40° C. and sequentially continuing polymerization through surrounding







zine-4(3H)-one derivatives having excellent coronary dilator properties and which have the structural formula



wherein R' is a radical selected from the group consisting of N,N - di - lower-alkylamino, N-lower-alkyl-N-allylamino, N - lower-alkyl-N-(methoxy-lower-alkyl)-amino, N-lower-alkyl-N-(diethylamino-lower-alkyl)-amino and N-lower-alkyl-N-benzyl-amino, lower alkyl meaning alkyl having 1 to 4 carbon atoms, said radical being bound via its nitrogen atom; R<sub>1</sub> is a lower alkoxy group having 1-4 carbon atoms which may be in the 6,7 or 6,7,8-position; R<sub>2</sub> is an alkoxy group having 1-4 carbon atoms; m is an integer selected from 1, 2 and 3; and n is an integer selected from the group consisting of 2 and 3 and pharmaceutically acceptable acid addition salts thereof.

3,751,414

### 3-SUBSTITUTED DERIVATIVES OR 1,3(3H)-BENZOXAZINE-2,4-DIONE

Herbert John Haver, Edwardsburg, Mich., and Shin Hayao, Tokyo, Japan, assignors to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Continuation-in-part of abandoned application Ser. No. 563,959, July 11, 1966. This application Sept. 13, 1971, Ser. No. 180,092

Int. Cl. C07d 87/10

U.S. Cl. 260—244 R

4 Claims

Compounds which are a series of 3-substituted derivatives of 1,3(3H)-benzoxazine-2,4-dione that are useful as analgetic agents. These compounds are prepared by reacting an appropriate N-substituted salicylamide derivative with a ring closing agent.

3,751,415

### 2-NITRO-11-(1-PIPERAZINYL)-DIBENZ[b,f][1,4]OXAZEPINES

Jean Schmutz, Muri, and Fritz Hunziker and Franz Martin Kunzle, Bern, Switzerland, assignors to Sandoz-Wander, Inc.

No Drawing. Continuation-in-part of application Ser. No. 57,316, July 22, 1970, which is a continuation-in-part of application Ser. No. 797,281, Feb. 6, 1969, now Patent No. 3,546,226, dated Dec. 8, 1970, which in turn is a continuation-in-part of abandoned application Ser. No. 712,956, Mar. 14, 1968. This application Nov. 1, 1971, Ser. No. 194,514

Claims priority, application Switzerland, Mar. 22, 1967, 4,103/67

Int. Cl. C07d 51/70

U.S. Cl. 260—268 TR

1 Claim

2 - nitro-11-(1-piperazinyl)-dibenz[b,f][1,4]oxazepines and its pharmaceutically acceptable acid addition salts are useful as anti-depressants.

3,751,416

### 3-[2-(4-PHENYL-1-PIPERAZINYL)-ETHYL]INDOLINES

George Rodger Allen, Jr., Old Tappan, N.J., Francis Joseph McEvoy, Pearl River, N.Y., Vern Gordon DeVries, Ridgewood, N.J., Daniel Bryan Moran, Suffern, N.Y., and Ruddy Littell, River Vale, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 27, 1971, Ser. No. 147,700

Int. Cl. C07d 51/70

U.S. Cl. 260—268 TR

8 Claims

This disclosure describes compounds of the class of substituted 3 - [2-(4-phenyl-1-piperazinyl)ethyl]indolines useful as tranquilizing agents.

### 3,751,417 1-ACYL-3-[2-(4-PHENYL-1-PIPERAZINYL)ETHYL]INDOLINES

George Rodger Allen, Jr., Old Tappan, N.J., Francis Joseph McEvoy, Pearl River, N.Y., Vern Gordon DeVries, Ridgewood, N.J., Daniel Bryan Moran, Suffern, N.Y., and Ruddy Littell, River Vale, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Aug. 12, 1971, Ser. No. 171,319

Int. Cl. C07d 51/70

U.S. Cl. 260—268 TR

10 Claims

This disclosure describes compounds of the class of substituted 1-acyl-3-[2-(4-phenyl-1-piperazinyl)ethyl]indolines useful as intermediates for the preparation of tranquilizing agents.

3,751,418

### BENZENESULFONYL-UREAS AND PROCESS FOR THEIR MANUFACTURE

Rudi Weyer, Frankfurt am Main, Walter Aumuller, Kelheim, Taunus, Helmut Weber, Frankfurt am Main, Roland Schweitzer, Falkenstein, Taunus, and Ruth Heerdt, Mannheim, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed June 3, 1971, Ser. No. 149,745

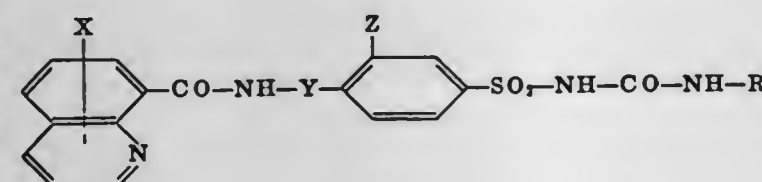
Claims priority, application Germany, June 6, 1970, P 20 27 950.9

Int. Cl. C07c 33/48

U.S. Cl. 260—283 SA

7 Claims

Hypoglycemically active benzenesulfonyl-ureas of the formula



wherein X is hydrogen, chlorine, bromine, methoxy or methyl, Y is  $-\text{CH}(\text{CH}_3)-\text{CH}_2-$ ,  $-\text{CH}_2-\text{CH}(\text{CH}_3)-$  or  $-\text{CH}_2\text{CH}_2-$ , R is alkyl of 3 to 6 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, which may be substituted by 1 or 2 alkyl of up to 3 carbon atoms or by chlorine, cycloalkenyl of 5 to 8 carbon atoms, which may be substituted by 1 to 2 alkyl of up to 3 carbon atoms, bicycloalkyl or bicycloalkenyl of 7 or 8 carbon atoms, nortricycyl, spiro[2,4]-heptyl, Z is hydrogen or a hydrocarbon radical of 1 or 2 carbon atoms which forms with Y a 5- or 6-membered ring, or the salts thereof as well as a process for their manufacture.

3,751,419

### BI-ISOUINOLINONE COMPOUNDS

Erich Ziegler, Graz, Austria, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,772

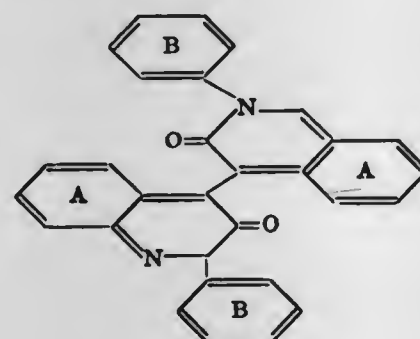
Claims priority, application Switzerland, Feb. 3, 1970, 1,465/70

Int. Cl. C07d 33/46

U.S. Cl. 260—288 R

2 Claims

Bi-isouinolinones of formula:



(I)

wherein the rings A and B can be further substituted by halogen, nitro, lower alkyl or lower alkoxy, and the rings A can contain a condensed benzene ring, are useful for coloring plastics in fluorescent yellow to red shades.

3,751,420

### MONOOLMONOENE AMINES

Frederick P. Hauck, Somerville, Joseph E. Sundeen, Trenton, and Joyce A. Reid, Highland Park, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

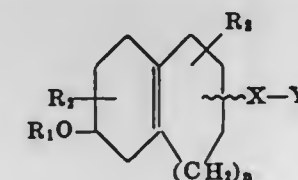
No Drawing. Filed Apr. 1, 1971, Ser. No. 130,437

Int. Cl. C07d 29/16

U.S. Cl. 260—293.56

6 Claims

Monoolmonoene amines are provided having the structure



which are useful as analgetic muscle relaxants.

3,751,421

### SUBSTITUTED 3,5,6-TRIALKO-2-PYRIDYL CARBONATES

Richard A. Nyquist, Midland, and Thomas L. Reder, Bay City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

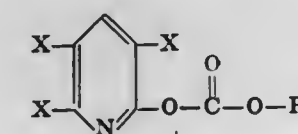
No Drawing. Filed Aug. 2, 1971, Ser. No. 168,434

Int. Cl. C07d 31/34

U.S. Cl. 260—295 R

5 Claims

3,5,6-trialko-2-pyridyl carbonates corresponding to the formula



wherein each X is independently chlorine, fluorine or bromine and R represents:

- loweralkyl of 1 to 4 carbon atoms, inclusive, excepting the tert-butyl configuration;
- halo lower alkyl of 1 to 4 carbon atoms, inclusive;
- loweralkenyl of 2 to 4 carbon atoms, inclusive;
- loweralkynyl of 3 to 4 carbon atoms, inclusive;
- (loweralkoxyloweralkoxy)loweralkyl wherein the terminal loweralkoxy group contains from 1 to 4 carbon atoms, inclusive, the internal loweralkoxy group contains from 2 to 4 carbon atoms, inclusive, and the loweralkyl group contains from 2 to 4 carbon atoms, inclusive; their preparation and utility as fungicides and herbicides is disclosed.

3,751,422

### PROCESS FOR PRODUCING BIPYRIDYLS

Roy Dennis Bowden, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 24, 1970, Ser. No. 57,387

Claims priority, application Great Britain, July 8, 1969, 34,414/69

The portion of the term of the patent subsequent to Mar. 21, 1989, has been disclaimed

Int. Cl. C07d 31/02, 31/10

U.S. Cl. 260—296 D

12 Claims

A process for the manufacture of bipyridyls, known for their herbicidal properties, which comprises the step of reacting a corresponding substituted pyridine in the liquid phase with ammonia, optionally in the presence of

3,751,423

### TRICHLOROETHYLIDENE-AMINO-THIAZOLES

Pal Benko, Zoltan Budai, Laszlo Pallos, and Edit Berenyi, Budapest, Hungary, assignors to Egyt Gyogyszervezeti Gyar

No Drawing. Original application Apr. 10, 1969, Ser. No. 815,238, now Patent No. 3,624,088. Divided and this application June 17, 1971, Ser. No. 154,178

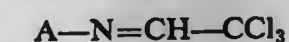
Claims priority, application Hungary, Apr. 12, 1968, EE-1,505

Int. Cl. C07d 91/34

U.S. Cl. 260—306.8 R

3 Claims

Compounds of the formula



wherein A is a thiazolyl-2 which may be unsubstituted or substituted by one nitro group or one or two methyl groups, and the pharmaceutically acceptable acid addition salts thereof.

The new compounds exert anthelmintic and herbicidal activity.

3,751,424

### THIAZOLIUM COMPOUND

Walter Reifschneider, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

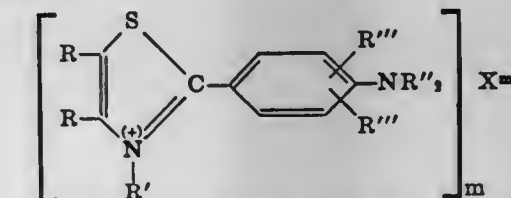
No Drawing. Original application Oct. 27, 1966, Ser. No. 589,859, now Patent No. 3,511,850, dated May 12, 1970. Divided and this application Aug. 29, 1969, Ser. No. 869,429

Int. Cl. C07d 91/32

U.S. Cl. 260—302 R

4 Claims

Compound which is a member selected from the group consisting of



wherein X represents a pharmaceutically-acceptable anion; R, each being taken separately, represents hydrogen or loweralkyl, or both R moieties, taken together, represent straight-chain alkylene being of from 3 to 6, both inclusive, carbon atoms; R' represents primary loweralkyl; each R'' independently represents hydrogen or primary loweralkyl; each R''' independently represents hydrogen, bromo, chloro, methoxy, or methyl; and m represents an integer equal to the valence of the anion X. The compounds are useful as agents for regulating the growth of plants.

3,751,425

### 1-METHYL-AND 1-ETHYLTHIOETHYLCARBAMOYL-SUBSTITUTED BENZIMIDAZOLES

Hans Osieka, Ludwigshafen, Karl Heinz Koenig Frankenthal, and Gerhard Bolz and August Amann, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 10, 1971, Ser. No. 122,995

Claims priority, application Germany, Mar. 14, 1970, P 20 12 219.4

Int. Cl. C07d 49/38

U.S. Cl. 260—309.2

4 Claims

Benzimidazoles bearing, as substituents, a carbamoyl radical in the 1-position and a mercapto carboxylamino radical in the 2-position. The compounds are suitable (in appropriate pharmaceutical preparations) as agents for treating and curing fungus diseases and as prophylactics therefor.



3,751,426

**1-SUBSTITUTED-6-PHENYL-4H-s-TRIAZOLO[4,3-a][1,6]BENZODIAZEPINE COMPOUNDS**

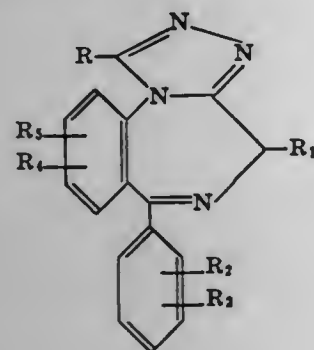
Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Apr. 28, 1971, Ser. No. 138,290

Int. Cl. C07d 57/02

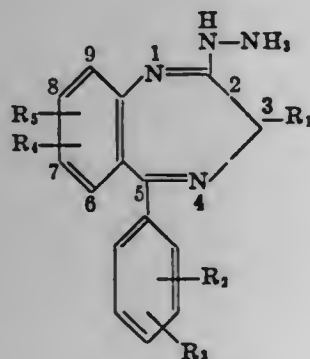
U.S. Cl. 260—308 R 18 Claims

1 - substituted - 6 - phenyl-4H-s-triazolo[4,3-a][1,4]benzodiazepines of the Formula VII:



(VII)

wherein R is selected from the group consisting of thio, alkylthio, in which the alkyl group is of 1 to 3 carbon atoms, inclusive, amino, nitro, and fluoro; wherein R<sub>1</sub> is selected from the group consisting of hydrogen and alkyl of 1 to 3 carbon atoms, inclusive; and wherein R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, and R<sub>5</sub> are selected from the group consisting of hydrogen, alkyl as defined above, halogen, nitro, cyano, trifluoromethyl, and alkoxy, alkylthio, alkylsulfinyl and alkylsulfonyl, in which the carbon chain moieties are of 1 to 3 carbon atoms, inclusive, are produced by condensing a 5-phenyl-3H-1,4-benzodiazepin-2-yl hydrazine of the Formula I:



with thiophosgene (SCCl<sub>2</sub>) to obtain a triazole of Formula VII above in which R is a thio group, or treating I with cyanogen bromide (BrCN) to give a compound of Formula VII wherein R is the amino group. Further conventional treatments produces the compounds in which R is an alkylthio or nitro group or fluoro.

The new products of Formula VII including their pharmacologically acceptable acid addition salts are useful as sedatives, tranquilizers and muscle relaxants in mammals and birds.

3,751,427

**LOWERALKYL-N-(1-LOWERALKYL-5-NITRO-IMIDAZOLE-2-CARBONYL) CARBAMATES**

David W. Henry, Menlo Park, Calif., and Dale R. Hoff, Basking Ridge, and Arthur A. Patchett, Cranford, N.J., assignors to Merck &amp; Co., Inc., Rahway, N.J.

No Drawing. Original application Feb. 19, 1969, Ser. No. 800,705, now Patent No. 3,632,817, dated Jan. 4, 1972. Divided and this application Feb. 12, 1971, Ser. No. 115,129

Int. Cl. C07d 49/36

U.S. Cl. 260—309 3 Claims

N-(1-loweralkyl-5-nitroimidazol-2-yl carbonyl) ureas and carbamates having antiprotozoal activity prepared by reaction of 1-loweralkyl-5-nitroimidazole-2-carboxamide with oxalyl halide and then with an appropriate alcohol or amine. The product compounds are useful as parasiticides.

3,751,428

**1-SUBSTITUTED BENZOYL-2-TRIFLUORO-METHYLBENZIMIDAZOLES**

Reinhard Sarges, Old Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Original application Mar. 20, 1968, Ser. No. 714,416, now Patent No. 3,625,954, dated Dec. 7, 1971. Divided and this application Oct. 4, 1971, Ser. No. 186,446

Int. Cl. C07d 49/38

U.S. Cl. 260—309.2 4 Claims

Selected 1-benzoylbenzimidazoles having at the 2-position hydrogen, CF<sub>3</sub>, —NHCOCF<sub>3</sub>, —CH<sub>2</sub>CH<sub>2</sub>CO<sub>2</sub>H, methyl or pyridyl and 1-benzoylbenzotriazoles having utility as anti-inflammatory agents and the preparation thereof by acylation of the appropriate benzimidazole or benzotriazole with a benzoyl halide.

3,751,429

**4-(3-AMINO-2-SUBSTITUTED PROPOXY) INDOLE DERIVATIVES**

Fritz Seemann, Basel, and Franz Troxler, Bottmingen, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

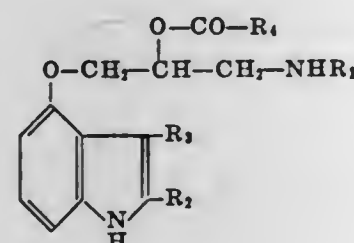
No Drawing. Continuation-in-part of abandoned application Ser. No. 124,976, Mar. 16, 1971. This application Sept. 24, 1971, Ser. No. 183,631

Claims priority, application Switzerland, Mar. 24, 1970, 4,379/70; Sept. 30, 1970, 14,467/70

Int. Cl. C07d 27/56

U.S. Cl. 260—326.14 R 18 Claims

This invention concerns novel compounds of the formula:



wherein R<sub>1</sub> is alkyl of 1 to 6 carbon atoms, cycloalkyl of 3 to 6 carbon atoms, phenylalkyl of 8 to 12 carbon atoms wherein the phenyl radical is separated from the nitrogen atom by at least 2 carbon atoms, 1,1-dimethyl-2-propinyl or allyl, R<sub>2</sub> is hydrogen, methyl, carbamoyl, or carbamoyl mono- or disubstituted by alkyl of 1 to 4 carbon atoms, R<sub>3</sub> is hydrogen or methyl, and R<sub>4</sub> is alkyl of 1 to 17 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, cycloalkyl of 3 to 7 carbon atoms substituted by one or more alkyl substituents of 1 to 4 carbon atoms, phenyl, phenyl monosubstituted by methyl, methoxy, fluoro or chlorine, or chloroalkyl of 1 to 7 carbon atoms, and acid addition salts thereof.

The compounds possess adrenergic β blocker and anti-arrhythmic properties.

3,751,430

**5-ACYL-2,3-DIHYDROBENZOTHIOPHENE-2-CARBOXYLIC ACIDS**

Bernard Libis, Saint Louis la Chaussee, France, and Ernst Habicht, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application May 26, 1969, Ser. No. 827,941, now Patent No. 3,651,094, dated Mar. 21, 1972. Divided and this application Sept. 20, 1971, Ser. No. 182,164

Claims priority, application Switzerland, May 30, 1968, 8,030/68

Int. Cl. A61k 27/00; C07d 63/22, 5/34

U.S. Cl. 260—330.5 5 Claims

5-acyl-benzofuran-2-carboxylic, 5-acyl-benzothiophene-2-carboxylic acids and pharmaceutically acceptable salts

thereof with bases, which compounds have valuable diuretic and simultaneously saluretic as well as anti-tussive activities, therapeutic compositions containing such compounds as aforesaid or their pharmaceutically acceptable salts with bases as well as methods for producing simultaneously diuretic and saluretic effects and for inhibiting tussive irritation in mammals. Illustrative embodiments exhibiting primarily antitussive and simultaneous diuretic and saluretic effects respectively are 2,3-dihydro-5-butyryl-6-methyl-benzofuran-2-carboxylic acid and 2,3-dihydro-5-butyryl-6,7-dimethyl-benzofuran-2-carboxylic acid.

3,751,431

**F.E.S. DERIVATIVES**

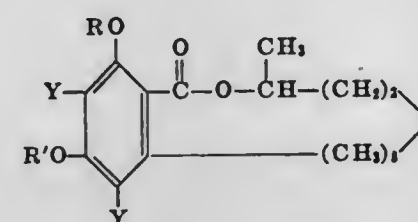
Herbert L. Wehrmeister and Edward B. Hodge, Terre Haute, Ind., assignors to Commercial Solvents Corporation

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,880

Int. Cl. C07d 9/00

U.S. Cl. 260—343.2 F 6 Claims

New compounds are provided and have the formula



where B is >C=O, >CHOH or >CH<sub>2</sub>; R and R' can be hydrogen, alkyl, acyl or aralkyl radicals; and Y is bromine. These compounds exhibit antibacterial activity and can be used in animal feed compositions.

3,751,432

**TETRAHYDROPYRAN DERIVATIVE**

Gottfried J. Brendel and Lawrence H. Shepherd, Jr., Baton Rouge, La., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Application Oct. 5, 1970, Ser. No. 78,213, now Patent No. 3,692,847, which is a division of application Ser. No. 771,651, Oct. 29, 1968, now Patent No. 3,631,065. Divided and this application May 25, 1972, Ser. No. 257,050

Int. Cl. C07d 7/14

U.S. Cl. 260—345.1 1 Claim

Nonionic compounds in which an aluminum atom is part of an olefinically unsaturated ring system are prepared by causing interaction among aluminum, a conjugated diene and a hydrocarbon aluminum hydride in the presence of a suitable Lewis base such as 1,4-dioxane or N-methyl pyrrolidine. The resulting cyclic organoaluminum compound is useful in the synthesis of olefins and branched chain alkenols. Thus by subjecting the cyclic organoaluminum compound to hydrolysis, on or more olefins may be produced. To prepare branched chain alkenols, the cyclic organoaluminum compound is reacted with a cleavable cycloparaffinic monoether having a 3, 4 or 5-membered ring. Thereupon the reaction mixture is subjected to hydrolysis. The following novel compounds were prepared by this procedure.

1-chloromethyl-3,4-dimethyl-4-penten-1-ol  
1-chloromethyl-3,3-dimethyl-4-penten-1-ol  
2,2-bis(chloromethyl)-4,5-dimethyl-5-hexen-1-ol  
2,2-bis(chloromethyl)-4,4-dimethyl-5-hexen-1-ol  
1,5,5-trimethyl-6-hepten-1-ol  
1,5,6-trimethyl-6-hepten-1-ol  
4,5,6-trimethyl-6-hepten-1-ol  
2,2,3-trimethyl-5,5-bis(chloromethyl)tetrahydropyran

3,751,433

**2-HYDROXY-2-(3-ACYL-4-OXOALKYL)-6-VINYLTETRAHYDROPYRANS AND TAUTOMERS**

Gabriel Saucy, Essex Fells, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Jan. 19, 1970, Ser. No. 4,026, now Patent No. 3,671,539. Divided and this application Mar. 29, 1972, Ser. No. 239,369

Int. Cl. C07d 7/04

U.S. Cl. 260—345.9 3 Claims

2-hydroxy-2-(3-acyl-4-oxoalkyl) - 6 - vinyltetrahydropyrans and tautomers thereof are intermediates useful in the preparation of pharmaceutically valuable steroidal compounds. Preparation of such compounds from 2-(2'-substituted aminoethyl)-2-hydroxy - 6 - vinyltetrahydropyrans and their alkyl substituted analogs are described.

3,751,434

**DERIVATIVES OF 2H-PYRAN-3(6H)-ONES**

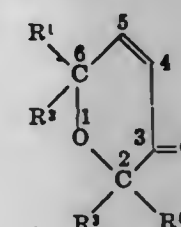
Yvon Lefebvre, Pierrefonds, Quebec, Canada, assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 78,196, Oct. 5, 1970, now Patent No. 3,657,226, which is a continuation-in-part of application Ser. No. 5,883, Jan. 26, 1970, now abandoned, which in turn is a continuation-in-part of application Ser. No. 748,196, July 29, 1968, now Patent No. 3,547,912. This application Apr. 7, 1971, Ser. No. 132,196

Int. Cl. C07d 7/10

U.S. Cl. 260—345.9 37 Claims

Compounds of the formula



in which R<sup>1</sup> and R<sup>2</sup> together represent oxo; or R<sup>1</sup> represents hydrogen and R<sup>2</sup> represents a hydroxyl, lower alkanoyloxy, p-nitrobenzoyloxy or chloroacetoxyl, lower alkoxy, lower alkoxy(lower)alkoxy, benzyloxy or tetrahydropyranyloxy; or R<sup>1</sup> represents a lower alkyl, aryl or substituted aryl and R<sup>2</sup> represents a hydroxyl, lower alkoxy, lower alkoxy(lower)alkoxy, benzyloxy or tetrahydropyranyloxy; R<sup>3</sup> represents hydrogen and R<sup>4</sup> represents lower alkyl, substituted lower alkyl, cyclo(lower)alkyl, aryl, substituted aryl, aralkyl, substituted aralkyl; or R<sup>3</sup> and R<sup>4</sup> each represent hydrogen or the same or different organic radicals described above; or R<sup>3</sup> and R<sup>4</sup> together represent a carboxylic ring, attached in a spiral fashion to the 2H-pyran-3(6H)-one ring so that the carbon atom 2 of the pyranone ring is common to the carbocyclic ring. The compounds have antibacterial and antifungal activities, and methods for their preparation and use are also disclosed.

3,751,435

**PROCESS FOR RECOVERY OF PIVALOLACTONE FROM POLYMERS THEREOF**

Servaas van der Ven and Frederik L. Binsbergen, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Jan. 14, 1971, Ser. No. 106,579

Claims priority, application Netherlands, Feb. 13, 1970, 7002062

Int. Cl. C07d 3/00

U.S. Cl. 260—343.9 9 Claims

Pivalolactone is recovered from polymers thereof by a process which comprises heating the polymer in the presence of a depolymerization catalyst at a temperature above 245° C. and a vapor pressure of said pivalolactone less than one atmosphere to form pivalolactone vapor, and rapidly condensing the pivalolactone vapor.



3,751,436

**2,3-DIHYDRO - 5 - (2-METHYLENE-ALKANOYL)-BENZOFURAN - 2 - CARBOXYLIC ACID ALKYL AND CYCLOALKYL ESTERS**

Ernst Habicht, Oberwil, Basel-Land, Switzerland, and Bernard Libis, Saint-Louis, France, assignors to Ciba-Geigy Corporation

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,207

Int. Cl. C07d 5/36

U.S. Cl. 260—346.2 R

5 Claims

Compounds of the class of 2,3-dihydro-5-(2-methylene-alkanoyl)-benzofuran- and 2,3-dihydro-5-(2-methylene-alkanoyl)-benzo[b]thiophene-2-carboxylic acid alkyl and cycloalkyl esters have diuretic and saluretic effects in mammals; pharmaceutical compositions containing said compounds and methods for producing a diuretic and saluretic effect in mammals comprising administering said compounds to said mammals are described; a typical embodiment is 2,3-dihydro-5-(2-methylene-butyryl)-6-methyl-benzofuran-2-carboxylic acid methyl ester.

3,751,437

**BATCH AND CONTINUOUS PROCESS FOR PREPARING MENADIONE**

Francis Huba, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed July 6, 1970, Ser. No. 52,361

Int. Cl. C07c 49/66

U.S. Cl. 260—396 R

4 Claims

Menadione is prepared by a batch or a continuous process using 2-methylnaphthalene, a hexavalent chromium compound, a mineral acid, water, pyridine and, if desired, an inert organic solvent. Reactants are fed into the reactor at rates and conditions which provide continuous oxidation of 2-methylnaphthalene to menadione. The process produces five times as much product per unit volume of reactor space as a batch process under comparable conditions.

3,751,438

**HYDROLYSIS OF 3-OXIMINO- $\Delta^5(10)$  STEROIDS**

George R. Lenz, Glenview, and Raphael Pappo, Skokie, Ill., assignors to G. D. Searle &amp; Co., Chicago, Ill.

No Drawing. Filed Jan. 20, 1972, Ser. No. 219,551

Int. Cl. C07c 169/22

U.S. Cl. 260—397.4

14 Claims

3-oximino- $\Delta^5(10)$  steroids are converted to the corresponding 3-keto- $\Delta^5(10)$  steroids by treatment with a titanium(III) or chromium(II) salt.

3,751,439

**CRYSTALLINE NICKEL CHELATE OF 1-NITROSO-2-NAPHTHOL AND PROCESS FOR PRODUCING SAME**

Richard Knight Putney, Hudson Falls, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Feb. 24, 1972, Ser. No. 229,168

Int. Cl. C07f 15/04; C08h 17/14

U.S. Cl. 260—439 R

10 Claims

Pigmentary compositions comprising an intimate dispersion of a crystalline, light-stable nickel chelate of 1-nitroso-2-naphthol and from 0.10 to 1.0 mole, per mole of the nickel chelate, of certain ester plasticizers are described. The compositions have improved texture and dispersibility and are produced by wetting the hydrated nickel chelate of 1-nitroso-2-naphthol in aqueous medium with the plasticizer, isolating the wetted chelate and then heating the isolated product at 65–105° C. until dehydration is complete and the chelate is converted to its crystalline, light-stable form.

3,751,440

**METAL COMPLEXES OF N,N-DIALKYLESTERS OF ETHYLENEDINITRILOTETRAACETIC ACID AND AND COMPOSITIONS STABILIZED THEREBY**

John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,307

Int. Cl. C07f 15/04, 11/00, 13/00

U.S. Cl. 260—439 R

4 Claims

Synthetic polymeric compositions which are subject to ultraviolet light deterioration are stabilized by means of an effective amount of a metal complex of N,N'-alkyl esters of ethylenedinitrilotetraacetic acid. Polymeric compositions containing these stabilizers also exhibit an increase in susceptibility to dye as compared to the unstabilized polymeric compositions. A typical embodiment is the nickel complex, N,N'-di-n-octadecyl ester of ethylenedinitrilotetraacetic acid.

3,751,441

**PREPARATION OF FERROCENYL BUTADIENES**

Dennis C. Van Landuyt, Auburn, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed June 15, 1971, Ser. No. 153,442

Int. Cl. C07f 15/02

U.S. Cl. 260—439 CY

8 Claims

The process of making ferrocenylalkadienes by reacting a ferrocene carbonyl compound with a Grignard reagent to produce an alkenol, and then reacting the ferrocenylalkenol in a dehydration reaction in the presence of diamylhydroquinone, benzene, and copper sulfate pentahydrate. A ferrocenylalkadiene is recovered from this reaction. These ferrocenylalkadienes are used in the preparation of homopolymers for propellant applications, or they may be copolymerized with butadienes and used in solid propellant binders.

3,751,442

**EXTRACTION OF UNSAPONIFIABLE FRACTIONS FROM NATURAL FATS**

Alain Rancurel, Chartres, France, assignor to Laboratoires Pharmascience

No Drawing. Filed June 28, 1971, Ser. No. 157,706

Claims priority, application France, July 2, 1970, 7024542

Int. Cl. C11b 1/10

U.S. Cl. 260—412.8

7 Claims

The invention relates to a new process for the extraction of the unsaponifiable fraction from natural fats.

3,751,443

**METHOD OF PRODUCING ACRYLONITRILE**

Khachik Egorovich Khcheian, prospekt Mira 148a, kv. 19; Olga Mikhailovna Revenko, ulitsa Chkalova 48a, kv. 53; Alla Nikolaevna Shatalova, Veernaya ulitsa 34, korpus 2, kv. 14; and Eleonora Grigorievna Gelperina, Schelkovskoe shosse 44, korpus 1, kv. 19, all of Moscow, U.S.S.R.

No Drawing. Filed Aug. 26, 1970, Ser. No. 67,244

Claims priority, application U.S.S.R., Sept. 1, 1969, 1371589

Int. Cl. C07c 121/02

U.S. Cl. 260—465.9

5 Claims

A method of producing acrylonitrile by reacting acetonitrile with a lower saturated aliphatic hydrocarbon, such as methane, in the presence of oxygen or an oxygen-containing gas at a temperature of 600–1000° C.

3,751,444

**PROCESS FOR THE PREPARATION OF 2,2-DIBROMO-2-CYANOACETAMIDE**

Richard H. Solem and Lawrence D. Berg, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 26, 1971, Ser. No. 164,884

Int. Cl. C07c 121/02, 121/16

U.S. Cl. 260—465.4

7 Claims

Disclosed is an improvement to the process of preparing 2,2-dibromo-2-cyanoacetamide by the acid catalyzed reaction of cyanoacetamide and bromine at a temperature no greater than 40° C. and HBr concentration no greater than 20%. The improvement involves oxidizing the by-product HBr in solution to bromine with a soluble bromate. The oxidation permits the reaction solution to be recycled thereby avoiding a waste disposal problem and increasing the yield of the desired product.

3,751,445

**PREPARATION OF CYANACRYLIC ACID ESTERS**

Wolfgang Imoehl, Unna Königsborn, and Peter Borner, Altunnen, Germany, assignors to Schering AG, Bergkamen, Germany

Filed Jan. 26, 1972, Ser. No. 220,891

Claims priority, application Germany, Feb. 1, 1971, P 21 04 518.1

Int. Cl. C07c 121/02

U.S. Cl. 260—465.4

3 Claims

Method and apparatus for depolymerizing polycyanacrylates by continuous feeding into a heated depolymerization zone, for example by screw means, with continuous removal of depolymerization residues therefrom, again, for example, by screw means, and with collection of the monomer product in a cooled receiver.

3,751,446

**PREPARATION OF ARYL-SUBSTITUTED ACETYLENIC COMPOUNDS**

Richard F. Heck, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Mar. 16, 1971, Ser. No. 124,920

The portion of the term of the patent subsequent to Sept. 8, 1987, has been disclaimed

Int. Cl. C07c 69/76, 15/02, 3/54

U.S. Cl. 260—469

10 Claims

Aryl-substituted acetylenic compounds are prepared by reacting acetylene or an arylacetylene such as phenylacetylene with an organopalladium compound. The latter compound is prepared by reacting a palladium salt such as palladium acetate with a suitable organomercury, tin or lead compound as, for example, diphenylmercury, tetraphenyltin, tetraphenyllead, phenylmercuric acetate.

3,751,447

**NOVEL GUANIDINOCAPROIC ACID PHENYL ESTERS AND THEIR PRODUCTION**

Setsuro Fujii, Tokushima, and Tsuyoshi Watanabe, Nishinomiyu, Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

No Drawing. Filed Oct. 14, 1970, Ser. No. 80,800

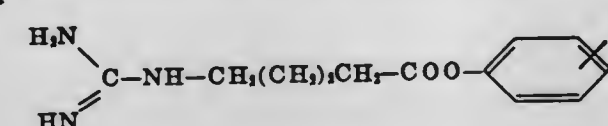
Claims priority, application Japan, Oct. 14, 1969, 44/82,103

Int. Cl. C07c 69/76, 101/24, 129/08

U.S. Cl. 260—473 R

2 Claims

Novel guanidinocaproic acid phenyl esters of the formula



where X is, for example, hydrogen or halogen, and process for the production thereof, useful as antikallikrein, antitrypsin and antiplasmin agents.

3,751,448

**BASICALLY SUBSTITUTED ISOBORNYL URETHANES**

Georg Jager, Raunheim (Main), and Rolf Geiger and Roman Muschaweck, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius &amp; Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 19, 1972, Ser. No. 219,150

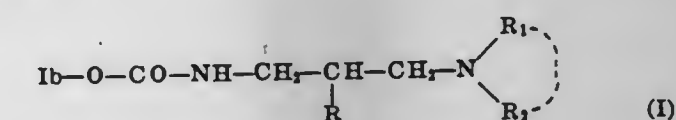
Claims priority, application Germany, Jan. 21, 1971, P 21 02 741.8; Dec. 4, 1971, P 21 60 237.9

Int. Cl. C07d 29/26

U.S. Cl. 260—482 C

4 Claims

Basically substituted isobornyl urethanes of the General Formula I



in which Ib represents the isobornyl radical, R represents hydrogen or the OH-group, R<sub>1</sub> and R<sub>2</sub> represent an alkyl radical having 1 to 4 carbon atoms or N, R<sub>1</sub>, R<sub>2</sub> represent the pyrrolidino or piperidino radical and their salts with physiologically tolerated acids, having local anaesthetic action.

3,751,449

**CYCLOALIPHATIC AND PHENYLALKYL ACRYLATES AND VINYL ESTERS**

Ramsis Gobran, Roseville, and Hanspeter Knoepfel and Spencer F. Silver, White Bear Lake, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

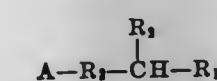
No Drawing. Filed June 26, 1969, Ser. No. 836,946

Int. Cl. C07c 69/54

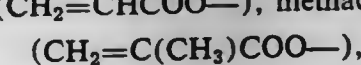
U.S. Cl. 260—486 R

6 Claims

Carbocyclic alkyl acrylates and vinyl esters of the general formula:



where

A is acryloxy (CH<sub>2</sub>=CHCOO—), methacryloxy

or carbovinylloxy (CH<sub>2</sub>=CHOCO—), R<sub>1</sub> is a cycloaliphatic or aromatic group, R<sub>2</sub> is a hydrogen atom or lower alkyl, and R<sub>3</sub> is an alkylene having at least five carbon atoms,

are prepared, for example, by alcoholysis of lower alkyl acrylates with cycloaliphatic- or aromatic-substituted alkanols or by acylation of said alkanols with acryloyl or methacryloyl chloride, or by vinyl ester interchange of lower vinyl esters with cycloaliphatic- or aromatic-substituted alkanolic acids, said carbocyclic alkyl acrylates and vinyl esters being polymerizable monomers useful in forming polymers having utility, for example, as pressure sensitive adhesives.

3,751,450

**SUBSTITUTED PHENYLCARBAMATES**

Adolf Fischer, Mutterstadt, Albrecht Mueller, Frankenthal, and Guenter Hansen, Ludwigshafen, Germany, assignors to Badische Anilin- &amp; Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed May 25, 1971, Ser. No. 146,791

Int. Cl. C07c 125/06

U.S. Cl. 260—479 C

1 Claim

New and valuable substituted phenylcarbamates having a good herbicidal action and a process for controlling the growth of unwanted plants with these compounds.



3,751,451

**MONOMERIC EMULSION STABILIZERS DERIVED FROM ALKYL/ALKENYL SUCCINIC ANHYDRIDE**  
Carlos M. Samour, Wellesley, and Mildred C. Richards, Wakefield, Mass., assignors to The Kendall Company, Walpole, Mass.

No Drawing. Continuation-in-part of application Ser. No. 867,900, Oct. 20, 1969. This application May 26, 1970, Ser. No. 40,718

Int. Cl. C07c 69/40

**U.S. Cl. 260—485 H** 3 Claims  
Quaternary ammonium salts having a lipophilic group covalently linked to the quaternary nitrogen through hydroxysuccinyl or hydroxysuccinylamino radicals are disclosed. These quaternary ammonium salts are useful as monomeric emulsion stabilizers.

3,751,452

# PROCESS FOR PRODUCING ADAMANTYL ESTERS OF POLYHYDRIC ALCOHOLS

Yoshiaki Inamoto and Hirokazu Nakayama, Wakayama, Hidetsugu Takenaka, Arita, and Yoshitomo Kimura, Wakayama, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed July 20, 1971, Ser. No. 164,412  
Claims priority, application Japan, July 24, 1970, 45/64,886

Int. Cl. C07c 61/12

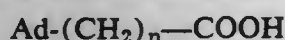
**U.S. Cl. 260—468 G** 6 Claims  
A compound of the formula



wherein  $m$  is 0, 1 or 2;  $n$  is 0 or 1; "Ad" is adamantyl or alkyl-substituted adamantyl; and  $R$  is hydrogen, alkyl, cycloalkyl or aralkyl. The compound is prepared by esterifying a polyhydric alcohol of the formula



with a carboxylic acid of the formula



The compounds are useful as lubricants, plasticizers, viscosity improvers, etc.

3,751,453

**ALPHA-ACYLOXYACETIC ACID PRODUCTION**  
Victor P. Kurkov, San Rafael, Seymour J. Lapporte, Orinda, and William G. Toland, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Aug. 21, 1972, Ser. No. 282,516  
Int. Cl. C07c 67/00

**U.S. Cl. 260—494** 12 Claims  
 $\alpha$ -Acyloxyacetic acids are produced as the major product by the reaction of formaldehyde, a carboxylic acid and carbon monoxide in the presence of catalytic amounts of a Group VIII noble transition metal compound and an iodide promoter.

3,751,454

**BIS-GUANIDIUM TETRACHLOROPHTHALATE AND TETRABROMOPHTHALATE AND PROCESS FOR MAKING SAME**

Satoyuki Minami, Otsu-shi, Masateru Nakoji, Moriguchi-shi, and Toshikazu Aoki, Otsu-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jan. 30, 1969, Ser. No. 795,252  
Claims priority, application Japan, Feb. 12, 1968, 43/8,359

Int. Cl. C07c 123/00

**U.S. Cl. 260—501.14** 1 Claim  
Bis-guanidium tetrachlorophthalates and bis-guanidium tetrabromophthalates and processes for obtaining same by interaction of an inorganic acid salt of guanidine and tetrachlorophthalic anhydride or tetrabromophthalic anhydride or an alkali metal salt of tetrachlorophthalate or tetrabromophthalate.

3,751,455

# METHOD OF PRODUCING 1,3-BIS(CARBOXY-METHYL) ADAMANTANES

Yoshiaki Inamoto and Hirokazu Nakayama, Wakayama, and Hidetsugu Takenaka, Arita, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 18, 1970, Ser. No. 64,815  
Claims priority, application Japan, Aug. 20, 1969, 44/65,826; Aug. 21, 1969, 44/66,152

Int. Cl. C07c 51/00

**U.S. Cl. 260—514 G** 5 Claims  
1,3-bis(carboxymethyl) derivatives of adamantane and alkyladamantanes are prepared in one step by the reaction of an adamantane, vinylidene chloride, and *t*-butyl alcohol in concentrated sulfuric acid in the presence of fuming sulfuric acid. The presence of fuming sulfuric acid is of absolute necessity because the second carboxymethyl group can not substantially be introduced into adamantane rings without fuming sulfuric acid.

3,751,456

# DISPROPORTIONATION OF AROMATIC MONOCARBOXYLATES

Yu-Lin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Mar. 3, 1972, Ser. No. 231,709  
Int. Cl. C07c 63/40, 63/32

**U.S. Cl. 260—515 P** 4 Claims  
Alkali metal salts of aromatic tricarboxylic acids are produced by the selective disproportionation of alkali metal salts of aromatic monocarboxylic acids in the presence of a cadmium iodide-sodium iodide catalyst system.

3,751,457

# DISPROPORTIONATION OF ALKALI METAL SALTS OF AROMATIC CARBOXYLIC ACIDS

Stanley J. Marwil, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Jan. 31, 1972, Ser. No. 222,279  
Int. Cl. C07c 63/26

**U.S. Cl. 260—515 P** 7 Claims  
A slurry comprised of an alkali metal salt of an aromatic carboxylic acid, e.g. potassium benzoate, a disproportionation catalyst, e.g. zinc benzoate, and an inert high-boiling organic dispersant, e.g. a terphenyl, and activated carbon dispersed in the organic dispersant together with said salt and catalyst, are subjected to an elevated temperature in the presence of a gas atmosphere, e.g. carbon dioxide to form a polycarboxylate having at least one more carboxyl group than said salt.

3,751,458

**CITROYLFORMIC ACID AND ITS PRODUCTION**  
Richard H. Wiley, New York, N.Y., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,379  
Int. Cl. C07c 59/12

**U.S. Cl. 260—535 P** 2 Claims  
Citroylformic acid, useful as a sequestrant and as a raw material for the production of citric acid, can be produced by the bimolecular decarboxylative self-condensation of oxaloacetic acid.

3,751,459

# L-TRANS-2-AMINO-4-(2-AMINOETHOXY)-3-BUTENOIC ACID

Julius Berger and David Pruess, Passaic, and James Parnell Scannell, Bloomfield, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Nov. 12, 1971, Ser. No. 198,449  
Int. Cl. C07c 101/04

**U.S. Cl. 260—534 M** 2 Claims  
A new antimicrobial, anthelmintic substance, L-trans-2-amino-4-(2-aminoethoxy)-3-butenoic acid, prepared by a new species of Streptomyces is disclosed.

3,751,460

# PROCESS FOR PREPARING ISOMERIC CYCLIC 5-MEMBERED UNSATURATED PHOSPHINE DIHALIDES

Reinhard Schliebs, Cologne, and Gerhard Jonas, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 19, 1971, Ser. No. 164,039  
Claims priority, application Germany, July 21, 1970, P 20 36 173.3

Int. Cl. C07d 105/02

**U.S. Cl. 260—543 P** 10 Claims  
Isomeric cyclic 5-membered unsaturated phosphine dihalides are prepared by reacting organo-phosphine dihalides with dienes in an oxyhalide of pentavalent phosphorus as a solvent.

3,751,461

**ALPHA CHLORINATION OF ACID CHLORIDES**  
Yog R. Dhirga, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of applications Ser. No. 86,338, Nov. 2, 1970, and Ser. No. 126,355, Mar. 19, 1971. This application Nov. 29, 1971, Ser. No. 203,043  
Int. Cl. C07c 51/58, 53/20, 55/02

**U.S. Cl. 260—544 Y** 7 Claims  
Acid chlorides are chlorinated in the alpha position by reacting the acid chloride with chlorine in the presence of a catalyst of an alkylpyridine or tetraalkylammonium halide.

3,751,462

# PROCESS FOR PREPARATION OF SUBSTITUTED FLUOROMETHANESULFONANILIDES

Kelly T. McGurran, Roseville, and Elden H. Banitt, Woodbury, Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.

No Drawing. Filed Sept. 27, 1971, Ser. No. 184,230  
Int. Cl. C07c 143/74

**U.S. Cl. 260—556 A** 6 Claims  
A novel process for the synthesis of the compound 2-hydroxy-5-[1-hydroxy-2-(4'-methoxyphenethylamino)propyl]fluoromethanesulfonamide and its salts, together with certain novel intermediates, is described.

3,751,463

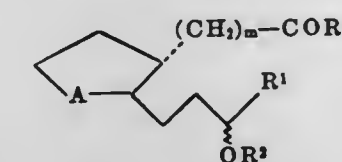
# CYCLOPENTANE DERIVATIVES

Michael Peter Lear Caton, Upminster, Trevor Parker, Romford, and Gordon Leonard Watkins, Dagenham, England, assignors to May & Baker Limited, Dagenham, England

No Drawing. Filed May 26, 1971, Ser. No. 147,273  
Claims priority, application Great Britain, May 27, 1970, 25,486/70

Int. Cl. C07c 103/86

**U.S. Cl. 260—557 R** 4 Claims  
Compounds of the formula:



wherein  $A$  represents carbonyl or a group  $-CH(OR^3)-$ ,  $R^1$  represents alkyl, cycloalkyl or cycloalkyl-alkyl,  $m$  represents 4 or 6,  $R^2$  represents hydroxy, alkoxy, amino, monoalkylamino, dialkylamino or, except when  $A$  represents carbonyl, hydrazino optionally substituted by one or two alkyl groups, and  $R^3$  represents hydrogen, alkyl, or when  $R^2$  represents hydroxy or alkoxy, an alkanoyl group, and when  $A$  represents a group  $-CH(OR^3)-$  the symbols  $R^3$  both represent hydrogen atoms or identical

groups, possess pharmacodynamic properties, in particular hypotensive activity and reduction in gastric acid secretion.

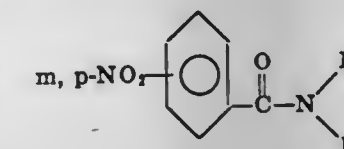
3,751,464

# N-SUBSTITUTED-N'-CYCLOALKYL-NITROBENZAMIDES

William D. Roll, Toledo, Ohio, assignor to The University of Toledo, Toledo, Ohio

No Drawing. Filed Apr. 26, 1971, Ser. No. 137,674  
Int. Cl. C07c 103/30

**U.S. Cl. 360—558 R** 9 Claims  
Simultaneously acting central nervous system (CNS) depressants and blood pressure depressors of the formula



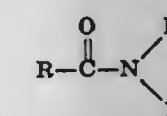
wherein  $R$  is selected from the group consisting of alkyl, hydroxyalkyl, cyanoalkyl, aryl, aralkyl, and hydroxy-aralkyl radicals; and wherein  $R'$  is selected from the group consisting of cycloaliphatic radicals containing between three and seven carbon atoms.

3,751,465

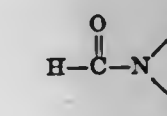
# PREPARATIONS OF N,N-DIALKYL-SUBSTITUTED FATTY AMIDES FROM NITRILES AND ALCOHOLS AND N,N-DIALKYLFORMAMIDES FROM HYDROGEN CYANIDE AND ALCOHOLS

Yasunobu Takahashi, Yohei Fukuoka, Katuyoshi Sasaki, and Saburo Senoo, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan  
No Drawing. Continuation-in-part of abandoned application Ser. No. 748,165, July 29, 1968. This application Dec. 22, 1970, Ser. No. 100,837  
Int. Cl. C07c 103/08

**U.S. Cl. 260—561 R** 9 Claims  
Novel process for the preparation of N,N-dialkyl-substituted fatty amides represented by the general formula



wherein  $R$  is an alkyl radical having 1 to 6 carbon atoms and  $R'$  is an alkyl radical having 1 to 4 carbon atoms, which comprises reacting at a temperature in the range of 50 to 1000° C. under pressure a nitrile represented by the general formula  $R-CN$ , wherein  $R$  has the same meaning as defined above, with an alcohol represented by the general formula  $R'-OH$ , wherein  $R'$  has the same meaning as defined above, the alcohol being employed in an amount in the range of from 1.5 to 10 moles of alcohol per mole of the nitrile, with or without employing a catalyst, and recycling at least a part of the by-products of the reaction to the starting reaction mixture. Thereby, the N,N-dialkylamides can be produced in high yield. And, a novel process for the preparation of N,N-dialkylformamides represented by the general formula



wherein  $R'$  is an alkyl radical having 1 to 4 carbon atoms, which comprises reacting at a temperature in the range of 50 to 1000° C. under pressure hydrogen cyanide, which is utterly different in chemical behavior from the nitrile, with an alcohol represented by the general formula



R'-OH, wherein R' has the same meaning as defined above, the alcohol being employed in an amount in the range of from 1.5 to 10 moles of alcohol per mole of the hydrogen cyanide, with or without employing a catalyst. In the latter process also, the yield may advantageously be improved by recycling at least a part of the by-products of the reaction.

3,751,466

## N-BENZYLIDENE ALKYLAMINES

Raphael Menasse and Karl Gatz, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 708,807, Feb. 28, 1968, which is a continuation-in-part of application Ser. No. 512,811, Dec. 9, 1965, now abandoned. This application Oct. 12, 1970, Ser. No. 80,148

Int. Cl. C07c 119/00

U.S. Cl. 260—566 F

3 Claims

N-benzylidene alkylamines in which the alkyl group has from 8 to 18 carbon atoms, and in which the phenyl moiety is optionally substituted, are fungicidal agents. Compositions containing these compounds are fungicides and methods for combatting fungi use these compounds.

3,751,467

## PREPARATION OF LIQUID-CRYSTAL COMPOUNDS

Heinz J. Dietrich and Edward L. Steiger, Toledo, Ohio, assignors to Owens-Illinois, Inc.

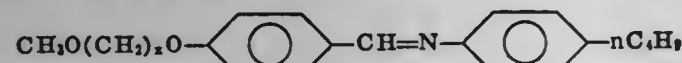
No Drawing. Filed May 19, 1971, Ser. No. 145,028

Int. Cl. C07c 119/00

U.S. Cl. 260—566 F

3 Claims

There is disclosed the preparation of liquid-crystal compounds of the structure:



where x equals 2 to 10, typically 2 to 5. The compounds are prepared by the reaction of para-n-butaniline and para-methoxyalkyleneoxybenzaldehyde.

3,751,468

## OXIMINO CYCLIC HYDROCARBONS

Jerome Robert Olechowski, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed Aug. 20, 1971, Ser. No. 175,780

Int. Cl. C07c 131/08

U.S. Cl. 260—566 A

1 Claim

A method for manufacturing oximino cyclic hydrocarbons by dehydrohalogenation of oximino halo cyclic hydrocarbons and novel compositions obtained thereby are disclosed.

Oximinocyclododecatrienes are prepared by the dehydrohalogenation of oximinocyclododecadiene in the presence of a basic dehydrohalogenating agent. In one embodiment dehydrohalogenation in the presence of an organic amine yields a product having a melting point of about 165–166° C. In another embodiment, using an inorganic base such as potassium hydroxide in tertiary butanol yields a product having a melting point of from about 80–85° C. which is a stereoisomer.

The unsaturated oximes obtained are hydrogenated under mild reaction conditions to yield a saturated oxime which is subjected to a Beckmann rearrangement to yield a lactam and the lactam converted to a polyamide which is used in the manufacture of fibers, filaments, molded articles such as containers and the like.

The oxime is hydrolyzed in the presence of an acceptor for the hydroxyl amine produced as a by-product of the hydrolysis to give either a saturated or unsaturated ketone depending on whether a saturated or unsaturated oxime is used as the starting material. Both the saturated and unsaturated ketones are useful as fragrance materials.

3,751,469

## METHOD OF PREPARING FLUORO-PERHALOAZAOLEFINS

Bryce C. Oxenrider, Florham Park, and Cyril Woolf, Morristown, N.J., and Wilhelmus M. Beyleveld, Deventer, Netherlands, assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 9, 1971, Ser. No. 161,336

Int. Cl. C07c 119/00

U.S. Cl. 260—566 R

9 Claims

Fluoroperhaloazaolefins are prepared by reacting a fluoroperhaloalkyl isocyanate with a fluoroperhaloalkoxide. For example, perfluoro-2,4-dimethyl-3-aza-2-pentene is prepared by reacting hexafluoroisopropyl isocyanate with potassium heptafluoroisopropoxide. The fluoroperhaloazaolefins are useful as liquid dielectrics and as intermediates in the preparation of other fluorinated organic compounds.

3,751,470

## N,N-DIALKYL-2-[2-(2-CYCLOALKYLVINYL)PHENOXY]ALKYLAMINES

Peter E. Cross, Canterbury, James R. Stichbury, Harbledown, near Canterbury, and Eric F. Thorpe, Birching-ton, England, and Nell M. Scollick, New London, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Filed Mar. 8, 1971, Ser. No. 122,253

Claims priority, application Great Britain, Mar. 13, 1970,

12,111/70

Int. Cl. C07c 93/06

U.S. Cl. 260—570.7

5 Claims

Ortho-substituted phenoxyalkylamines having gastric anti-secretory activity are prepared. A typical embodiment is N,N-diethyl-2-[2-(2-cyclohexylvinyl)phenoxy]ethylamine.

3,751,471

N-HYDROXYBENZYL- $\alpha,\alpha'$ -XYLENE-DIAMINES

Wilhelm Becker, Hamburg, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

No Drawing. Filed June 12, 1970, Ser. No. 45,898

Claims priority, application Switzerland, June 19, 1969,

9,601/69

Int. Cl. C07c 87/28

U.S. Cl. 260—570.5 P

3 Claims

The invention relates to improved phenols and to their use as cross-linking agents for epoxy compounds. Hitherto known cross-linking agents of this type are, however, highly viscous and must be diluted prior to use and this causes some deterioration of the properties of the plastic produced. Furthermore, some of the coatings made with these cross-linking agents are attacked by acids and form a white layer when wetted with water. In addition, their mechanical properties are not satisfactory. The invention has the object of eliminating the above mentioned defects of coatings or compounds of epoxy resins, by reacting special diamines, first with aldehydes, and then with a C—H acid compound.

3,751,472

## 2,4,4'-TRIS-(ALPHA,ALPHA-DIMETHYLBENZYL)DIPHENYLAMINE

Edward L. Wheeler, Woodbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

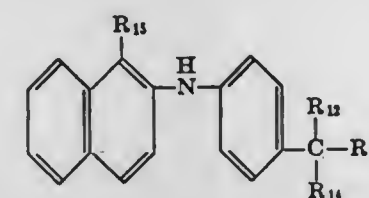
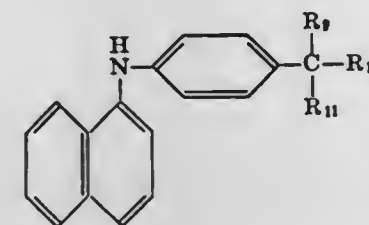
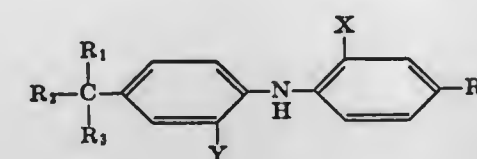
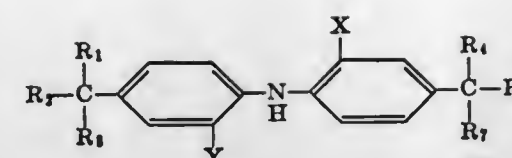
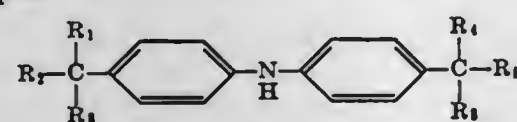
No Drawing. Application Dec. 27, 1968, Ser. No. 787,577, which is a continuation-in-part of application Ser. No. 540,817, Apr. 7, 1966, now Patent No. 3,505,225. Divided and this application July 19, 1971, Ser. No. 164,144

Int. Cl. C07c 87/28

U.S. Cl. 260—570 R

1 Claim

Derivatives of diphenylamine or phenyl-naphthylamine of the types



where R<sub>1</sub>, R<sub>4</sub> and R<sub>5</sub> are phenyl or p-tolyl groups and the remaining R's, X and Y may be alkyl or various other substituents, are useful antioxidants for lubricating oils or for various polymeric substrates (e.g. polypropylene) especially in combination with a dialkyl thiodipropionate. A typical antioxidant is 4,4'-bis(alpha,alpha,p-trimethylbenzyl)diphenylamine made by reacting p-alpha-dimethylstyrene with diphenylamine.

3,751,473

## PROCESS FOR FLUORINATING NITROAROMATIC MONOAMINES

Marion E. Hill and Donald L. Ross, Palo Alto, and Clifford L. Coon, Fremont, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

No Drawing. Filed July 29, 1968, Ser. No. 748,569

Int. Cl. C07c 85/00, 87/22

U.S. Cl. 260—577

5 Claims

The invention comprises the fluorination of amine-substituted nitro compounds (to produce the corresponding fluoramine-substituted nitro compounds), which fluorination is effected by dissolving the amine-substituted nitro compound in liquid hydrogen fluoride or acetonitrile, and passing fluorine, either as such or mixed with an inert gas, such as nitrogen or helium, to effect substitution of fluorine atoms for the amine hydrogen atoms.

3,751,474

## METHOD OF PREPARING NONTOXIC POLYAMINES

Kenneth G. Phillips, River Forest, and Marcellus J. Geerts, Mount Prospect, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,612

Int. Cl. C07c 85/04, 87/20

U.S. Cl. 260—583 P

2 Claims

A method of preparing novel polyethylene polyamines from the reaction of ammonia and ethylene dichloride is shown. The products have a high molecular weight and are preparing using a mole ratio of ammonia to ethylene

dichloride of more than 2.6:1. The polyamines are substantially nontoxic to fish in contrast to standard polyamines.

3,751,475

## PROCESS FOR THE PREPARATION OF POLY-ISOBUTENYL-SUBSTITUTED TETRAETHYLENEPENTAMINE

Henricus G. P. van der Voort and Willem P. de Jong, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 21, 1971, Ser. No. 145,938

Claims priority, application Netherlands, May 21, 1970,

7007392

Int. Cl. C07c 85/04, 87/20

U.S. Cl. 260—583 P

5 Claims

Hydrocarbyl polyamines exhibit improved detergent/dispersant properties as additives for lubricants and fuel oils when prepared by extracting the reaction product of a polyolefinic chlorohydrocarbon and an alkyleneopolyamine with a liquid methanol or ethanol solution.

3,751,476

## BIS(2-FLUORO-2,2-DINITROETHYL)NITROSAMINE

Horst G. Adolph, Beltsville, and Mortimer J. Kamlet, Silver Spring, Md., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Jan. 29, 1970, Ser. No. 12,521

Int. Cl. C07c 111/00

U.S. Cl. 260—583 CC

1 Claim

Bis(2-fluoro-2,2-dinitroethyl)nitrosamine is prepared by reacting bis(2-fluoro-2,2-dinitroethyl)amine with nitrosyl-sulfuric acid or any similar nitrosating agent. This compound is used as a plasticizer and an explosive.

3,751,477

## PREPARATION OF HYDROPEROXIDES

Donald L. Roberts, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

No Drawing. Filed Mar. 13, 1969, Ser. No. 807,072

Int. Cl. C07c 49/43

U.S. Cl. 260—586 B

6 Claims

Acyclic or cyclic methyl substituted trisubstituted olefins treated with triarylphosphite-ozone adducts yield  $\alpha$ -methylene hydroperoxides.

3,751,478

## PREPARATION OF 1,2-CYCLOHEXANEDIONE

Michael A. Tobias, Edison, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Sept. 8, 1970, Ser. No. 70,487

Int. Cl. C07c 49/27

U.S. Cl. 260—586 R

2 Claims

2,3-epoxycyclohexanone is rearranged catalytically to 1,2-cyclohexanedione. Dehydrogenation of 1,2-cyclohexanedione produces catechols.

3,751,479

## OXO-SUBSTITUTED ALIPHATIC HYDROCARBONS

Norman E. Liddell, Gainesville, Fla., and John B. Siddall, Palo Alto, Calif., assignors to Ziecon Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of application Ser. No. 61,397, Aug. 4, 1970. This application Oct. 28, 1970, Ser. No. 84,870

Int. Cl. C07c 49/20

U.S. Cl. 260—593 R

10 Claims

Novel oxo-substituted aliphatic compounds and intermediates therefor useful for the control of insects.



### 3,751,480 PREPARATION OF AROMATIC ALDEHYDES AND THE CORRESPONDING ALCOHOLS

Jean-Claude Brunie, Michel Costantini, and Noel Crenne, Lyon, and Michel Jouffret, Villeurbanne, France, assignors to Rhone-Poulenc S.A., Paris, France  
No Drawing. Filed Mar. 3, 1970, Ser. No. 16,214  
Claims priority, application France, Jan. 14, 1970, 7001234

Int. Cl. C07c 45/00

U.S. Cl. 260—599

9 Claims

Mixtures of aromatic aldehydes with their corresponding alcohols, and consisting predominantly of the aldehyde, are produced by decomposing the corresponding aromatic hydroperoxide in the presence of a metal salt the cation of which exhibits Brönsted acidity in aqueous solution or oxide which exhibits Brönsted acidity in aqueous solution.

### 3,751,481 PROCESS FOR THE PRODUCTION OF TERTIARY PHOSPHINES

Kurt Weinberg, Upper Saddle River, N.J., assignor to Union Carbide Corporation, New York, N.Y.  
No Drawing. Filed Dec. 1, 1971, Ser. No. 203,829

Int. Cl. C07f 9/02

U.S. Cl. 260—601.5 P

8 Claims

A process for the production of tertiary phosphines which comprises contacting an aryl phosphine halide with powdered sodium, and thereafter reacting the product of said reaction with a hydrocarbyl halide, both of said reactions being conducted in an oxygen-free environment at a temperature and for a period of time sufficient to produce tertiary phosphines.

### 3,751,482 PROCESS FOR THE PRODUCTION OF TERTIARY PHOSPHINE OXIDES

Kurt Weinberg, Upper Saddle River, N.J., assignor to Union Carbide Corporation, New York, N.Y.  
No Drawing. Filed Dec. 1, 1971, Ser. No. 203,826

Int. Cl. C07f 9/02

U.S. Cl. 260—606.5 P

10 Claims

A process for the production of tertiary phosphine oxides which comprises contacting a suitable arylphosphine halide with powdered sodium in an oxygen-free atmosphere and thereafter reacting the product of said reaction with a suitable hydrocarbyl halide in an oxygen-containing atmosphere.

### 3,751,483 PHENOLIC THIOETHERS AND PROCESS FOR PREPARING SAME

Merle E. Cisney, Camas, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.  
No Drawing. Filed Oct. 13, 1971, Ser. No. 188,437

Int. Cl. C07c 149/36

U.S. Cl. 260—609 F

7 Claims

Phenolic thioethers wherein the sulfur atom on the phenolic nucleus is attached to an aliphatic, alicyclic or aralkyl group of 2 to 18 carbon atoms are prepared by a reaction of metathesis whereby groups of this character, as incorporated in an organic halide, can be substituted for those of a lower character, whether saturated or unsaturated, attached to the sulfur atom on a starting phenolic thioether compound. Typically, phenolic thioethers can be prepared by refluxing methylthio-phenol with an organic halide the reaction going to completion as the low-boiling methyl chloride co-reaction product is distilled off, as it is formed, from the reaction zone. Various novel alkylthio-phenol compounds are prepared wherein the alkyl group contains an ether linkage or a hydroxy or a carboxy group. The phenolic thioethers prepared by the present invention have utility as antioxidants and as pesticides, they being variously useful as insecticides, herbicides and bactericides, and are useful as monomers in polymer formation.

### 3,751,484 TRANSMETHYLATION PROCESS

Noland Poffenberger and William David Watson, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,098

Int. Cl. C07c 41/00

U.S. Cl. 260—612 R

6 Claims

Diphenyl oxide (diphenyl ether) is methylated by reaction with a methylated benzene at about 100–200° C. and in the presence of a mixture of HF and BF<sub>3</sub>.

### 3,751,485 MODIFIED PHENOLIC STILBENES AS ANTIFERTILITY AGENTS

William J. Middleton, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Original application Oct. 31, 1969, Ser. No. 873,124. Divided and this application Nov. 15, 1971, Ser. No. 198,952

Int. Cl. C07c 43/28

U.S. Cl. 260—612 R

4 Claims

Described are certain 1,1-bis(trifluoromethyl)-2,2-diphenylethylenes, which carry an oxy group in the para position of at least one benzene ring. These new compounds, as well as their parent compound, 1,1-bis(trifluoromethyl)-2,2-diphenylethylene, are effective in preventing pregnancy in warm-blooded animals and can be administered after coitus.

### 3,751,486 ALKYL-SUBSTITUTED UNSATURATED ACETALS

Alfred A. Schleppnik, St. Louis, Mo., and John B. Wilson, North Brunswick, N.J., assignors to Monsanto Company, St. Louis, Mo.

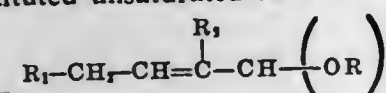
No Drawing. Filed Dec. 9, 1970, Ser. No. 96,584

Int. Cl. C07c 43/30

U.S. Cl. 260—615 A

6 Claims

Alkyl-substituted unsaturated acetals of the formula



wherein R, R<sub>1</sub> and R<sub>2</sub> represent lower alkyl groups, are prepared by reacting an alpha, beta-unsaturated aldehyde with a lower alkanol in the presence of the corresponding alkyl ester selected from the group consisting of trialkyl orthoformates, tetraalkyl orthosilicates and dialkyl sulfites and a catalytic amount of ammonium nitrate. The compounds have very pleasant strong green, floral, woody odors and are useful as components in fragrance compositions.

### 3,751,487 ALKOXY SUBSTITUTED-2,2'-BIPHENYL-DIMETHANOLS

Arnold Brossi, Verona, and Benjamin Pecherer, Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

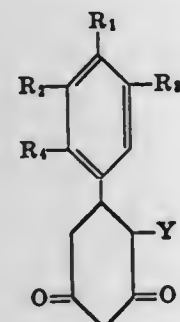
No Drawing. Continuation-in-part of application Ser. No. 559,383, June 22, 1966. This application Dec. 11, 1969, Ser. No. 884,327

Int. Cl. C07c 43/22

U.S. Cl. 260—613 R

2 Claims

Substituted dibenzo[c,e]azepines and dibenzo[d,f]azepines, prepared through various sequential intermediates, for example, starting with a compound of the formula



IV

wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub> and Y are as defined hereinafter, are described. The end products are useful as hypotensive agents.

### 3,751,488 ALKYLATION PROCESS

Bernardus J. van Sorge, Selkirk, N.Y., assignor to General Electric Company

No Drawing. Filed July 22, 1970, Ser. No. 57,335

Int. Cl. C07c 39/06

U.S. Cl. 260—621 R

10 Claims

There is provided a process for selectively alkylating a phenolic compound in the ortho-position to the significant reduction of alkylation in the meta- and para-positions which comprises alkylating the phenolic compound with an alkanol in the presence of a molybdenum-containing catalyst.

### 3,751,489 HYDROGEN FLUORIDE PURIFICATION

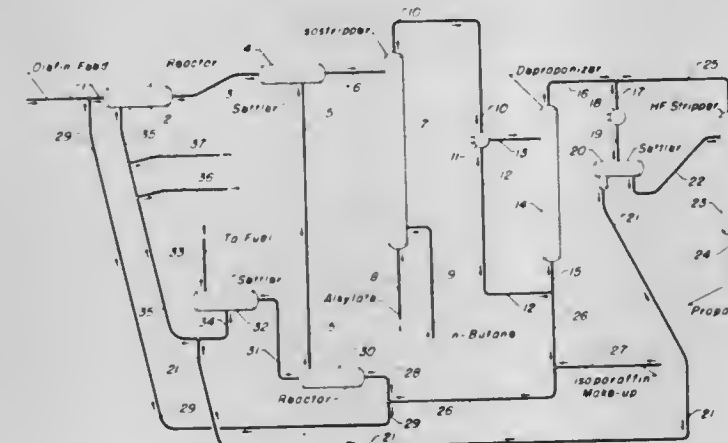
Jay E. Sobel, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 5, 1971, Ser. No. 131,235

Int. Cl. C07c 3/54

U.S. Cl. 260—683.48

11 Claims



A process for producing an alkylate product from an isoparaffin and an olefin, utilizing hydrogen fluoride catalyst, in which process the catalyst and reactants are admixed in an alkylation zone, the effluent from the alkylation zone is separated to provide a hydrocarbon stream and a catalyst stream, the alkylate product is recovered in the hydrocarbon stream, the catalyst stream is contacted with a second portion of the isoparaffin in a second alkylation zone, and the effluent from the second alkylation zone is separated to provide a second hydrocarbon stream and a second catalyst stream.

### 3,751,490 NITROBENZENE STABILIZED WITH HEAVY METAL COMPOUNDS

David Dodman, Malcolm Wilkins, and John Mathers Woolley, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Jan. 25, 1972, Ser. No. 220,703

Claims priority, application Great Britain, Feb. 22, 1971, 5,095/71

Int. Cl. C07c 81/02

U.S. Cl. 260—647

6 Claims

C-nitroso compounds, especially nitrosobenzene, are stabilized by the addition of compounds such as salts or chelates of heavy metals, especially manganese, copper or cobalt.

### 3,751,491 BIS(TRIFLUOROMETHYL)BENZOIC ACIDS

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 703,880, Feb. 8, 1968. This application Apr. 10, 1970, Ser. No. 27,459

Int. Cl. C07c 25/14

U.S. Cl. 260—651 F

2 Claims

Bis(trifluoromethyl)benzoic acids, e.g., 2,4-bis(trifluoromethyl)benzoic acid, are prepared by reacting bis(trifluoromethyl)benzene with alkyl lithium and treating the resulting product with carbon dioxide. The resulting benzoic acids are useful as central nervous system depressants and agrochemical agents.

### 3,751,492 PREPARATION OF SODIUM AND POTASSIUM FLUOROETHYLENES

Serge Y. Delavarenne, Wemmel, Belgium, assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 18, 1970, Ser. No. 99,710

Int. Cl. C07c 21/18

U.S. Cl. 260—653.3

8 Claims

Sodium fluoroethylenes and potassium fluoroethylenes are conveniently prepared by a process which comprises reacting fluoroethylenes containing at least one hydrogen with sodium amide or potassium amide respectively, in a reaction media comprised of hexamethylphosphoramide and either tetrahydrofuran or an ether. The resulting fluoroethenyl compounds, especially the trifluoroethyl derivatives, are intermediates for the preparation of fluoro-vinyl monomers and insecticides.

### 3,751,493 ISOMERISATION PROCESS

Clifford William Capp, Ewell, and Peter John Nicholas Brown, Epsom, England, assignors to BP Chemicals Limited, London, England

No Drawing. Filed Feb. 18, 1971, Ser. No. 116,666

Claims priority, application Great Britain, Feb. 19, 1970, 7,931/70

Int. Cl. C07c 21/04

U.S. Cl. 260—654 R

2 Claims

Dichlorobutenes are isomerised in the presence of a catalyst composition comprising copper naphthenate and a nitro-compound as promoter.

### 3,751,494 PURIFICATION OF CHLORINATED HYDROCARBONS EMPLOYING MOLECULAR SIEVES

Norman L. Beckers, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed Mar. 8, 1971, Ser. No. 122,088

Int. Cl. C07c 21/12

U.S. Cl. 260—654 S

2 Claims

Saturated, partially-chlorinated, hydrocarbons, such as partially-chlorinated ethanes, are removed from unsaturated chlorocarbon and chlorinated hydrocarbons, such as perchloroethylene, by treatment with type 13X molecular sieves. In this manner saturated, partially-chlorinated, hydrocarbons are dehydrochlorinated and the products of dehydrochlorination are at least partially adsorbed. Any remaining dehydrochlorination products may be subsequently separated by fractional distillation.

### 3,751,495 PREVENTION OF DISCOLORATION IN VINYLIDENE CHLORIDE

Dietmar Seyferth, Lexington, Mass., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Aug. 8, 1969, Ser. No. 848,753

Int. Cl. C07c 21/00

U.S. Cl. 260—654 S

6 Claims

Discoloration of vinylidene chloride monomer due to dichloroacetylene is prevented by treatment with phosphines and esters of phosphoric or phosphorous acid.



3,751,496

**PROCESS FOR PREPARING DICHLOROBUTENE**  
Naoyuki Todo, Tokyo, Hiroyuki Hagiwara, Funabashi-shi, and Minoru Kurita and Toshio Sato, Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

No Drawing. Filed Aug. 7, 1969, Ser. No. 848,346  
Claims priority, application Japan, Aug. 7, 1968, 43/55,501

Int. Cl. C07c 21/00  
U.S. Cl. 260—654 A 9 Claims

A process for preparing dichlorobutene which comprises reacting together butadiene, hydrogen chloride and oxygen at a temperature of 80° C. to 300° C. in the presence of a catalyst consisting of a copper salt, phosphoric acid and an alkali chloride or of a copper salt and an alkali metal phosphate which catalyst is supported on a carrier.

3,751,497

**PROCESS FOR THE PRODUCTION OF CYCLOPENTENE FROM CYCLOPENTADIENE**

Wulf Schwerdtel, Cologne, Wolfgang Swodenk, Odenthal-Globusch, and Peter Woernle, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 21, 1971, Ser. No. 145,914  
Claims priority, application Germany, May 25, 1970, P 20 25 411.9

Int. Cl. C07c 13/12, 5/16  
U.S. Cl. 260—666 A 8 Claims

The process for the production of cyclopentene from cyclopentadiene which comprises partially hydrogenating cyclopentadiene with molecular hydrogen in the gas phase at a temperature of about 50 to 300° C. in the presence of a novel catalyst comprising a support and, as active material, by weight of the catalyst, about 0.1 to 2% of palladium and about 0.2 to 2% of chromium, titanium or mixtures thereof.

3,751,498

**PREPARATION OF n-ALKYLBENZENES**

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed May 12, 1972, Ser. No. 252,786

Int. Cl. C07c 15/02  
U.S. Cl. 260—668 D 10 Claims

Benzene compounds containing an alkyl substituent which is normal in configuration are prepared by alkylating cyclohexane with 1-alkenes in the presence of a free-radical generating compound and hydrogen chloride and thereafter dehydrogenating the n-alkylcyclohexane in the presence of a dehydrogenation catalyst to form the desired n-alkylbenzenes.

3,751,499

**HYDROGENATION PROCESS**

James J. Tazuma, Stow, Vipin M. Kothari, Akron, and Robert A. Kumse, Barberton, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed May 5, 1972, Ser. No. 250,802

Int. Cl. C07c 3/00  
U.S. Cl. 260—666 A 8 Claims

This invention is an improvement in the process whereby cyclopentadiene is continually reduced to cyclopentene by passing the hydrocarbon along with hydrogen over a catalyst comprising palladium on alumina at temperatures from about -10° C. to about 150° C. and pressures from about 0 pounds per square inch to about 1000 pounds per square inch gauge (p.s.i.g.), the improvement being that the reactor is flooded with the cyclopentadiene hydrocarbon.

3,751,500

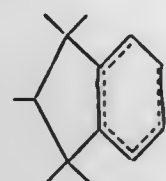
**HYDROGENATED INDANE DERIVATIVES AND PROCESSES FOR PRODUCING SAME**

John B. Hall, Rumson, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Original application Aug. 18, 1969, Ser. No. 851,086, now Patent No. 3,636,176. Divided and this application Feb. 16, 1971, Ser. No. 115,834

Int. Cl. C07c 13/46  
U.S. Cl. 260—666 PY 6 Claims

A hydrogenated indane derivative having the formula:



wherein the dashed lines represent single or double bonds, no more than two of the dashed lines represent double bonds and, when two double bonds are present, such bonds being unconjugated; perfume compositions containing such indanes; and processes for producing same.

3,751,501

**TELOMERIZATION REACTIONS UTILIZING LIQUID HYDROCARBON SOLUTIONS OF CERTAIN ORGANOMETALLIC COMPLEXES**

Conrad W. Kamienski and Joseph H. Merkley, Gastonia, N.C., assignors to Lithium Corporation of America, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 194,498, Nov. 1, 1971, which is a continuation-in-part of application Ser. No. 3,189, Jan. 15, 1970, now abandoned. This application Aug. 9, 1972, Ser. No. 279,005

Int. Cl. C07c 3/10  
U.S. Cl. 260—668 B 28 Claims

Telomerization reactions wherein an aromatic hydrocarbon, such as toluene, is telomerized, in the presence of catalyst mixture or complex comprising, by way of illustration, (a) n-butylium or n-butylium and (b) alkylolithiums such as n-butylium, by the gradual and controlled addition of monomers such as conjugated dienes and/or vinyl-substituted aromatic compounds, whereby to produce novel liquid resinous telomers.

3,751,502

**HYDROCARBON ISOMERIZATION PROCESS**

John C. Hayes, Palatine, Roy T. Mitsche, Island Lake, Richard E. Rausch, Mundelein, and Frederick C. Wilhelm, Arlington Heights, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Application July 17, 1970, Ser. No. 56,008, which is a continuation-in-part of application Ser. No. 34,539, May 4, 1970, now Patent No. 3,660,309. Divided and this application Mar. 8, 1972, Ser. No. 232,905

Int. Cl. C07c 5/22  
U.S. Cl. 260—668 A 18 Claims

Isomerizable hydrocarbons such as paraffins, cycloparaffins, olefins and alkyl aromatics are isomerized by utilizing a catalytic composite containing catalytically effective amounts of a platinum group component and a Group IV-A metallic component combined with a carrier material of alumina and a finely divided crystalline aluminosilicate such as mordenite. Also disclosed is a catalytic composite comprising a platinum group component, a Group IV-A metallic component and a Friedel-

Crafts metal halide component combined with a carrier material of alumina and a finely divided crystalline aluminosilicate.

3,751,503

**PRODUCTION OF BENZENE**

Roy John Sampson, Christopher Buxton Spencer, and John Garfield Chenoweth, all of Norton Hall, The Green, Norton, Stockton-on-Tees, Teesside, England

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,773  
Claims priority, application Great Britain, Mar. 26, 1971, 7,912/71

Int. Cl. C07c 3/58  
U.S. Cl. 260—672 R 11 Claims

Alkyl aromatic hydrocarbons, for example toluene, are dealkylated to yield benzene and hydrogen in the presence of steam, and optionally, hydrogen over a Group VIII noble metal catalyst supported on alpha-alumina. The products of the reaction are phase separated to yield an organic fraction from which benzene is separated, the remainder of the fraction comprising unchanged and/or other aromatic hydrocarbons being recycled as feed material for continued dealkylation. The process may be used to increase the aromatics content and to increase the ratio of lower to higher aromatic in paraffin-aromatic mixtures, for example the hydrocarbon mixture obtained by reforming.

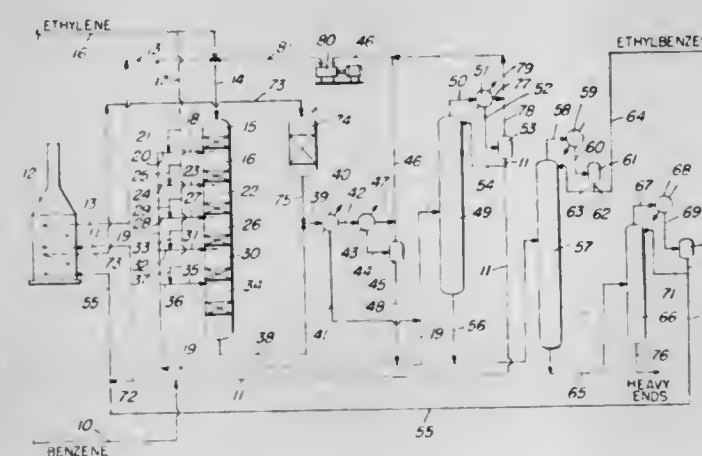
3,751,504

**VAPOR-PHASE ALKYLATION IN PRESENCE OF CRYSTALLINE ALUMINOSILICATE CATALYST WITH SEPARATE TRANSALKYLATION**

Philip E. Keown, Clyde C. Meyers, and Robert G. Wetherold, Beaumont, Tex., assignors to Mobil Oil Corporation

Filed May 12, 1972, Ser. No. 252,884

Int. Cl. C07c 3/62, 3/52  
U.S. Cl. 260—672 T 28 Claims



A process is provided for alkylation of aromatic hydrocarbons by contacting same with an alkylating agent in a reaction zone maintained under conditions such that said alkylation is accomplished in the vapor-phase and in the presence of a catalyst comprising a crystalline aluminosilicate zeolite characterized by a unique X-ray diffraction pattern, said catalyst under said conditions being capable of affording a high and selective yield of desired alkylaromatic product. Said alkylation process is accompanied by a system for transalkylation of the polyalkylaromatic portion of the effluent from said alkylation process. There is also provided, when said reaction zone is comprised of a series of reactor stages, a quench for effluent from said stages between said stages. Also, a catalyst steam regeneration method is provided.

3,751,505

**HYDRODEALKYLATION PROCESS**

Angelo Bergomi, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Mar. 28, 1972, Ser. No. 238,946

Int. Cl. C07c 3/58  
U.S. Cl. 260—672 R 9 Claims

There is disclosed a method for the hydrodealkylation of hydrocarbons in which toluene, xylene, ethyl benzene and mono- and dimethylnaphthylenes are hydrodealkylated when passed with hydrogen over a catalyst comprising an alkali metal dispersed on an anhydrous support, said catalyst having a surface area of at least one square meter per gram at temperatures ranging from about 220° C. to about 550° C.

3,751,506

**VAPOR-PHASE ALKYLATION IN PRESENCE OF CRYSTALLINE ALUMINOSILICATE CATALYST**

George Thomas Burruss, Beaumont, Tex., assignor to Mobil Oil Corporation

No Drawing. Filed May 12, 1972, Ser. No. 252,776

Int. Cl. C07c 3/52  
U.S. Cl. 260—671 R 13 Claims

A process is provided for alkylation of aromatic hydrocarbons by contacting same with an alkylating agent in a reaction zone maintained under conditions such that said alkylation is accomplished in the vapor-phase and in the presence of a catalyst comprising a crystalline aluminosilicate zeolite characterized by a unique X-ray diffraction pattern, said catalyst under said conditions being capable of affording a high and selective yield of desired alkylaromatic product.

3,751,507

**ADSORPTION PROCESS**

Robert Winn Walker, Fort Washington, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Original application Aug. 19, 1969, Ser. No. 851,456, now abandoned. Divided and this application July 12, 1971, Ser. No. 162,016

Int. Cl. C07c 7/12  
U.S. Cl. 260—674 SA 8 Claims

A process for adsorbing or removing compounds, especially polar compounds from non-polar compounds is disclosed. An example is the adsorption of aliphatic alcohols or phenolic compounds from organic solvents. The adsorption process utilizes cross-linked adsorbent resins containing tertiary amine oxide functionality.

3,751,508

**CATALYST FOR SELECTIVE HYDROGENATION OF ACETYLENIC HYDROCARBON IN THE CONCURRENT PRESENCE OF DIOLEFIN**

Tokuo Fujiso, Yokosuka, and Tadashi Ohmori, Kawasaki, Japan, assignors to Nippon Oil Company, Ltd., Minato-ku, Tokyo, Japan

No Drawing. Filed Feb. 22, 1971, Ser. No. 117,714

Claims priority, application Japan, Feb. 25, 1970, 45/15,526

Int. Cl. B01j 11/22; C07c 11/22  
U.S. Cl. 260—677 H 6 Claims

Catalyst for selective hydrogenation of acetylenic hydrocarbons in the concurrent presence of diolefins, which is composed of the carrier containing at least 5% by weight of magnesium-aluminum spinel of the formula,



and, as the active metal component supported on the carrier, 1-50% by weight of copper component calculated as copper oxide, and 0.1-3% by weight of nickel component calculated as nickel oxide.



3,751,509

**PROCESS FOR ISOLATING ISOBUTYLENE FROM BUTANE-BUTYLENE FRACTION**

Alexandr Grigorievich Liakumovich, prospekt Lenina 23, kv. 4; Jury Ivanovich Michurov, prospekt Lenina 13, kv. 4; and Nonna Fedorovna Kian, ulitsa Voxalnaya 2v, kv. 55, all of Sterlitamak, U.S.S.R.; Valerian Mikhailovich Sobolev, Naberezhnaya imeni Gorkogo 46-50, kv. 185, Moscow, U.S.S.R.; and Vladimir Ivanovich Ponomarenko, ulitsa Yakutova 22, Sterlitamak, U.S.S.R.

No Drawing. Filed July 17, 1972, Ser. No. 272,663  
Int. Cl. C07c 11/12

U.S. Cl. 260—677 A 6 Claims

A process for isolating isobutylene from butane-butylene fraction which comprises treating butane-butylene fraction with phenol or alkylphenol in the presence of a catalyst such as aluminium, alkylaluminium or aluminium phenoxide, in an amount of at least 0.5% by weight as calculated for the starting phenol or alkylphenol at a temperature within a range of from 100 to 160° C. and under a pressure of from 2 to 30 atm. The resulting product of interaction of phenol or alkylphenol and isobutylene is subjected to decomposition in the presence of the above-mentioned catalyst at a temperature of from 180 to 240° C. until isobutylene is formed, as well as the starting phenol or a mixture of the starting phenol with mono- or di-tert-butylphenols, or the starting alkylphenol of a mixture of the starting alkylphenol with its mono- and di-tert-butyl derivatives. Isobutylene is isolated, whereas the phenols resulting from the decomposition are recycled to the stage of treating butane-butylene fraction.

The process of the present invention enables the elimination of isobutylene losses due to its polymerization and copolymerization with butenes, as well as avoidance of equipment corrosion and catalyst losses.

3,751,510

**DEHYDROGENATION OF OLEFINS**

Roger W. Spoerke, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio  
No Drawing. Filed Aug. 24, 1970, Ser. No. 66,643  
Int. Cl. C07c 5/18

U.S. Cl. 260—680 R 6 Claims

There is disclosed a process for the dehydrogenation of olefins to form diolefins by subjecting olefins to dehydrogenation conditions. Alkali metals and alkaline earth metals in an unoxidized state on suitable supports such as carbon, alumina, silica, etc. are used as catalysts.

3,751,511

**ISOMERIZATION OF 2-BUTYNE TO 1,2-BUTADIENE**

Edward L. Kay and Durward T. Roberts, Jr., Akron, Lawrence E. Calihan, Cuyahoga Falls, and Lynn B. Wakefield, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio  
No Drawing. Filed June 12, 1972, Ser. No. 261,859  
Int. Cl. C07c 5/24, 11/16

U.S. Cl. 260—680 R 5 Claims

2-butyne is isomerized to 1,2-butadiene using a catalyst which is a salt of a metal from Group I-A or II-A and an aliphatic alcohol having from one to six carbon atoms. The reaction takes place at a temperature of from 0° to 100° C., and the desired 1,2-butadiene is separated and recovered from the reaction products.

3,751,512

**PROMOTED OXIDATIVE DEHYDROGENATION PROCESS**

Marvin Z. Woskow, Houston, and Harold F. Christmann, Seabrook, Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.  
No Drawing. Filed Mar. 2, 1970, Ser. No. 15,904  
Int. Cl. C07c 5/18

U.S. Cl. 260—680 E 10 Claims

Improved oxidative dehydrogenation catalysts can be prepared by adding rhenium or a platinum group metal

to a metal ferrite oxidative dehydrogenation catalyst, for example by adding 0.02% palladium to Mg ferrite treated with 2% phosphoric acid, the conversion, selectivity and yield were the same as an unpromoted Mg ferrite treated with 3% phosphoric acid but at substantially lower inlet and maximum temperatures. In other embodiments of the invention the yield can be substantially increased while reducing the temperatures, e.g., Mg ferrites+5% H<sub>3</sub>PO<sub>4</sub>+0.01% Pd gave 67 mole percent yield of butadiene at a maximum temperature 40° F. lower than the unpromoted catalyst which gave only 60 mole percent yield.

3,751,513

**SKELETAL REARRANGEMENT OF OLEFINS**

James J. Tazuma, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio  
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,176  
Int. Cl. C07c 5/22

U.S. Cl. 260—683.2 6 Claims

There is disclosed a method of skeletal rearrangement of olefins which comprises subjecting at least one olefin having at least four carbon atoms in its main chain to temperatures ranging from about 250° C. to about 650° C., while said olefin is in the presence of a catalyst from the group consisting of cupric fluoride, cupric chloride, cupric bromide and cuprous chloride, said catalyst being supported on alumina or silica alumina in an amount of about 5 to about 25 percent by weight of support.

3,751,514

**PREPARATION OF ISOBUTYLENE AND PROPYLENE FROM ISOBUTANE**

Frederic H. Hoppstock, Akron, and Jeffrey A. Goodwin and Kenneth J. Frech, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio  
No Drawing. Continuation of abandoned application Ser. No. 861,142, Sept. 25, 1969. This application June 21, 1971, Ser. No. 155,287  
Int. Cl. C07c 3/28, 5/18; C10g 11/06, 11/08

U.S. Cl. 260—683.3 6 Claims

There is disclosed a process for the simultaneous preparation of isobutylene and propylene from isobutane in the presence of a homogeneous catalyst system. Hydrogen sulfide, methyl mercaptan, ammonium hydrosulfide, ammonium bromide and ammonium sulfide are disclosed as representative examples of the homogeneous catalyst system employed.

3,751,515

**HYDROGENATION PROCESS**

Mario D. Zadra, Barberton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio  
No Drawing. Filed Mar. 28, 1972, Ser. No. 238,960  
Int. Cl. C07c 5/04, 5/06

U.S. Cl. 260—683.9 8 Claims

There is disclosed a method for the hydrogenation of monoolefins, cycloolefins, diolefins, cyclodiolefins and acetylenes which are hydrogenated when passed with hydrogen over a catalyst comprising an alkali metal dispersed on an anhydrous support, said catalyst having a surface area of at least one square meter per gram at temperatures ranging from about 80° C. to about 500° C.

3,751,516

**PREPARATION OF PROPYLENE FROM NORMAL BUTANE**

Kenneth J. Frech, Tallmadge, Frederic H. Hoppstock, Akron, and Jeffrey A. Goodwin, Tallmadge, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio  
No Drawing. Continuation of abandoned application Ser. No. 859,164, Sept. 18, 1969. This application June 21, 1971, Ser. No. 155,295  
Int. Cl. C07c 3/28; C10g 11/06

U.S. Cl. 260—683 R 6 Claims

There is disclosed a method of preparing propylene by pyrolyzing n-butane in the presence of a homogeneous

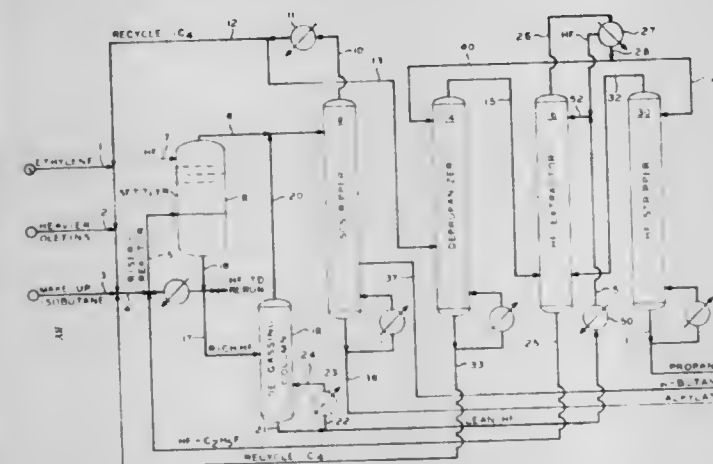
catalyst system. Among the examples of the homogeneous catalyst disclosed is hydrogen sulfide, methyl mercaptan, ammonium hydrosulfide, ammonium bromide and ammonium sulfide.

3,751,517

**RECOVERY OF ALKYL FLUORIDE IN ALKYLATION OF ISOPARAFFIN WITH ETHYLENE AND A HIGHER OLEFIN PROMOTER**

Thomas Hutson, Jr., and Cecil O. Carter, Bartlesville, Okla., assignors to Phillips Petroleum Company  
Filed Mar. 3, 1971, Ser. No. 120,588  
Int. Cl. C07c 3/54

U.S. Cl. 260—683.48 4 Claims



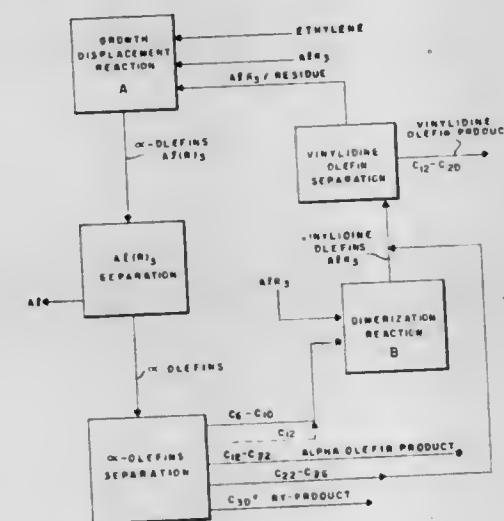
In the alkylation of an isoparaffin with an olefin in the presence of hydrofluoric acid as catalyst wherein the total olefin feed and/or isoparaffin stream includes or is converted in part to propane and alkyl fluoride formed in the operation is found in a propane containing stream, said stream is contacted with liquid hydrogen fluoride to extract the alkyl fluoride from the propane and the thus enriched hydrogen fluoride is charged to the alkylation, the propane being recovered from the usual hydrogen fluoride stripper.

3,751,518

**INTEGRATED CONTINUOUS PROCESS FOR OLEFIN PRODUCTION**

John Joseph Hagan, Kenneth Patrick Keating, and Thomas Howard Austin, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.  
Filed Aug. 16, 1971, Ser. No. 172,159  
Int. Cl. C07c 3/10

U.S. Cl. 260—683.15 D 4 Claims



A novel combination of olefin polymerization reactions provides an integrated continuous process for efficiently

producing high yields of certain olefins that are valuable for preparing olefin sulfonates.

3,751,519

**COMPATIBLE POLYCARBONATE-SILOXANE COMPOSITION**

Edgar E. Bostick, Scotia, N.Y., and Donald B. G. Jaquiss, New Harmony, Ind., assignors to General Electric Company  
No Drawing. Filed July 29, 1971, Ser. No. 167,483  
Int. Cl. C08g 47/10, 17/13

U.S. Cl. 260—824 4 Claims

A composition consisting of in admixture, a polycarbonate and 0.01–2.0 weight percent of a particular solid monomeric crystallized cyclosiloxane compound. Particularly, the siloxane employed herein is octaphenylcyclotetrasiloxane.

3,751,520

**POLYURETHANE COMPOSITIONS CONTAINING POLYVINYLIDENE FLUORIDE**

Toshio Yasuda, Tokyo, Japan, assignor to BASF Wyandotte Corporation, Wyandotte, Mich.  
No Drawing. Continuation-in-part of application Ser. No. 84,144, Oct. 26, 1970. This application Feb. 7, 1972, Ser. No. 224,312  
Claims priority, application Japan, Oct. 27, 1969, 44/85,914

U.S. Cl. 260—859 R 4 Claims

The coefficient of friction of a polyurethane elastomer is reduced by adding thereto from about 5 parts to about 20 parts by weight based on the total weight of the resulting composition of a homopolymeric vinylidene fluoride resin.

3,751,521

**HIGH IMPACT POLYOLEFIN COMPOSITIONS COMPRISING E/P BLOCK COPOLYMER AND HIGH DENSITY POLYETHYLENE**

Iamurri Roger, Le Meyran, Martignes, France  
No Drawing. Continuation of abandoned application Ser. No. 811,595, Mar. 28, 1969. This application June 18, 1971, Ser. No. 154,675  
Claims priority, application France, Apr. 17, 1968, 148,370

U.S. Cl. 260—876 B 10 Claims

High impact strength polyolefin compositions formulated of 50% to 98% by weight polyethylene having a specific gravity greater than 0.96 and 50% to 2% by weight of a sequenced copolymer formed of 5% to 50% by weight of a sequence obtained by statistic copolymerization of ethylene and propylene with the remainder formed of a previous or subsequent sequence of polymerized propylene.

3,751,522

**GRAFT COPOLYMERS AND PROCESS FOR THEIR PREPARATION**

Donald R. Lachowicz, Fishkill, and Charles B. Holder, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.  
No Drawing. Filed May 28, 1971, Ser. No. 148,144  
Int. Cl. C08f 15/00

U.S. Cl. 260—877 9 Claims

Graft copolymers are prepared in a two-stage process by first reacting, for example, 1,2-polybutadiene or an ethylene/propylene/alkylidene norbornene terpolymer, with a mixture of dinitrogen tetroxide and oxygen to form a nitrooxidized backbone polymer having incorporated therein nitro and peroxy nitrate functions which serve, in the second stage of the process, as sites for the subsequent graft polymerization of an acrylate monomer.



3,751,523

## TWO-STAGE PROCESS FOR PREPARING GRAFT COPOLYMERS

Donald R. Lachowicz, Fishkill, and Charles B. Holder, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed May 28, 1971, Ser. No. 148,133

Int. Cl. C08f 15/00

U.S. Cl. 260—877

9 Claims

Graft copolymers are prepared in a two-stage process by first reacting, for example, 1,2-polybutadiene or an ethylene/propylene/alkylidene norbornene terpolymer with dinitrogen tetroxide to form a nitrated backbone polymer having incorporated therein nitro and nitrite functions which serve, in the second stage of the process, as sites for the subsequent graft copolymerization of an acrylate monomer.

3,751,524

## MONOVINYLDENE AROMATIC POLYMER COMPOSITIONS MODIFIED WITH OLEFIN POLYMERS

Daniel H. Haigh, Beaverton, Mich., and James B. Louch, Hampton, Va., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 2, 1971, Ser. No. 149,379

Int. Cl. C08f 19/00

U.S. Cl. 260—878 R

7 Claims

Monovinyldene aromatic polymers having improved toughness and surface characteristics are prepared by polymerizing monomeric compositions of monovinyldene aromatic monomers, rubber, cross-linkable material and a modifying amount of high molecular weight olefin polymer.

3,751,525

## GASKET-FORMING COMPOSITIONS

Mannie Brenner, 393 Broadway, Cambridge, Mass. 02145; Fred L. Chase, 30 Lake Shore Drive, Arlington, Mass. 02174; and Arthur J. Leydon, 587 Lexington St., Waltham, Mass. 02154

No Drawing. Filed Sept. 28, 1970, Ser. No. 76,268

Int. Cl. C08f 19/06, 41/04

U.S. Cl. 260—880 B

4 Claims

The oxidation resistance of gasket-forming compositions containing a thermoplastic styrene-butadiene-styrene type block copolymer is enhanced by incorporating into them, in addition to conventional quantities of N,N'-dinaphthyl-p-phenylenediamine, a small percentage of calcium, magnesium, zinc or aluminum oxide.

3,751,526

## PROCESS FOR PRODUCING IMPACT RESISTANT THERMOPLASTIC RESINS

Hotuma Okasaka, Nagoya, Takehiko Okamoto, Chitagan, Toshimasa Hirai and Masakazu Inoue, Nagoya, and Akira Asama, Nishinomiya, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

No Drawing. Filed Sept. 30, 1970, Ser. No. 76,983

Int. Cl. C08f 19/08, 1/04

U.S. Cl. 260—880 R

5 Claims

A latex, wherein a diene type rubber is dispersed, is added to an unsaturated monomer, at least 20% of which comprises an aromatic unsaturated monomer. Separation of water from the mixture, in which the monomer acts as an extractant with respect to the diene rubber, and then bulk polymerizing the mixture results in the production of an impact resistant resin having many desirable properties.

3,751,527

## PROCESS FOR DELIQUEFYING, PURIFYING AND BLENDING POLYMERS

Newman M. Bortnick, Orelan, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 18, 1971, Ser. No. 199,912

Int. Cl. C08f 29/24

U.S. Cl. 260—899

16 Claims

The present invention is concerned with separation of the liquid from the solids of an emulsion polymer latex in such a manner as to achieve removal as well of water-soluble components, such as emulsifiers, catalysts, and other materials which, though needed to produce the latex, are undesirable contaminants when the latex is used for some purposes. It is also concerned with an efficient process for the blending of the polymer solids of a latex with another polymer. These objectives are accomplished by special adaptation and modification of a screw- or worm-type of press or extrusion equipment.

3,751,528

## TRICYCLIC SECONDARY PHOSPHITE ESTERS

Yoshiaki Inamoto and Hirokazu Nakayama, Wakayama, and Takeji Kadono, Kainan, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed June 23, 1971, Ser. No. 156,115

Claims priority, application Japan, June 24, 1970, 45/54,980

Int. Cl. C07f 9/08

U.S. Cl. 260—956

1 Claim

A compound of the formula



wherein Z is a single or double bond, is prepared by reacting, in an inert solvent, a compound selected from the group consisting of 2 - exo-hydroxy-exo-trimethylenenorbornane and 2 - exo-hydroxy-2,3-dihydro-exo-dicyclopentadiene with phosphorus trihalide. The compounds are useful as additives for synthetic lubricating oils, hydraulic oils and cutting oils.

3,751,529

## PREPARATION OF ESTERS OF PHOSPHORUS ACIDS

Joseph W. Baker and Ingatius Schumacher, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 24, 1971, Ser. No. 156,477

Int. Cl. C07f 9/12, 9/18

U.S. Cl. 260—973

16 Claims

Esters of phosphorus acids are prepared by an improved process whereby thiol- or hydroxyl-containing organic materials and phosphorus halides are reacted at specified temperatures in the presence of carbamate catalysts thereby providing high yields of substantially pure esters and allowing preparation of selected mono-, di- and tri-esters of phosphorus acids having substantially

no side reactant contamination. By means of this improved process, mono-, di- and tri-esters of phosphorus acids may be selectively prepared. They are useful as plasticizers and processing aids and as intermediates in the preparation of plasticizers, oil additives and functional fluids.

3,751,530

## FREE RADICAL ADDITION OF DITHIOPHOSPHONIC AND DITHIOPHOSPHINIC ACIDS TO ACETYLENES

Alexis A. Oswald, Mountainside, and George N. Schmit, Parlin, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed May 28, 1968, Ser. No. 732,553

The portion of the term of the patent subsequent to Sept. 5, 1984, has been disclaimed

Int. Cl. C07f 9/32, 9/36, 9/40

U.S. Cl. 260—978

4 Claims

Dithiophosphonic and dithiophosphinic acid esters can be prepared by free radical addition of the corresponding dithiophosphonic and dithiophosphinic acids to unsaturated compounds, such as olefinic and acetylene compounds, e.g. vinyl chloride, butadiene, allene, methylacetylene, etc. The novel unsaturated mono-adducts of this reaction such as O-ethyl-S-propenyl ethanedithiophosphonate, e.g., are useful as pesticides, particularly as insecticides, and lubricating oil additives such as anti-oxidants, etc.

3,751,531

## METHOD OF BIAXIALLY STRETCHING TUBES OF POLYVINYL FLUORIDE POLYMERS

George N. Foster, Somerville, and William Sacks, Gillette, N.J., assignors to Union Carbide Corporation

No Drawing. Original application Nov. 24, 1967, Ser. No. 685,336, now Patent No. 3,594,458. Divided and this application Mar. 16, 1971, Ser. No. 124,952

Int. Cl. B29d 7/24; B01j 1/10

U.S. Cl. 264—22

5 Claims

Vinyl fluoride polymer webs including film, in the absence of a solvent can upon irradiation and heating to orientation temperature, be readily biaxially oriented, in tubular or nontubular form, to a clear, durable web.

3,751,532

## MECHANICAL METHOD OF FORMING CONCRETE VIA SUSPENSION

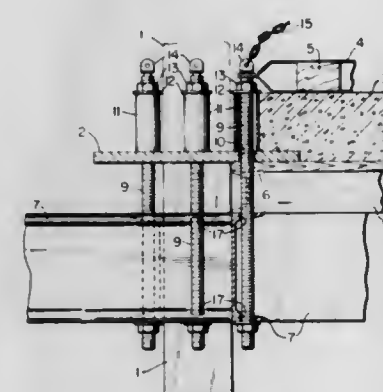
Paul R. Roth, 550 Ocean Drive, Key Biscayne, Fla. 33149

Filed Dec. 11, 1969, Ser. No. 884,236

Int. Cl. E04b 1/16, 1/35, 5/17

U.S. Cl. 264—31

1 Claim



A method for suspension casting of a building slab involving, as a basic unit of a modular system, four vertical columns, beams horizontally extending therebetween and suspended therefrom at a preselected height, the beams and portions of the column suspension struc-

ture serving to sandwich and clamp the slab form so that after curing, the beams, form, and clamps can be dropped for use on the next higher floor.

3,751,533

## METHOD AND APPARATUS FOR MONITORING MELT SPINNING

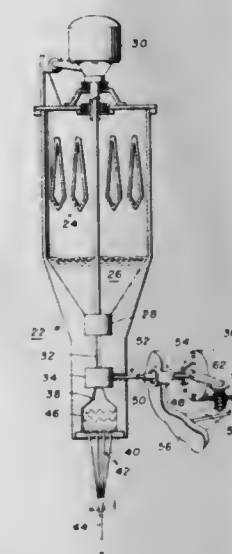
David Bowen, Jr., Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Continuation of abandoned application Ser. No. 42,102, June 1, 1970. This application Sept. 15, 1971, Ser. No. 180,912

Int. Cl. D01d 5/12; G06g 7/14

U.S. Cl. 264—40

6 Claims



Meter and booster pump motors are resiliently mounted to deflect or pivot about their own axes in reaction to torque transmitted to their respective pumps. This deflection or pivotal motion is a measure of the pressures developed by the pumps, and permits early detection of excessive or insufficient pack pressure, inadequate melt supply, etc.

3,751,534

## PROCESS FOR THE PRODUCTION OF LAMINAR CELLULAR ARTICLES

David Fairclough Oxley, St. Albans, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 723,248, Apr. 22, 1968. This application Apr. 8, 1971, Ser. No. 132,597

Claims priority, application Great Britain, May 3, 1967, 20,590/67, 20,591/67

Int. Cl. B29d 9/00, 27/00; B32b 7/02

U.S. Cl. 264—45

15 Claims

Producing a laminate having a cellular core and an unfoamed surface skin by injecting a non-foamable thermoplastic composition and then a foamable thermoplastic composition into a mould and retaining the materials within the mould and thereafter enlarging the mould and allowing the foamable composition to foam.

3,751,535

## PREPARATION OF MOULDING COMPOSITIONS CONTAINING GLASS FIBERS

Vincenzo Ruoti and Felice Farioli, Milan, Italy, assignors to Snia Viscosa Società Nazionale Industria Applicazioni Viscosa, Milan, Italy

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,085

Claims priority, application Italy, Dec. 31, 1969, 26,552/69

Int. Cl. B01j 2/20

U.S. Cl. 264—141

3 Claims

A method of forming a granulated compound having excellent physical properties and consisting of a mixture of a synthetic linear polyamide, a synthetic linear polyester and glass fibers by feeding suitable amounts of said



polyamide, polyester and glass fibers to an extruder and then granulating the resulting extruded mixture.

3,751,536

**MICROPOROUS MEMBRANES**

Guy Bourat, Bourg-la-Reine, and Albert Fabre, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France  
No Drawing. Filed Aug. 4, 1971, Ser. No. 169,115  
Claims priority, application France, Aug. 7, 1970, 29,297

Int. Cl. B29d 27/04

U.S. Cl. 264—47

8 Claims

The invention provides a microporous opaque polyvinyl chloride membrane having a porosity between 40 and 85%, the pores having a diameter of less than  $1\mu$ .

3,751,537

**PROCESS FOR CONTROLLING DIMENSIONS OF THE PRODUCT IN FOAMED PLASTIC EXTRUSION**

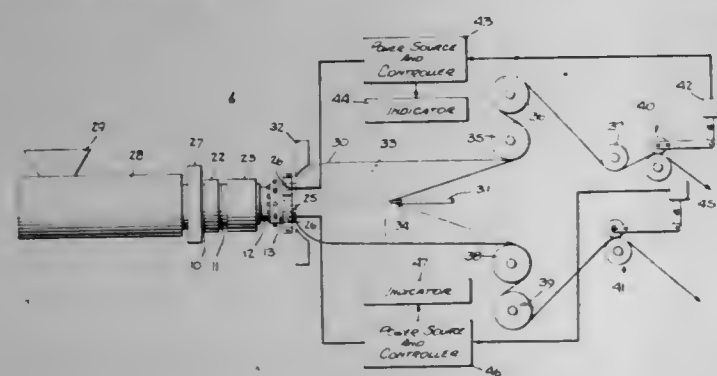
Victor Edward Scotto, Uniondale, and Maurice W. Blackwelder, Deer Park, N.Y., assignors to Owens-Illinois, Inc.

Filed Jan. 12, 1970, Ser. No. 2,005

Int. Cl. B29d 7/02, 23/00, 27/00; B29f 3/08

U.S. Cl. 264—40

3 Claims



Caliper in the cross direction in webs of extruded foamed plastic produced by longitudinal slitting of a tubular extrusion is controlled by differentially heating the extrusion die circumferentially about its axis. This can be accomplished by locating a plurality of independently controllable heaters around the die.

3,751,538

**FABRICATION OF NUCLEAR FUEL PELLETS**  
Alfred Jean Flipot, Geel, and Robert E. M. Gilissen, Mol, Belgium, assignors to Belgonucleaire, S.A., and Centre d'Etude l'Energie Nucleaire, both of Brussels, Belgium  
No Drawing. Filed Feb. 25, 1970, Ser. No. 14,226

Int. Cl. G21c 21/00

U.S. Cl. 264—5

4 Claims

The specification discloses nuclear fuel pellets containing small amounts of barium in an amount sufficient to lower the bulk density of the pellets, and a process of controlling the bulk density of such pellets based on the addition of barium.

3,751,539

**USE OF VAPOR DEPOSITION TO FORM A HOLLOW TUBULAR BODY CLOSED ON ONE END**

Konrad Reuschel, Vaterstetten, Arno Kersting, Erlangen, and Wolfgang Keller, Pretzfeld, Germany, assignors to Siemens Aktiengesellschaft, Munich, Erlangen and Berlin, Germany

Continuation-in-part of application Ser. No. 826,249, May 20, 1969. This application Oct. 26, 1971, Ser. No. 192,672

Claims priority, application Germany, Apr. 2, 1969, P 19 17 016.2

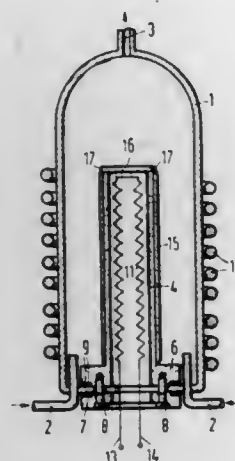
Int. Cl. B01j 17/30, 17/32

U.S. Cl. 264—81

3 Claims

Described are two methods of producing a hollow body, comprised of semiconductor material, especially silicon,

by precipitation from a gaseous compound of said semiconductor material upon the surface of a heated carrier body, which after a sufficiently thick layer of semiconductor material has been precipitated, is removed again without damaging said layer. One method is characterized by using a hollow carrier body, open at least at two opposite sides. Prior to the precipitation of the semiconductor material, one of the open sides of the carrier



body is covered by a wafer from the same semiconductor material whose shape corresponds to the open side. Thereafter, the semiconductor material is precipitated from the gaseous compound until the desired layer thickness and a gas-tight connection is obtained between the layer and the covering semiconductor material. The second method precipitates a semiconductor layer and thereafter welds a cover on the tube.

3,751,540

**METHOD OF MAKING A MOLD FOR REPRODUCING PARTS OF SHOES AND THE LIKE**

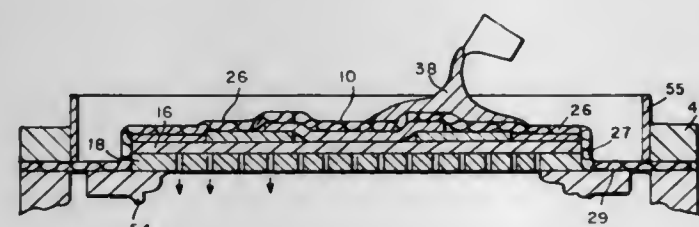
Frederick A. Prah, Jr., Carlisle, and Robert B. Dunlap, Medway, Mass., assignors to Compo Industries, Inc., Waltham, Mass.

Filed Aug. 19, 1971, Ser. No. 173,072

Int. Cl. B29c 1/02

U.S. Cl. 264—90

12 Claims



The method of making a master mold for reproducing parts having raised portions on its face comprising providing a master pattern of the part to be reproduced, positioning the master pattern within a mask on a supporting surface, displacing the elevated portions at the face of the master pattern into a substantially common plane, forming a rigid structure across the back of the master pattern and mask, about the peripheral edge of the mask and forwardly of the plane of the master pattern to provide a cavity at the forward side of the master pattern, removing the mask from the rigid structure, flooding the cavity with a curable liquid material having a lower di-

electric constant than the thermoplastic of which the part is to be reproduced to a predetermined depth which is greater than the thickness of the projecting portion, causing the liquid material to cure and then stripping the cured material representing the mold from the rigid structure.

3,751,541

**PROCESS OF FORMING PLASTIC TUBING WHICH IS PARTIALLY CORRUGATED**

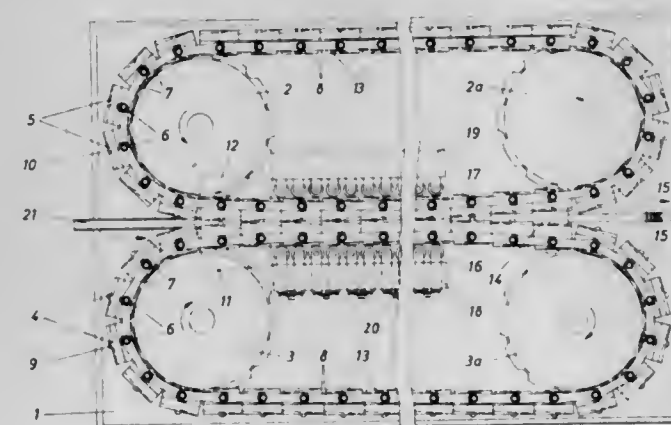
Wilhelm Hegler, 8731 Oerlenbach, Germany  
Continuation-in-part of abandoned application Ser. No. 779,117, Nov. 26, 1968. This application Mar. 24, 1971, Ser. No. 127,757

Claims priority, application Germany, Nov. 29, 1967, P 17 04 715.3

Int. Cl. B29c 17/07, 17/14

U.S. Cl. 264—90

10 Claims



Continuous formation of partially transversely corrugated plastic tubing by extruding a tube of thermoplastic material; passing the tubing, while still in thermoplastic forming condition, through a mating mold half assembly in which each set of mold halves are connected together in an endless fashion and wherein some of the mating mold halves have transverse corrugation molding means therein and some of the mating mold halves are smooth insofar as their molding surfaces are concerned; closing the mold halves about said tubing; simultaneously conveying the endless mold half assemblies and the endless thermoplastic tubing in molding relation to each other at the same rate along a mold path; applying a vacuum to the outside of said thermoplastic tubing along said mold path through said mold halves thereby drawing said thermoplastic tubing against the smooth molding surfaces of the smooth mold halves and into the transverse corrugated molding surfaces of the corrugated mold halves; and opening said mold halves from about said tubing after said tubing has cooled to below its thermoplastic forming temperature.

3,751,542

**ORIENTATION OF TUBING FOR A CONTINUOUS PROCESS FOR MAKING BLOW MOLDED CONTAINERS**

John N. Hall, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 9, 1971, Ser. No. 197,060

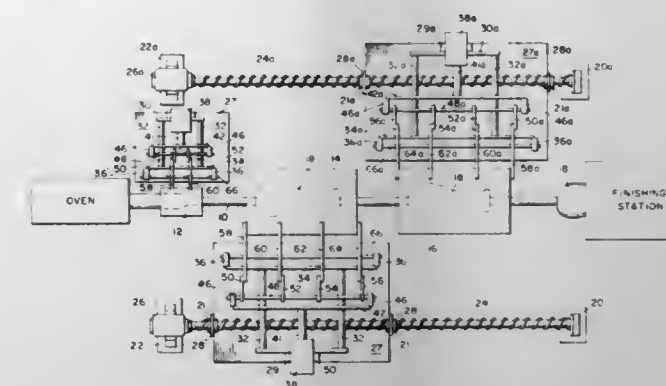
Int. Cl. B29c 17/07

U.S. Cl. 264—99

1 Claim

The time lapse between initiation of orientation of a continuous plastic tubing and blowing a container therefrom in a continuous process for making blow molded containers is reduced by having one mold moving away from an oven to draw a given length of tubing from the

oven and then clamping the tubing at a location adjacent the oven and letting continued movement of the mold



away from the oven orient the given length of tubing. Another mold closes on the oriented length of tubing and a container is formed therein.

3,751,543

**PELLETIZING PROCESS**

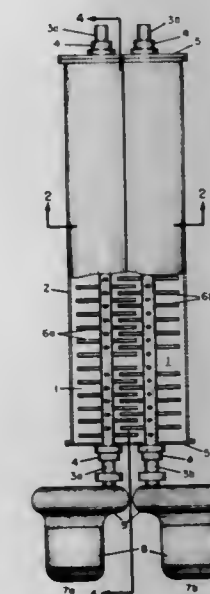
Paul N. Hare, Swartz, La., assignor to Cities Service Company, New York, N.Y.

Filed June 25, 1971, Ser. No. 156,629

Int. Cl. B01j 2/10

U.S. Cl. 264—117

6 Claims



Wetted powders are pelletized in an elongated pelletizing zone by means of interdigitating members which project radially outwards from two rotatable shafts which extend axially through the zone. A curved, longitudinally extending wall of a conduit which bounds the pelletizing zone is proximal to the tip-ends of the agitator members which are not interdigitating during rotation of the shafts. During pelletization the wetted powder advances axially through the conduit, first being swirled against the curved conduit wall, and then toward the center line of the conduit where it is transected by interdigitating members. The members which are not interdigitating move through the wetted powder against the wall. There is recirculation of wetted powder from the wall, through the interdigitating members, and back to the wall as the powder advances axially through the pelletizing zone.



# **3,751,544** **METHOD FOR CUTTING THROUGH A BLOCK OF PLASTIC MATERIAL**

Johannes Jacobus Smorenburg, Abcoude, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands

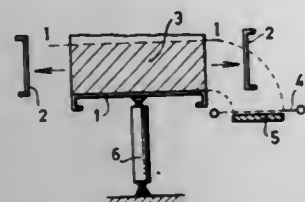
Filed July 8, 1971, Ser. No. 160,724

Claims priority, application Netherlands, July 17, 1970, 7010674

Int. Cl. B28b 11/14

U.S. Cl. 264—157

2 Claims



planes parallel to the upstanding sides of the block, is performed subsequent to a tilting movement around a line parallel to an edge of the bottom of the block by means of an auxiliary supporting surface with at least one cutting wire lying upon said surface.

# **3,751,545** **FABRICATION OF PLASTIC SPINNERETTES BY MEANS OF STACKED MANDRELS**

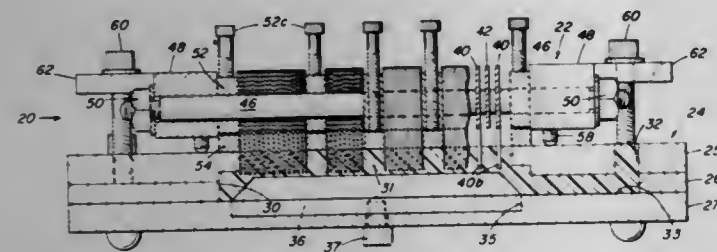
James Bruce Peeso, Jr., and Donald Murfitt, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of abandoned application Ser. No. 723,696, Apr. 24, 1968. This application Sept. 3, 1970, Ser. No. 69,250

Int. Cl. B29c 1/14

U.S. Cl. 264—162

7 Claims



A method of making spinnerettes comprising casting a plastic resin into a mold cavity defined by a plurality of comb-like elements supported above the cavity, said elements inserted vertically downward into said cavity, and withdrawing said elements after the resin has hardened thereby leaving a plurality of holes in the casting which are the orifices of the finished spinnerette. This method enables the manufacture of spinnerettes having a large number of orifices of any desired shape.

# **3,751,546** **PROCESS FOR THE MANUFACTURE OF FILAMENTS ON THE BASIS OF HIGH-MELTING POLYAMIDES**

Ernst Horoldt, Kelkheim, Taunus, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 26, 1971, Ser. No. 164,857

Claims priority, application Germany, July 28, 1970, P 20 37 254.7

Int. Cl. D01f 7/00

U.S. Cl. 264—184

5 Claims

The application relates to a process for the wet spinning of preponderantly aromatic polyamides by spinning a spinning solution containing besides an aprotic solvent a

dissolved metal halide into an aqueous salt-containing coagulation bath; the coagulation bath containing as salt the same metal halide as does the spinning solution. The process simplifies the manufacture of filaments made from high-melting polyamides having a high dynamic efficiency and partially a poor flammability, and it ensures an easy regeneration of the coagulation baths.

# **3,751,547** **PROCESS FOR PRODUCING HIGH MODULUS POLYVINYL ALCOHOL SYNTHETIC FIBERS**

Hiroshi Kawakami, Hideshi Satoh, Akira Miyoshi, Kazuharu Kawabata, and Kohkichi Kimura, Akoh, Japan, assignors to Unitika Limited, Amagasaki-shi, Hyogo-ken, Japan

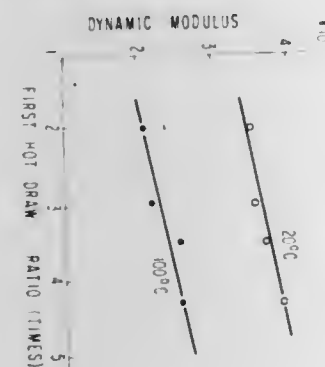
Filed June 28, 1971, Ser. No. 157,246

Claims priority, application Japan, June 27, 1970, 45/56,238, 45/56,239

Int. Cl. D01f 7/00

U.S. Cl. 264—210 F

15 Claims



A process for producing high modulus polyvinyl alcohol synthetic fibers which comprises spin-drawing polyvinyl alcohol synthetic fibers having a homogeneous section and then carrying out a multistage hot drawing. Polyvinyl alcohol synthetic fibers are produced by such a process.

# **3,751,548** **FORMED-IN-PLACE STATOR END WINDING BLOCKS FOR A DYNAMOELECTRIC MACHINE**

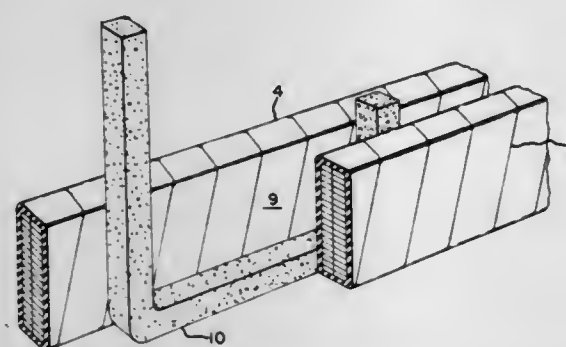
Frank J. Lasak, Schenectady, N.Y., assignor to General Electric Company

Filed Oct. 8, 1970, Ser. No. 79,094

Int. Cl. H02k 3/46

U.S. Cl. 264—261

6 Claims



A method of forming the stator end winding blocks of a large dynamoelectric machine is described whereby the end winding blocks are cast in place. The method is practiced by forming a mold cavity of a resilient sponge rubber material, between bar members, filling the cavity with a curable liquid plastic material, preferably a urethane rubber, and then curing the liquid material such that it is converted to a solid elastomer. When forming the spacer blocks of a large generator, a number of such mold cavities can be formed and then the cavities may be filled while the generator is periodically

rotated, allowing each end winding block to partially cure before rotation to the next position, thereby preventing spillage.

# **3,751,549** **PROCESS FOR IMPREGNATING ELECTRICAL COMPONENTS**

Harry I. Hazzard, Los Angeles, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

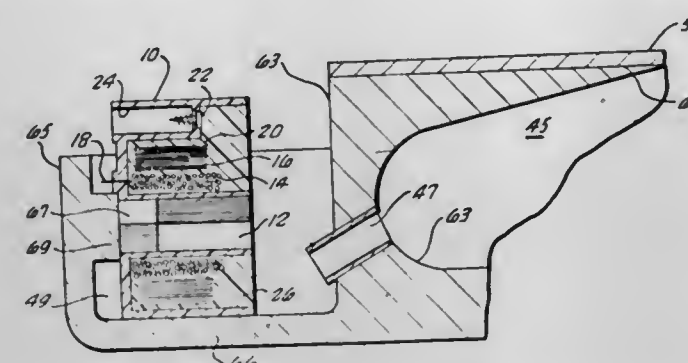
Original application Mar. 12, 1969, Ser. No. 806,520, now Patent No. 3,619,865. Divided and this application

Sept. 7, 1971, Ser. No. 178,390

Int. Cl. B29c 5/04

U.S. Cl. 264—272

7 Claims



A motorized centrifugal impregnator insulates and mechanically pots coils and the like by centrifuging resin and catalyst into the interior of the coils' casings. The casings are mounted with their interiors to be filled facing radially inward on a circle about the rotational axis of the impregnator. An inner, generally flat surface of the impregnator is surrounded by equally spaced dividers which define distribution passages or channels leading to each coil casing. The passages are configured to produce radial resin and catalyst flow without resin pocketing. A lip or tube at the outer radial limits of each channel direct the resin into the coil casing. Resin and catalyst poured onto the inner surface are thoroughly mixed and distributed to the coils with the resin compound being equally divided by the equally spaced divider walls.

# **3,751,550** **METHOD FOR MAKING DIFFERENTIAL DUROMETER FACED ROLLS**

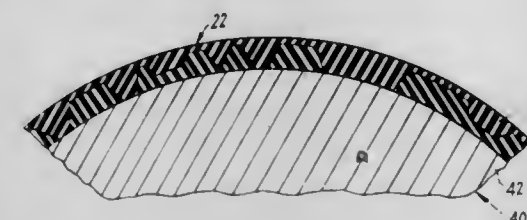
Jan P. Nauta, West Hartford, Conn., assignor to Rowland Development Corporation, Kensington, Conn.

Filed Aug. 20, 1970, Ser. No. 65,433

Int. Cl. B29c 3/00; B29b 1/00

U.S. Cl. 264—275

11 Claims



An embossing roll for producing visual pattern effects in which the surface layer is of greater resilience than the inner layer and has a multiplicity of closely spaced embossing formations therein. The inner layer is of non-uniform depth to produce variations in depth of the more resilient outer layer and thereby variations in rigidity about the surface of the embossing roll. As a result, distortion in the spacing between embossing formations occurs when sufficient pressure is placed upon the roll at the nip during the embossing operation. The variations in

thickness of the inner layer are conveniently accomplished by carving a substantially uniform deposit of the resin of the inner layer into the desired pattern and then depositing the outer layer thereon. The procedure is most desirably employed in the manufacture of optical sheet materials of the type described in William P. Rowland, U.S. Pat. 3,357,773.

# **3,751,551** **PROCESS OF CENTRIFUGAL CASTING**

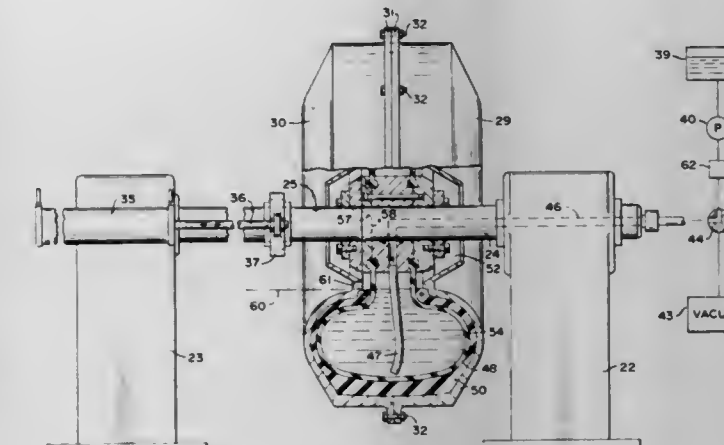
Daniel Ross McGillvary, Jackson Township, Stark County, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Filed July 6, 1971, Ser. No. 159,893

Int. Cl. B29c 5/04

U.S. Cl. 264—311

14 Claims



The process of centrifugally casting an article such as a tire or the like from a curable or hardenable liquid polymeric material, which process includes the steps of selecting a mold and placing a core within the mold which core is hollow and/or is readily deformable under pressure but which has sufficient memory to resume its original position when the pressure is removed. The article being formed is formed between the core and the mold. The space between the core and the mold is filled with the curable liquid material of which the article is to be formed and the hollow core is also filled with a liquid material. The liquid material in the hollow core, the material from which the core is constructed and the curable liquid material all have about the same specific gravity. The mold and core are rotated to centrifugally cast the article which is formed of the curable liquid material. The deformable core permits easy removal from the completed article and the matching of the specific gravities as aforementioned keeps the deformable core from distorting during the centrifugal casting operation. The order of introducing the liquid material into the core, introducing the curable liquid into the space between the mold and core and rotation of the mold and core can be varied within the limits as set forth in the following description. Variations in the structure for accomplishing the principle of matching specific gravities are illustrated and described.

# **3,751,552** **METHOD FOR DRAWING THERMOPLASTIC MATERIALS**

William R. Meadors, Washington, W. Va., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of application Ser. No. 835,826, Jan. 31, 1969, which is a division of application Ser. No. 598,500, Dec. 1, 1966, both now abandoned. This application Jan. 12, 1972, Ser. No. 217,403

Int. Cl. B29c 17/03

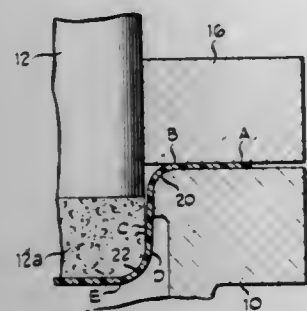
U.S. Cl. 264—320

2 Claims

In the deep drawing of synthetic thermoplastic sheet material, the present invention uses a roughened surface



on the terminal portion or nose of the punch. The function of this roughened punch surface is to firmly engage and grip the material as it is wrapped over the end of



the punch during the drawing operation. Contact with the roughened surface will reduce the flow of material as it is in the process of being stretched across this region so that thinning is mitigated.

### 3,751,553 PROCESS FOR SEPARATING YTTRIUM VALUES FROM THE LANTHANIDES

Bjorn Gaudernack, Oslo, and Gunnar Hannestad and Ingleiv Hundere, Skedsmokorset, Norway, assignors to Forskningsgruppe for Sjeldne Jordarter  
No Drawing. Filed Sept. 13, 1971, Ser. No. 180,097  
Claims priority, application Norway, July 20, 1971, 2,750/71

Int. Cl. C22b 59/00

U.S. Cl. 423—21 8 Claims

An improved liquid-liquid extraction process for the separation of yttrium values from the elements of the lanthanide series and other impurities is disclosed. The light lanthanide elements are separated by extraction from an aqueous nitrate solution with an organic solution of a quaternary ammonium nitrate, and the heavy lanthanides are subsequently removed from the aqueous solution by extraction with an organic solution of a quaternary ammonium thiocyanate.

### 3,751,554 PROCESS FOR THE EXTRACTION OF NICKEL, COPPER AND COBALT FROM MANGANIFEROUS ORES

Conrad B. Bare, Coopersburg, and Joseph W. Pasquali, Bethlehem, Pa., assignors to Bethlehem Steel Corporation

Filed Aug. 19, 1971, Ser. No. 173,210

Int. Cl. C22b 3/00

U.S. Cl. 423—32 8 Claims

A process for the extraction of nickel, copper and cobalt from manganiferous ores, such as deep sea nodules, in which the ore is roasted from about 700° F. to about 1400° F. in a reducing atmosphere. The ore is cooled under non-oxidizing conditions, and leached under oxidizing conditions with an ammoniacal-ammonium carbonate solution comprising about 55 to 160 grams per liter of ammonia and about 30 to 120 grams per liter of carbon dioxide.

### 3,751,555 SOLVENT EXTRACTION PROCESS FOR THE RECOVERY OF MOLYBDENUM AND RHENIUM FROM MOLYBDENITE

Hal D. Peterson, Boulder, Colo., assignor to Molybdenum Corporation of America, Louviers, Colo.

Filed Mar. 22, 1972, Ser. No. 236,838

Int. Cl. C01g 39/00, 47/00

U.S. Cl. 423—49 10 Claims

Process for the recovery of molybdenum and rhenium values from highly acid solutions which comprises contacting the solution with a water-immiscible organic phase

including a mixed extractant comprising an alkyl phosphonate and an organophosphoric acid with or without the addition of an amine extractant, or first contacting the solution with the phosphonate to selectively remove rhenium, organic acids and other impurities, followed by contacting the resulting solution with the organophosphoric acid with or without the addition of an amine extractant and an organic phosphate, and recovering the molybdenum and rhenium values from the extractant by conventional means. Process is applicable to recovery of the metal values from leach solutions having a sulfuric acid content up to 600 grams per liter resulting from nitric acid-oxidation leach of molybdenite.

### 3,751,556 BENEFICIATION PROCESS FOR TITANIFEROUS ORES

Jack Whitehead, Acklam, Frank Ronald Williams, Rudby, and Derek Vernon Gosden and Graham Woodhouse, Horsham, England, assignors to British Titan Limited, Billingham, Teesside, England

No Drawing. Filed May 14, 1971, Ser. No. 143,629

Claims priority, application Great Britain, May 16, 1970, 23,851/70

Int. Cl. C01g 23/02, 25/04, 25/06

U.S. Cl. 423—82 15 Claims

A process for the removal of soluble titanium from a solution obtained by leaching an iron-containing titaniferous material with aqueous hydrochloric acid by the addition of phosphoric acid or a phosphate, preferably in the presence of an oxidising agent, whereby the soluble titanium is precipitated in an insoluble form.

### 3,751,557 SOLVENT EXTRACTION PROCESS FOR PURIFICATION OF BERYLLIUM

Hiroshige Suzuki, Tokyo, Hisahiko Einaga, Ohmiya, and Yasumichi Mori, Koshigaya, Japan, assignors to National Institute for Researches in Inorganic Materials, Tokyo, Japan

No Drawing. Filed Mar. 10, 1971, Ser. No. 123,042

Claims priority, application Japan, July 10, 1970, 45/59,901

Int. Cl. C22b 59/00

U.S. Cl. 423—112 15 Claims

A solvent extraction process for the purification of beryllium using an aminopolycarboxylic acid as a masking or sequestering agent, which comprises (i) preparing an aqueous solution system containing the beryllium compound to be purified, an aminopolycarboxylic acid, water, and a compound selected from the group consisting of  $\beta$ -ketocarboxylic esters and malonic diesters, with the pH of the solution adjusted to 4.5–9, (ii) extracting the aqueous solution system with a water-immiscible, organic solvent, (iii) back-extracting the resulting organic solvent phase with an aqueous solution of a mineral acid, and (iv) recovering the beryllium compound from the resulting aqueous solution phase.

### 3,751,558 PROCESS OF SEPARATING COBALT FROM NICKEL BY MEANS OF AMMONIA

Ranko P. Crnojevic, Arvada, and Donald F. Lowe, Lakewood, Colo., assignors to American Metal Climax, Inc., New York, N.Y.

Filed Jan. 14, 1972, Ser. No. 217,761

Int. Cl. C01g 51/00, 53/00

U.S. Cl. 423—144 15 Claims

A method is provided for separating nickel from cobalt contained in nickel-cobalt acid solutions whereby to produce a highly enriched nickel product low in cobalt wherein the nickel-cobalt acid solution is treated at ambient temperature with a predetermined amount of ammonia to produce a nickel-ammonia complex, an ammonium acid-salt and a cobalt-containing precipitate or concen-

trate which is separated from the solution, the ammonium ion concentration of the acid-salt being maintained below 0.3 mole per liter. The nickel is thereafter recovered from the solution. In its preferred aspects, the solution, after removal of the cobalt-containing precipitate, is heated to an elevated temperature of at least about 50° C. to form a second cobalt-containing precipitate which is separated from the solution, a highly enriched nickel product being thereafter recovered from the solution by known means, such as in the form of nickel hydroxide, nickel oxide, metallic nickel powder, or other form.

3,751,559

### PROCESS FOR TREATING AN AQUEOUS SOLUTION OF CRUDE SODIUM CHLORIDE

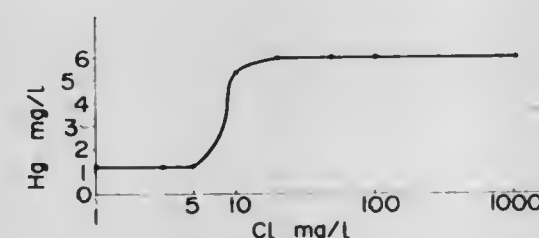
Iwao Kanno, Junichi Yoshioka, and Sumito Fuzio, Miyazaki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed June 16, 1971, Ser. No. 153,776

Int. Cl. C01d 3/16

U.S. Cl. 423—158

7 Claims



A process for treating an aqueous solution of crude sodium chloride containing mercury wherein, before removing magnesium and calcium which contaminate the crude sodium chloride, chlorine or sodium hypochlorite is added to said solution to control concentration of free chlorine therein to at least 10 mg./l., thereby to prevent mercury from precipitating with magnesium and calcium. It is preferable to recycle a slurry containing precipitates of calcium and magnesium.

3,751,560

### MULTI-STAGE PROCESS FOR THE PREPARATION OF SODIUM BICARBONATE

Ulrich Neumann, Rodenkirchen, Germany, assignor to Chemiebau, Dr. A. Zieren GmbH. & Co. KG, Cologne-Mungersdorf, Germany

Filed Apr. 7, 1971, Ser. No. 131,987

Claims priority, application Germany, Apr. 8, 1970, P 20 16 633.0; Oct. 2, 1970, P 20 48 486.0

Int. Cl. C01d 7/10

U.S. Cl. 423—189

13 Claims

Sodium bicarbonate is produced from an aqueous solution of sodium hydroxide obtained from the sodium amalgam electrolytic process by:

- Reacting the sodium hydroxide solution with carbon dioxide at about 70–110° C., preferably 95–105° C., in a first stage to form a crystalline precipitate containing sodium carbonate monohydrate while simultaneously evaporating water from the reaction mixture;
- Separating the crystalline precipitate from mother liquor thereof and recycling the latter to the first stage;
- In a second stage, dissolving the separated crystalline precipitate containing sodium carbonate monohydrate, and reacting the resultant solution with carbon

dioxide at 20–70° C., preferably 30–40° C., to precipitate sodium bicarbonate;

(d) Separating the resultant solid sodium bicarbonate from mother liquor, and recycling the latter into the second stage to dissolve said crystalline precipitate.

### ERRATUM

For Class 423—645 see:  
Patent No. 3,751,566

3,751,561

### STABLE POLYMER-ENZYME ORAL HYGIENE COMPOSITIONS

Bernard S. Wildi, Kirkwood, Thomas L. Westman, St. Louis, and Leonard Keay, Florissant, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 763,341, Sept. 27, 1968. This application Nov. 23, 1970, Ser. No. 92,218

Int. Cl. A61k 7/16

U.S. Cl. 424—48

20 Claims

Oral hygiene compositions, comprising polymer-enzyme products wherein the enzyme is covalently bound, having protease activity within the pH range of the oral cavity, and such compositions comprising a plurality of polymer-enzyme products or a polymer-plural enzyme product, whereby the range of effective enzymatic activity is extended. The compositions are stable, long-acting in use, substantive to the teeth, and not readily subject to denaturation of the enzymatic component thereof even upon long storage. The polymer-enzyme products employed are tailored to be effective at the normal relatively neutral pH range of the oral cavity. One especially preferred composition for dental use comprises a polymer-enzyme product wherein both neutral protease and dextranase are covalently bound. Method of using such polymer-enzyme products in oral hygiene.

3,751,562

### MEDICATED GELLED OILS

Joseph Nichols, Princeton, N.J., assignor to Princeton Biomedix Incorporated, Princeton, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 28,124, Apr. 13, 1970. This application Sept. 22, 1972, Ser. No. 291,239

Int. Cl. A61k 9/06, 27/00

U.S. Cl. 424—45

11 Claims

Medicated gelled oils suitable for topical application are disclosed. The gelled oils which form an ointment base are mineral oils gelled with at least one polyoxyethylated fatty acid alcohol ether. The base can be compounded with any conventional topical medicament for use as a germicide, fungicide, or anesthetic.

3,751,563

### SUNSCREENS PREPARATIONS

Earl L. Richardson, Congers, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed June 11, 1969, Ser. No. 832,480

Int. Cl. A61l 23/00

U.S. Cl. 424—60

5 Claims

A solution adapted for use as a cosmetic sun-screen preparation comprising a polypropylene glycol monoalkylether fluid having an average molecular weight of about 400 to about 3000 and a viscosity of about 120 to about 3000 as measured in Saybolt Universal Seconds at 100° F. and wherein the alkyl group has from 1 to 10 carbon atoms as solvent and a chemical sunscreen agent as solute in at least a sufficient amount to screen the sun from human skin and up to about nine percent by weight of the solvent, said chemical sunscreen agent being selected from the group consisting of 2-ethoxyethyl p-methoxycinnam-



ate, amyl p-dimethylaminobenzoate, homomenthyl salicylate, 2-hydroxy-4-methoxy-benzophenone, 2,4-dihydroxy-benzophenone, 1-monoglyceryl p-aminobenzoate, 2-ethylhexyl salicylate, and phenyl salicylate.

### 3,751,564 PROCESS FOR PREPARING SCLEROPROTEIN-ALKYL THIOSULFATE AGENTS FOR THE CARE OF THE HAIR

Wolfgang Eckardt, Bad Segeberg, Rudolf Tietj, Hamburg, and Victor Wolf, Hamburg-Blankenese, Germany, assignors to Lever Brothers Company, New York, N.Y.  
No Drawing. Continuation of abandoned application Ser. No. 781,237, Dec. 4, 1968. This application Mar. 5, 1971, Ser. No. 121,571  
Claims priority, application Germany, Dec. 8, 1967, P 16 95 969.6  
Int. Cl. A61k 7/06, 7/08

U.S. Cl. 424—70 7 Claims  
Process for the preparation of an anti-dandruff agent in which a partially degraded scleroprotein or fibrous protein is reacted with an alkyl or alkenyl thiosulphate in an aqueous alkaline medium.

### 3,751,565 THERAPEUTIC COMPOSITIONS

Salvatore L. Santorelli, 160—54 10th Ave., Whitestone, N.Y. 11357

No Drawing. Continuation-in-part of application Ser. No. 754,098, Aug. 12, 1968, which is a continuation of application Ser. No. 507,515, Nov. 12, 1965, which is a continuation-in-part of application Ser. No. 431,714, Feb. 10, 1965, which is a continuation-in-part of application Ser. No. 220,907, Aug. 31, 1962, which is a continuation-in-part of application Ser. No. 852,174, Nov. 12, 1959, which in turn is a continuation-in-part of application Ser. No. 773,809, Nov. 14, 1958, all now abandoned. This application Mar. 11, 1970, Ser. No. 18,717

Int. Cl. A61k 27/00 4 Claims  
The present invention is directed to a composition having a complex compound therein, the composition being useful as a bactericidal and fungicidal agent or in the treatment of burns. The composition comprises 100 cc. of 60–70% alcohol or propylene glycol, about 18 to 22 grams of salicylic acid, about 0.1 to 2 grams of an iodine antiseptic such as polyvinylpyrrolidone-iodine or iodine/sodium iodide and 0.1 to 2 grams of a mercurial antiseptic such as 0.1 to 2 grams of sodium ethylmercurithiosalicylate or sodium dibromoxymercurifluorescein which form a complex compound, with salicylic acid being present in excess of 10 grams in the composition. The present invention also includes the complex compound of salicylic acid, an iodine antiseptic such as polyvinylpyrrolidone-iodine or iodine/sodium iodide and a mercurial antiseptic such as sodium ethylmercurithiosalicylate or sodium dibromoxymercurifluorescein, which can be used in solutions, ointments or sprays.

### 3,751,566 PREPARATION OF ALUMINUM HYDRIDE BY REACTION OF AN ALKALI METAL HYDRIDE WITH BORON TRICHLORIDE

John W. Churchill, Mount Carmel, Conn., assignor to the United States of America as represented by the Secretary of the Army  
No Drawing. Filed Jan. 15, 1969, Ser. No. 791,527  
Int. Cl. C01b 6/00

U.S. Cl. 423—645 10 Claims  
A novel process for the preparation of aluminum hydride. The process utilizes the reaction of an alkali metal aluminum hydride with a boron trihalide. Typically, the alkali metal is sodium or lithium and the halogen is chlorine. The process is conducted in the presence of an ether such as diethyl ether, followed by removal of the precipitate of the alkali metal halide, dilution of the solu-

tion with an aromatic solvent, and heating to remove ether, effect crystallization and convert to the stable form of aluminum hydride. The product is useful as a solid propellant ingredient.

### 3,751,567 SYNERGISTIC ANTIBIOTICS

Edward Alexander Konopka, Murray Hill, N.J., and Justus Melchior Gelzer, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 81,112, Oct. 15, 1970, which is a continuation-in-part of abandoned application Ser. No. 13,788, Feb. 24, 1970, which in turn is a continuation-in-part of application Ser. No. 809,967, Mar. 24, 1969, now Patent No. 3,644,616, dated Feb. 22, 1972. This application Jan. 17, 1972, Ser. No. 218,537  
Int. Cl. A61k 21/00

U.S. Cl. 424—114 4 Claims  
Rifamycines or their semisynthetic derivatives, in combination with penicillines or cephalosporines, exhibit synergistic effects against pathogens.

### 3,751,568 METHOD OF COATING TEETH WITH A DURABLE GLAZE

Sheila Ann Mundorff and Basil Glover Biddy, Rochester, N.Y., and Buddhi Man Shrestha, Biratnagar, Nepal, India, assignors to Eastman Dental Center, Rochester, N.Y.

Filed June 18, 1971, Ser. No. 154,360  
Int. Cl. A61k 7/16

U.S. Cl. 424—131 14 Claims  
Ytterbium chloride and acidified solutions thereof are applied topically to teeth either preceding or following the topical application of titanium tetrafluoride to increase the resistance thereof to dental caries. The acidified solution of ytterbium chloride; certain organic acids, such as formic acid, acetic acid and the like and their salts, and certain inorganic acids, such as, hydrochloric acid, form an aesthetically pleasing, durable fluoride glaze on the tooth surface when applied topically either following or preceding the topical application of titanium tetrafluoride.

### 3,751,569 CLEAR COOKING AND SALAD OILS HAVING HYPOCHOLESTEROLEMIC PROPERTIES

Billy Arthur Erickson, Springfield, Mo., assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 842,698, July 17, 1969. This application Jan. 12, 1972, Ser. No. 217,708  
Int. Cl. A61k 15/02

U.S. Cl. 424—173 8 Claims  
A cooking and salad oil composition having enhanced hypocholesterolemic properties is prepared by adding 0.5% to 10% (free sterol equivalent) by weight of the composition of plant sterol monocarboxylic acid ester to clear, liquid glyceride base oil.

### 3,751,570 POLYNICOTINIC ESTERS OF HESPERIDIN

Eugene L. Lerol, Bievres, France, assignor to Societe d'Etudes de Produits Chimiques, Issy-les-Moulineaux, France

No Drawing. Continuation-in-part of abandoned application Ser. No. 726,232, May 2, 1968. This application July 16, 1970, Ser. No. 55,620  
Claims priority, application Great Britain, May 5, 1967, 21,078/67  
Int. Cl. C07c 47/18; A61k 27/00

U.S. Cl. 424—180 2 Claims  
The present invention relates to the octonicotinic ester of hesperidin, to compositions containing it and to its preparation by reacting hesperidin with a nicotinoyl halide. The compound reduces the cholesterol count in the blood.

## ELECTRICAL

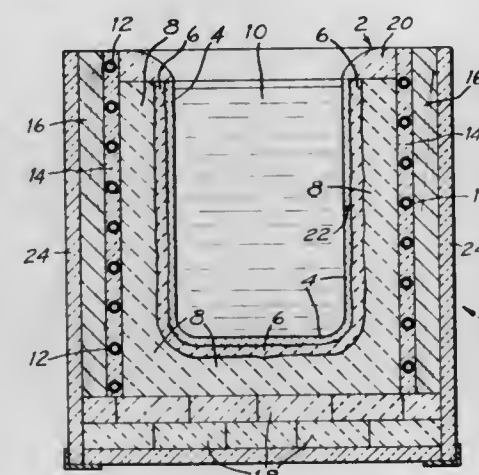
### 3,751,571 REFRACTORY CEMENT LINING FOR CORELESS INDUCTION FURNACES

Owen M. Burrows, Holden, Mass., assignor to Norton Company, Worcester, Mass.

Filed Mar. 29, 1972, Ser. No. 239,201  
Int. Cl. F27d 1/10

U.S. Cl. 13—35

3 Claims



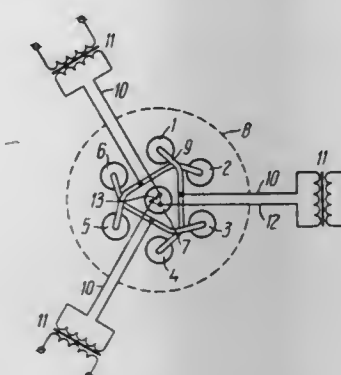
A multi strata refractory lining for coreless induction furnaces, formed from a castable refractory cement. The composition of the cement is preferably a mixture of fused or dead burned spinel, magnesia and/or alumina aggregate, a lesser amount of reactive magnesia, and a small amount of an organic acid. When the cement is cast into the form of a lining in a furnace, cured, dried, and subjected to an initial metal melting run, a ceramically set or sintered crust is formed on the inner surface of the lining and a soft, friable zone adjacent thereto. This combination results in a superior lining in that when the inevitable cracks develop in the furnace lining, they can propagate only through the hard sintered inner facing of the furnace lining, terminating at the soft zone. The failure of the cracks to propagate completely through the lining prevents runoff of the molten metal thus greatly extending the life of the lining.

### 3,751,572 PLANT FOR THE ELECTROSLAG REMELTING OF METAL

Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 9, kv. 21; Vladimir Konstantonovich Lebedev, ulitsa Engelsa, 25, kv. 12; Vitaly Mikhailovich Baglai, ulitsa Semanshko, 10, kv. 54/3; Oleg Petrovich Bondarenko, ulitsa Kreschatik, 15, kv. 34; Boris Izrailevich Medovar, bulvar Lesi Ukrainki, 2, kv. 8; Nikolai Fedorovich Medvedenko, ulitsa Vernadskogo, 67, kv. 86; Igor Vladimirovich Pentegrov, Zadorozhny pereulok, 6, kv. 14; Jury Vadimovich Latash, Vozdukhoflotsky prospekt, kv. 14; Jury Georgievich Emelyanenko, ulitsa Darvina, 5, kv. 5; Boris Borisovich Fedorovsky, ulitsa Mecnikova, 7a, kv. 26; Lev Andreevich Shurue, ulitsa Gagarina, 10/2, kv. 7, all of, Kiev; Jury Andreevich Schelkunov, Krasny prospekt, 96, kv. 14, Novosibirsk; Pavel Petrovich Loskutov, ulitsa Uritskogo, 17, kv. 8, Novosibirsk; Kim Moiseevich Khasin, ulitsa K. Marxa, 8/2, kv. 70, Novosibirsk; Jury Fedorovich Frolov, prospekt K. Marxa, 8/2, kv. 70, Novosibirsk, and Valery Vasilievich Saimin, ulitsa Zorge, 95, kv. 69, Novosibirsk, all of U.S.S.R.  
Filed Sept. 9, 1971, Ser. No. 179,047  
Claims priority, application U.S.S.R., Nov. 13, 1970, 1487362; Sept. 11, 1970, 1467857  
Int. Cl. H05b 3/60, 7/10

U.S. Cl. 13—9 6 Claims  
The present invention relates to the field of electrometallurgy and more particularly to a plant for the electroslag remelt-

ing of metal. According to the invention the plant is characterized by having consumable electrodes positioned in a mould at the apices of a rectilinear polygen and connected



diametrically in pairs by current-carrying bridges. The present invention is suitable for melting heavy ingots of high-grade steels and alloys up to several hundreds of tons in weight.

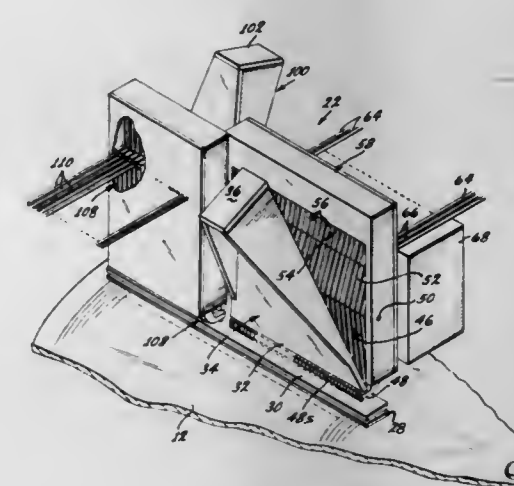
### 3,751,573 MECHANICALLY KEYED OPTICAL ORGAN

Stephen Bartok, Gardena; Melvin R. Kennedy, Carson; George J. Klose, Redondo Beach; Edmund E. Landsinger, Torrance, and George W. Stewart, Costa Mesa, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Sept. 28, 1972, Ser. No. 293,217  
Int. Cl. G10h 3/06

U.S. Cl. 84—1.18

16 Claims



An optical organ of the type which shines light through the tracks of a rotating optical record onto photocell apparatus and which utilizes depressable keys to play selected tracks, wherein only one or a few photocells are required. The keys are connected to slideable rods that deflect small light control members positioned between the record and photocell. In one organ, the deflectable members are pivotally mounted shutters with corrugated side walls that interfit one another to prevent the leakage of light between the shutters. In another organ, the deflectable members are resilient light-conducting fingers formed in a sheet-like edge portion of a transparent member, each finger being deflectable to a position where its end can pick up light from a particular optical track and carry it to the photocell.



3,751,574

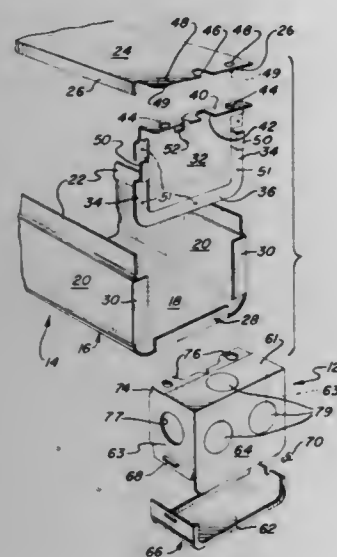
**BALLAST CANNISTER CONSTRUCTION**

Clarence E. Fisher, Roselle, Ill., assignor to Advance Transformer Co., Chicago, Ill.

Filed June 23, 1972, Ser. No. 265,597

Int. Cl. H05k 5/04

U.S. Cl. 174-52 R



A ballast canister has its end wall provided with integral ears that are formed during fabrication of the end wall and provide confining guides for the flanges of a junction box attached to the canister.

3,751,575

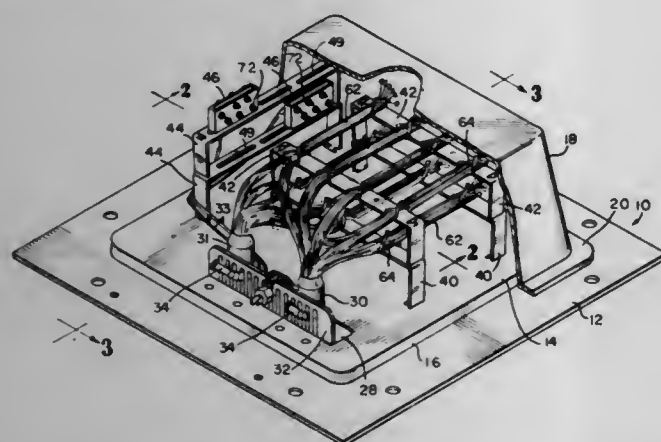
**GROUND LEVEL TERMINAL HOUSING**

Earl C. Barb, Muncie, Ind., assignor to General Cable Corporation, New York, N.Y.

Filed Feb. 24, 1972, Ser. No. 228,893

Int. Cl. H02g 9/00

U.S. Cl. 174-52 R



A telephone cable terminal housing adapted to lie flat on the level ground, without excavation. A ground plate has a wide flat ground engaging border and a raised central mounting platform joined by an upstanding wall forming an outward-facing peripheral shoulder. A bell jar cover fits over the platform with its continuous side wall close about and overlapping the peripheral shoulder to enclose equipment mounted on the platform. The platform has a cable entrance opening and forms a mounting base for cable terminal apparatus. This includes terminal strips each having a support bar and resiliently bendable integral legs with T-heads that snap into T-slots in the platform or into similar T-slots in the ends of previously mounted terminal strips. For cable-to-cable splicing, corresponding bundles of wires from the cables are brought together across the terminal strips in one or more tiers and the corresponding wires spliced together. Other wires connect selected cable wires to terminal blocks for service connection,

to loading coils, etc. The terminal housing provides all the advantages of an above-ground terminal housing with improved access and as good or better production of the equipment therein, it avoids the difficulties and hazards of underground housings while its ground-level mounting and low silhouette minimizes its visual and physical obstruction of the ground area on which it is mounted.

6 Claims

3,751,576

**PLURAL-CELL DUCT**

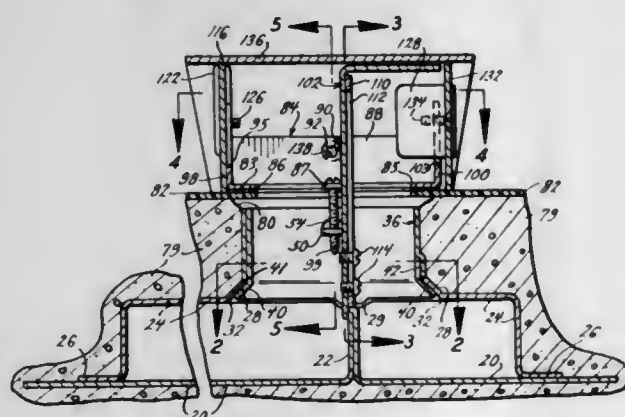
Richard A. Klinkman, New Baden, Ill., and Louis E. Mueller, Fenton, Mo., assignors to Mac-Fab Products, Inc., St. Louis, Mo.

Filed Apr. 13, 1972, Ser. No. 243,792

Int. Cl. H02g 3/18

U.S. Cl. 174-48

38 Claims



A plural-cell duct, embedded within a concrete floor, has openings spaced apart along the length thereof; and collars extend upwardly from those openings to help define potential passages extending from the cells of that duct to the surface of that floor. Each of those potential passages has a barrier therein which will effectively isolate one of the cells of that plural-cell duct from an adjacent cell. Whenever a support for an electrical fitting is to be secured to any of those collars, the barrier can be removed from the potential passage through that collar to free substantially the entire cross section of that passage of any -- thereby facilitating the "fishing" of conductors through the plural-cell duct and that collar. Subsequently, a support for an electrical fitting will be secured to the collar; and that support will have a divider which will coact with a partition in the plural-cell duct to restore the isolation of the one cell from the adjacent cell.

3,751,577

**SEAL FOR A HIGH PRESSURE, SHORT ARC GAS LAMP**

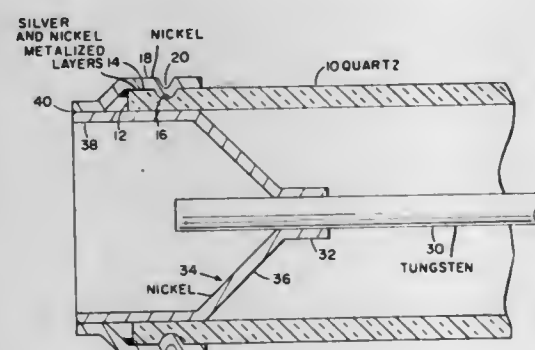
Charles E. Rich, Gainesville, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 12, 1972, Ser. No. 261,858

Int. Cl. H01j 5/34, 61/36

U.S. Cl. 174-50.58

1 Claim



The invention concerns a reliable quartz-to-metal seal for use in a high pressure, short arc gas lamp, such as for example,

that disclosed in Keller et al. U.S. Pat. No. 3,256,459. The seal involves a nickel ferrule to provide a long path nickel-to-quartz and nickel-to-tungsten seal.

3,751,578

**METAL-CLAD THREE-CONDUCTOR HIGH-VOLTAGE TRANSMISSION LINE**

Fritz Hoffmann, Rheinheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

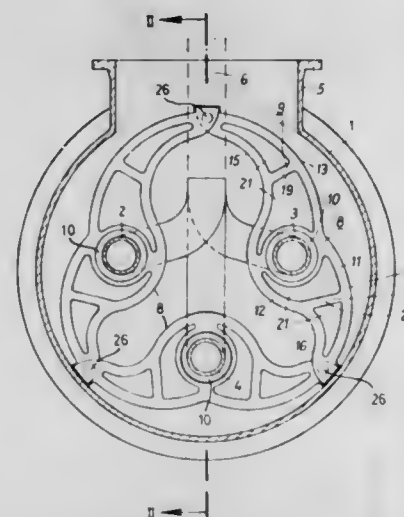
Filed Mar. 27, 1972, Ser. No. 238,405

Claims priority, application Germany, Apr. 8, 1971, P 21 18 176.0

Int. Cl. H01b 9/06, 17/18

U.S. Cl. 174-99 B

14 Claims



The three conductors of the high voltage transmission line are arranged in triangular array within the metal-clad casing and are supported at longitudinally spaced apart points. At each support point, three insulator bodies are provided so that each conductor is supported by a single insulator body. Each insulator body surrounds one conductor, at least partially, and is attached at two points of the metal casing which are separated from each other by at least an angle of 90° relative to the periphery of the casing.

3,751,579

**ELECTRICAL WIRING BUSHING WITH STRAIN RELIEF**

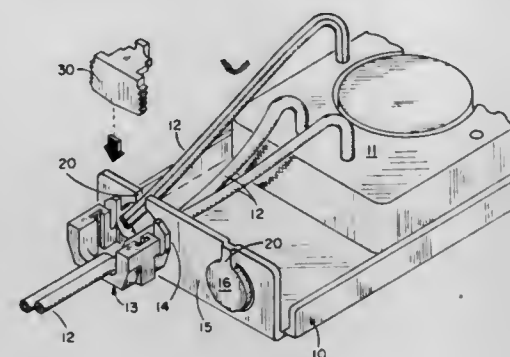
Howard H. Nojiri, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 4, 1972, Ser. No. 223,630

Int. Cl. F16l 5/00; H01b 17/26

U.S. Cl. 174-153 G

12 Claims



A bushing to protect and retain an electrical wire passing through an aperture in the side of an electrical box. The bushing is constructed to have a slot running parallel to its axis and a gate-like retaining means which is received crosswise of the slot to hold the wire in place. The bushing is especially adapted for use with an electrical box having an open slot in the aperture so that the bushing can be placed into the aperture and after it is in position, the electric wire or wires can be

fed through the slot in the aperture and the bushing before the retaining means is placed in position. The bushing is made of a first portion which is received in the aperture of the box and a second portion containing the retaining means which are partially connected so that after the bushing is in place, the second portion can be deformed with a tool to allow removal of the retaining means.

3,751,580

**COLOR TEMPERATURE CONTROL FOR TELEVISION APPARATUS**

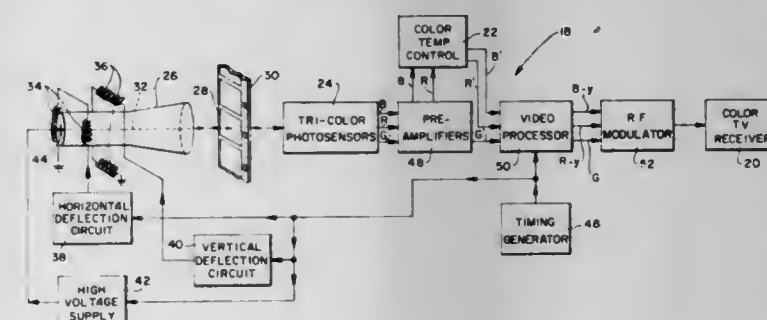
Lenard M. Metzger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 5, 1971, Ser. No. 186,746

Int. Cl. H04n 9/12

U.S. Cl. 178-5.4 R

2 Claims



Apparatus and method for compensating for color temperature variation in scene illuminants, image recordings, or image reproduction through optical-to-electrical and electrical-to-optical signal transducer apparatus. Color temperature control is effected through the inverse variation, with respect to each other, of at least two primary colors in a tri-color chromatic display.

3,751,581

**COLOR TELEVISION STANDARD SYSTEM CONVERTING EQUIPMENT**

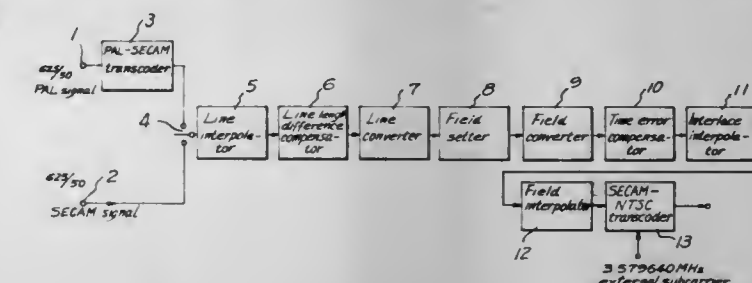
Haruo Sakata; Hiroshi Tanimura; Ryuichi Kaneko; Hideo Kusaka, all of Tokyo; Eichi Sato, Sagamihara, and Tokuji Kubo, Tokyo, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Continuation-in-part of Ser. No. 818,341, April 22, 1969, abandoned. This application Oct. 18, 1971, Ser. No. 190,216

Int. Cl. H04n 9/42

U.S. Cl. 178-5.4 C

10 Claims



A system for converting color television signals from one standard system having a certain number of scanning lines and fields to a second standard system having a different number scanning lines and of fields, comprising the steps in a sequence of: line interpolation, line length compensation, line number conversion, field setting, field number conversion, time error compensation, interlace interpolation and field interpolation or in a sequence reverse thereto while using the SECAM type signal.

Most of the equipment used in each of the above steps are so constructed that the SECAM type composite color signal may be processed without modifying the signal in order to simplify the system. The respective equipment comprises delay



lines as the main constructive elements to stabilize the operation. In order to effectively utilize the delay element the desired interpolated signal is formed in the frequency domain by a combining means by using a frequency modulated signal, and by means of the same the discontinuity of the picture which will be or has been accompanied with the conversion of the number of lines or number of fields is compensated.

3,751,582

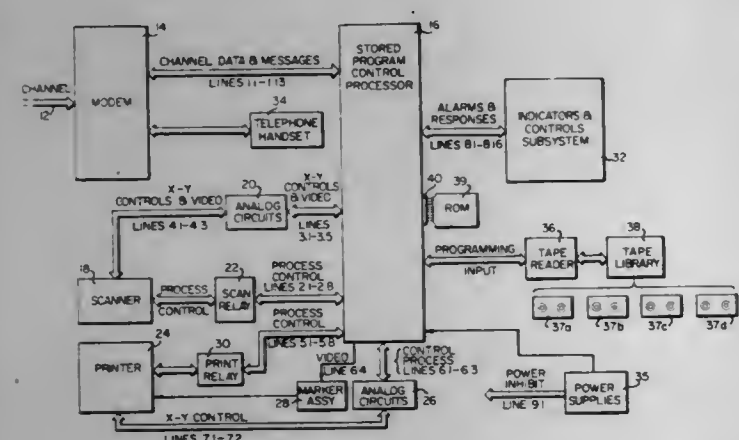
**STORED PROGRAM FACSIMILE CONTROL SYSTEM**  
Robert E. Wernlkoff, Joseph M. Van Horn, both of Cambridge, Mass.; Albert E. Mignone, deceased, late of Shaker Heights, Ohio, and by Gilda Mignone, executrix, 419 Nayatt Rd., Barrington, R.I., assignor to Addressograph Multigraph Corporation, Cleveland, Ohio

Filed Dec. 8, 1971, Ser. No. 206,066

Int. Cl. H04n 1/32

U.S. Cl. 178-6

20 Claims



A facsimile transceiver system incorporating a stored program controller. The stored program controller provides operational control of a scanner and a printer mechanism in conjunction with a communication channel for transmitting and receiving facsimile signals and a condition indicator display for presenting transceiver condition information. The scanner and printer are made to operate with a variety of different formats of control and data signals from a remote facsimile system by associating an appropriate program with the controller. This program instructs the controller to process the control and data signals passing through it between the channel, and scanner and printer in a manner that causes the local facsimile system to operate compatibly with other facsimile equipment at the remote end of the communication channel. By readily varying controller operation with different programs, which can be simply associated with the controller, a single facsimile transceiver is operable with a range of different remote transceivers, operator characteristics and diagnostic checkouts. Improvements in facsimile efficiency are also readily incorporated in existing equipment by providing the improvement through a new program.

3,751,583

**COMMUNICATION SYSTEM**

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.

Continuation of Ser. No. 823,600, May 12, 1969, Pat. No. 3,705,973, which is a continuation-in-part of Ser. No. 279,031, April 1, 1963, abandoned, which is a continuation-in-part of Ser. No. 723,075, Feb. 28, 1958, Pat. No. 3,084,213, and a continuation-in-part of Ser. No. 225,173, Aug. 27, 1962, which is a continuation-in-part of Ser. No. 668,348, Sept. 23, 1957, Pat. No. 3,051,777. This application Dec. 11, 1972, Ser. No. 313,656

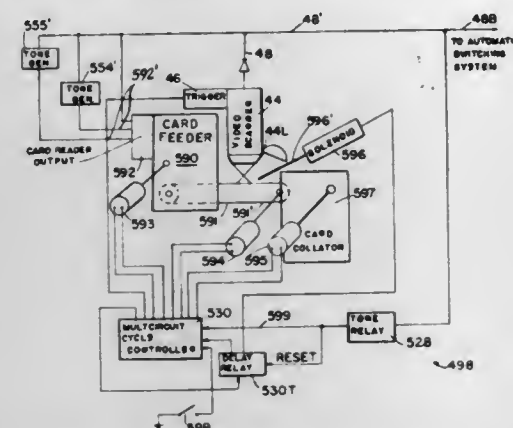
Int. Cl. H04l 11/06, 11/15; H04n 1/32

U.S. Cl. 178-6

10 Claims

An automatic communication system and method for generating information recorded on record cards by automatically reading individual cards, and transmitting the informa-

tion generated as electrical signals to one or more receiving stations where it is automatically recorded. The system includes means for automatically effecting a communication link between the output of the card reader and a selected receiving station and, after automatically establishing that the communication link is in effect, the card reader is controlled to read the information recorded on selected cards fed thereto. In a particular form, at least certain of the cards read



contain recordings which, when reproduced therefrom, are applied to an automatic switching system to connect the output of the card reader with one or more of the receiving stations. When a connection is made, a signal is generated which is applied to control or initiate the card reading operation. In another form if a connection is not effected, a card rejection mechanism is operated to remove one or more cards from the feeding mechanism so they will not be read.

3,751,584

**TELEVISION SIGNAL TO PHOTOGRAPHIC FILM RECORDING SYSTEM**

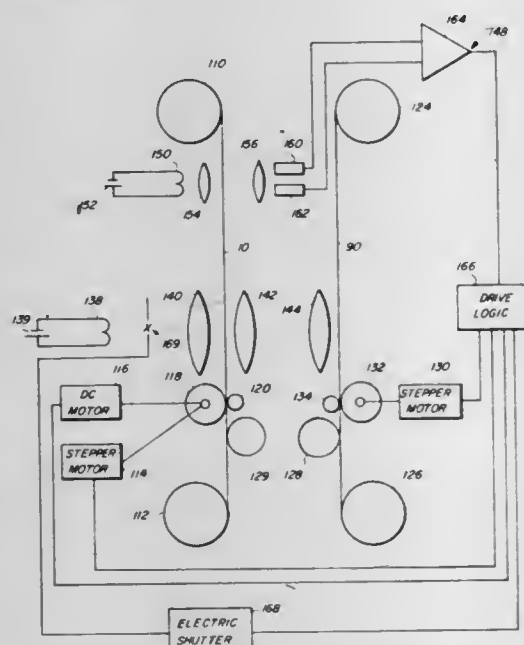
Royce D. Pickering, and David M. Glassman, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 28, 1971, Ser. No. 166,887

Int. Cl. G03b 41/00; H04n 5/88

U.S. Cl. 178-6.7 A

9 Claims



An apparatus and method for recording television scenes onto photographic film in a format suitable for use in conventional optical motion picture projectors. A beam splitter is used to simultaneously record the scanning spots of a TV signal onto two adjacent frames of an intermediate, continuously running film such that two fully interlaced TV fields are recorded on every frame of the intermediate film. Selected frames from the intermediate film are then printed onto conventional photographic motion picture film in a format which can then be used in conventional optical motion picture projectors.

3,751,585

**COUNTING SYSTEMS IN IMAGE ANALYSIS EMPLOYING LINE SCANNING TECHNIQUES**

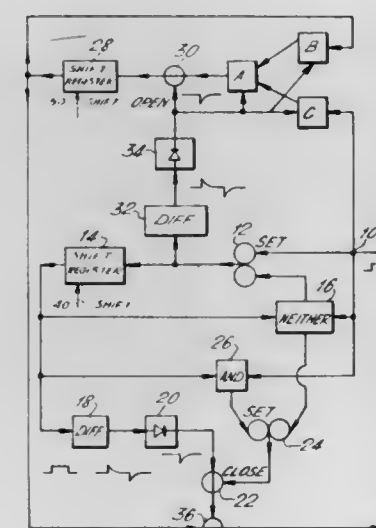
Colin Fisher, Meldreth House Meldreth, Royston Hertfordshire, Boyston, England

Continuation-in-part of Ser. No. 821,180, April 29, 1969, Pat. No. 3,619,494. This application July 12, 1971, Ser. No. 161,844

Int. Cl. H04n 7/02

U.S. Cl. 178-6.8

2 Claims



The invention provides for the use of so-called shift registers in feature counting and measuring image analysis apparatus.

3,751,586

**CIRCUIT SYSTEM FOR COMPENSATING THE INFLUENCE OF THE BACK-GROUND RADIATION ON THE PICTURE DISPLAY IN AN INFRA-RED CAMERA**  
Bengt Henri Johansson, Karlskoga, Sweden, assignor to Aktebolaget Bofors, Bofors, Sweden

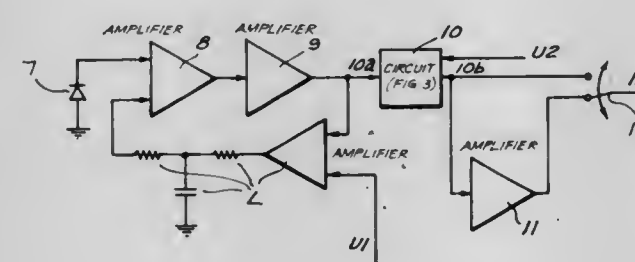
Filed Oct. 22, 1970, Ser. No. 82,990

Claims priority, application Sweden, Oct. 29, 1969, 14774/69

Int. Cl. 250; H04n 5/19

U.S. Cl. 178-7.1

6 Claims



In an infra-red (IR) camera system a scene is line scanned to provide a video signal which includes a picture signal representing the object being monitored and background signal representing the temperature changing background region. Portions of the video signal are controllably sensed during particular times of the line scans to generate a compensating signal which is superimposed on the video signal to minimize effects of the changing background signal on the average value of the picture signal.

3,751,587

**LASER PRINTING SYSTEM**

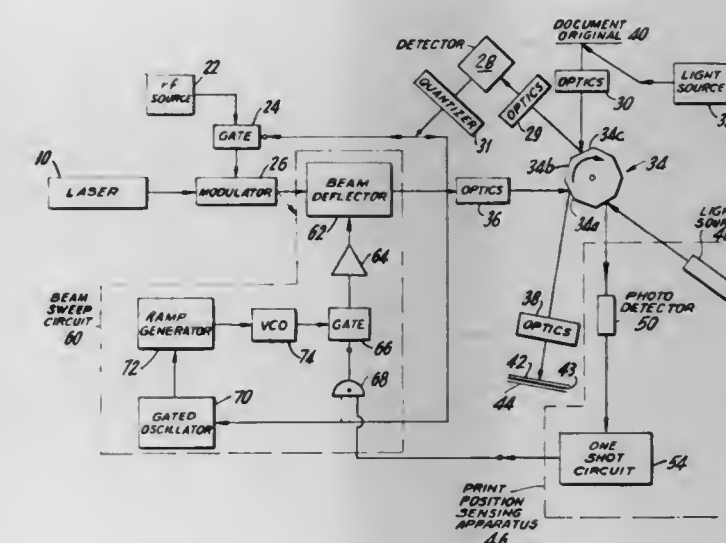
Julius R. Insler, Bergenfeld; Allen R. Leslie, Baldwin, and Ronald J. Vigneri, Midland Park, all of N.J., assignors to Saxon Industries, Inc., New York, N.Y.

Filed Jan. 20, 1972, Ser. No. 219,239

Int. Cl. H04n 1/10

U.S. Cl. 178-6.6 R

23 Claims



A modulated laser beam developed in a non-contacting printing arrangement sweeps across an ink bearing carrier disposed adjacent a printing surface, e.g., an untreated paper sheet. In successive line sweeps, each slightly displaced from the prior sweep line, the incident laser beam selectively transfers printing materials, such as ink, from the carrier to the paper surface in accordance with the laser modulation intelligence. The modulator reduces or shutters the laser beam in such manner as to prevent ink transfer where printing is not desired and allows the laser beam to pass or directs the laser beam to points where printing is desired. Printing speed for the composite printing system directly depends upon the rate at which ink can be displaced from its carrier, and therefore ultimately upon laser power. In a copying machine context, the laser modulating information is developed by scanning the original document to be reproduced.

In accordance with the present invention, the laser beam is alternately accelerated and slowed with respect to the average sweep rate across the ink bearing carrier during printing to essentially dwell at such points on the carrier where it is desired that ink be displaced onto the printing surface during the sweep of a line trace. Accordingly, the power of the laser beam required to transfer ink is reduced, and thereby also permissible printing speeds are increased, by reason of the swell of the laser beam on the ink vis-a-vis that situation where the laser beam is swept at a constant speed across the ink bearing carrier.

3,751,588

**VERTICAL SYNCHRONIZING CIRCUITRY**

Robert Roy Eckenbrecht, Bethany, and Dong Woo Rhee, Williamsburg, both of N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed June 2, 1972, Ser. No. 259,159

Int. Cl. H04n 5/10

U.S. Cl. 178-7.3 S

24 Claims

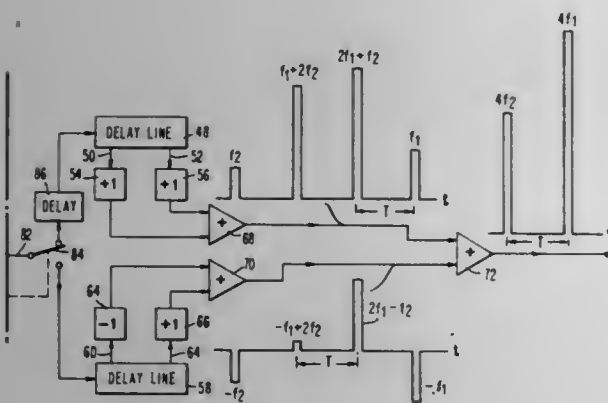
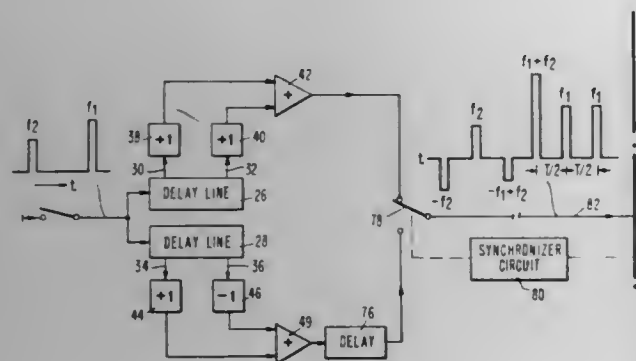
A vertical synchronizing circuit including a counter is shown. The counter counts a predetermined number of pulses synchronized with the received television signal, such as the horizontal oscillator output pulses, and then recycles provided







in the system. Any noise introduced during transmission is not made larger in amplitude with the result that the signal to noise ratio of the received signals is improved. The input signals are supplied to a plurality of encoding devices at the transmitter. The encoding devices include tapped delay line devices having multipliers at the taps that multiply the tapped signals by a plus or minus factor in accordance with the code. The multiplied signals are then combined to produce a pulse sequence which is transmitted to the receiving station. At the



receiving station the pulse sequence is applied to a plurality of decoding devices. The decoding devices include tapped delay line devices having multipliers at the taps which multiply the tapped signals by a plus or minus factor according to a code which is complementary to the code used at the transmitting station. The multiplied signals are then combined to recover the original input signal which is increased in amplitude by a given factor. The system may be embodied in acoustic surface wave structures wherein the encoding and decoding devices are interdigital transducers.

3,751,597

### TIME DIVISION MULTIPLEX NETWORK SWITCHING UNIT

Peter Istvan Bonyhard, Edison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

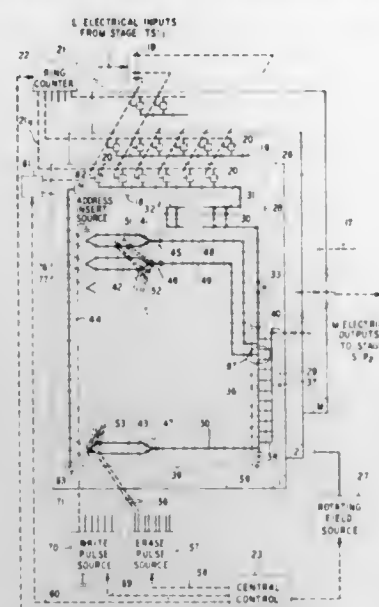
Filed Dec. 30, 1971, Ser. No. 214,269  
Int. Cl. H04J 3/00

U.S. Cl. 179-15 AQ

13 Claims

A time slot interchanger has an input signal delay path of selectable delay coupled to an input thereof. An input signal converter receives, in electrical form, different time division multiplex input signals in parallel and applies them, in magnetic single-wall domain form, to the time slot interchanger input in series through the selected delay for that interchanger. A plurality of such switching units are interconnected at corresponding signal positions of their respective converters; and the converters of the respective interchangers are controllably enabled to respond to the electrical signals in sequence in different time slots of the time division multiplex

input signals. The time slot interchanger input delays are selected in accordance with the converter enabling sequence,



3,751,598

### MAGNETIC RECORD-PLAYBACK DEVICE

Shigetaro Muraoka, 2-28 Osaki 2-chome Shin, Tokyo, Japan

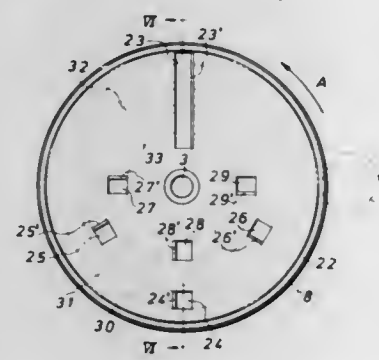
Filed Aug. 12, 1971, Ser. No. 171,085

Claims priority, application Japan, Jan. 27, 1971, 46/2838 (utility model)

Int. Cl. G11b 5/82, 23/18, 23/32

U.S. Cl. 179-100.2 MD

1 Claim



A magnetic record-playback device consisting of a disk having magnetic recording medium on the periphery thereof and having one or more of apertures; a magnetic record-playback head; a main switch; a sub-switch; a driving system for said disk and other ordinary record-playback means including amplifier etc., and being characterized in that the rotation of said disk being started by the action of said sub-switch and stopped by the opening of said main switch where a contact of said main switch being dropped into one of said apertures.

3,751,599

### MAGNETIC HEAD HAVING MULTIPLE HEAD CORES

Hiroshi Ogawa, Yokohama; Toshi Suzuki, Kamakura; Tadashi Suzuki, Yamato, and Mitsunaki Tanaka, Fujisawa, all of Japan, assignors to Victor Company of Japan Ltd., Kanagawa-ku, Yokohama-City, Kanagawa-ken, Japan

Filed Nov. 22, 1971, Ser. No. 200,787

Claims priority, application Japan, Nov. 24, 1970, 45/103960; Dec. 31, 1970, 45/138684; Feb. 26, 1971, 46/11279

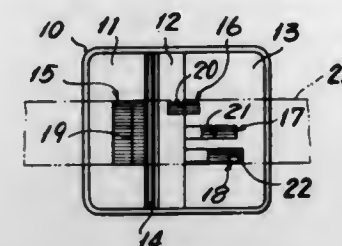
Int. Cl. G11b 5/28

U.S. Cl. 179-100.2 C

4 Claims

A multi-head core magnetic head comprises at least one head core having a gap of a relatively large gap width and at

least two other head cores having gaps of gap width respectively smaller than that of said one head core. The at least two other head cores are disposed at positions at which they can trace a track made by the at least one head core on the mag-



netic tape and distances between the gap of the at least one head core and the respective gaps of the at least two other head cores are different from each other. These head cores are integrally assembled in a single shield case.

3,751,600

### COMBINATION MICROPHONE AND CONTROL STAND FOR LOUDSPEAKING TELEPHONE SET

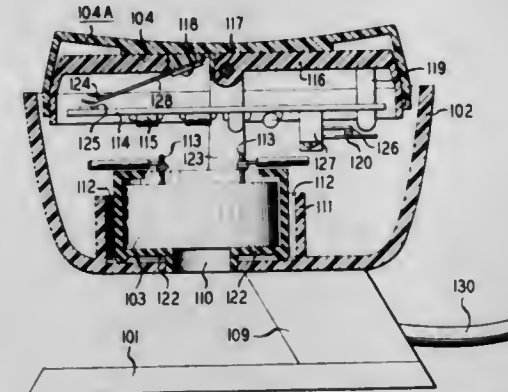
George Willis Reichard, Jr., Indianapolis, Ind., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 22, 1971, Ser. No. 210,642

Int. Cl. H04m 1/62, 1/20

U.S. Cl. 179-100 L

3 Claims



In a combination control stand and microphone support structure for a loudspeaking telephone set, an omnidirectional microphone is mounted within a pedestal supported body portion with the top thereof providing a base for control switch actuating buttons, the microphone being entirely hidden from view with its face pointing downwardly at the desk top or other supporting structure.

3,751,601

### TAPE PLAYBACK FOR PLAYING THROUGH A RADIO RECEIVER

Harry W. Wally, 36 Plaza St., Brooklyn, N.Y.

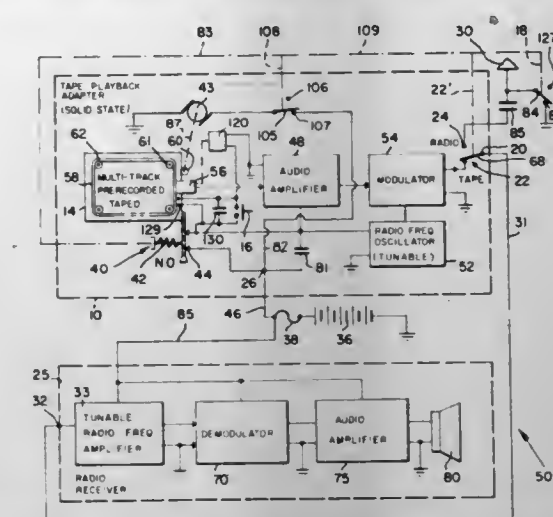
Continuation-in-part of Ser. No. 663, Jan. 5, 1970. This application Nov. 17, 1971, Ser. No. 199,477

Int. Cl. G11b 31/00

U.S. Cl. 179-100.11

12 Claims

A playback system for a multitrack prerecorded tape cartridge or cassette includes a tape playback adapter for inserting the cartridge or cassette therein. The adapter includes a motor for driving the tape, a magnetic head for picking up audio signals from the tape, both a manual switch and an automatic switch (actuateable by the cartridge insertion) for selecting a particular track, a channel (track) indicator, an audio amplifier to amplify the picked up audio signals, a tunable radio frequency oscillator for generating a carrier, and a modulator for modulating the audio signals on the oscillator. The modulator is connectable via an automatic selector switch also (actuateable by the cartridge insertion) to the radio frequency input terminal of an amplitude or frequency modulated radio broadcast receiver. A radio frequency antenna is also connectable to the radio frequency input terminal via the



adapter and radio receiver. The automatic track switch is actuateable by a conducting surface carried on the tape, and the track switches include a spark-suppressing condenser across their opposing electrical terminals circuitry.

3,751,602

### LOUDSPEAKING TELEPHONE

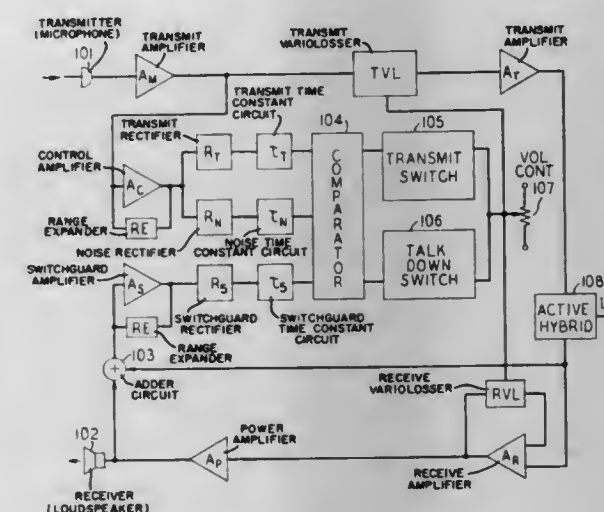
Robert Louis Breeden, Carmel, Ind., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 13, 1971, Ser. No. 171,550

Int. Cl. H04m 1/60

U.S. Cl. 179-81 B

6 Claims



In a loudspeaking telephone employing a control circuit to achieve complementary switched gain in the transmit and receive channels, the timing means associated with the gain switching provides for a fixed relatively fast attack time and a variable or adaptive release time dependent upon the presence or absence of speech signals in the receive channel when a transmit speech signal terminates. Improved mode transition and particularly effective talk-down action results.

3,751,603

### DEVICE FOR CONTROLLING MAGNETIC HEAD DISPLACEMENT

Lucien Robert Prieur, Ecouen, and Hubert Cecyl Albert Rousseau, Meudon, both of France, assignors to Societe Industrielle Honeywell Bull (Societe anonyme), Paris, France

Filed Jan. 24, 1972, Ser. No. 219,956

Claims priority, application France, Feb. 5, 1971, 7103902

Int. Cl. G11b 5/54

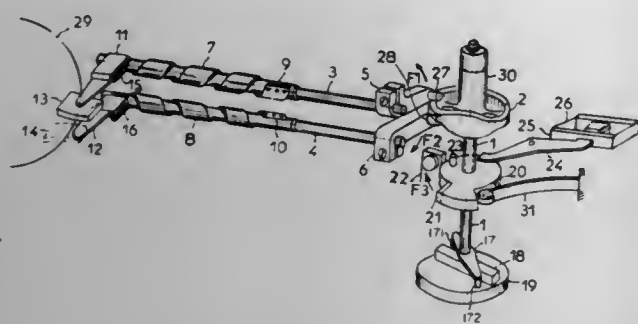
U.S. Cl. 179-100.2 CA

9 Claims

A device for controlling at least one magnetic head in an apparatus for writing and reading data on and out a magnetic medium.



Said device is equipped with a spindle actuating at least one cam cooperating with at least one arm equipped with a spring attached by one of its ends to this arm and by the other end in contact with the magnetic head in such a way as to be capable of bringing said magnetic head near said medium into a posi-



tion for writing or reading said data, a device for controlling the rotation of said spindle, means for locking the magnetic head in said position and means for releasing the magnetic head, so that it may be moved away from said medium.

Said device is utilizable with magnetic disk memories.

3,751,604

### AUTOMATIC CONTROL SYSTEM FOR LOADING AND UNLOADING MAGNETIC TAPES IN DIGITAL RECORDER EQUIPMENTS

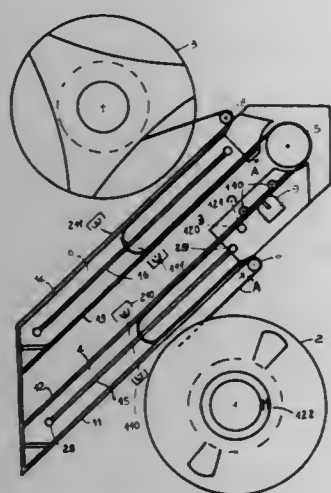
Fernand Calizzano, Grosley; Michel Chauvel, Chateau-Malabry; Jean Malliere, Antony, and Jean Rybner, Paris, all of France, assignors to Compagnie Internationale pour L'Informatique, Louverciennes, France

Filed July 12, 1971, Ser. No. 161,436

Claims priority, application France, July 15, 1970, 7026002 Int. Cl. G11b 15/58, 15/52

U.S. Cl. 179—100.2 PM

14 Claims



An automatic control system for loading and unloading a magnetic tape receiver coil from and to a delivery coil in a digital recorder equipment having a tape driving capstan at an intermediate location between upstream and downstream depression wells having outlets connected to a main suction duct comprises means in such a connection for enabling selective applications of reduced depressions and/or outer atmosphere pressure to said wells and a hardware programme arrangement which is monitored from the response of sensors detecting the presence or absence of the magnetic tape at a number of selected positions along its normal path between the delivery and receiver coils for ensuring, during a loading operation, an automatic formation of magnetic tape loops within said wells and, during an unloading operation, an automatic release of such loops from said wells, and for controlling the ends of both loading and unloading automatic operations.

3,751,605

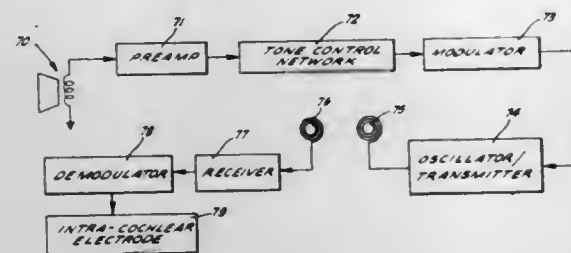
### METHOD FOR INDUCING HEARING

Robin P. Michelson, Redwood City, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 75,076, Sept. 24, 1970, abandoned. This application Feb. 4, 1972, Ser. No. 223,416 Int. Cl. H04r 25/00

U.S. Cl. 179—107 R

9 Claims



There is disclosed a method for inducing the sensation of intelligible hearing by direct electrical excitation of the auditory nerve endings distributed along the basilar membrane within the cochlea. An electrode is positioned within the lower scala of the cochlea by insertion through the round window. The electrode consists of a resilient base member shaped to conform to the inner surface of the lower scala, such base member extending along the basilar membrane. The base member retains a pair of conductors which extend parallel to the length of the basilar membrane. An electrical excitation signal corresponding to an externally generated audio signal is conducted to the conductors of the electrode thereby generating a uniform, alternating electrical field along the basilar membrane which replaces the naturally generated auditory electrical field.

3,751,606

### LOOP FAULT LOCATOR

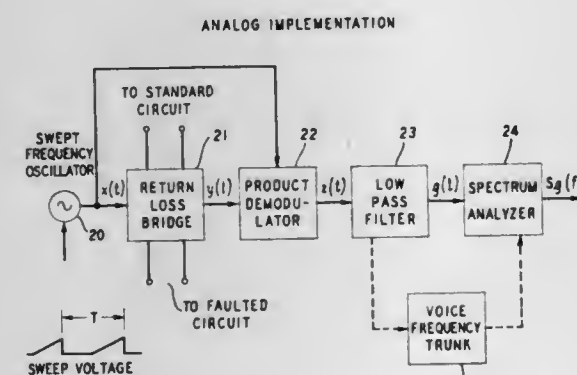
Charles William Kaiser, Jr., Somerville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 29, 1971, Ser. No. 213,663

Int. Cl. H04b 3/46

U.S. Cl. 179—175.3

6 Claims



A fault on a telephone cable pair which may contain other impedance irregularities is located by a frequency-domain distance detection system. The difference between the input impedance of the circuit which contains the fault and a standard impedance is measured periodically across a set of predetermined frequency bands to produce a corresponding set of periodic time functions. The power spectra of these functions are determined, and the frequencies of the spectral maxima are used to estimate the distances to all of the impedance irregularities (including the fault) from the measurement point.

3,751,607

### METHOD OF CONTROL OF LINE CIRCUIT CUTOFF RELAY

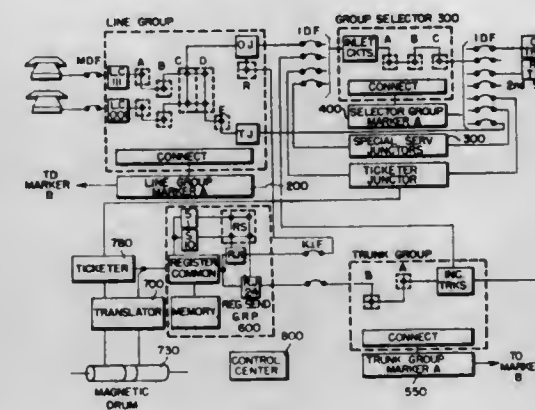
Charles A. Pleasance, Palatine, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed June 5, 1972, Ser. No. 259,641

Int. Cl. H04m 3/22

U.S. Cl. 179—175.2 R

5 Claims



An arrangement for remotely controlling a line circuit cutoff relay including diodes through which the "C" lead of each line circuit is connected to a common wire attached to an isolated battery or power supply, with the latter further being connected to each test board or wire-chief test trunk and each terminating junctor. Each terminating junctor also is provided with a relay (KO) which responds to a + potential from the isolated battery. As soon as the KO relay operates, it connects the incoming "EC" lead to the outgoing "C" lead. The incoming remote test circuit, that is, the wire chief junctor, is arranged to connect + potential from the isolated battery to the "EC" lead to the group selector matrix.

3,751,608

### SOUND RECEIVER HEAD SET OR EAR PHONE

Bernhard Weingartner, Vienna, Austria, assignor to AKG Akustische U. Kino-Gerate Gesellschaft, Wien, Austria

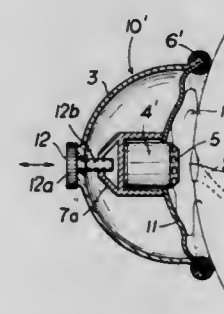
Filed Apr. 17, 1970, Ser. No. 29,492

Claims priority, application Austria, Apr. 25, 1969, A 4038/69

Int. Cl. H04r 1/10

U.S. Cl. 179—182 R

2 Claims



A sound receiver head set or ear phone includes an ear piece housing of generally semi-spherical shape having an annular padded edge which is adapted to be located against the head of a user around the ear. The housing defines a guide for a transducer system which has an acoustic inlet which may be oriented at a selected location in respect to the auditory meatus of the wearer. The housing carries adjusting means for regulating the position of the transducer and the acoustic outlet so that it is at a desired spacing or gap from the ear. The guide way defined in the housing for the transducer is advantageously oriented at an optimum angle in respect to the ear of the wearer in respect to a tangent to the head of the wearer and in addition the adjustable means permits its inner and outer movement in respect to the ear for the precise definition of the volume of an interreaction gap defined between the acoustic outlet of the transducer and the auditory meatus of the ear.

3,751,609

### IGNITION DISTRIBUTOR CAP WITH ISOLATED CAPACITOR AND RESISTOR

Norman Alfred Jukes, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

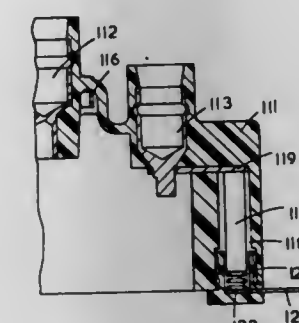
Filed May 22, 1972, Ser. No. 255,482

Claims priority, application Great Britain, July 12, 1971, 27,661/71

Int. Cl. H01h 1/58

U.S. Cl. 200—19 DC

5 Claims



The ignition distributor cap comprises an insulating body carrying an input terminal and a series of output terminals for successive contact by a rotor arm of the distributor. A connector forms with the input terminal a capacitor the dielectric of which is the material of the body. A resistor is connected to one of the output terminals and to a further connector.

3,751,610

### IGNITION DISTRIBUTOR

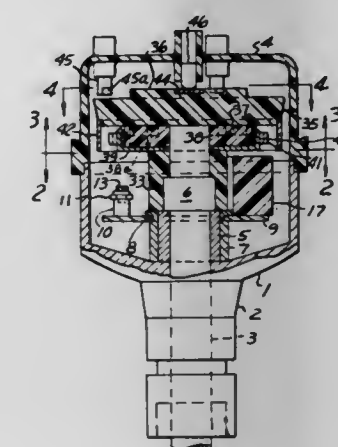
Othniel A. Bednarz, 1340 Northwood Dr., Inkster, Mich.

Filed May 17, 1972, Ser. No. 253,976

Int. Cl. H01h 19/12

U.S. Cl. 200—19 R

6 Claims



An ignition system for internal combustion engines, incorporating an improved rotor. The rotor is annular in form, and non-conductive. It is formed with slideways extending diametrically from its axis of rotation, and opening downwardly throughout their length. Non-conductive slide elements are received in the slideways, and on their bottom faces carry transmitter plates. The transmitter plates are substantially triangular in form with the wide end of the triangle extending inwardly toward the axis of rotation. On its outer end face, each slide carries a spring. A grounding ring depends from the rotor and encircles the slideways so that the springs bear on the inner peripheral surface of the ring, normally urging the slide elements in toward the axis of rotation. A set screw extends through the ring and the rotor to contact the distributor shaft, and establish electrical contact between ring and shaft.

A brush housing is disposed beneath the rotor, and a brush, socketed in the housing is urged upwardly by a spring to have sliding contact with the bottom faces of the rotor, sliding elements, and transmitter plates, which are co-planar. The brush



has electrical communication with the primary winding of a coil, and the necessary, usual electrical circuitry, and a source of electrical current, are present to render the ignition system operable.

Contact of the brush with the transmitter plates closes a circuit to the primary winding of the coil, and the duration of such contact, of course, determines the strength of the spark reaching a spark plug. Obviously, as speed of rotation increases, the duration of contact decreases and the strength of spark is diminished. To compensate for increased speed of rotation, the present invention provides triangularly shaped transmission plates, which are mounted on, and beneath the slide elements, to slide outwardly as centrifugal force intensifies with speed of rotation. Outward sliding travel disposes a longer path of travel over the transmission plates, due to the diverging lateral edges thereof to compensate in part for the decreased time of such travel to afford a longer build-up of magnetic field in the primary coil and hence a stronger spark.

3,751,611

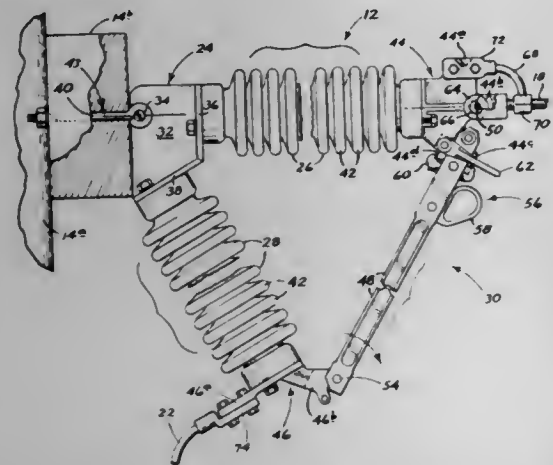
# ELECTRICAL SWITCH ASSEMBLY WITH TENSION-TRANSMITTING INSULATOR

Charles E. Kerr, Jr., Hillsboro, Oreg., assignor to Eltec, Inc., Portland, Oreg.

Filed May 17, 1971, Ser. No. 144,060  
Int. Cl. H01h 31/00

U.S. Cl. 200—48 R

7 Claims



A switch assembly mounted on an upright pole for electrically connecting and disconnecting a pair of conductors, where one of these conductors extends under tension generally horizontally away from the pole, and the other conductor extends generally along the pole. The assembly includes a base fastened to the pole, and a pair of elongated diverging insulators anchored to the base which carry a switch adjacent their outer ends. One of the insulators is substantially axially aligned with the tensed conductor, and serves to transmit tension between this conductor and the pole.

3,751,612

# SNAP ACTION CAPACITIVE TYPE SWITCH

Wray C. Hansen, Arvada, Colo., assignor to Colorado Instruments, Inc., Broomfield, Colo.

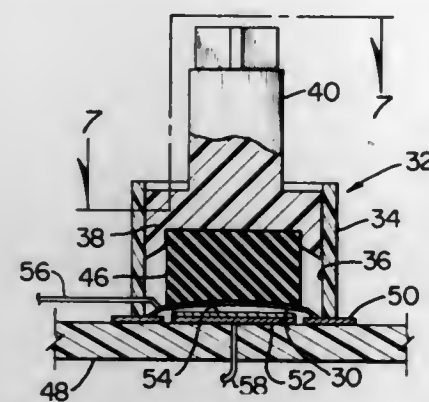
Filed Aug. 30, 1971, Ser. No. 175,941  
Int. Cl. H01h 35/00; G08c 5/00

U.S. Cl. 200—52 R

7 Claims

Electrical signaling device in the form of a capacitor or condenser having a fixed plate and a generally dome-shaped snap action plate which may be deformed toward the fixed plate, wherein the dome-shaped plate, when in its normal or relaxed state, is in the form of a hollow geometric solid having an open polygonal base with a planar side wall extending from each side of the base at equal angles thereto toward each other and are joined by an arcuate surface, the base having arcuate corners bent to extend from the opposite side of the base as the side walls. When the number of sides equals three, it has a

base which has the general shape of an equilateral triangle with apexes which are arcuate, the latter being bent angularly



to the general plane of the plate, forming abutments which resist the deforming force applied to the dome-shaped plate.

3,751,613

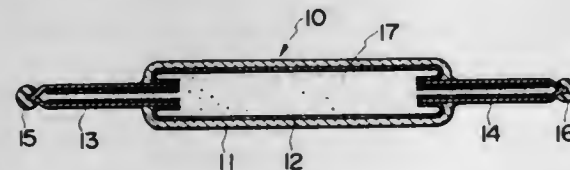
# BREAKABLE COLLISION DETECTING ELEMENT FOR AUTOMOBILES

Fumiyuki Inose, Kokubunji; Masahiro Takahashi, Hachioji, and Takemi Aida, Higashiyama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 29, 1972, Ser. No. 239,189  
Int. Cl. H01h 31/30

U.S. Cl. 200—61.08

19 Claims



A cylindrical glass tube is provided with two metal lead tubes deposited respectively at both ends thereof and has a metal film formed on the inner surface thereof by an electrodeless plating technique; the cylindrical tube is evacuated or charged with an inert gas, to thus provide a breakable collision detecting element.

3,751,614

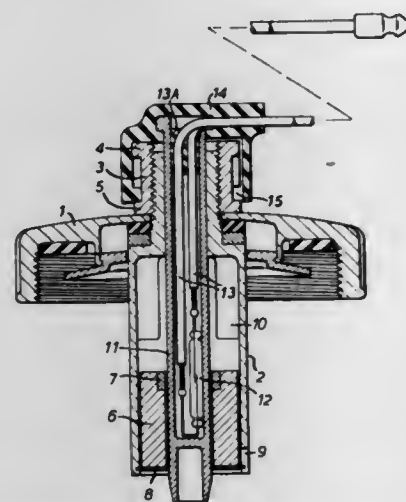
# FLUID LEVEL INDICATING DEVICES WITH PULL TO TEST FEATURE

Peter Jones, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed May 24, 1972, Ser. No. 256,301  
Claims priority, application Great Britain, May 26, 1971, 17,234/71; Feb. 15, 1972, 6,951/72; Mar. 6, 1972, 10,425/72  
Int. Cl. H01h 36/02

U.S. Cl. 200—84 C

10 Claims



A fluid indicating switch is provided with a test feature. A closure cap assembly having magnetically actuated switch

means and a magnetic fluid level responsive means is attached to a fluid reservoir. The fluid level responsive magnetic means will actuate the switch in response to changes in the reservoir fluid level or by manual pull upon the cap assembly.

3,751,615

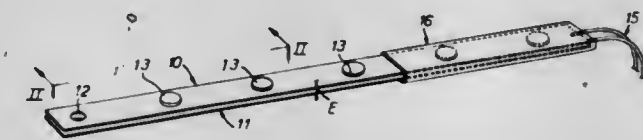
# PRESSURE-OPERATED TAPE SWITCH

Maurice De Lolsy, Paris, France, assignor to Etablissements TORRIX, Levallois-Perret, France

Filed Mar. 10, 1972, Ser. No. 233,556  
Claims priority, application France, July 7, 1971, 7124778  
Int. Cl. H01h 13/16

U.S. Cl. 200—86 R

6 Claims



A pressure-operated tape or ribbon switch suitable for use for detecting the presence of an occupant of a seat in a motor vehicle when this switch is secured to the underside of the seat. The switch comprises a pair of elongate contact blades with pairs of spaced aligned holes at regular intervals along the longitudinal axis of the switch. Insulating studs are molded to the blades at the holes for riveting the latter together and normally maintaining the blades in spaced apart relationship. Contact is possible by direct or indirect pressure forces exerted on the switch.

3,751,616

# FLOAT SWITCHES

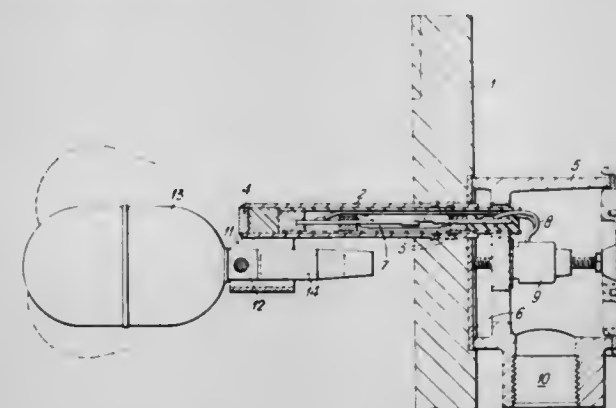
Robert Innes, Beaconsfield, and Norman West, High Wycombe, both of England, assignors to Ronald Trist Controls Limited, Slough, England

Filed June 28, 1972, Ser. No. 267,221  
Claims priority, application Great Britain, July 21, 1971, 34,250/71

Int. Cl. H01h 35/18

U.S. Cl. 200—84 C

7 Claims



An electrical switch assembly, for measuring liquid levels or flow, has a mounting plate which is arranged to be fitted to a container wall to seal an aperture through the wall; a tube which is made of a non-magnetic material, which extends through and is sealed in a bore in the plate, and which has its end on the wet side of the plate sealed; a sensing element which is arranged to be moved by the liquid in the container and a magnet which, with the sensing element, is pivotally mounted on the wet side of the mounting plate; a magnetically responsive switch contact unit within the tube and responsive to movement of the magnet upon movement of the sensing element; and a terminal housing mounted on the dry side of the mounting plate and incorporating terminals connected to the switch contact unit.

3,751,617

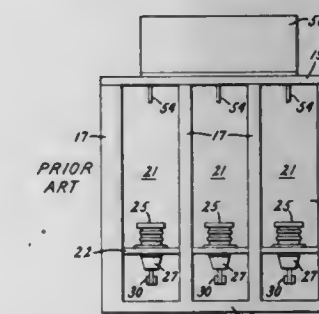
# VACUUM TYPE CIRCUIT BREAKER

Arthur L. Bohlenger, Newtown Square, and Richard H. Miller, Berwyn, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed June 14, 1972, Ser. No. 262,582  
Int. Cl. H01h 33/66

U.S. Cl. 200—144 B

5 Claims



For converting a particular existing oil circuit breaker into a vacuum-type circuit breaker, a conversion assembly is provided which can be easily incorporated into the circuit breaker after the circuit breaker has been stripped of certain key components. The conversion assembly comprises a frame on which vacuum interrupters, their operating mechanism, and an interconnecting linkage are mounted and suitably adjusted in the factory. Conversion is effected by attaching this frame to the top of an existing cell of the circuit breaker in place of the previously-used cap and thereafter electrically connecting the vacuum interrupters in circuit with existing lead-in conductors.

3,751,618

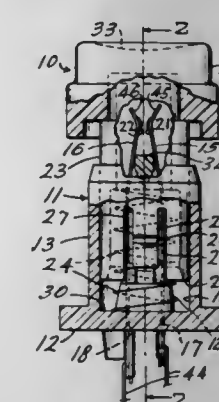
# PUSH-SWITCH WITH SPRING BIASED PLUNGER

Don M. Hallerberg, Huntington Beach, Calif., assignor to Hi-Tek Corporation, Santa Ana, Calif.

Filed Feb. 23, 1972, Ser. No. 228,648  
Int. Cl. H01h 31/2

U.S. Cl. 200—159 R

1 Claim



A highly electrical Electrical switch suitable for keyboards and the like. A pair of resilient contact members are mounted within a housing such that a plurality of contact portions on one of the members are biased to normally contact corresponding portions on the other member. The contact portions are formed from a suitable contact material. When the switch unactuated, a contact separating member on a switch actuating plunger forces apart the corresponding contact portions on the contact members. When the plunger is moved against a spring to an actuated position, the contact separating member moves to allow the corresponding contact portions to come into electrical contact.



3,751,619

**ELECTRICAL CONTACT STRUCTURE OF THE PLUG-AND-SOCKET TYPE CIRCUIT BREAKERS**

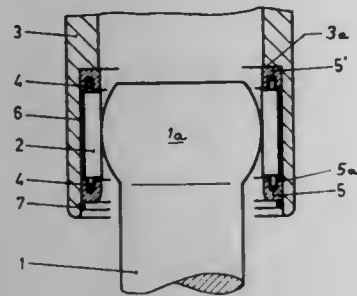
Adolf Niederer, Unterehrendingen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland  
Filed June 20, 1972, Ser. No. 264,512

Claims priority, application Switzerland, July 1, 1971, 9660/71

Int. Cl. H01h 1/38

U.S. Cl. 200-166 BH

2 Claims



A plug-and-socket type of electrical contact structure designed for handling high currents includes a contact plug having a spherically shaped head adapted to enter a tulip type of socket formed by a cylindrical assembly of resiliently mounted contact fingers which are forced in a radially outward direction by the head of the contact plug to establish a pressure contact with a cylindric support housing within which the cylindric assembly of contact fingers is mounted.

3,751,620

**ELECTRIC GARMENT**

Teruhisa Yuasa, Takatsuki, Japan, assignor to Yuasa Battery Company Limited, Osaka Prefecture, Japan

Continuation of Ser. No. 99,833, Dec. 21, 1970, abandoned.

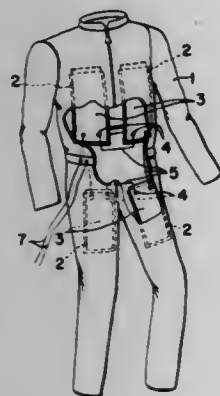
This application Dec. 30, 1971, Ser. No. 214,498

Claims priority, application Japan, Mar. 10, 1970, 45/23337

Int. Cl. H05b 1/00

U.S. Cl. 219-211

3 Claims



An electric garment having heating elements on the inside surface of the garment, the heating elements connecting to a power source outside the garment through a cord so as to generate heat from the elements. The heating elements comprise an electroconductive fabric knitted of a chemical fiber and a metallic fiber coated on the surface of the fabric with an electroconductive agent prepared from a mixture of thermosetting resin, carbon powder and metal powder, the heating element being further covered with a spongelike heat retaining layer having independent bubbles.

3,751,621

**TRANSFER UNIT FOR AN AUTOMATIC MACHINE FOR THE LARGE-SCALE PRODUCTION OF PARTS COMPRISING TWO WELDED ELEMENTS**

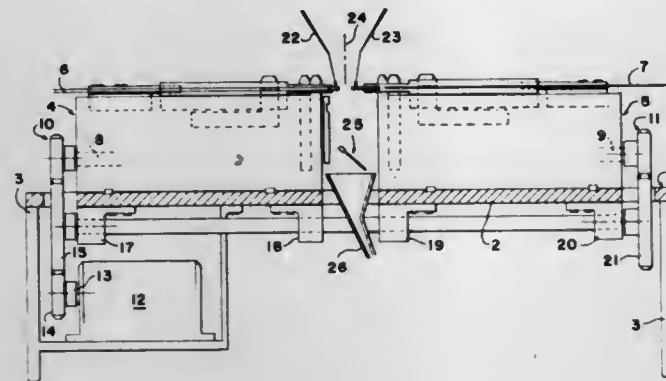
Rene Maler, 11, rue d'Huming, 67 Strasbourg-Neudorf, France

Filed Mar. 30, 1972, Ser. No. 239,447

Int. Cl. B23k 9/04, 11/00

U.S. Cl. 219-103

8 Claims



A transfer unit for feeding a continuous line of wire, cutting the wire into segments and welding them to a second element such as a second wire segment which is processed in an identical manner in a second unit mounted opposite to the first.

The unit comprises a horizontal drive shaft mounted in a stationary frame, a coaxial cylinder sleeve secured to the shaft and provided with a plurality of guide grooves forming cams, two independent carriages fitted with roller followers engaged in the guide grooves and displaceable on two superposed parallel slides in reciprocating movements programmed by the grooves, two clamps mounted on the carriage for gripping and feeding the wire in continuous motion, means for cutting the wire into segments and connecting each segment to a voltage source which delivers a welding pulse.

3,751,622

**PROTECTION CIRCUIT FOR ELECTRICAL DISCHARGE MACHINING POWER SUPPLY APPARATUS**

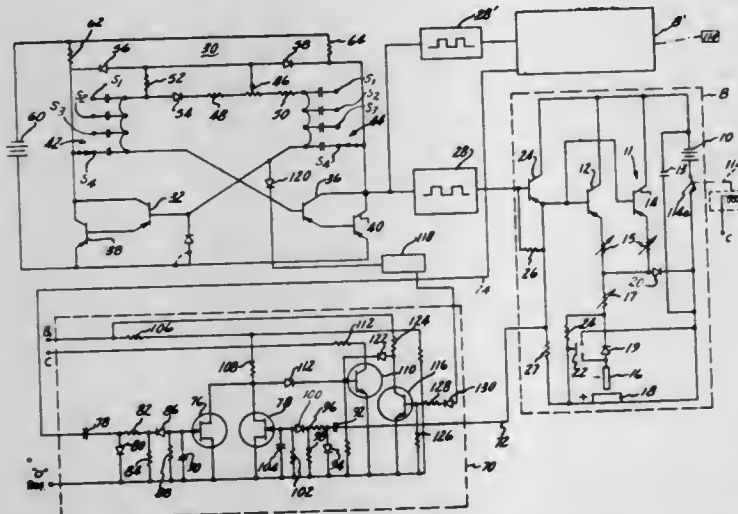
Oliver A. Bell, Jr., Mooresville, N.C., assignor to Colt Industries Operating Corp., Davidson, N.C.

Filed Jan. 17, 1972, Ser. No. 218,271

Int. Cl. B23p 1/08

U.S. Cl. 219-69 S

10 Claims



A protection circuit which responds to output transistor failure to provide power interruption to protect an electrical discharge machining apparatus. The parameter responded to is that drive voltage which is used to trigger the electronic output switch on and off. The protection circuit is equally applicable to single or to multiple gap machining set-ups. Field effect transistors providing high impedance operation are used to initiate interruption of the power supply for the electrical discharge machining apparatus.

3,751,623

**PROCESS AND DEVICE FOR PRODUCING THIN WALLED OR EXTRA-THIN WALLED SMOOTH TUBES BY WELDING**

Fernand Noel Doublet, La Croix St. Leu, France, assignor to Societe Anonyme Tubest, Paris, France

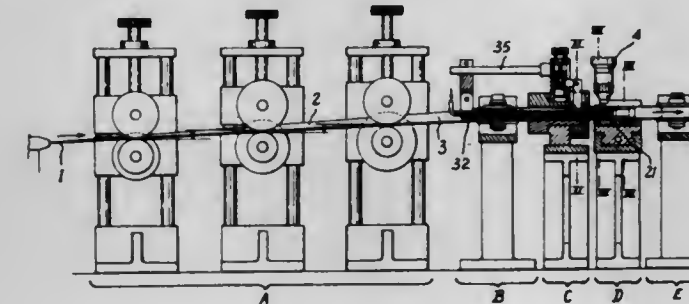
Filed June 9, 1971, Ser. No. 151,317

Claims priority, application France, June 12, 1970, 7021596

Int. Cl. B23k 31/06

U.S. Cl. 219-67

13 Claims



A process and apparatus for thin-walled tubes from strips having a thickness of 0.03 - 0.7 mm, for example, wherein the tube blank formed by curving the strip is continuously moved past a stationary electrode to weld the same.

3,751,624

**BUTT BRAZING APPARATUS AND METHOD**

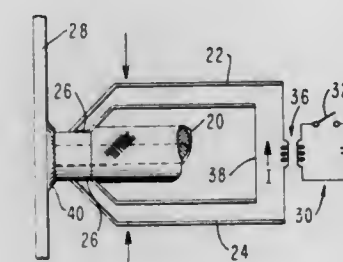
Raymond H. Banks, Wappingers Falls; Neal D. Gillespie, and Adolph W. Rzent, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, New York, N.Y.

Filed June 29, 1972, Ser. No. 267,279

Int. Cl. B23k 1/04

U.S. Cl. 219-85

7 Claims



A metallic bonding system for butt-brazing miniature wires is provided which utilizes a small composite wire which includes a section of brazing material. The fine wire is to be butt-brazed to a pad member to form an electrical connection. A first conductive member forms a first electrode and a second conductive member forms a second electrode. Each of these electrodes contains a wire holding section for holding the small composite wire near one end thereof. A power supply is connected at one end of each of the first and second conductive members and a high resistance member is connected across the other end thereof. The power supply provides a controlled current pulse of sufficient duration to cause heating in the wire holding section to melt the insulation and contact the small composite wires, thereby completing a circuit through the small composite wires which heats up sufficiently to cause the brazing material section of the wire to form a braze between the end of the wire and the pad member.

3,751,625

**UNDERWATER TORCH**

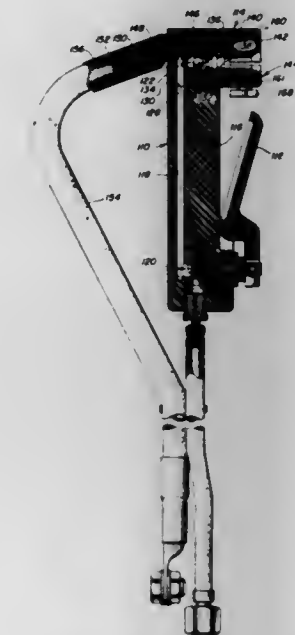
Jerry R. Hummel, and Kenneth E. McCall, both of Lancaster, Ohio, assignors to Arcair Company, Lancaster, Ohio

Filed Mar. 1, 1972, Ser. No. 230,609

Int. Cl. B23k 9/28

U.S. Cl. 219-70

4 Claims



An underwater cutting and welding torch wherein in one embodiment the electrode is securely gripped by movable members held together by an elastic cover. The torch is further characterized in that a minimum of electrical conducting material is required resulting in a safer torch. An alternate apparatus for securing the electrode includes an elastic or elastomeric member that itself is one of the electrode gripping members.

3,751,626

**RESISTANCE WELDING OF ALUMINUM**

Wayne W. Binger, New Kensington; Walter G. Zelle, Lower Burrell; Fred R. Hoch, Lower Burrell, and Paul B. Dickerson, Lower Burrell, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 17, 1971, Ser. No. 209,396

Int. Cl. B23k 11/16

U.S. Cl. 219-118

9 Claims

Resistance welding such as spot welding of aluminum sheets and the like is greatly enhanced by the provision of a reacted silicate coating which substantially extends the useful life of welding electrodes by reducing pickup of aluminum on the electrode.

3,751,627

**APPARATUS FOR INITIATING AND STABILIZING A WELDING ARC**

Guido Prischl, Antony, France, assignor to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procédes Georges Claude, Paris, France

Filed Dec. 28, 1971, Ser. No. 212,939

Claims priority, application France, Dec. 30, 1970, 7047290

Int. Cl. B23k 9/10

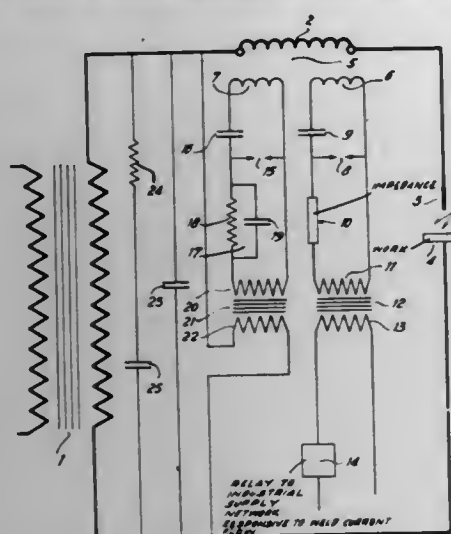
U.S. Cl. 219-131 R

3 Claims

This invention relates to welding installations, of the kind that comprise a source of electrical energy at mains frequency, incorporating a supply circuit for a welding electrode and means for forming and emitting high frequency discharges into the supply circuit to the electrode. The pulse-forming means are of the kind incorporating a capacitor and a discharge path such as an arrester, spark gap or other discharger. According to the invention, the pulse-forming



means comprise a first circuit including a capacitor and a discharge path, such that the strength of the pulses is sufficient to cause initial striking of the welding arc and being rendered inoperable when an arc welding current has been established and a second pulse-forming circuit also including a capacitor and a discharge path all independent of said first circuit. Said



second circuit is supplied at arc voltage and is rendered operable during rapid variation of the arc voltage, the pulses emitted having a strength sufficient to maintain the stability of the arc struck by the first circuit. The pulses or discharges from the first and second circuits are transferred to the arc via a common winding.

3,751,628

# METHOD FOR ARC WELDING WITH OVERLAPPED BAND ELECTRODES

Peter Scherl, Kapfenberg, Austria, assignor to Gebr. Bohler & Co. AG, Kapfenberg, Austria

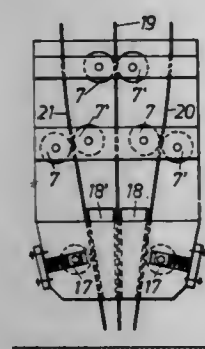
Filed Dec. 22, 1970, Ser. No. 100,749

Claims priority, application Austria, Dec. 24, 1969, 12047

Int. Cl. B23k 9/00

U.S. Cl. 219-137

12 Claims



An improved arc-welding process and apparatus for producing welded seams by means of band or flat strip electrodes. The apparatus of the invention uses at least two band or flat strip electrodes which overlap at least partially. The aforementioned flat strip electrodes are then welded by means of arc-welding in a common welding bath.

3,751,629

# SURFACE HEATING DEVICE

Paul Eisler, 57 Exeter Rd., London, England

Division of Ser. No. 607,601, Dec. 30, 1966, Pat. No. 3,573,430, which is a continuation-in-part of Ser. No. 301,488, Aug. 12, 1963, Pat. No. 3,296,415, which is a continuation-in-part of Ser. No. 749,554, July 18, 1958, Pat. No. 3,100,711.

This application Mar. 9, 1971, Ser. No. 122,495

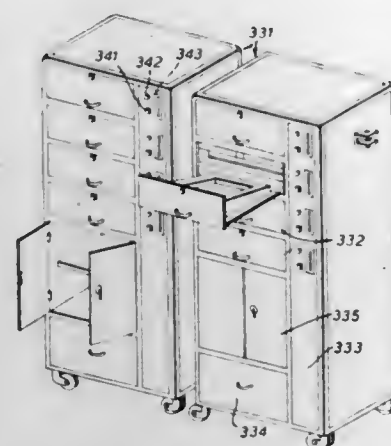
Int. Cl. H05b 3/00

U.S. Cl. 219-201

8 Claims

A dispensible container constructed for a single use incorporates a thin low voltage heating film with terminals accessi-

ble from outside and opening means permitting access to its contents is used as a package for a substance adapted to be heated and plastic in the sense of being sufficiently mobile to be removed from the container as soon as it has been suffi-



ciently heated. The outer portion of the package may comprise means for directing most of the heat inside the package to heat the substance and its side walls may be stiffened by a stiff frame of light weight material of the stressed skin type.

3,751,630

# RADIANT PANEL HEATING SYSTEM

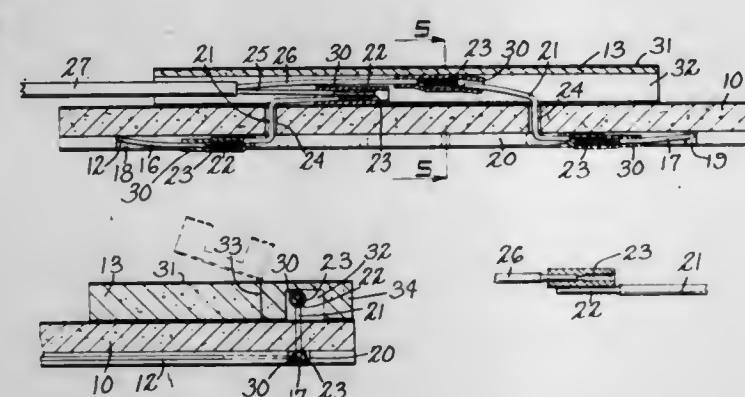
Joseph L. Brasky, Killingworth, Conn., assignor to Thermo-Ray, Inc., Killingworth, Conn.

Filed Oct. 12, 1971, Ser. No. 188,388

Int. Cl. H05b 1/00; H02g 3/00

U.S. Cl. 219-345

3 Claims



An electric radiant heating panel includes a gypsum panel incorporating a length of electrical resistance heating wire therein having ends adapted to be connected to source leads at the rear surface of the panel by connection members. Each connection member comprises a short length of wire attached at one end to the heating wire and carrying a sleeve-like member on the other end adapted to receive source leads from two directions whereby a plurality of such panels can be connected electrically in parallel with the source leads. A cover is provided over the connection members at the rear of the panel and comprises a section of gypsum panel scored through one cover sheet and the gypsum core so that the section is divided into two portions whereby the other cover sheet acts as a hinge. One portion is secured to the rear surface of the panel, while the other portion is recessed to receive the connection members and source leads and is pivotally movable about the hinge relative to the rear surface of the panel to selectively cover or expose the source leads and connection members.

3,751,631

# TEMPERATURE CONTROL SYSTEMS

Brent H. A. Seager, Stoney Stanton, and Geoffrey A. Williams, Ernsford Grange, both of England, assignors to Dunlop Limited, London, England

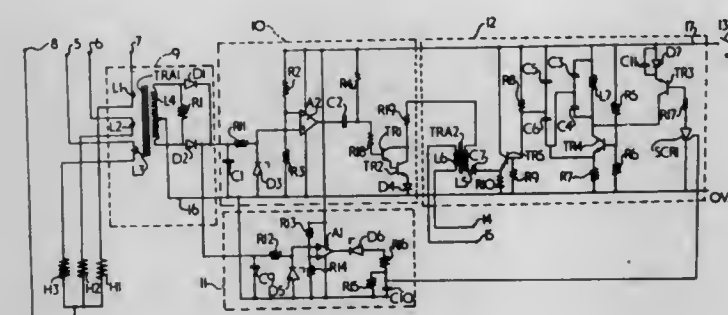
Filed Feb. 14, 1972, Ser. No. 225,956

Claims priority, application Great Britain, Feb. 17, 1971, 4,794/71

Int. Cl. H05b 1/02

U.S. Cl. 219-485

15 Claims



A heater control system, particularly for temperature unbalance arising in the currents flowing in three heater elements supplied from a three-phase power supply. The current unbalance may be created as a result of a short-circuit, or may in a temperature control circuit be dependent on changes in the resistance of one heater element having a different temperature coefficient from that of the other elements.

3,751,632

# OVEN AND CONTROL CIRCUIT THEREFOR

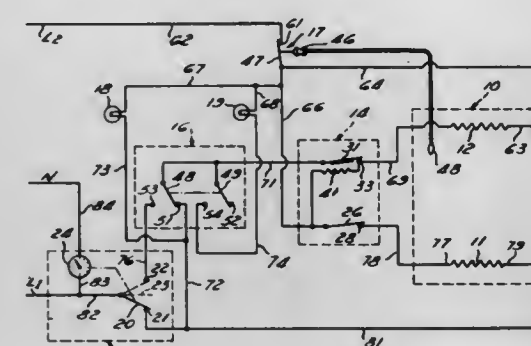
Herbert A. Kauranen, Grandville, Mich., assignor to Kelvinator, Inc., Grand Rapids, Mich.

Filed Oct. 18, 1971, Ser. No. 189,903

Int. Cl. H05b 1/02

U.S. Cl. 219-492

13 Claims



An oven and control circuit is disclosed in which four different modes of operation are provided. In one mode of baking, both the broil heating element and the bake heating element are operated on demand of the oven thermostat. The broil heating element is operated on a timed on-off cycle to provide top heat for broiling or the like. In a second bake mode of operation, top heat is not provided but the control circuit is operated automatically to change to a keep-warm mode of operation at the end of the baking time. In the keep-warm mode, the broil heating element is provided with full voltage but is operated with a timed on-off cycle of relatively short duration with the cycle time arranged to establish a heat balanced condition when the desired keep-warm temperature is reached so that low temperature thermostat means are not required. In the broil mode of operation, the broil heating element can be operated with a timed on-off cycle which can be adjusted to regulate broiling heat.

3,751,633

# PLUG-IN CHAMBER FURNACE

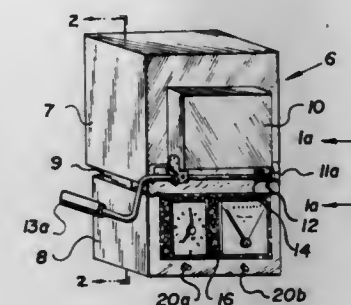
William Green, 128 Ocean View Ave., and Itzhak Heisler, 2632 W. 2nd St., both of Brooklyn, N.Y.

Filed Oct. 8, 1971, Ser. No. 187,679

Int. Cl. F27b 5/14

U.S. Cl. 219-390

2 Claims



A burn-out furnace having separate upper and lower units with the upper unit being detachably mountable on the lower unit, one of said upper and lower units being the element-containing ceramic furnace and the other of the units being the electronic control therefor with the circuits of the two separate units being connectable by a plug-in male and female jack unit, the male jack being associated with one unit and the female jack being associated with the other unit, additionally in a preferred embodiment the furnace door being pivotally mounted on a support extending from the electronic control unit and the door being openable and closable by a handle detachably connected to the door and mountable in opposite alternative directions for a left-handed operator as opposed to a right-handed operator.

3,751,634

# APPARATUS FOR MEASURING THE DEGREE OF THERMAL DISCOMFORT AND A SYSTEM COMPRISING SUCH AN APPARATUS

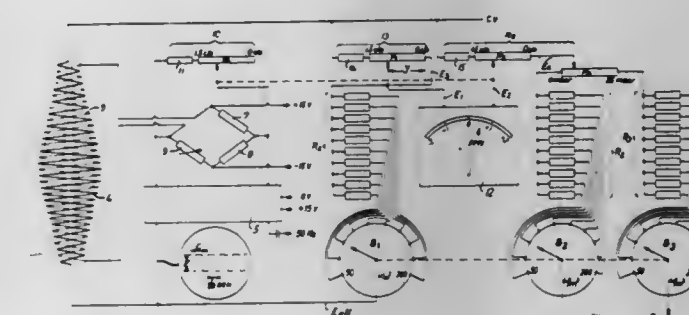
Thomas Lund Madsen, No. 11 Rosengårdsvej, 2830 Virum, Denmark

Filed Nov. 15, 1971, Ser. No. 198,524

Int. Cl. H05b 1/02

U.S. Cl. 219-497

14 Claims



An apparatus for measuring the degree of thermal discomfort by means of a measuring body for simulating the heat exchange of the human body with the environment. The temperature of the measuring body is maintained at a constant value near the temperature of the human body and the power supplied to the measuring body is measured. From this measured value a first comparison magnitude is derived, taking into consideration a fictitious total heat production and/or type of clothing set on the apparatus. A second comparison magnitude also depending on the fictitious heat production and/or type of clothing set on the apparatus, but not on the power supplied to the measuring body is also produced. The two comparison magnitudes are compared and the comparison result is the output magnitude of the apparatus which can be displayed or used in any other way.











3,751,650

## VARIABLE LENGTH ARITHMETIC UNIT

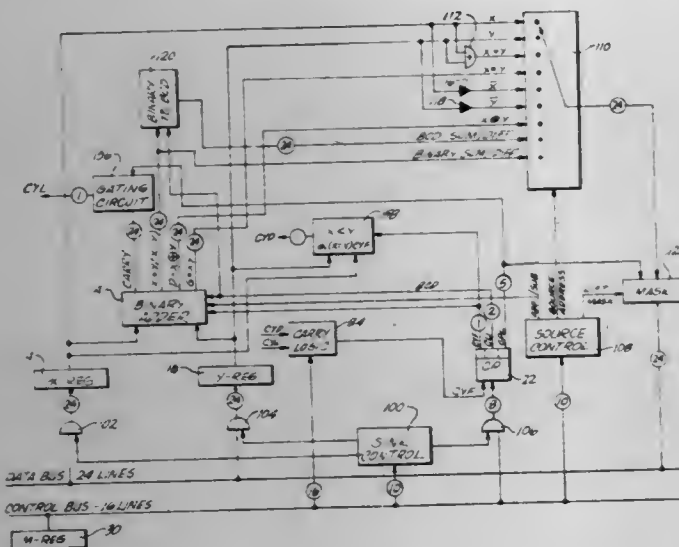
William A. Koehn, Santa Barbara, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed June 28, 1971, Ser. No. 157,091

Int. Cl. G06F 7/385

U.S. Cl. 235-175

5 Claims



An arithmetic unit in which a plurality of arithmetic and logic functions are performed using either one or both of two inputs X and Y, each input providing a variable number of bits in parallel. The output may be any one of a number of functions, such as the arithmetic functions of  $X + Y$  and  $X - Y$ , and the logical functions  $X \cdot Y$ ,  $X + Y$ ,  $X \oplus Y$ ,  $X$ , and  $Y$ , etc. All of the functions are generated by the unit and any of the functions may be selected and operate as a data source. The arithmetic unit can operate either in a straight binary or a binary-coded decimal mode. The number of bits in the output for the arithmetic functions is variable and the carry or borrow is generated for each order and is therefore available from the highest order according to the selected length.

3,751,651

## DIMENSION COMPARATOR FOR MACHINE TOOLS

Piero Pomella, and Luciano Lauro, both of Ivrea, Italy, assignors to Ing. C. Olivetti &amp; C., S.p.A., Ivrea (Torino), Italy

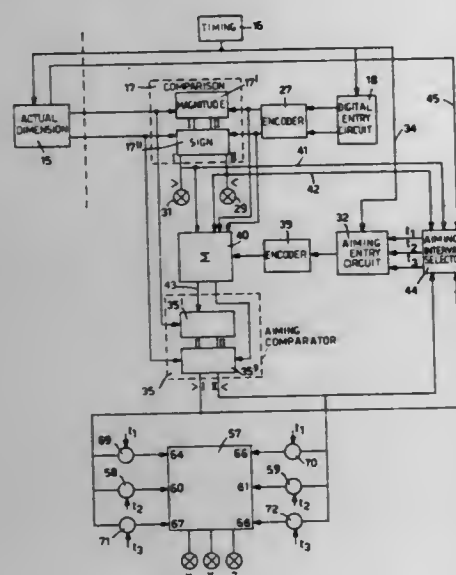
Filed Sept. 29, 1971, Ser. No. 184,678

Claims priority, application Italy, Sept. 30, 1970, 70263 A/70; Aug. 26, 1971, 69844 A/71

Int. Cl. G06F 15/46

U.S. Cl. 235-151.11

17 Claims



A dimension comparator for machine tools is disclosed wherein a first comparator compares a theoretical numerical

dimension with an actual dimension as determined by a position measurer. After it is determined that the actual dimension is greater or less than the theoretical dimension, a second comparator compares the actual dimension to a numerical value representing the theoretical dimension plus or minus the numerical value of an aiming interval. This representative numerical value is determined by an adder controlled by the output of the first comparator. In an alternative embodiment, means are provided for controlling the adder to add predetermined increments to the theoretical dimension for comparison in the second comparator.

3,751,652

## UNIVERSAL CAMERA FLASH SENSOR BRACKET

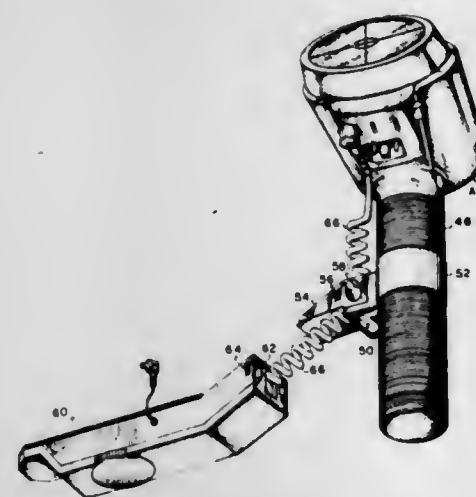
Dean M. Peterson, Littleton, and Peter H. Neukirchner, Lakewood, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed July 28, 1971, Ser. No. 166,860

Int. Cl. G03 15/02

U.S. Cl. 240-1.3

2 Claims



A mounting bracket featuring a light sensing device is detachably securable to both a camera and a flash unit. A flash control signal is transmitted from the camera to the bracket through a first two wire electrical connection, and thence to the flash unit through a second two wire electrical connection, to effect the operation of the flash unit whereby to illuminate a scene being photographed. The second electrical connection is selectively extendable from, and ordinarily housed within, the bracket. A second signal representative of the operation of the flash unit is transmitted from the flash unit through the second electrical connection to a light sensing circuit, included within one embodiment of the mounting bracket, to activate a light sensing device which, in turn, monitors light received from the scene being photographed and generates a quench signal upon detection of a predetermined amount of the received light. The quench signal is transmitted to the flash unit through the second electrical connection for effectively terminating the illumination of the scene being photographed.

3,751,653

## REFRIGERATED DISPLAY CASE

James Henry, Levittown, Pa., assignor to Embart Corporation, Bloomfield, Conn.

Filed June 4, 1971, Ser. No. 149,922

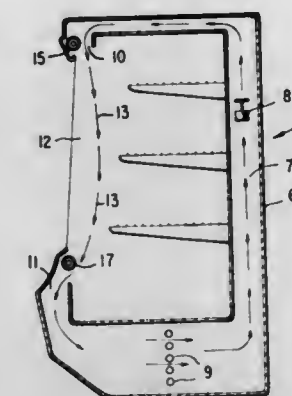
Int. Cl. A47I 11/10

U.S. Cl. 240-6

10 Claims

A refrigerated case and display lamp arrangement is provided which case may be alternately cooled and heated for defrosting purposes. An elongated tubular fluorescent lamp is mounted within the case and is provided with tubular jacket spaced coaxially thereabout. Elastomeric support members are disposed at either end of the lamp to hold the jacket in a

particular spaced relationship with respect to the lamp. Axially extending grooves are formed in a radial face of each support member to receive the terminal edges of the tubular jacket. The outer surface of each supporting member is formed with a circumferentially extending recess for receiving a steel ring which biases axially extending surfaces of each



supporting member into pressure engagement with both the tubular jacket and a glass portion of the fluorescent lamp.

A spacer member may be positioned about the fluorescent lamp approximately at the mid-span thereof for insuring a constant spaced relationship between the jacket and the lamp along the entire length thereof.

3,751,654

## ROTATIONAL LIGHTING SYSTEM

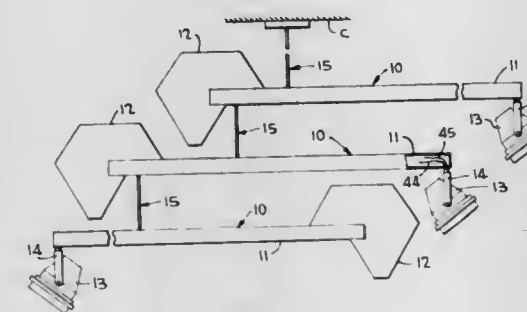
Paul D. Grebinar, 10 Station Square, Forest Hills, N.Y.

Filed Aug. 18, 1971, Ser. No. 172,738

Int. Cl. F21v 21/03; F21p 5/00

U.S. Cl. 240-52 R

12 Claims



A rotational lighting system comprising at least one lighting fixture suspended so as to be freely rotatable between its ends from a horizontal support. A means for suspending the lighting fixture comprises rigid electric current-conducting elements having a support means at one end so designed as to not only support the fixture but to conduct electric current therethrough from said elements to a light on the fixture. Additional lighting fixtures and/or dummy fixtures similarly suspended in series with one another but out of axial alignment may also be provided so that the lights of each fixture will each generate light beams along different and random paths as each fixture freely rotates about its own suspension means.

3,751,655

## DIFFUSER WITH ONE OR MORE ATTACHMENT MEMBERS FOR LIGHT GUIDING CABLES AND PROVIDED WITH A LIGHT ATTENUATING DEVICE

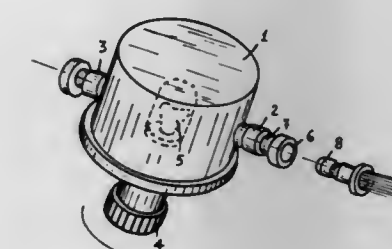
Giuseppe Codrino, Via Stazione, Quattordio, Alessandria, Italy

Filed Nov. 12, 1971, Ser. No. 198,338

Int. Cl. B60q 3/04

U.S. Cl. 240-8.16

4 Claims



A diffuser with one or more attachment members for light guiding cables, and provided with a device permitting to attenuate the quantity of light emitted by the luminous source.

3,751,656

## FLEXIBLE PLASTIC FLASH ILLUMINATION DEVICES WITH SOLID PYROTECHNIC MATERIAL

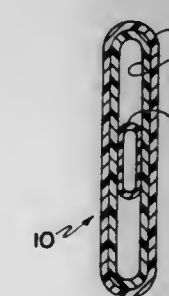
Sheldon A. Buckler, Lincoln; David P. Kennedy, Cambridge, and Kenneth S. Norland, Belmont, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 10, 1972, Ser. No. 216,467

Int. Cl. G03b 15/02

U.S. Cl. 240-1.3

18 Claims



Flash illumination devices are formed of transparent sheet plastic wherein a pair of opposed walls are marginally secured together to provide a cavity for retaining pyrotechnic material. The pyrotechnic material comprises a combustible material and a solid oxidant. Ignition means are associated with the flash devices.

3,751,657

## LIGHTING FIXTURE FOR HIGH INTENSITY LAMPS

Richard Sangiamo, Roselle; Charles Roth, Glen Gardner; Edward J. Fox, Dover, and Leonard Atkin, Springfield, all of N.J., assignors to Keene Corporation, New York, N.Y.

Filed Dec. 16, 1970, Ser. No. 98,806

Int. Cl. F21v 29/00, 7/06

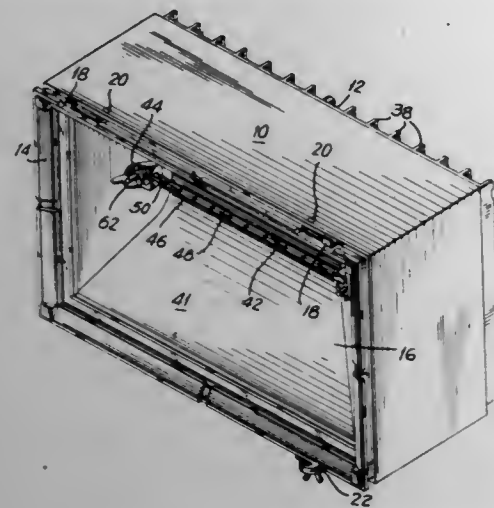
U.S. Cl. 240-41.35 E

8 Claims

A lighting fixture of the floodlight type using a quartz iodine lamp having sealed terminals on opposite ends thereof. The metal sockets into which the lamp terminals fit are designed to carry away heat from the sealed ends by radiation and conduction at a rate sufficient to permit lamp operation below



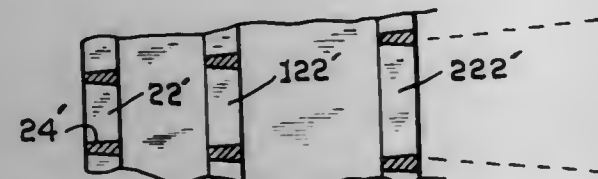
prescribed temperature levels set by the lamp manufacturer. The fixture further incorporates improved reflector mounting,



lamp accessibility, socket and heat dissipation features which permit economical manufacture, speedy assembly, operation and maintenance.

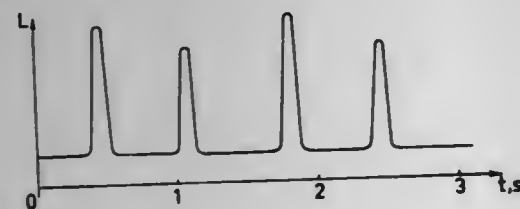
### 3,751,658 ILLUMINATING APPARATUS FOR STRAIGHT LINE PROPAGATION OF LIGHT

Claude D. Arnold, Box 749, Alpine, Tex.  
Filed July 14, 1971, Ser. No. 162,450  
Int. Cl. F21v 11/04  
U.S. Cl. 240-46.07



An illuminating apparatus for projecting and directing straight line rays of light from the apparatus to a selected area spaced apart therefrom which comprises a light source and a filter through which the light must pass. The filter is comprised of a plurality of individual adjacently arranged cells which are disposed transversely to the rays of light, each of which establish a tunnel through which part of the light can pass. Each cell, in longitudinal cross-sectional configuration, diminishes in size in a direction away from the light source so that stray light waves are eliminated.

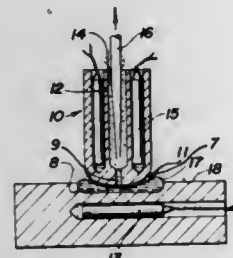
3,751,659  
LIGHTING SYSTEM FOR VEHICLES  
Birger Nordberg, 5 Lovstaplatsen, Vasteras, Sweden  
Continuation of Ser. No. 711,059, March 6, 1968, abandoned.  
This application Aug. 17, 1970, Ser. No. 64,601  
Claims priority, application Sweden, Mar. 8, 1967, 3157/67  
Int. Cl. B60q 1/00  
U.S. Cl. 240-7.1



A lighting system for vehicles in which individual units are provided for illuminating limited portions of the field of vision

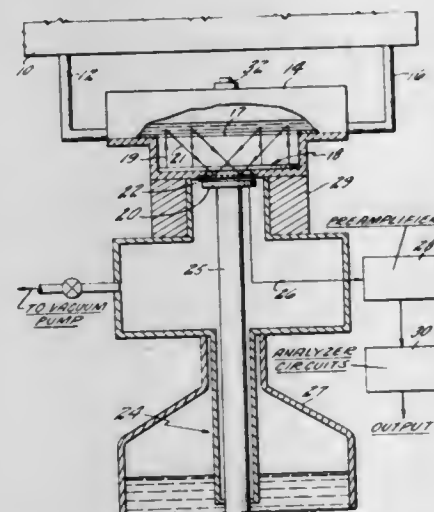
in front of the vehicle in the direction of travel which is primarily intended for motor vehicles and is such as to illuminate the road and any moving or stationary obstacles in front of the vehicle, thereby utilizing the driver's eyesight so that it is given the optimum conditions possible under which to function whereby accidents may be prevented.

3,751,660  
SAMPLE VAPORIZING APPARATUS  
Warren M. Thurston, Deep River, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada  
Filed July 29, 1971, Ser. No. 167,297  
Claims priority, application Canada, Oct. 16, 1970, 095770  
Int. Cl. H01j 39/34  
U.S. Cl. 250-41.9 S



An apparatus for vaporizing liquid samples containing impurities comprising a sample vaporizing and vapor receiving member having a surface portion thereof heated above the Leidenfrost point. The vaporized sample is drawn by a vacuum to a mass spectrometer for analysis through a passageway in the member that opens to the heated surface portion. Impurities in the sample remain in the liquid phase.

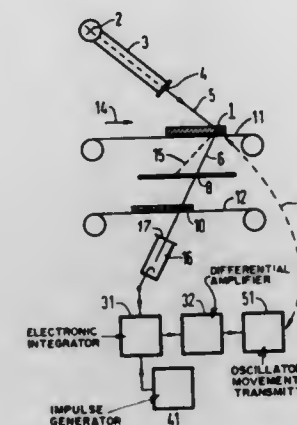
3,751,661  
ENGINE OIL INSPECTION SYSTEM USING X-RAY  
FLUORESCENCE  
Louis L. Packer, Enfield; William A. Bruton, East Hartford, and Bernard A. Woody, Rockville, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.  
Filed June 10, 1970, Ser. No. 44,954  
Int. Cl. G01n 23/22  
U.S. Cl. 250-43.5 R



The concentration of metal wear particles in the lubricating oil system of engines such as aircraft gas turbines is continuously monitored by using x-ray fluorescent techniques. A beta excited x-ray source such as promethium-147 is mounted in a novel annular apposition target arrangement, and supplies primary x-rays to circulating engine oil. Depending on the source and target composition, selected metals such as iron in the oil will emit secondary fluorescent radiation which is measured by a lithium-drifted silicon semiconductor detector. Concentrations of metals as low as 2 parts per million may be detected.

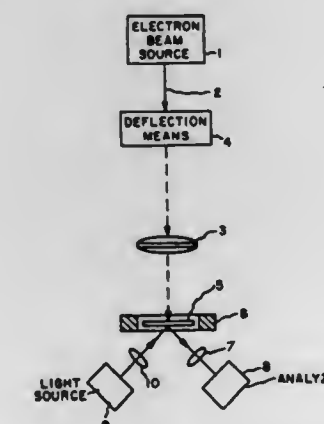
3,751,662  
X-RAY TOPOGRAPHY APPARATUS  
Heinrich Grienauer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany  
Filed Oct. 20, 1971, Ser. No. 190,722  
Claims priority, application Germany, Oct. 20, 1970, P 20 15 511.1

U.S. Cl. 250-275  
Int. Cl. H01j 37/20



This invention provides an improvement in an X-ray topography apparatus for photographing grid distortions of a monocrystalline solid body. In the X-ray apparatus which includes a rotary oscillatory drive in communication with its feed line, the crystalline body to be examined is oscillated along the feed line about an axis in the plane of the feed line and perpendicular to said plane formed by the incident and refractory X-rays of the apparatus with the crystalline body, the amplitude of the rotary oscillation being set to a sufficiently low value to maintain the level of X-ray diffraction constant, and the improvement comprising an electronic follow-up device in direct communication with the oscillatory drive to continuously readjust the zero point of the oscillation to provide a maximum intensity of the diffracted X-ray beam recorded.

3,751,663  
MAGNETISABLE MATERIAL FOR DETECTING AND/OR  
RECORDING ELECTROMAGNETIC RADIATION AND  
ELECTRONS  
Antonius Gerardus Hendrikus Verhulst; Theodoor Holtwijk; Willem Lems, and Ulrich Ernst Enz, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.  
Continuation of Ser. No. 94,900, Dec. 3, 1970, abandoned.  
This application Jan. 7, 1972, Ser. No. 216,220  
Claims priority, application Netherlands, Dec. 6, 1969, 6918364  
Int. Cl. G01t 1/00  
U.S. Cl. 250-472



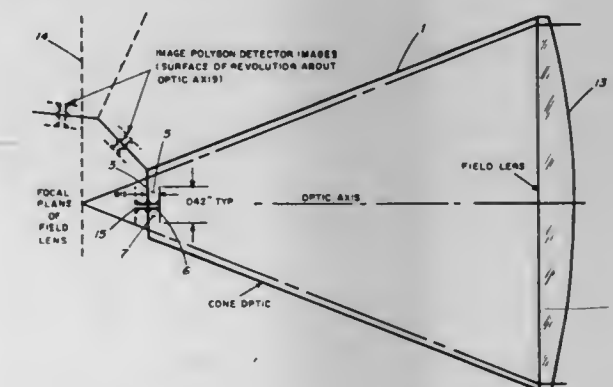
A device for detecting and/or recording electron and electromagnetic radiation employing as an active element a material having a magnetic parameter such as coercivity,

permeability or magnetic permeability which changes upon exposure to such radiation. Materials suitable for this purpose are  $Y_3Fe_{4.90}Nb_{0.1}O_{12}$ , mixed crystals of  $(NiZn)Co_2O_4$ , and  $(NiZn)Fe_2O_4$ , and mixed crystals of



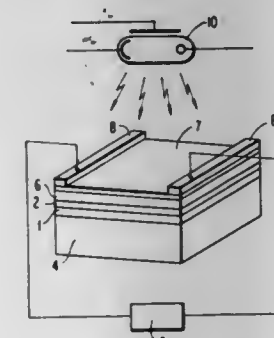
where  $0 \leq \delta < 1$  and  $0 \leq E < 1$ , B and  $B_1$  are bivalent Ni, Zn, Co, Mg, Mn or (LiFe) 0.5 and mixtures thereof, A and  $A_1$  are metals having a valence unequal to three, and Z is trivalent Co, Mn, or Cr and combinations thereof.

3,751,664  
INFRARED DETECTOR SYSTEM  
Gerald Falbel, Stamford, Conn., assignor to Barnes Engineering Company, Stamford, Conn.  
Filed Aug. 7, 1972, Ser. No. 278,689  
Int. Cl. G01j 5/02  
U.S. Cl. 250-353



A detector flake, such as a pyroelectric detector, which has leads going to the two faces of the flake, is mounted in a truncated collecting cone spaced from the truncated end from one quarter to twice the diameter of the flake. A field lens is provided imaging the entrance aperture to the optical system on a focal plane which would go through the apex of the cone if it were projected. The truncation is a mirror, except for a small central hole through which one lead for the detector passes, and as a result, both sides of the detector flake are utilized. Another modification replaces the flat mirror at the truncation with a hemispherical reflecting cup and a detector flake mounted on edge, that is to say, with its surfaces parallel to the axis of the cone.

3,751,665  
PREHEAT TYPE COPYING APPARATUS  
Shinichi Yabe, and Tomio Okada, both of 210 Nakanuma, Minami Ashigara-machi, Ashigara-kamigun, Kanagawa, Japan  
Filed July 29, 1971, Ser. No. 167,338  
Claims priority, application Japan, July 30, 1970, 45/81316  
Int. Cl. G01n 21/34  
U.S. Cl. 250-317



A preheat-type copying apparatus wherein an original and heat-sensitive copying paper are placed between a heat-resistant



ing press plate transparent to infrared rays and a cushion member. An electroconductive film for preheating the copying paper, and transparent to infrared rays, is provided on the surface of the press plate.

3,751,666

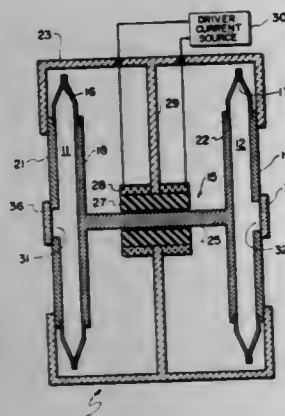
## INFRARED GENERATOR

William F. Hug, 1100 S. Los Robles St., Pasadena, Calif.  
Filed Oct. 11, 1972, Ser. No. 296,684

Int. Cl. H01j 35/00

U.S. Cl. 250-495

16 Claims



A pulsed infrared radiation generator comprising a confined molecular energy storing gas and having resonantly driven means for periodically compressing said gas to pressures and temperatures sufficiently high to cause emission of infrared radiation from said gas over a wavelength band determined by the fundamental vibrational wavelength of the gas. By using such a resonantly driven system for periodic compression of the gas within an enclosed chamber, a large portion of the un-radiated internal energy in the molecular gas, as well as the kinetic energy of the driven compression mechanism, can be recovered. The generator further includes second energy storing means which may comprise either a second gas-filled chamber arranged back-to-back with the first gas-filled chamber, or a spring attached to the resonantly driven compression mechanism.

3,751,667

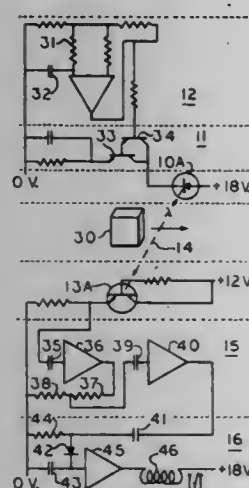
## RADIATION PATH CONTINUITY TRANSDUCER OF HIGH PASS FREQUENCY

George F. Quittner, 1780 Cumberland Rd., Cleveland, Ohio  
Continuation-in-part of Ser. No. 873,154, Nov. 3, 1969,  
abandoned. This application Aug. 10, 1971, Ser. No. 170,570

Int. Cl. G01j 3/00

U.S. Cl. 250-351

15 Claims



A signal is generated at a frequency substantially higher than powerline frequency and used to modulate a radiation

emitting device. A radiation responsive device detects the modulated radiation together with any ambient radiation from other sources. AC coupling removes any unmodulated component from the output of the radiation responsive device, and high pass filtering greatly attenuates any components of the signal at the first harmonic of power line frequency and lower. Those frequencies which are substantially higher than power-line first harmonic are amplified and detected, and are utilized to signal whether or not the modulated radiation path is or is not interrupted. Provisions are disclosed to decrease the possibility that ambient radiation, not from the specially modulated source, will saturate the detector and amplifier system.

3,751,668

## CONCENTRIC CYLINDER ASSEMBLY FOR PRODUCING PULSED NEUTRONS

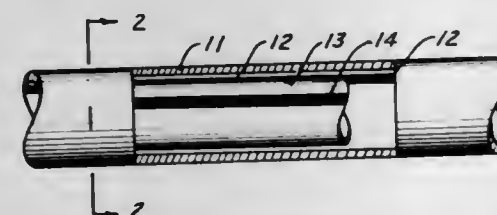
Harold L. Coleman, Dayton; Harold A. Malson, Ketterling;  
Howard R. DuFour, New Carlisle, and Richard G. Olt,  
Dayton, all of Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Filed Oct. 28, 1970, Ser. No. 84,675

Int. Cl. G21g 3/04

U.S. Cl. 250-84.5

5 Claims



Pulsed bursts of neutron are produced from a source in which strips of radioactive material are placed on the inner surface of a cylinder, and low Z target material is placed on the outer surface of an inner concentric cylinder. As the inner cylinder is rotated, the radioactive material and the target material are matched to produce a burst of neutrons.

3,751,669

## RADIATION SHIELDING MEANS JOINT AND METHOD OF MAKING SAME

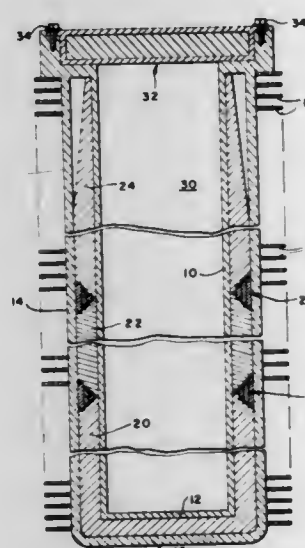
Fred J. Bush, Jr., Malvern, Pa., assignor to NL Industries, Inc.,  
New York, N.Y.

Filed May 24, 1971, Ser. No. 146,356

Int. Cl. G21f 5/00

U.S. Cl. 250-506

14 Claims



A pair of radiation shielding members such as uranium castings are provided with tapered end portions which are positioned adjacent one another. The joint between the radiation shielding members includes a plurality of filler members

disposed between said tapered portions and the filler members being positioned in contact with one another and radially outwardly of one another, the outer ones of said filler members overlapping inner ones of said filler members in a longitudinal direction. The filler members are welded to the tapered ends of the radiation shielding members along the opposite circumferentially extending edges of the filler members.

3,751,670

## SUBSCRIPTION COMMUNICATION SYSTEM

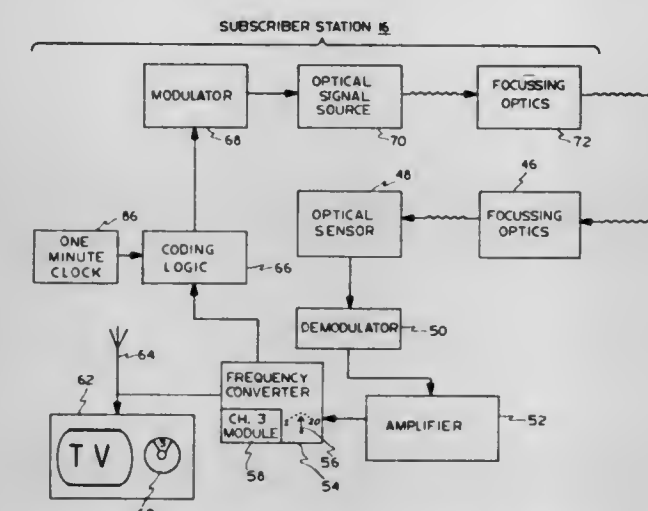
Seymour L. Grodner, Hartsdale, N.Y., and Marvin I. Radlauer,  
Matawan, N.J., assignors to Telebeam Corporation, New  
York, N.Y.

Filed May 11, 1971, Ser. No. 142,331

Int. Cl. H04b

U.S. Cl. 250-199

9 Claims



A subscription communication system is described wherein each one of many subscribers has his own individual optical communications service link from a common distribution station. As a result, there is positive control over the communications service provided to each subscriber, and information as to the subscriber's economic accountability for such service is generated right at the distribution station. A service request communications link is also provided from each subscriber station to the distribution station, preferably in the form of an optical signal, and the economic accountability of the subscriber is dependent upon receipt of the request signal. The service and request signals are affected equally by adverse weather conditions, so that the subscriber is not billed for service under weather conditions which are below the threshold of system availability.

3,751,671

## OPTO-ELECTRONIC RELAY

Maurice A. Maniere, Conflans-Sainte-Honorine, and Pierre  
Thépaut, Paris, both of France, assignors to Lignes Telegra-  
phiques et Telephoniques, Paris, France

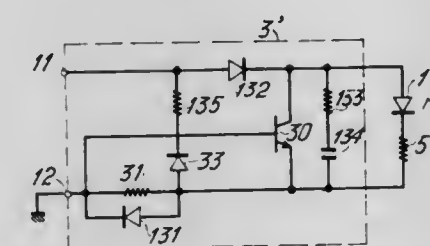
Filed July 25, 1972, Ser. No. 275,061

Claims priority, application France, July 27, 1971, 7127503

Int. Cl. H04b 9/00

U.S. Cl. 250-199

2 Claims



An opto-electronic relay comprising an electroluminescent diode fed from unipolar or bipolar telegraph signals and a

phototransistor converting the light radiated by the electroluminescent diode into relayed electric signals. Protection means are provided against overload of said diode by too strong input signals. Distortion correction means are also provided for improving the waveform of the relayed signals. The protection means include the series connection of a resistor with said diode and at least one silicon diode and a transistor shunting said diodes, while the distortion correction means include a series R.C. circuit shunting said electroluminescent and protection diodes.

3,751,672

## OPTO-ELECTRONIC APPARATUS FOR MEASURING AND CONTROLLING THE CONCENTRATION OF SOLUTIONS

Alfred Michel, Erlangen, and Werner Rummel, Grossdehnsen-  
dorf, both of Germany, assignors to Siemens Aktien-  
gesellschaft, Munich, Germany

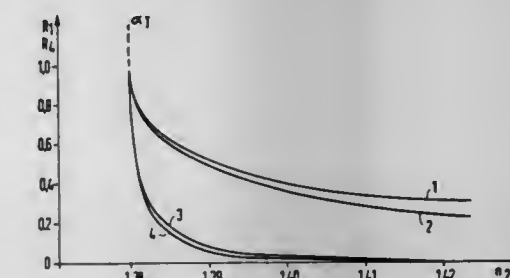
Filed Apr. 28, 1972, Ser. No. 248,388

Claims priority, application Germany, May 3, 1971, P 21 21 744.7

Int. Cl. G01n 21/46

U.S. Cl. 250-218

22 Claims



An improved opto-electronic apparatus for determining the concentration of solutions includes a probe having a prismatic immersion tip with at least two internally reflecting surfaces. A light-emitting means in the probe body directs a collimated beam of light through the prism toward a first reflecting surface of the probe tip, the incident beam making an angle with the first reflecting surface approximately equal to a critical angle of total reflection corresponding to the nominal index of refraction of the solution being examined. The included angle between subsequent reflecting surfaces is preferably approximately at least twice this critical angle. The light beam is reflected from a last reflecting surface toward an adjacent light receiving surface optically connected with a light-sensitive means in the probe body. Variations in the concentration of the solution in which the probe tip is immersed affect the intensity of the light beam finally reflected to the light-sensitive means, and the amplified output of the light-sensitive means provides a voltage suitable for use in measuring and controlling the concentration of the solution.

3,751,673

## ELECTRICAL POWER GENERATING SYSTEM

Roger S. Sprankle, 2051 Woodlyn Rd., Pasadena, Calif.

Filed July 23, 1971, Ser. No. 165,536

Int. Cl. H02k 7/18

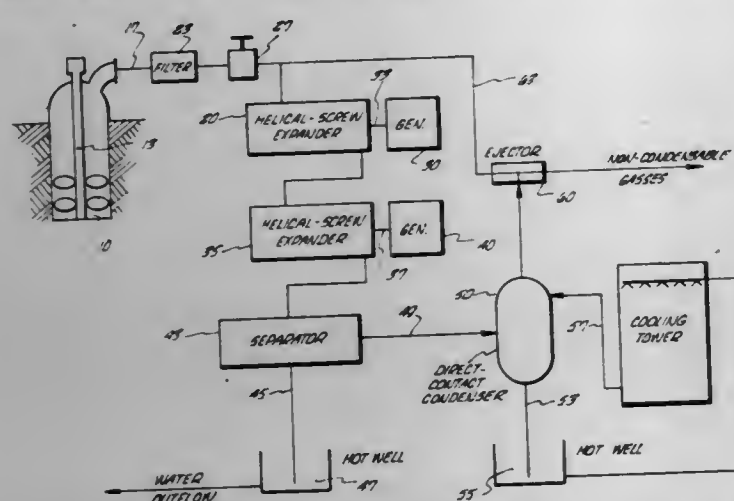
U.S. Cl. 290-52

14 Claims

An electrical power generating system is disclosed which utilizes the entire amount of energy available in geothermally heated water. The power generating system comprises a source of geothermally heated water. One or more helical screw expanders are provided for receiving said geothermally heated water and utilizing the energy generated therein for driving at least one output shaft. Each helical screw expander comprises a pair of mating helical rotors rotatably mounted within a housing in a timed relationship. A generator is coupled to each output shaft for generating electricity. As the



geothermally heated water flows through the expanders, the liquid drops in pressure and a portion thereof flashes to the vapor phase. The mass flow of vapor continues to increase as



the pressure drops through the expanders. This increase in the mass flow of the vapor expands the chambers formed by the rotors to rotatably drive the rotors and the output shafts connected thereto.

3,751,674

### CIRCUIT ARRANGEMENT FOR USE WITH VEHICLES SAFETY ARRANGEMENT

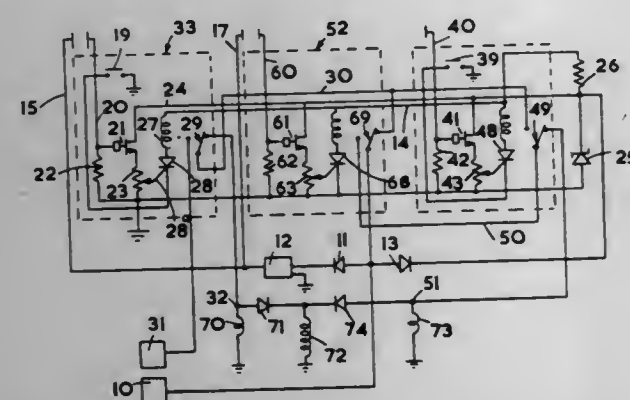
William David Holt, Colne, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England  
Filed Mar. 6, 1972, Ser. No. 232,127

Claims priority, application Great Britain, Mar. 12, 1971, 6,798/71

Int. Cl. H02g 3/00

U.S. Cl. 307-10 SB

18 Claims



A circuit arrangement for use with a vehicle safety harness includes an alternating signal generator and a pair of conductors respectively in an associated vehicle seat and a part of the harness, these conductors forming capacitor plates between which alternating current flows only when the harness is in position on an occupant of the seat. A switching circuit is responsive to this current flow and also to the closure of a switch associated with the harness buckle to complete a circuit to the vehicle starter.

3,751,675

### ANALOG CONTROL SYSTEM WITH PLURAL STATES HAVING A COMMON POWER SOURCE ARRANGEMENT AND MEANS FOR ELIMINATING ERROR VOLTAGES ARISING THEREFROM

Akira Ohte, and Minoru Tamuki, both of Tokyo, Japan, assignors to Yokogawa Electric Works, Ltd., Tokyo, Japan  
Filed Oct. 21, 1971, Ser. No. 191,413

Claims priority, application Japan, Oct. 27, 1970, 45/94439

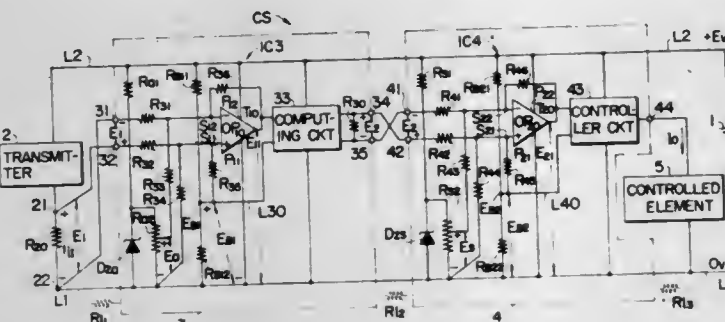
Int. Cl. H02j 13/00

U.S. Cl. 307-34

23 Claims

A control system of the type including a plurality of stages each drawing power from power lines connected to a common

power source, characterized by an input circuit in each of said stages for receiving input signals and for eliminating error voltage components arising from the line resistance of said power lines, thereby affording accurate signal processing. Each input circuit comprises an operational amplifier drawing power from the power lines, series resistors for applying the input signal to the differential signal input terminals of the operational amplifier, and a resistor for negatively feeding back a portion of the operational amplifier output to one signal input terminal. A reference voltage derived from the power source is applied through a resistor to the other signal



input terminal. The two input signal resistors are made equal and the feedback and reference voltage resistors are made equal and as a result the operational amplifier output has no error components arising from power line resistance or from bias applied to the input signal. The input circuit may be arranged to subtract a base component voltage from the input signal according to two different arrangements. The amplification provided by the operational amplifier is determined by the ratio of the feedback or reference voltage resistors to the signal input resistors, or by the ratio of a voltage divider at the operational amplifier output provided to feed back a portion of the output through said feedback resistor.

3,751,676

### CURRENT CONTROL CIRCUIT FOR A PLURALITY OF LOADS

Yoshiaki Igarashi; Kazutsugu Kobayashi, and Hisayuki Matsumoto, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

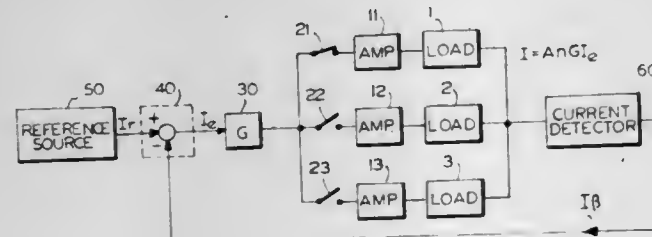
Filed June 18, 1971, Ser. No. 154,548

Claims priority, application Japan, June 26, 1970, 45/56342; June 26, 1970, 45/56344

Int. Cl. H02j 3/00

U.S. Cl. 307-31

4 Claims



An electronic circuit for switching and controlling a current flowing through a plurality of loads so that it is proportional to a reference signal irrespective of an unbalance and a variation of the  $h_{FE}$  values of current amplifying transistors wherein a current detector detects the total current flowing through the loads and the output of said detector is used as a feedback signal. When the circuit is used to control an electronically commutated motor, a motor generating a smooth and constant torque is easily obtained.

3,751,677

### VARIABLE MARK SPACE RATIO PULSE CONTROLLERS

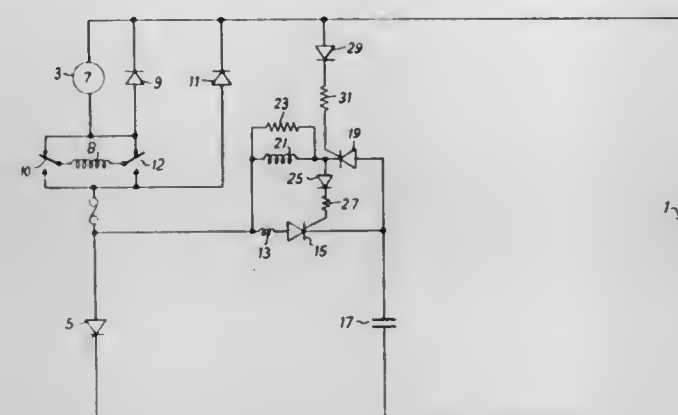
David Gurwicz, Gateshead, England, assignor to Sevcon Engineering Limited, Durham, England

Filed May 9, 1972, Ser. No. 251,821

Int. Cl. H03k 3/00

U.S. Cl. 307-106

8 Claims



A variable mark space ratio pulse controller which avoids the use of complex circuitry for triggering the commutating and reversal thyristors, triggering of the reversal thyristor occurring automatically on conduction of the main thyristor and triggering of the commutating thyristor occurring a pre-determined time after initiation of conduction of the main thyristor.

3,751,678

### CIRCUIT BREAKER DEVICE

Kikuo Kawasaki, and Katsuhiko Oose, both of Kawasaki, Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

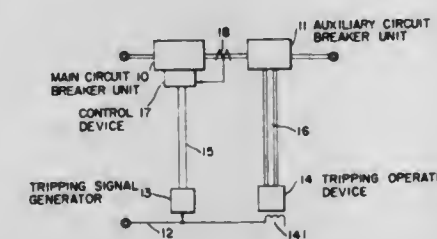
Filed Nov. 15, 1971, Ser. No. 198,799

Claims priority, application Japan, Nov. 20, 1970, 45/102544

Int. Cl. H01h 9/30

U.S. Cl. 307-136

10 Claims



A circuit breaker device comprising a main circuit breaker unit adapted to interrupt the flow of a large current and an auxiliary circuit breaker unit adapted to interrupt the flow of a current smaller than the first-mentioned current and connected in series with the former unit, the operating speed of the main circuit breaker unit being set quicker than that of the auxiliary circuit breaker unit, a circuit-breaking operation of the main circuit breaker unit being initiated only when a load current which is too large for the device occurs.

3,751,679

### FAIL-SAFE MONITORING APPARATUS

Donald J. Rotter, St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 4, 1971, Ser. No. 121,072

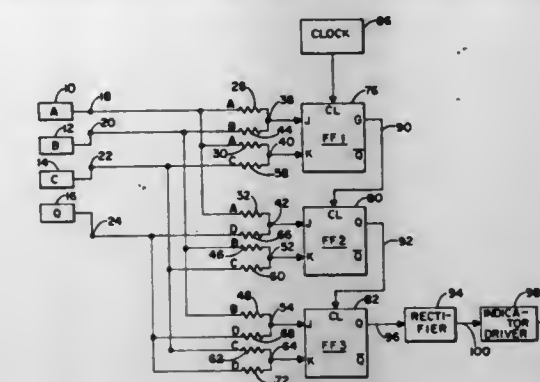
Int. Cl. H03k 19/42, 21/00, 5/18

U.S. Cl. 307-204

6 Claims

The specification discloses apparatus which acts to monitor the presence of logic signals indicative of a control condition at a majority of the circuit elements sampled. A plurality of JK flip-flops are cascaded, with a source of clock signal connected to the toggle input of the first flip-flop, and the output

of each flip-flop fed to the toggle input of the next succeeding flip-flop, the output of the last flip-flop being connected to an



indicator. The J and K input terminals of the flip-flops receive biasing signals from sampled circuit elements which are combinatorially connected to the J and K flip-flop terminals.

3,751,680

### DOUBLE-CLAMPED SCHOTTKY TRANSISTOR LOGIC GATE CIRCUIT

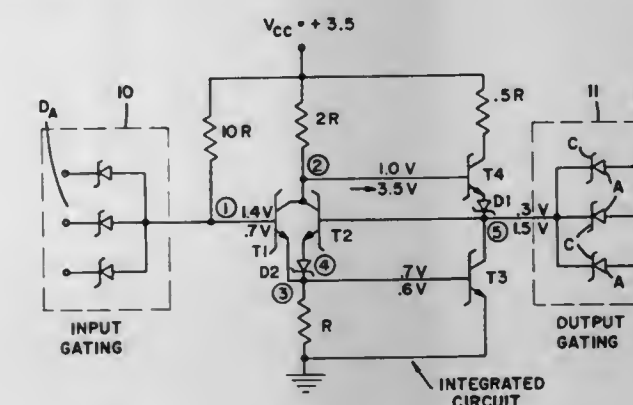
David A. Hodges, Berkeley, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Mar. 2, 1972, Ser. No. 231,185

Int. Cl. H03k 17/00

U.S. Cl. 307-213

8 Claims



A double-clamped Schottky transistor logic gate circuit which includes a totem pole output with Schottky clamp transistors with the pull-down transistor supplying a stable low output level and the pull-up transistor provides a high stable output level voltage by use of a negative feedback arrangement which includes level shifting Schottky diodes and a second Schottky clamp transistor to control the current to the pull-up transistor. An output gating arrangement utilizing Schottky diodes provides reduced capacitances and chip area by placing the cathode of the diode in the same isolated integrated semiconductor regions as the collector of the pull-down transistor. In addition, temperature compensation is provided and noise immunity is improved by integrating a voltage regulator into the same integrated circuit.

3,751,681

### MEMORY SELECTION APPARATUS

William F. Jordan, Jr., Wellesley, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.

Division of Ser. No. 675,081, Oct. 4, 1968, Pat. No. 3,588,851, Continuation-in-part of Ser. No. 536,736, March 23, 1966, abandoned, Continuation-in-part of Ser. No. 536,921, March 23, 1966, abandoned. This application Dec. 7, 1970, Ser. No. 95,904

Int. Cl. H03k 19/36, 19/24, 17/04

U.S. Cl. 307-215

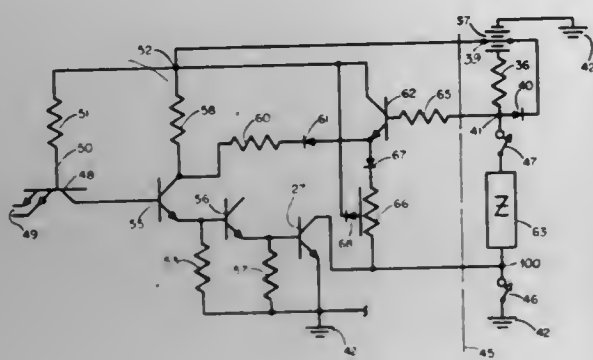
4 Claims

Electronic selection circuits for operating coincident-current magnetic memories, and like apparatus, are provided for



construction essentially entirely as integrated circuits, even the output drive stages. The circuits are arranged to transform ground referenced input signals to output signals for driving

second AND-gate that has an output connected to an input of the OR-gate. The command input terminal is connected to inputs of both the first and second AND-gates. An inverter is inserted in the signal path between the command input terminal and the input of the OR-gate. These interconnections between the AND-gates and OR-gates reduces the possibility of "race" conditions developing within the bistable multivibrator.



floating reactances without the transformers required in the prior art for voltage isolation. Further, the new circuits drive these reactive loads without excessive power dissipation or excessive transient voltages.

3,751,682

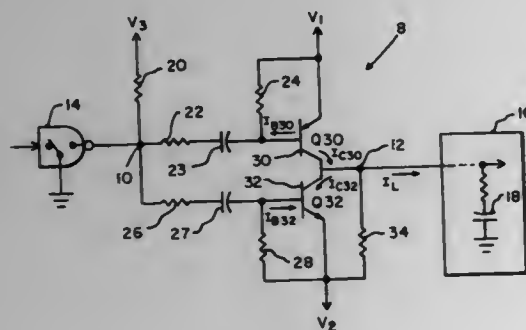
**PULSED VOLTAGE DRIVER FOR CAPACITIVE LOAD**  
James A. Howe, Burnsville, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,465

Int. Cl. H03k 17/00

U.S. Cl. 307-255

13 Claims



A voltage source of pulsed signals for charging or discharging a capacitive load is disclosed. The circuit includes two complementary transistors serially coupled along their output (collector and emitter) electrodes between the two voltage sources as a push-pull driver. Their input (base) electrodes are each coupled in parallel by a respectively associated serially aligned capacitor and resistor to an input terminal that is driven by a binary logic level circuit while their common coupled output (collector) electrodes are coupled to a capacitive load.

3,751,683

**COMBINED DATA AND SET-RESET FLIP-FLOP WITH PROVISIONS FOR ELIMINATING RACE CONDITIONS**  
Albertus Drost, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 17, 1972, Ser. No. 227,162

Claims priority, application Netherlands, Feb. 23, 1971, 7102353

Int. Cl. H03k 19/22

U.S. Cl. 307-218

9 Claims

A bistable multivibrator has input terminals for a reset, an information and a command signal. A first AND-gate and an OR-gate are cross-coupled to form a feedback loop. The reset input terminal is connected to an input of the first AND-gate. The information input terminal is connected to an input of a

second AND-gate that has an output connected to an input of the OR-gate. The command input terminal is connected to inputs of both the first and second AND-gates. An inverter is inserted in the signal path between the command input terminal and the input of the OR-gate. These interconnections between the AND-gates and OR-gates reduces the possibility of "race" conditions developing within the bistable multivibrator.

3,751,684

**FAULT MODE DETECTION SYSTEM**

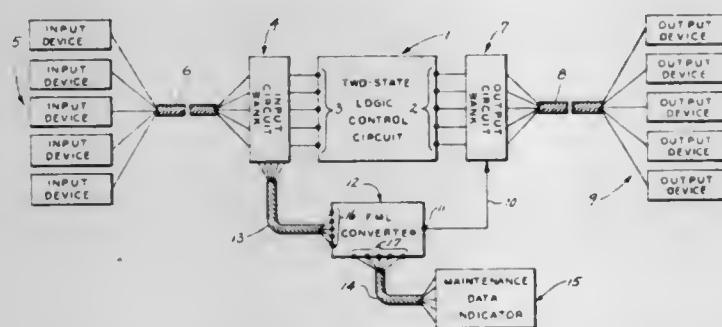
Odo J. Struger, Mayfield Heights, Ohio, assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Apr. 14, 1972, Ser. No. 244,153

Int. Cl. H03k 19/38, 17/60; H02h 7/20

U.S. Cl. 307-202

11 Claims



A converter circuit which includes at least one fault mode logic gate connects to receive the digital input signals generated to a two-state logic control circuit from a plurality of input devices. The converter circuit output connects through a disable bus to an output circuit bank. The converter circuit detects open circuit conditions at any one of the input devices and generates a digital disable signal to the output circuit bank which operates to disconnect, or deenergize the output devices being controlled by the logic control circuit. Input circuits may be connected between the input devices and the converter circuit to provide a hardware reduction. Also, a maintenance data indicator circuit connects to the converter circuit and operates in response to digital malfunction signals generated thereby to identify any input device which becomes open circuited.

3,751,685

**REDUNDANT PULSE SUPPLY SYSTEM**

Hannes Jaeger, Am Buchet 24, 8021 Joking, Germany

Filed Dec. 2, 1971, Ser. No. 204,232

Claims priority, application Germany, Dec. 4, 1970, P 20 59 797.1

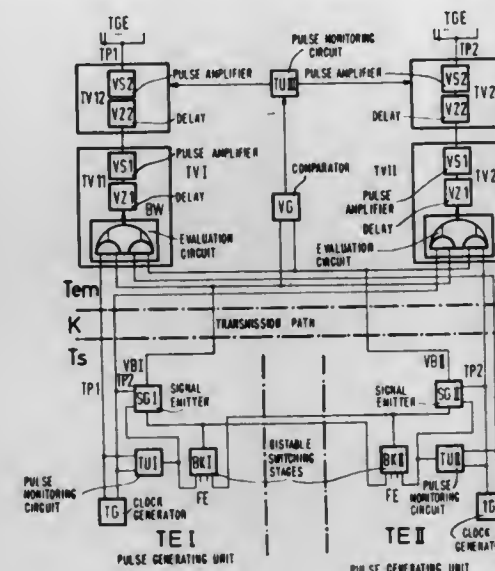
Int. Cl. H02h 7/20

U.S. Cl. 307-219

10 Claims

A pulse supply system of the type having parallel-operating, like constructed pulse generating units is described. One unit functions as the active unit, while the other is a reserve unit with the possibility of switching between these states. Each of the duplicate pulse generators contains one stage of a bistable circuit, at the output of which is available an unambiguous signal indicative of the state of each pulse generator. A signal emitter is available in each pulse generating unit for producing an output indicative of the state of the applicable pulse

generating unit; the signal emitters being conditioned by the bistable circuit. An evaluation circuit for each output pulse phase is present in the circuit receiving the pulses; this circuit



3,751,686

**TELEGRAPH RELAY**

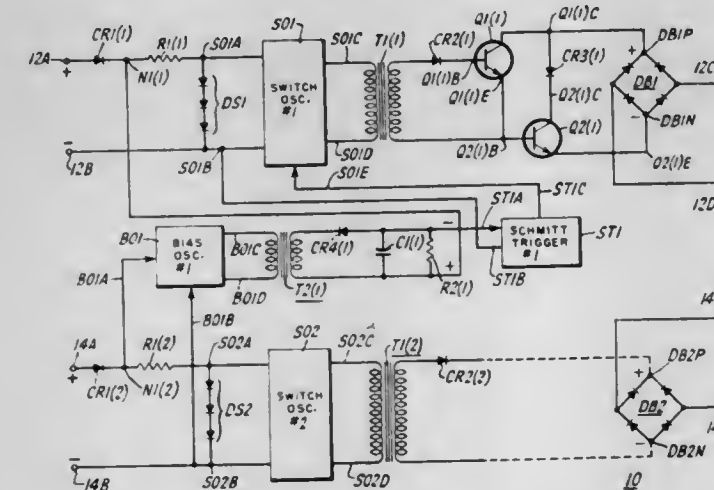
John R. Sherwood, Arlington, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed Dec. 1, 1971, Ser. No. 203,582

Int. Cl. H03k 17/00

U.S. Cl. 307-241

12 Claims



A solid state telegraph relay of the dual channel type is provided in which each signal channel output is constrained to OPEN and CLOSE as a function of the differential between the strengths of the respective input signals thereto. Each channel includes a Darlington output switch controlled by the output of a switching oscillator, the latter being controlled by a Schmitt trigger circuit which in turn is controlled by a bias oscillator cross coupled with the opposite channel and providing an output, to the trigger circuit, as a linear function of the signal strength in said opposite channel, in opposition to an input signal derived from the signal channel associated with said trigger circuit as a function of its input signal strength. Accordingly, when both input signals are equal the outputs of both signal channels are OPEN and when one of said input signals is greater than the other by a predetermined percentage differential, the output of that one of said signal channels will be constrained to CLOSE. Application of a variable bias to the input of one of said signal channels serves to selectively vary the Mark/Space time at the output of the other. Thus, the telegraph relay provided can function in both the differential mode and the bias mode.

3,751,687

**INTEGRATED SEMICONDUCTOR CIRCUIT FOR DATA STORAGE**

Wilhelm Jutzi, Wädenswil, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.

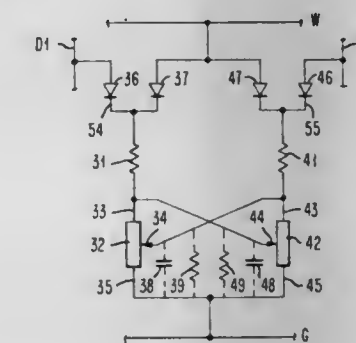
Filed June 30, 1971, Ser. No. 158,465

Claims priority, application Switzerland, July 1, 1970, 9957/70

Int. Cl. H03k 3/26; G11c 11/34

U.S. Cl. 307-279

2 Claims



receives both the signal emitter outputs and the pulse supply outputs. The evaluation circuit forwards only the pulse from the generator indicated as being in the active state.

A storage circuit for binary data designed for application in a functional memory. The circuit uses Schottky gate field effect transistors. It is arranged to enable layout on a very small surface area of a monolithic semiconductor crystal. The circuit is a modified bistable multivibrator in which the two transistors have one electrode in common. Decoupled connections are arranged at the end of the load resistors remote from the transistors.

3,751,688

**ERASING CIRCUIT FOR USE IN A DISPLAY TUBE PROVIDED WITH A STORAGE SCREEN**

Rojk Hooghordel, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

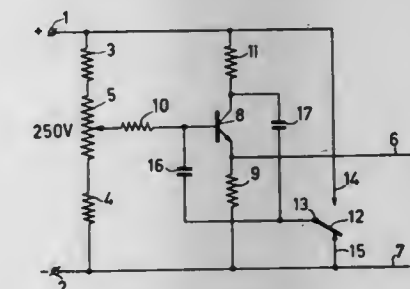
Filed Dec. 23, 1971, Ser. No. 211,249

Claims priority, application Netherlands, Jan. 8, 1971, 7100211

Int. Cl. H03k 17/00; H01j 29/41

U.S. Cl. 307-246

5 Claims



To erase the information on a storage screen of a display tube there must be applied to the tube sudden potential variations which may have values of several hundreds of volts. By using a low-voltage transistor in emitter-follower connection in conjunction with transistor protective means and an appropriate RC time determination both the normal bias voltage and the sudden high-voltage potential variations may be applied to the tube.

This erasing circuit may be used in storage oscilloscopes.

3,751,689

**ELECTRONIC LATCH CIRCUIT**

William P. Hogg, Greensburg, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 22, 1971, Ser. No. 164,997

Int. Cl. H03k 19/24, 5/18, 17/26

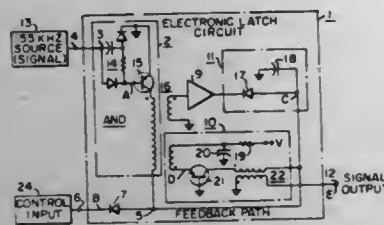
U.S. Cl. 307-246

12 Claims

An AND gate has a signal input to which a periodic signal is applied and a control input to which a control pulse is momen-



tarily applied. In response to the concurrent presence of the periodic signal and the control pulse at the respective inputs, a periodic signal is provided at the output of the AND gate. The periodic signal provided at the output of the AND gate is detected for charging a charge storage means to a voltage level of substantially the same level as the voltage level of the control pulse. This latter voltage level is fed back to the control



input of the gate, and in response thereto, the gate continues to provide the periodic signal at its output after the control pulse terminates and until the periodic input signal to the gate is interrupted. The periodic output signal from the gate is amplified in an amplifier and provided as the output signal of the latch circuit. In response to the sensing of the AND gate no longer providing the periodic output signal, the charge storage means then rapidly discharges through the amplifier.

3,751,690

## PIEZOELECTRIC IGNITION APPARATUS

Osami Okamoto, Moriguchi-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

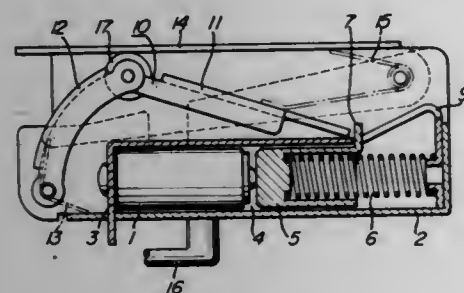
Filed Jan. 31, 1972, Ser. No. 222,207

Claims priority, application Japan, Feb. 2, 1971, 46/4652

Int. Cl. H04r 17/00

U.S. Cl. 310-8.7

3 Claims



A compact and accurately-operable piezoelectric ignition apparatus comprising a case, a piezoelectric element fixed on one side of the case by a fixing covering, a hammer and a first spring both arranged coaxially with the piezoelectric element, a hammer pressing plate, a support member, the hammer pressing plate and the support member being joined rotatably in an inverted-V shape at an end each thereof, and a pressure plate, the other end of the support member being attached to the case, the pressure plate having a free end in contact with the joint between the support member and the hammer pressing plate, the hammer having a protrusion which engages with and disengages from the other end of the hammer pressing plate as the pressure plate is depressed.

3,751,691

## ROTATIONAL TRANSDUCER USING HALL EFFECT DEVICES

Robert C. Ellis, Jr., Durham, N.C., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 14, 1972, Ser. No. 244,061

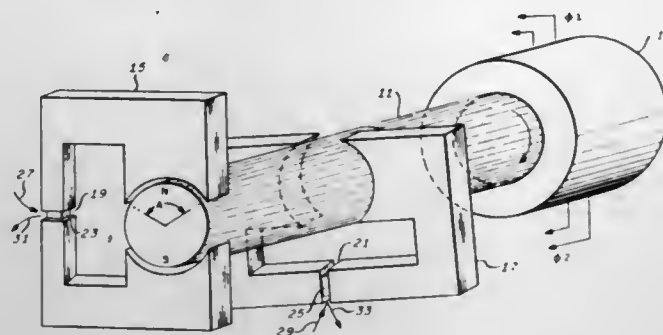
Int. Cl. H03b 15/00

U.S. Cl. 310-10

10 Claims

A brushless d.c. rotational transducer provides output voltages of low harmonic content. A diametrically magnetized rotatable shaft supplies flux for two magnetic stator members magnetically coupled to the shaft and disposed in space

quadrature with respect to each other. A Hall effect device in each stator member is responsive to the instantaneous magnetic flux density in the stator member. The stator members are proportioned so that their pole arcs extend through an



angle equivalent to the angle that would be occupied by an even number of half waves of the harmonic to be rejected. Tachometer and resolver embodiments of the invention are described.

3,751,692

## TEMPERATURE INSENSITIVE PIEZOELECTRIC RESONATOR MOUNTING

Hubert Choffat, Neuchatel, Switzerland, assignor to Centre Electronique Horloger SA, Neuchatel, Switzerland

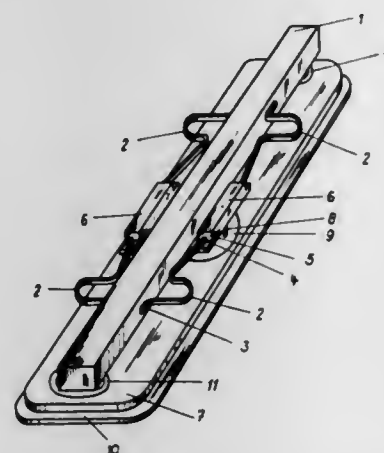
Filed Nov. 4, 1971, Ser. No. 195,749

Claims priority, application Switzerland, Nov. 23, 1970, 17321/70

Int. Cl. H04r 17/00

U.S. Cl. 310-9.1

4 Claims



A bar of x-y oscillating quartz is suspended in a casing under vacuum by two pairs of suspension wires fixed on opposite faces of the bar, centrally facing ends of each pair of wires being fixed to a respective bar section each secured to a single respective support filament passing through a central insulating part of the casing base. Final adjustment of the frequency is effected by the deposit of material onto the ends of the quartz bar after mounting same, but prior to encapsulation and evacuation.

3,751,693

## MOVING COIL MOTOR WITH NO STRAY FLUX

Andrew Gabor, Danville, Calif., assignor to Diablo Systems, Incorporated, Hayward, Calif.

Filed Feb. 14, 1972, Ser. No. 226,139

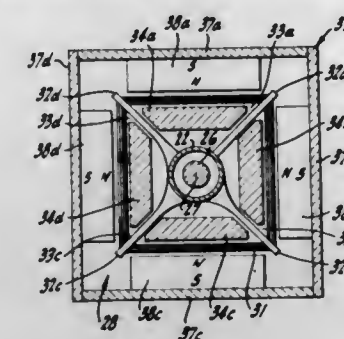
Int. Cl. H02k 41/02

U.S. Cl. 310-13

3 Claims

A voice coil motor for driving the read/write heads of a magnetic disk drive unit includes an outer elongated enclosure of square cross section and an inner enclosure of similar configuration both of which serve as pole pieces for elongated magnets which are affixed to the inner walls of the outer en-

closure. The permanent magnets are polarized so that their axes are perpendicular to the coincident center axis of the elongated enclosures. A slidable element is mounted on a rod extending along this center axis, the slidable element driving the read/write head through an aperture in the end plate of the enclosures. An electric coil of square cross section is mounted



in an air gap between the inner pole pieces and the permanent magnets by support fingers which extend through slots in the corner of the pole pieces the supports extending from the movable carrier. By this arrangement all of the flux is contained within the rectangular enclosure and practically no stray flux influences the magnetic recording medium.

3,751,694

## APPARATUS FOR PRODUCING HIGH FREQUENCY VIBRATIONS OF A SIEVE SCREEN

Gunter Erlenstaedt, Remscheid, Germany, assignor to "Rheum" Rheinische Werkzeug-Maschinenfabrik GmbH, Remscheid-Luttringhausen, Germany

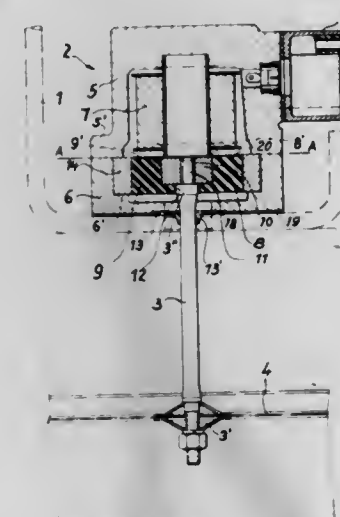
Filed Aug. 26, 1971, Ser. No. 175,204

Claims priority, application Germany, Apr. 26, 1971, P 21 20 244.8

Int. Cl. H02k 35/00

U.S. Cl. 310-29

9 Claims



In apparatus for producing high frequency vibrations of a sieve screen and composed of a vibratory system including a rod which extends transverse to the screen surface and is attached to the screen at a point, and an electromagnetic vibration generator which acts on the rod and applies thereto vibrations which in turn are transferred to the screen, the rod is connected to a rubber return spring which is tuned to the vibratory system.

3,751,695

## ONE-WAY DIRECTIONAL CONTROL MEANS FOR SYNCHRONOUS A.C. MOTORS

Edwin Richard Morley, Two Rivers, and Gerald Frederick Schmidt, Manitowoc, both of Wis., assignors to AMF Incorporated, White Plains, N.J.

Filed Mar. 24, 1972, Ser. No. 237,868

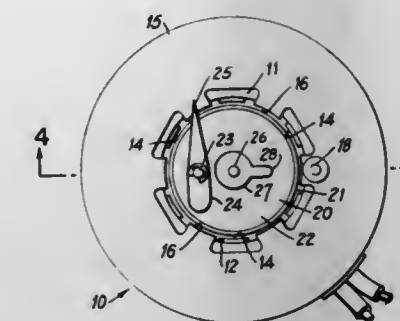
Int. Cl. H02k 7/10

U.S. Cl. 310-41

6 Claims

A synchronous A.C. motor having rotor means and a stator means which has included therewith fixed abutment means.

The rotor means includes a rotatable rotor shaft having a radially extending cam fixed on one end thereof, and a rotor rotatable on the shaft and having an elongated stop member pivotally mounted thereon. Upon rotation of the rotor in one direction the elongated stop member engages the cam means



3,751,696

## TOOTH ARRANGEMENT FOR A STEPPING MOTOR

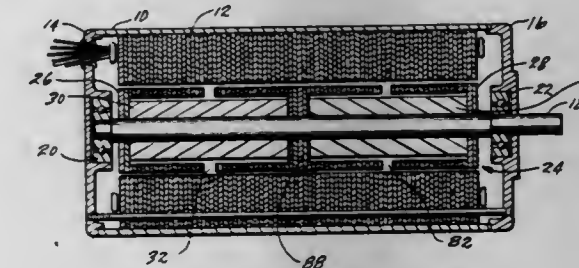
Anthony P. Morreale, Whittier, Calif., assignor to Computer Devices Corporation, Santa Fe Springs, Calif.

Filed Nov. 22, 1971, Ser. No. 200,772

Int. Cl. H02k 37/00

U.S. Cl. 310-49

8 Claims



A stepping motor includes a stator assembly and a rotor assembly having teeth projecting toward each other. The rotor assembly includes a plurality of permanent magnets spaced apart along the rotational axis with repelling poles of adjacent magnets facing each other. The teeth on the rotor project from a plurality of axially spaced apart cylindrical members that cooperate with the magnets to form magnetic poles of the rotor with an interior member cooperating with near ends of adjacent magnets to form a single magnetic pole. In operation, magnetic flux lines between the stator and rotor assemblies split to form parallel circuits having a common path through the interior member.

The teeth are arranged in an alternating offset configuration having three axially extending sections corresponding to the three cylindrical rotor members. For each section there are a plurality of teeth on the stator that attract teeth on the rotor member and a separate plurality of teeth on the stator that repel teeth on the rotor member. Each tooth of the plurality of attracted teeth on the rotor member aligns itself with a tooth on the stator. On the other hand, each tooth of the plurality of repelling teeth on the stator projects toward the middle of the space between adjacent teeth on the rotor and repel them equally.



3,751,697

**SYNCHRONOUS MOTOR CONSTRUCTION WITH DIRECTIONAL CONTROL**

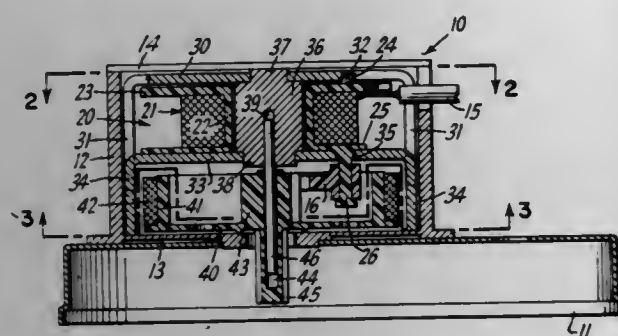
Edwin R. Morley, and Roger E. Jacobs, both of Two Rivers, Wis., assignors to AMF Incorporated, White Plains, N.Y.

Filed June 1, 1972, Ser. No. 258,611

Int. Cl. H02k 7/118, 21/08

U.S. Cl. 310-41

6 Claims



Means for assembling and aligning the stator assembly with two pole pieces of a synchronous permanent magnet motor without the use of jigs. The alignment means also provides a pivot for a cam follower for the one way directional control of the motor.

3,751,698

**PLURAL ELECTRIC MOTORS**

Alan J. Walker, 387 Maidstone Rd., Gillingham, Kent, England

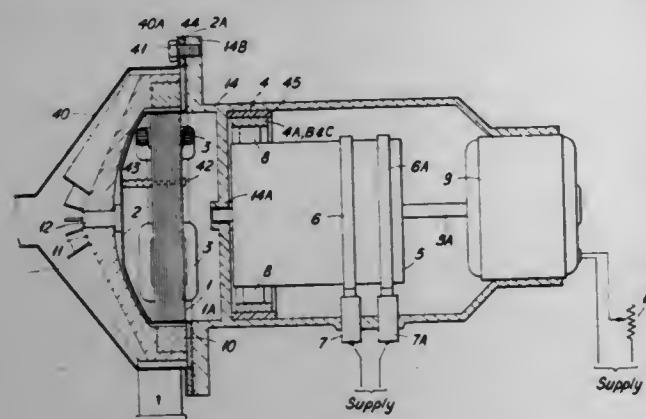
Filed June 28, 1971, Ser. No. 157,576

Claims priority, application Great Britain, June 30, 1970, 31,479/70

Int. Cl. H02k 21/10

U.S. Cl. 310-126

9 Claims



This invention relates to electric motors in which the commutating means are controllable and operated independently of the armature. The invention also relates to such motors where the armature is integral with the impeller of a pump and fluidly isolated from the stator and other parts of the motor. The invention affords speed control of electric motors.

3,751,699

**GAS FILLED VERTICAL DYNAMOELECTRIC MACHINE**

Robert F. Gleichman, San Jose, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 25, 1972, Ser. No. 247,369

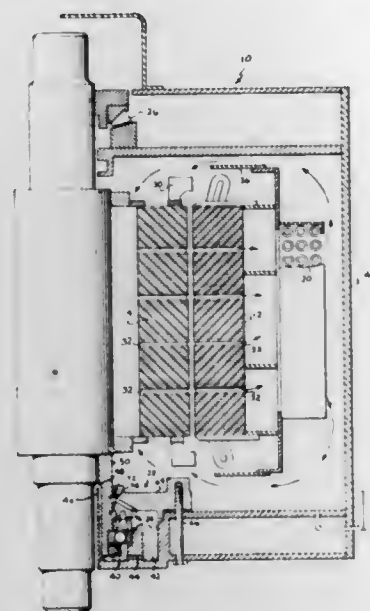
Int. Cl. H02k 5/16

U.S. Cl. 310-90

12 Claims

A totally enclosed, inert gas filled vertical dynamoelectric machine is described wherein liquid lubricant in the lower bearing housing is employed to seal the machine output shaft against the loss of inert gas. To inhibit loss of lubricant from the seal, a stationary oil sleeve concentrically disposed within a zone between the rotor shaft and shaft sleeve protrudes to a

height in excess of the oil level within the housing by an amount at least equal to the change in level produced by the pressure of the inert gas within the machine. The lower bearing preferably is enclosed by a selectively notched bearing cover which serves in conjunction with annular grooves upon the shaft sleeve to prevent oil creepage along the exterior of the shaft while blow-out of oil from the seal by excessive gas



pressure within the machine is inhibited by a liquid filled, generally U-shaped tube communicating the motor interior with the ambient. To prevent turbulence produced by rotation of the rotor from breaking the seal, the lubricant should extend to a level above the bearing or a selectively apertured partition could be inserted between the lower end of the shaft sleeve and the bearing.

3,751,700

**COMMUTATOR HAVING COMMUTATING SEGMENTS ADHESIVELY BONDED IN SHEAR TO A BASE MEMBER**

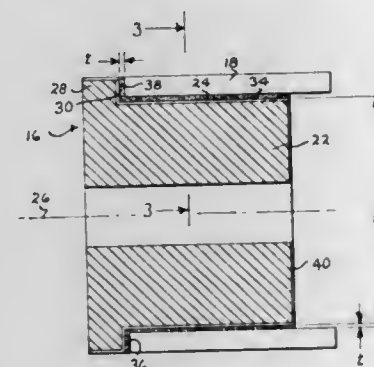
Quintin Perry Cole, Erie, Pa., assignor to General Electric Company, Lynn, Mass.

Continuation-in-part of Ser. No. 77,071, Oct. 1, 1970, abandoned. This application Mar. 1, 1972, Ser. No. 230,677

Int. Cl. H02k 13/04

U.S. Cl. 310-235

8 Claims



A commutator in which a base member having a mounting portion of substantial axial extent and an annular planar surface axially facing the mounting portion has electrically conductive commutating segments secured to the mounting portion. Each commutating segment has a planar surface at an end thereof closely adjacent the annular planar surface, and the end planar surface is adhesively bonded to the annular planar surface by a relatively thin layer of adhesive material which is electrically conductive and has high dielectric strength. The thickness of the adhesive layer is sufficiently small that the bonds between the layer and the adjacent surfaces are substantially stressed in shear during operation of the commutator in a dynamoelectric machine.

3,751,701

**CONVERGENT FLOW HOLLOW BEAM X-RAY GUN WITH HIGH AVERAGE POWER**

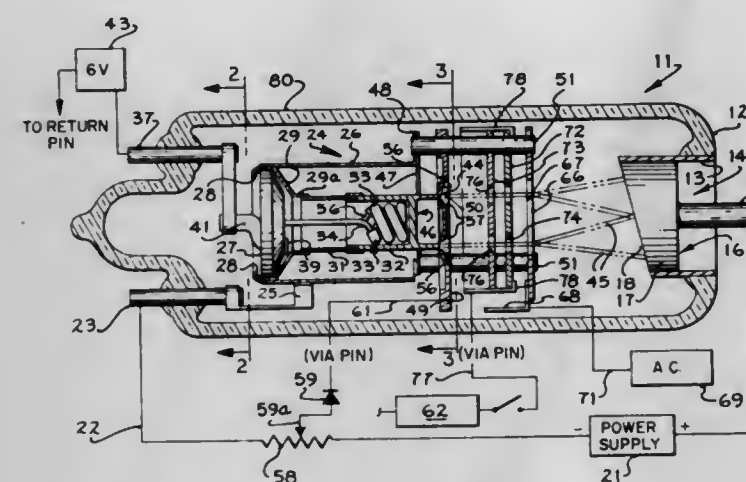
Nicholas M. Gralenski, Aptos, George Wada, Palo Alto, and David J. Bates, Los Altos, all of Calif., assignors to Watkins-Johnson Company, Palo Alto, Calif.

Filed Mar. 8, 1971, Ser. No. 122,065

Int. Cl. H01j 35/14, 35/30

U.S. Cl. 313-57

3 Claims



An X-ray generating tube characterized by grid means formed with narrow annular slits which serve to isolate the cathode from being influenced by the high voltage of the anode. According to one embodiment, a target formed as a hollow conical surface of revolution closed at one end forms an X-ray window at one end of the tube. According to another embodiment, the axis of the tube remains substantially unobstructed whereby X-rays generated from a conical surface of the type noted above are emitted at the end of the tube disposed opposite the target end. Another embodiment combines the advantages of the first named and last named embodiment by utilizing concentrically oriented coaxially disposed electron beam control elements formed with a narrow annular slit for passing electrons radially into the axial region of the tube.

3,751,702

**ROTATING ANODE X-RAY TUBE**

Kurt Dietz, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

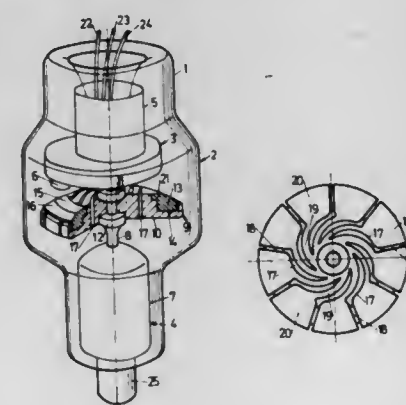
Filed July 20, 1970, Ser. No. 56,554

Claims priority, application Germany, July 23, 1969, P 19 37 351.4

Int. Cl. H01j 35/04

U.S. Cl. 313-60

11 Claims



This invention relates to an X-ray tube of the rotating-anode type which includes a disk which is resiliently mounted upon a shaft and also contains an electron impinging portion thereupon. The anode is provided with a plurality of recesses therewithin which produces the advantages which will be hereinafter summarized.

3,751,703

**VIDICON HAVING EXTERNAL LIGHT SOURCE ADJACENT SEALED END, AND LIGHT CONDUCTOR TRANSMITTING LIGHT THEREFROM TO TARGET**

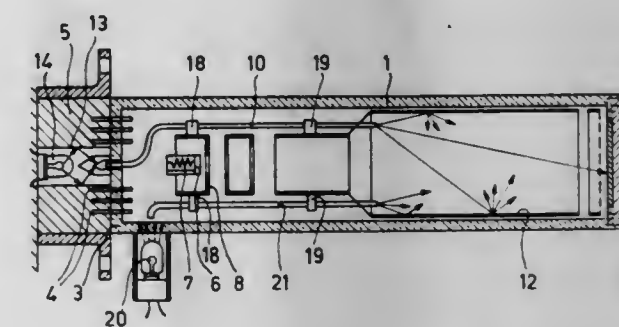
Willem Paul Weijland; Hans Georg Gerlach; Antonius Joannes Maria Van den Beld, and Louis Maarten Swart, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 885,914, Dec. 17, 1969, Pat. No. 3,628,076. This application June 24, 1971, Ser. No. 156,565

Int. Cl. H01j 31/38, 29/89

U.S. Cl. 313-65 LF

3 Claims



A television camera tube of the vidicon type in which a photoconductive screen at one end of an evacuated envelope receives an image of a scene to be televised and is scanned by an electron beam. An external auxiliary light source is provided for uniformly illuminating the screen and light from this source is conducted through a light conductor to the tip of an exhaust tube for the envelope opposite the screen so that the screen is illuminated uniformly by light from the auxiliary light source.

3,751,704

**DELAY LINES COOLED BY LIQUID CIRCULATION AND ELECTRONIC TUBES UTILISING SUCH DELAY LINES**

Robert Guillemet, and Pierre Ribout, both of Paris (8eme), France, assignors to Thomson-CSF, Paris, France

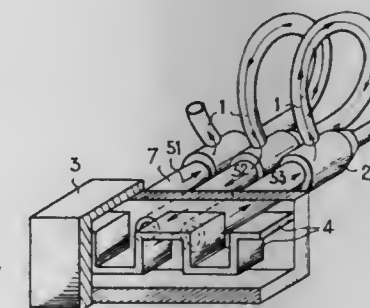
Filed Dec. 7, 1971, Ser. No. 205,632

Claims priority, application France, Dec. 30, 1970, 7047286

Int. Cl. H01j 25/34

U.S. Cl. 315-3.5

5 Claims



Delay line in the form of a helix for a travelling wave tube is provided including a plurality of hollow conductive tube elements forming turns of the helix. Fluid distribution means communicates with the tube elements for circulating fluid therethrough and includes alternate feeds to each of said turns and alternate outputs from each of said turns, said alternate feeds and outputs forming conductive elements coupled to the extremities of each of the conductive tube elements of the helix.



3,751,705

**ELECTRON IMAGE DATA PROCESSING APPARATUS**

John R. Shoemaker, Akron, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Continuation of Ser. No. 872,677, Aug. 10, 1971, abandoned.

This application Aug. 10, 1971, Ser. No. 170,656

Int. Cl. H01j 31/48

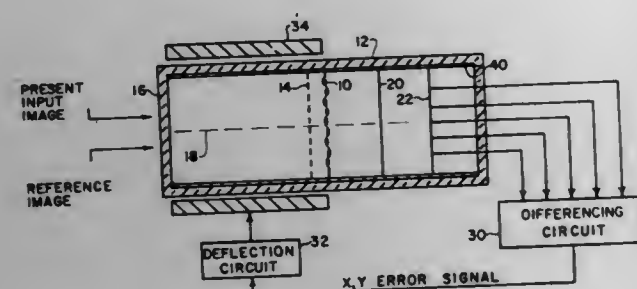
U.S. Cl. 315-11

4 Claims 53 51.1

Int. Cl. H01j 29/70

U.S. Cl. 315-27 TD

7 Claims



Disclosed is an electron image correlation tube adapted to achieve correlation without mechanical or electrical nutation. This eliminates the need for considerable electronic equipment in system complexity. Fundamentally, the invention utilizes an electronic lens in combination with a sectioned anode cooperating with a differencing circuit to achieve the correlation. The outputs of the various sections of the sectioned anode are analyzed by the differencing circuit and the resultant signals are, through a deflection circuit, utilized to control the deflection yokes of the correlation tube and consequently accurately achieve the correlation.

3,751,706

**MEANS FOR CONSERVING ENERGY DURING LINE RETRACE OF A RASTER TYPE DISPLAY**

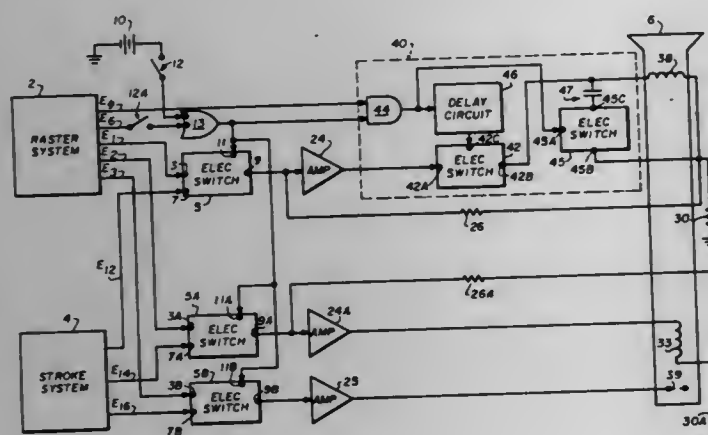
Abner Owens, Jr., Paramus, and Donald Weinstein, Fair Lawn, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Feb. 3, 1971, Ser. No. 112,358

Int. Cl. H01j 29/70

U.S. Cl. 315-27 TD

11 Claims



A cathode ray tube (magnetic deflection) display system provides pictorial (raster) and symbol (stroke) displays and includes an energy conservation circuit which uses the energy stored in the horizontal deflection coil of the cathode ray tube to achieve retrace of the sweep voltage used in providing the pictorial display.

3,751,707

**SWEEP DEFLECTION LINEARIZATION CIRCUIT**

Hermann Greiner, and Wolfgang Lerch, both of Darmstadt, Germany, assignors to Fernsch GmbH, Darmstadt, Germany

Filed Nov. 1, 1971, Ser. No. 194,430

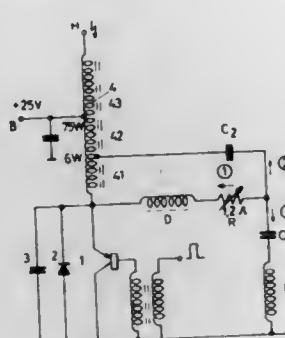
Claims priority, application Germany, Oct. 31, 1970, P 20

4 Claims 53 51.1

Int. Cl. H01j 29/70

U.S. Cl. 315-27 TD

7 Claims



A transistor is switched on and off by pulses, successively completing a circuit through an autotransformer, and completing a series deflection circuit through a tapping of the autotransformer, a capacitance and an inductance. The capacitance is divided in two series-connected capacitors. A resonant oscillator circuit employs the transformer tapping, the adjacent capacitor, and a variable resistor and choke connected between a junction of the capacitors and a junction of the transformer and the transistor.

3,751,708

**SWEEP CIRCUIT FOR OSCILLOSCOPE**

Peter Harzer, Eningen, Germany, assignor to Wandel u Golttermann, Reutlingen, Germany

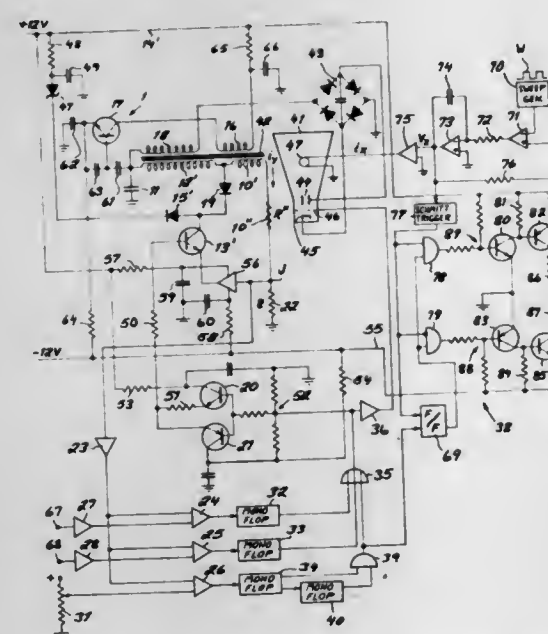
Filed May 14, 1971, Ser. No. 143,499

Claims priority, application Germany, May 14, 1970, P 20 23 548.7

Int. Cl. H01j 29/80

U.S. Cl. 315-22

16 Claims



The beam of a cathode-ray tube, normally suppressed, is electromagnetically deflected by a triangular current in the x direction and by a sinusoidal current of substantially higher frequency in the y direction, thereby producing an invisible grid on the oscilloscope screen. Whenever the y-deflection signal matches an input signal to be visualized, the beam is turned on for a small fraction of a y-sweep cycle during which the y sweep is interrupted whereby a short horizontal trace is produced on the screen. For tracing a horizontal base line in

response to a given reference signal, the x sweep may be momentarily accelerated to the frequency of the y sweep which in this case is interrupted for a full cycle; this acceleration takes place on every  $n^{\text{th}}$  intersection of the y sweep with the imaginary base line.

3,751,709

**INTERNAL TUBE PELTIER COOLING OF IMAGE INTENSIFICATION PHOTOCATHODES**

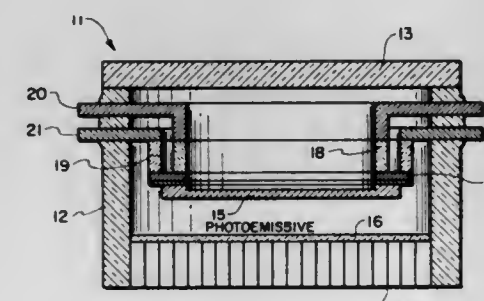
Herbert L. Wilson, Woodbridge; Hans D. Pommerrenig, Springfield, and William A. Gutierrez, Woodbridge, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 25, 1972, Ser. No. 247,313

Int. Cl. H01j 7/44

U.S. Cl. 315-50

7 Claims



An intratube Peltier cooling device for cooling a photoemissive device mounted in a sealed housing of an image intensifier device. The cooler consists of at least a pair of N and P type material semiconductor elements having a centrally located cold junction element which surrounds the periphery of the photoemissive device. A hot junction is positioned adjacent the outer periphery of the semiconductor elements and extends through the sealed tube walls of the image intensifier device. Electrical connection is provided at the external periphery of the hot junction.

3,751,710

**LIGHTING CIRCUIT SYSTEM**

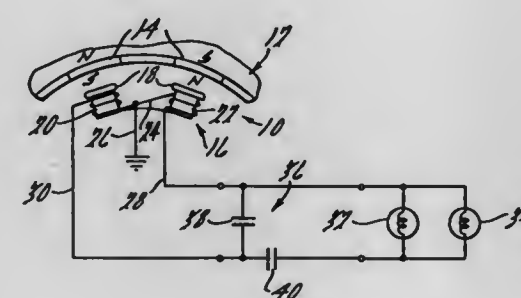
Thomas F. Carmichael, Drayton Plains; Richard J. Maier, Pontiac, both of Mich., and William J. Kirkpatrick, Bryan, Ohio, assignors to Syncro Corporation, Oxford, Mich.

Filed June 28, 1971, Ser. No. 157,329

Int. Cl. B60q 1/26

U.S. Cl. 315-79

11 Claims



An electrical system for regulating the output potential to a lighting circuit for a vehicle from an existing electrical generating device driven by the engine of the vehicle whereby the potential to the lights will be sufficient to provide adequate lighting over the usable speed range of the engine.

3,751,711

**LIGHTING DEVICE FOR ROAD VEHICLES**

George-Robert Schick, Prilly, Switzerland, assignor to Schick &amp; Cie, Prilly, Canton of Vaud, Switzerland

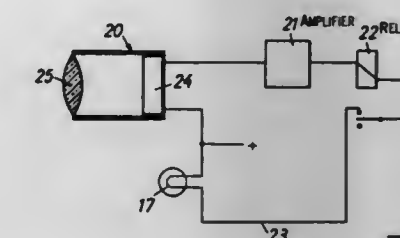
Filed Oct. 7, 1970, Ser. No. 78,856

Claims priority, application Switzerland, Oct. 9, 1969, 15181/69

Int. Cl. B60q 1/14

U.S. Cl. 315-83

10 Claims



An automatically operated lighting device for road vehicles including headlights capable of being switched to a main beam position and to a dipped beam position, a cell including a light sensitive detector for capturing light at the front of the vehicle and a control circuit, responsive to the detector, for operating the headlights so as to switch them from one position to the other when the intensity of the captured light passes a fixed limit. The headlights include a filter which reduces to a fraction the specific intensity of a predetermined wavelength range of the light emitted by a light source within the headlights. The sensitivity of the detector is a maximum in the range filtered by the filter.

3,751,712

**DIGITAL DIFFERENTIAL ANALYZER SPIRAL SCAN GENERATOR**

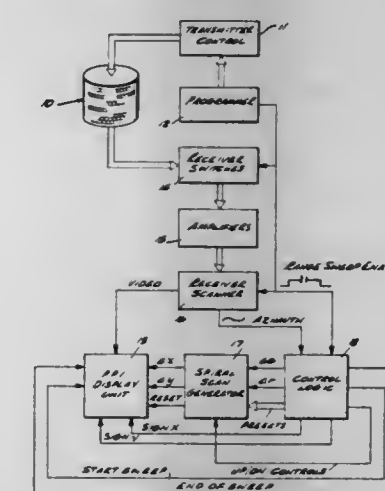
Gordon E. Murray, Santa Ana, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Apr. 29, 1970, Ser. No. 32,951

Int. Cl. H01j 29/70

U.S. Cl. 315-24

16 Claims



A spiral sweep generator for a rectangular Cartesian coordinate PPI display in a sonar system is disclosed using two cross-coupled DDA's to generate the sine and cosine values of sweep angle  $\theta$ , and DDA's coupled to the sine and cosine DDA's to compute range rate values as increments  $\Delta x$  and  $\Delta y$ . The signs of the sine and cosine values are computed from the range rate increments as absolute values by counters in a PPI display unit. The signs of the sine and cosine are applied directly to the respective derivatives  $X$  and  $Y$  in the display unit where  $\theta$  is zero for a heading-up display, i.e., for  $X=0$ ;  $Y=1$ .



3,751,713

## CIRCUIT ARRANGEMENT FOR PRODUCING A HIGH VOLTAGE SPARK

Peter Lohberg, Rodheim v.d.H., Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany

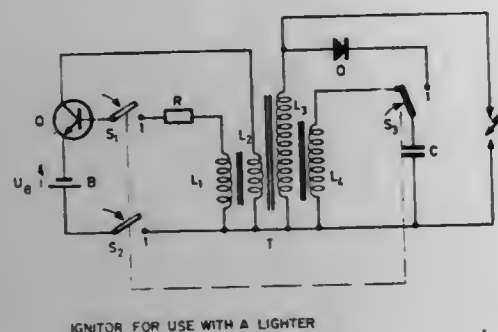
Filed July 23, 1971, Ser. No. 165,081

Claims priority, application Germany, July 27, 1970, P 20 37 068.7

Int. Cl. H05b

U.S. Cl. 315—209 T

2 Claims



IGNITOR FOR USE WITH A LIGHTER

A circuit arrangement for producing a high voltage spark comprising a semi-conductor device and a transducer coupled therewith, a source of low power d.c. voltage coupled to the semi-conductor device for supplying power thereto, the transducer having a primary and a secondary circuit, a rectifier and a storage capacitor connected into the secondary circuit of the transducer, a sparkgap device connected in parallel with the secondary circuit of the transducer, a switching device having a plurality of switching positions, the transducer including an auxiliary winding connected in circuit relationship with the storage capacitor in one of the switching positions wherein the storage capacitor is charged to a voltage defined by the transformation ratio of the transducer, and in another position of the switching device the capacitor discharges the voltage thereon across a diode into the sparkgap device connected in parallel with the secondary circuit of the transducer, the transducer including a feedback coupled winding returned to an electrode of the semi-conductor device.

3,751,714

## ELECTRONIC PHOTOFLASH UNIT

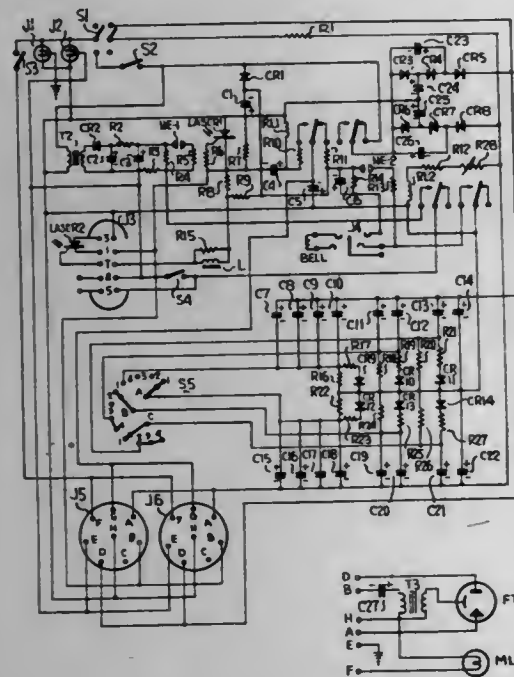
David O. Cooper, 2505 N. Quantico St., Arlington, Va.

Filed Nov. 24, 1971, Ser. No. 201,786

Int. Cl. H05b 37/00

U.S. Cl. 315—241 P

15 Claims



Controlled ionization of a photoflash tube by use of a light activated silicon controlled rectifier (LASCR) permits the

operator to remain isolated from shock hazard. The LASCR is triggered by a neon lamp which is lit when a camera shutter switch is actuated. The shutter switch and lamp circuit are isolated from the AC line by a low power transformer and from the high voltage DC by the lamp-LASCR arrangement. A bank of capacitors discharges through the ionized photoflash tube and has its capacity rendered variable by a switch in which each switch position corresponds to a respective f-stop in the camera. Flash tube afterglow is eliminated by a relay circuit which prevents the capacitor bank from being recharged by the high voltage supply until the flash tube de-ionizes. Another relay circuit prevents operation of the flash tube prior to full charge of the capacitor bank.

3,751,715

## IONIC WIND MACHINE

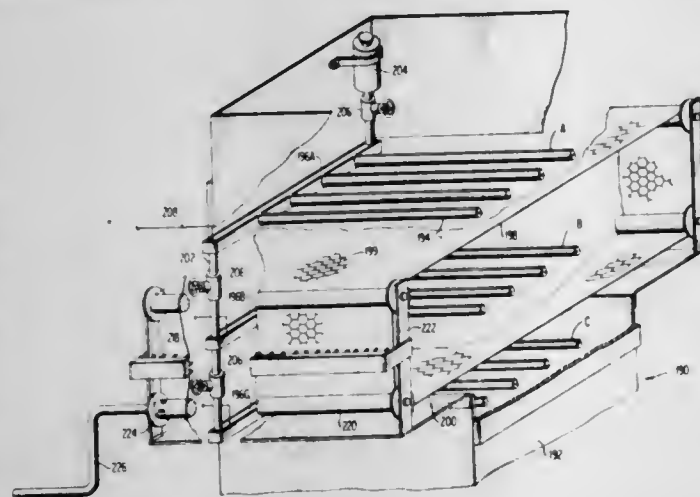
Harrison F. Edwards, 79 S. Broad St., Norwich, N.Y.

Filed July 24, 1972, Ser. No. 274,201

Int. Cl. H05h 5/06

U.S. Cl. 317—4

17 Claims



Disclosed is a wind generating machine with no moving parts. A thin corona wire is located adjacent a wire mesh and a potential gradient of from 7,000 to 20,000 volts causes air to flow in a direction from the wire toward the mesh. The air flow is voltage sensitive. Several stages may be provided and the mesh may form part of a continuous belt. A rigid self-contained assembly is provided by physically connecting the wire and mesh. In other forms, a dielectric coated wire or a liquid, for example, water, is utilized in lieu of the thin corona wire.

3,751,716

## PROTECTIVE EQUIPMENT FOR A SERIES CAPACITOR

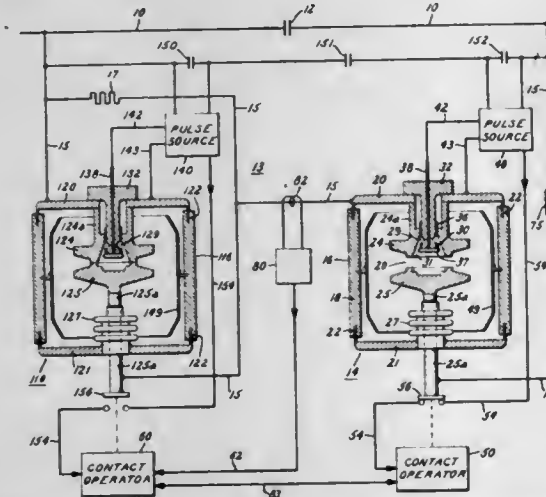
Ingolf B. Johnson, Schenectady, N.Y., and Graham R. Mitchell, Willingboro, N.J., assignors to General Electric Company, Philadelphia, Pa.

Filed Sept. 5, 1972, Ser. No. 286,469

Int. Cl. H02h 7/16

U.S. Cl. 317—12 A

10 Claims



Protective means for a series capacitor comprises a normally-open triggered vacuum interrupter that is triggered into

conduction to establish a bypass circuit shunting the capacitor in response to a condition producing an overvoltage across the capacitor. After the interrupter is so triggered, its contacts are driven into engagement to provide a solid metallic path for continued current flow through the bypass circuit. When the bypass circuit current subsides to a predetermined level, a resistor is inserted into the bypass circuit in series with the closed contacts of the interrupter, shortly after which said contacts are separated to interrupt the bypass circuit. Any restrike occurring in the vacuum interrupter during the latter interruption produces a low-current discharge through the series combination of the resistor and the interrupter that acts to clean up the contacts of the interrupter.

3,751,717

## BIPOLAR FLOATING INPUT, PARTICULARLY FOR DIGITAL PANEL METERS

Joshua Horwitz; Barnard M. Gordon, both of Magnolia, and Brant W. Becker, Sudbury, all of Mass., assignors to Gordon Engineering Company, Wakefield, Mass.

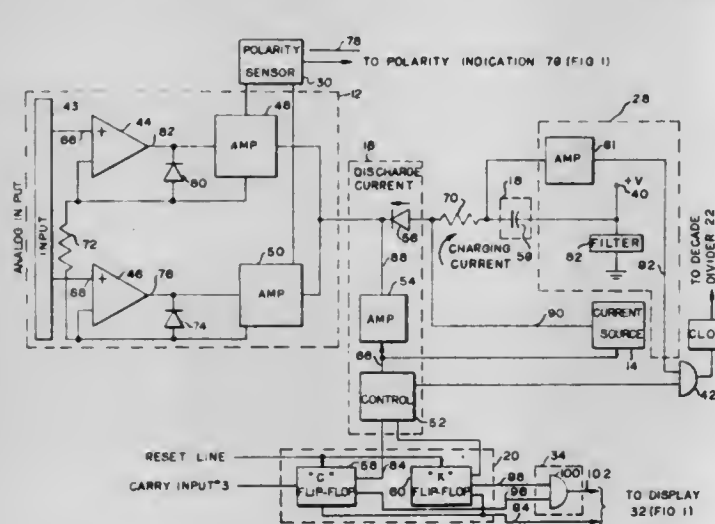
Continuation of Ser. No. 852,808, Aug. 25, 1969, abandoned.

This application July 1, 1971, Ser. No. 158,990

Int. Cl. H02b 1/04; H05k 5/02

U.S. Cl. 317—99

6 Claims



In a bipolar floating input device, particularly for dual-slope integration digital panel meters, an analog voltage is applied to a bipolar floating input circuit and a digital form of the analog voltage is presented by a display.

3,751,718

## PROGRAMMABLE ELECTRIC LOCKING SYSTEM

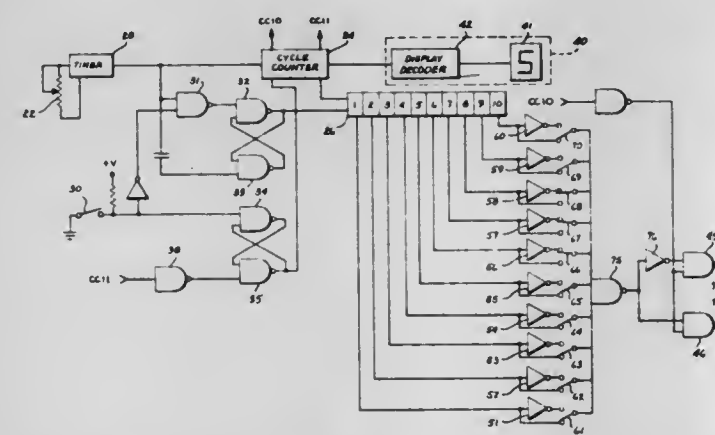
Leland J. Hanchett, Jr., 3143 E. Malopai Dr., Phoenix, Ariz.

Filed Nov. 16, 1972, Ser. No. 307,120

Int. Cl. E05b 49/00

U.S. Cl. 317—134

7 Claims



An electric locking system including an electrically operated door latch wherein the latch is energized by a signal derived from logic circuitry. The system is provided with a

switch and a timing light; the initial closure of the switch activates the timing light for successive periods of time. During each of the successive periods of time, a memory register is enabled and activation of the switch during one of these periods of time will result in the storage of a binary one in the memory register. When the timing light has been energized and the memory register enabled a predetermined number of times, a logic gate is enabled and the contents of the memory register are applied to the gate; if the contents of the memory register coincide with a preselected binary code, an unlocked signal causes the energization of the electrical latch mechanism to thereby unlock the door.

3,751,719

## HEAVY CURRENT RELAY CIRCUIT

Mario Guarasci, Niagara Falls, and Rodney Hayden, Soney Creek, Ontario, both of Canada, assignors to TRW Inc., Cleveland, Ohio

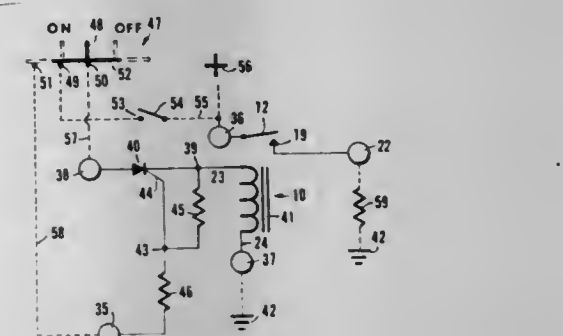
Filed Aug. 3, 1972, Ser. No. 277,695

Claims priority, application Canada, May 24, 1973, 143246

Int. Cl. H01h 47/32

U.S. Cl. 317—148.5 B

3 Claims



The following disclosure describes a heavy current relay switch circuit device for an automobile having a high current load such as a rear window de-icing heater. The device is useful with a manual press type On-Neutral-Off control switch for the heated load, the switch having an On terminal, a Neutral terminal connected to the ignition and an Off terminal. The device has separate On and Off terminals connectable to the corresponding terminals of the switch, a ground terminal, a battery terminal and a load terminal. A silicon controlled rectifier device is connected in series with a relay coil between the Off terminal and ground terminal. The gate of the silicon controlled rectifier is connected to the On terminal so that the rectifier becomes conducting when gated by momentarily pressing the switch to the On position, thus to energize the relay coil. The normally open relay contacts are adapted to connect the battery directly to the load when the relay is energized. If for any reason, such as by vibration, the contacts separate the rectifier continues to conduct current from the ignition circuit through the Off terminal while the ignition is On thus restoring the circuit for the heater load which latter is, however, interrupted should the ignition be turned off.

3,751,720

## RADIALLY ORIENTED MONOLITHIC CIRCUIT MASTERSLICE

William John Nestork, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,846

Int. Cl. H01l 3/00, 5/00

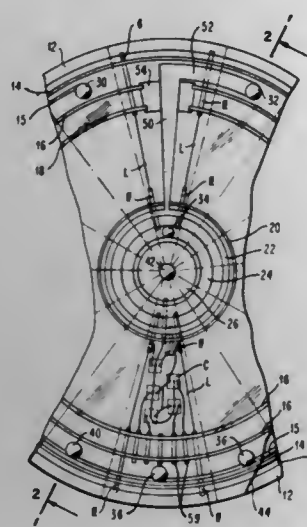
U.S. Cl. 317—234 R

12 Claims

A semiconductor integrated circuit masterslice comprising semiconductor substrate having a center of origin and arcuate or annular conductive lines thereon. A plurality of cell groups



are symmetrically located on the semiconductor substrate with respect to radial lines extending from the center of origin



so as to significantly increase packing densities compared to that available with orthogonally or randomly disposed monolithic integrated circuit structures.

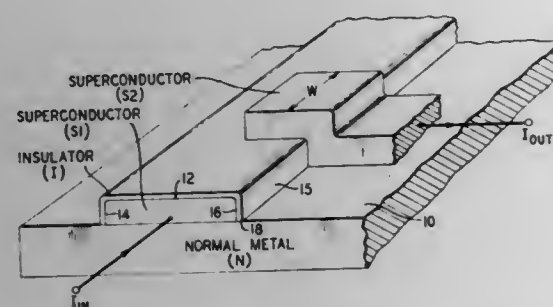
3,751,721

## SNS SUPERCURRENT DEVICE

Theodore Alan Fulton, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.  
Filed Dec. 22, 1971, Ser. No. 210,841  
Int. Cl. H011

U.S. Cl. 317-234

7 Claims



An improved SNS supercurrent device comprises a pair of superconductive regions, a relatively thick insulative region contiguous with and separating the superconductive regions from one another, and a normal metal region contiguous with both superconductive regions. The insulative region is of sufficient thickness to prevent substantial supercurrent tunneling therethrough when a current source is connected between the superconductive regions. Consequently, current, following the path of least resistance, flows in a path including the normal metal region. The junction defined by the normal metal region has a significantly reduced cross-sectional area which in turn means the device has lower critical supercurrents and higher resistances than heretofore attainable in SNS structures.

3,751,722

## MOS INTEGRATED CIRCUIT WITH SUBSTRATE CONTAINING SELECTIVELY FORMED RESISTIVITY REGIONS

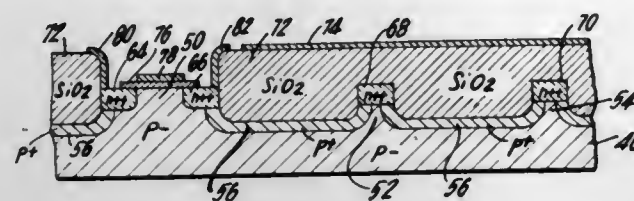
Paul Richman, St. James, N.Y., assignor to Standard Microsystems Corporation, Hauppauge, N.Y.  
Filed Apr. 30, 1971, Ser. No. 138,915  
Int. Cl. H011 19/00, 11/14

U.S. Cl. 317-235 R

1 Claim

An MOS integrated circuit including active devices and potential parasitic devices in which the threshold voltage at the active devices is relatively low, but is relatively high at the locations of the parasitic devices. One embodiment of the cir-

cuit includes a substrate and an epitaxial layer of the same polarity thereon, with the resistivity of the latter being significantly greater than that of the former. The high-resistivity epitaxial layer is present at the channel region of the active devices, but is not present at the locations of the parasitic



devices. In a second embodiment of the invention, the circuit includes a substrate of high resistivity and selectively diffused regions with doping concentration significantly greater than in the substrate. The active devices are formed in the high resistivity regions and the parasitic devices are formed in the selectively diffused regions.

3,751,723

## HOT CARRIER METAL BASE TRANSISTOR HAVING A P-TYPE EMITTER AND AN N-TYPE COLLECTOR

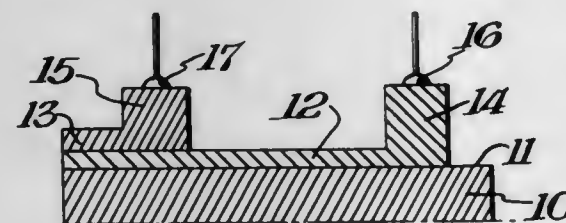
George A. Shirn, Williamstown, Mass.; Norman Carlile Miller, Shaker Heights, Ohio, and William L. Patterson, Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Mar. 1, 1972, Ser. No. 230,597

Int. Cl. H011 11/00, 15/00

U.S. Cl. 317-235 R

1 Claim



A p-type material comprising the emitter region of a metal base hot carrier transistor with n-type material comprising the collector to provide a p-metal-n hot carrier transistor. Hot holes injected through the emitter-base barrier give rise to hot electrons having sufficient energy to pass through the base-collector barrier.

3,751,724

## ENCAPSULATED ELECTRICAL COMPONENT

N. Christian McGrath, 168 Hopkinton Rd., Concord, N.H., and Roger M. Nash, Eaton Pky., Meredith, N.H.

Filed Apr. 28, 1972, Ser. No. 248,501

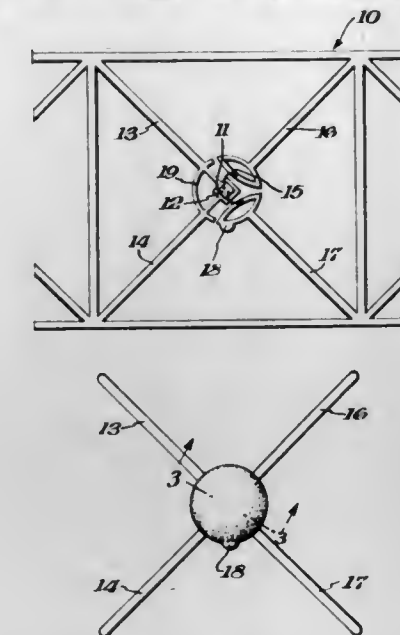
Int. Cl. H011 3/00, 5/00

U.S. Cl. 317-234 R

7 Claims

The lead frame of an electrical component has a generally circular and substantially continuous portion thereon that is indexed under a dispenser to receive a pre-metered drop of an encapsulant. The encapsulant viscosity and surface tension

are such that it flows around and under this circular portion forming a protective mass therearound that is retained in



ductive plates, and which are heated to form expanded portions holding the conductive plates in place against the base. Integral ridges extend outwardly from the face of the base to form alignment guides which facilitate assembly. A self-tapping adjustment screw is threaded directly into the molded plastic base.

3,751,726

## SEMICONDUCTOR DEVICE EMPLOYING DARLINGTON CIRCUIT

Willem Gerard Einthoven, Belle Mead, and Carl Franklin Wheatley, Jr., Somerset, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 18, 1971, Ser. No. 199,880

Int. Cl. H011 19/00

U.S. Cl. 317-235 R

9 Claims

place prior to being cured. The retained droplet thereby forms the final package shape and outline for the electrical component.

3,751,725

## TRIMMER CAPACITOR

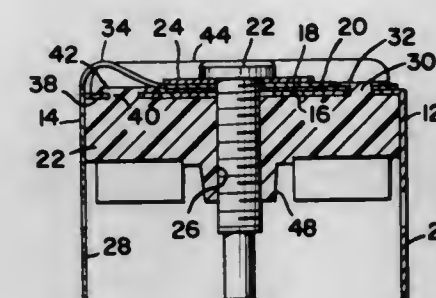
Steven Stavrou, P.O. Box 39, Collingwood, Ontario, Canada

Filed June 28, 1972, Ser. No. 267,242

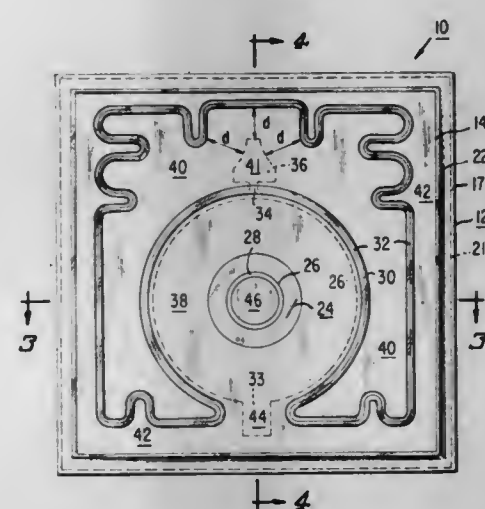
Int. Cl. H01g 5/16

U.S. Cl. 317-249 R

2 Claims



A trimmer capacitor utilizes a molded plastic base having integral projections which extend through openings in con-



A device employs two emitters in a common base region having a base-collector junction which only intersects a mesa edge of the device. A distributed resistance is defined between a base contact and a conductive layer substantially uniformly overlapping the outer periphery of one of the emitters which completely surrounds the base contact.



# DESIGNS

AUGUST 7, 1973

228,047  
JERSEY

Andrew J. N. Alexander, Port Credit, Ontario, Canada,  
assignor to Maple Leaf Gardens Limited, Toronto,  
Ontario, Canada

Filed Apr. 8, 1971, Ser. No. 132,629  
Term of patent 14 years

Int. Cl. D2—02

U.S. Cl. D2—46



228,048

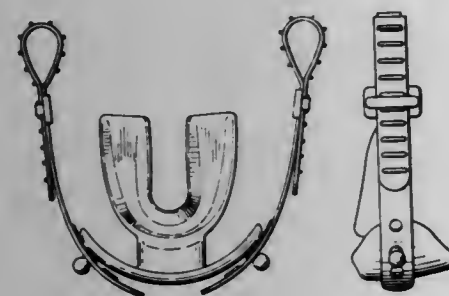
PROTECTIVE MOUTHPIECE

Glenn O. Miller, Tonawanda, N.Y., assignor to  
Shield Mfg., Inc., Buffalo, N.Y.

Original design application Feb. 9, 1970, Ser. No. 21,322.  
Divided and this application Mar. 1, 1971, Ser. No.  
120,007

Term of patent 14 years  
Int. Cl. D2—03; D24—99

U.S. Cl. D2—233



228,049

LOCK OPERATED STEREO TAPE CARTRIDGE  
DISPLAY CASE

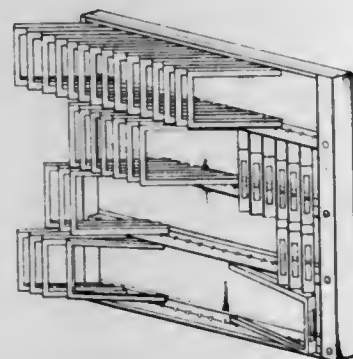
Arthur G. Anthonsen, 83 Huntington Bay Road, Hunt-  
ington, N.Y. 11943; and Benjamin Rubenstein, 10  
Cedar Road; and Samuel C. Schechter, 3 Orient Court,  
both of Westbury, N.Y. 11590

Filed June 23, 1971, Ser. No. 156,164

Term of patent 14 years

Int. Cl. D6—04

U.S. Cl. D6—130



228,050

INFLATABLE CAR BED

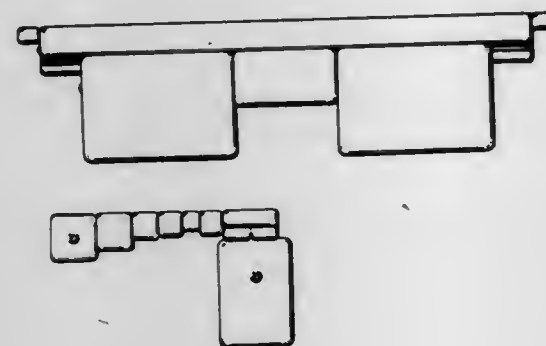
Melvin L. Wieland, 3507 NE. 54th St.,  
Kansas City, Mo. 64119

Filed July 8, 1971, Ser. No. 160,981

Term of patent 14 years

Int. Cl. D6—01

U.S. Cl. D6—201



AUGUST 7, 1973

U. S. PATENT OFFICE

377

228,051

STUDY CARREL

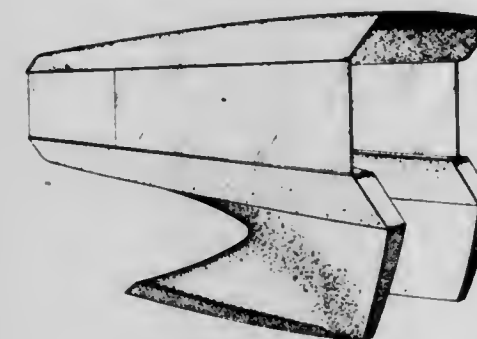
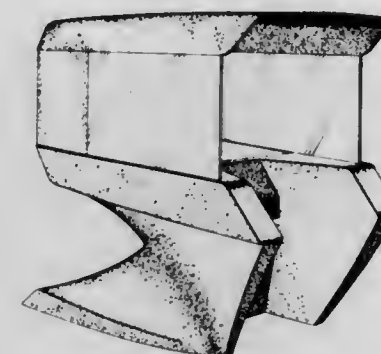
Calvin Masaru Shimaoka, Harbor City, and Anton A.  
Sixt, Laguna Hills, Calif., assignors to Carter Indus-  
tries, Inc., Santa Ana, Calif.

Filed Dec. 3, 1971, Ser. No. 204,785

Term of patent 14 years

Int. Cl. D6—04

U.S. Cl. D6—181



228,053

COFFEEMAKER

John E. Knox, Affenthal, near Baden-Baden, and Gerhard  
Hubner, Baden-Baden, Germany, assignors to Wigo-  
Gottlob Widmann & Sohne KG

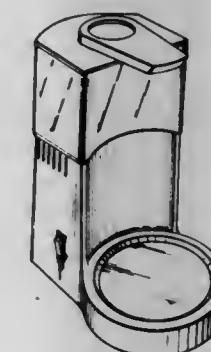
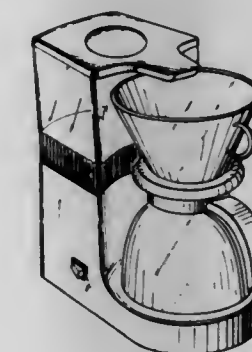
Filed June 21, 1971, Ser. No. 155,384

Claims priority, application Germany May 5, 1971

Term of patent 14 years

Int. Cl. D7—02

U.S. Cl. D7—63



228,052

NEWSPAPER HOLDING AND BUNDLING DEVICE

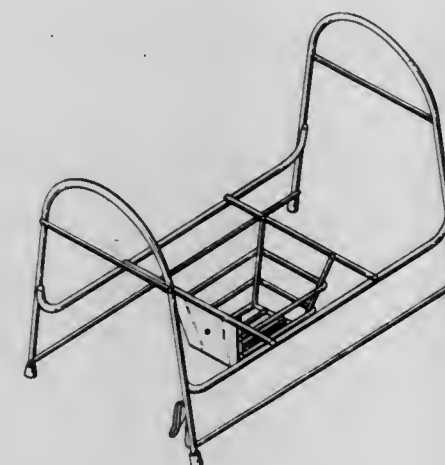
William E. Howard, West Hartford, Conn., assignor to  
Materials Handling Systems, Inc., West Hartford, Conn.

Filed Aug. 18, 1971, Ser. No. 172,955

Term of patent 14 years

Int. Cl. D6—04

U.S. Cl. D6—184



228,054

NUTCRACKER

Carl R. Craft, Kempner, Tex. 76539

Filed July 10, 1972, Ser. No. 270,090

Term of patent 14 years

Int. Cl. D7—04

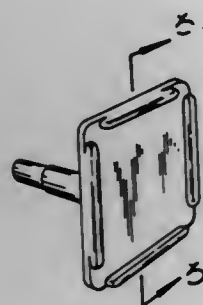
U.S. Cl. D7—98





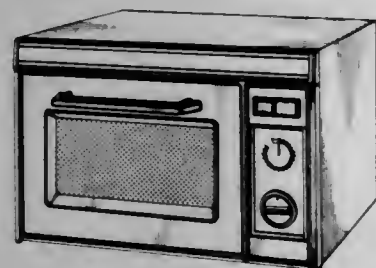
**228,055**  
**BUTTER SPREADER**  
 Joseph T. Eisenhoffer, 5418 Devonshire,  
 St. Louis, Mo. 63109  
 Filed Dec. 8, 1971, Ser. No. 206,242  
 Term of patent 14 years  
 Int. Cl. D7—04

U.S. Cl. D7—99



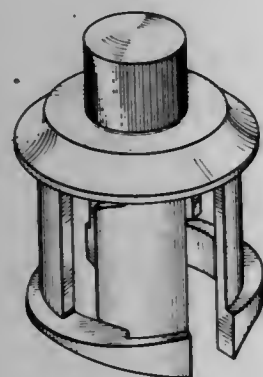
**228,056**  
**MICROWAVE OVEN**  
 Akiyoshi Koshiro and Koshiaki Kawata, Nara, Japan,  
 assignors to Matsushita Electric Industrial Co., Ltd.,  
 Osaka, Japan  
 Filed Oct. 18, 1971, Ser. No. 190,428  
 Claims priority, application Japan Apr. 19, 1971  
 Term of patent 14 years  
 Int. Cl. D7—02

U.S. Cl. D7—128



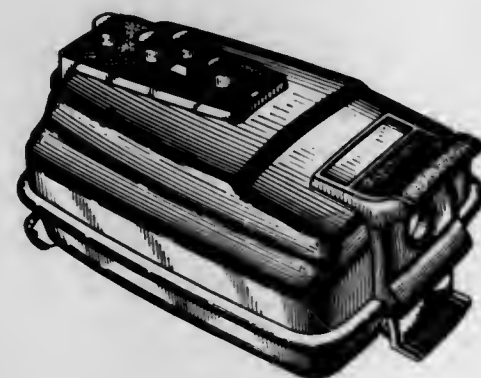
**228,057**  
**VALVE FOR COOKING UTENSIL LID**  
 Frank E. Stepanek, Lagrange Park, Ill., assignor to Amer-  
 ican Home Products Corporation, New York, N.Y.  
 Filed Dec. 13, 1971, Ser. No. 207,720  
 Term of patent 14 years  
 Int. Cl. D7—02

U.S. Cl. D7—129



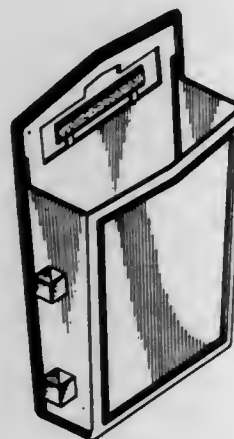
**228,058**  
**SUCTION CLEANER**  
 Samuel E. Hobullin, Lexington, Ill., assignor to National  
 Union Electric Corporation, Greenwich, Conn.  
 Filed Nov. 15, 1971, Ser. No. 199,082  
 Term of patent 14 years  
 Int. Cl. D15—05

U.S. Cl. D7—168



**228,059**  
**LITTER BOX**  
 Cecil B. Woofter, Newton, Iowa, assignor to  
 The Vernon Company  
 Filed Aug. 31, 1971, Ser. No. 176,794  
 Term of patent 14 years  
 Int. Cl. D7—06

U.S. Cl. D7—193



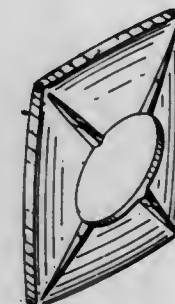
**228,060**  
**COMBINED DOOR HANDLE AND LOCK**  
**HOUSING SET**  
 William J. Horgan, Jr., Pittsburgh, Pa., assignor to  
 Blumcraft of Pittsburgh, Pittsburgh, Pa.  
 Original design application June 1, 1970, Ser. No. 23,211.  
 Divided and this application June 30, 1971, Ser. No.  
 158,498

Term of patent 14 years  
 Int. Cl. D8—06  
 U.S. Cl. D8—138



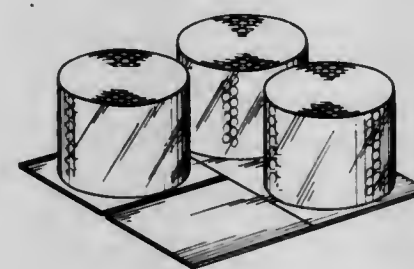
**228,061**  
**DOOR LOCK ESCUTCHEON**  
 Henry Kartarik, White Bear Lake, Minn., assignor to  
 Ideal Security Hardware Corporation, St. Paul, Minn.  
 Filed Aug. 30, 1971, Ser. No. 176,448  
 Term of patent 14 years  
 Int. Cl. D8

U.S. Cl. D8—179



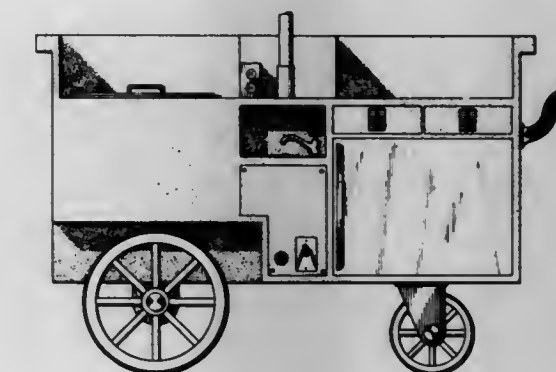
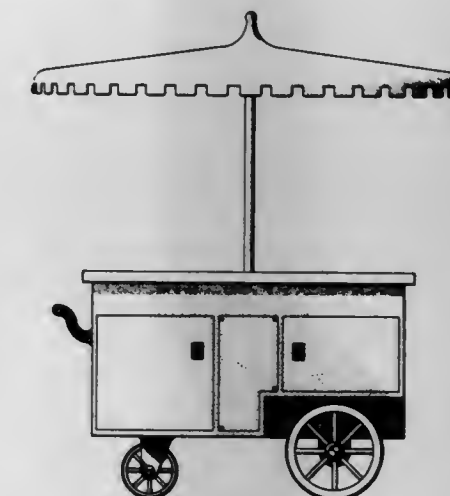
**228,062**  
**PACKAGING CUSHION OR THE LIKE**  
 William R. Armstrong, Fair Lawn, N.J., assignor to  
 Sealed Air Corporation, Fair Lawn, N.J.  
 Filed Feb. 17, 1971, Ser. No. 116,301  
 Term of patent 14 years  
 Int. Cl. D9—99

U.S. Cl. D9—294



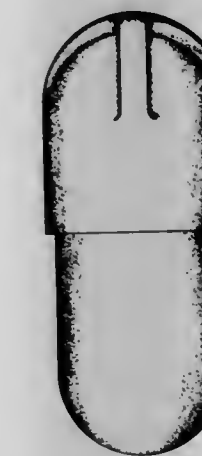
**228,063**  
**FOOD CART**  
 Ira A. Keeshin and Ronald J. Kruse, Cincinnati, Ohio,  
 assignors to Federated Department Stores, Inc., Cin-  
 cinnati, Ohio  
 Filed July 28, 1971, Ser. No. 167,088  
 Term of patent 14 years  
 Int. Cl. D12—02

U.S. Cl. D14—3 M



**228,064**  
**CAPSULE**  
 Kenneth N. Larsen, Southfield, Mich., assignor to Parke,  
 Davis & Company, Detroit, Mich.  
 Filed Aug. 26, 1971, Ser. No. 175,420  
 Term of patent 14 years  
 Int. Cl. D28—01

U.S. Cl. D16—3



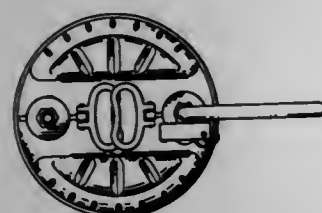
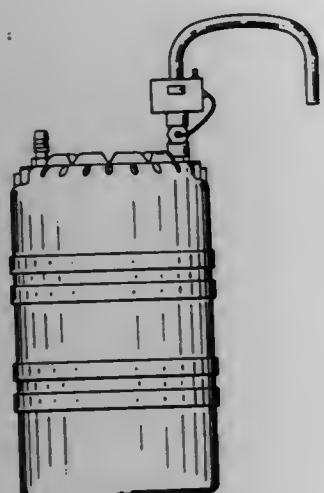


228,065

**WATER CONDITIONER**

Daniel B. Comroe, St. Paul, Minn., assignor to  
Ecodyne Corporation  
Filed June 4, 1971, Ser. No. 143,712  
Term of patent 14 years  
Int. Cl. D23—01

U.S. Cl. D23—3

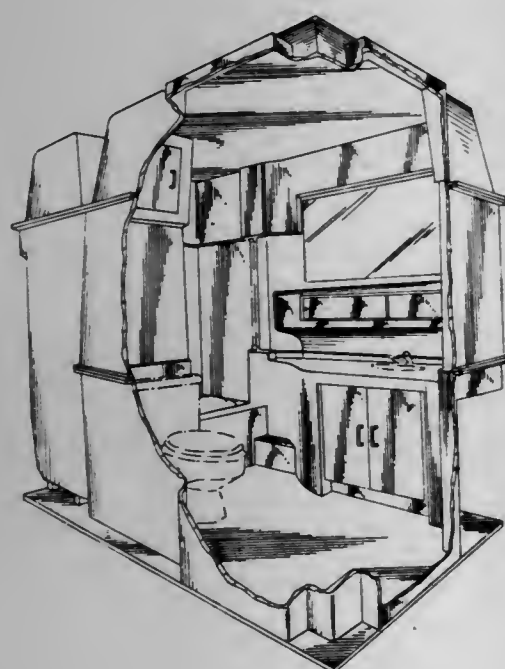


228,066

**MODULAR BATHROOM**

Edmund F. Humphries, Jr., Tulls Creek Road,  
Moyock, N.C. 27958  
Filed May 14, 1971, Ser. No. 143,717  
Term of patent 14 years  
Int. Cl. D23—02

U.S. Cl. D23—49

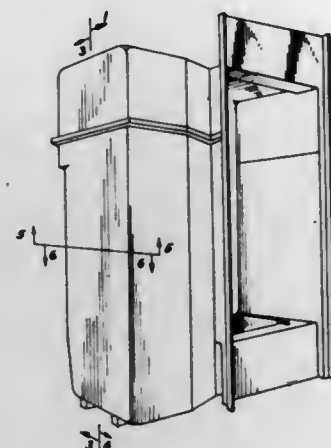


228,067

**COMBINED BATHTUB AND SHOWER UNIT**

Edmund F. Humphries, Jr., Tulls Creek Road,  
Moyock, N.C. 27958  
Filed May 21, 1971, Ser. No. 146,002  
Term of patent 14 years  
Int. Cl. D23—02

U.S. Cl. D23—49



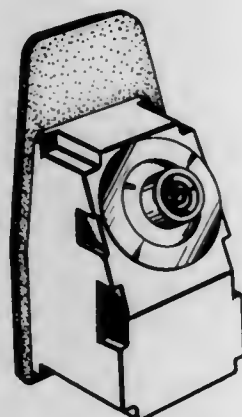
228,068

**BLOWER**

Anthony C. Lاراia, Torrington, and Jan Najman, Terry-  
ville, Conn., assignors to Torin Corporation, Torrington,  
Conn.

Filed Sept. 20, 1971, Ser. No. 182,306  
Term of patent 14 years  
Int. Cl. D23—03

U.S. Cl. D23—74



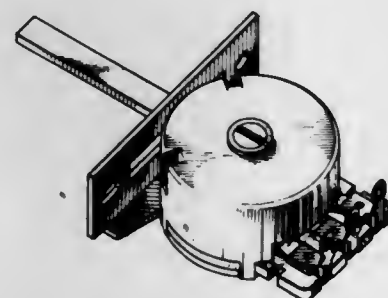
228,069

**VARIABLE RESISTOR**

Shunzo Oka, Hirakata, and Akitoshi Miyashita, Suita,  
Japan, assignors to Matsushita Electric Industrial Co.,  
Ltd., Osaka, Japan

Filed July 2, 1971, Ser. No. 159,585  
Term of patent 14 years  
Int. Cl. D13—03

U.S. Cl. D26—1 D



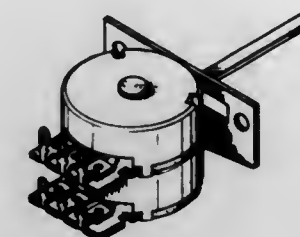
228,070

**DUPLEX VARIABLE RESISTOR**

Shunzo Oka, Hirakata, and Akitoshi Miyashita, Suita,  
Japan, assignors to Matsushita Electric Industrial Co.,  
Ltd., Osaka, Japan

Filed July 2, 1971, Ser. No. 159,587  
Term of patent 14 years  
Int. Cl. D13—03

U.S. Cl. D26—1 D



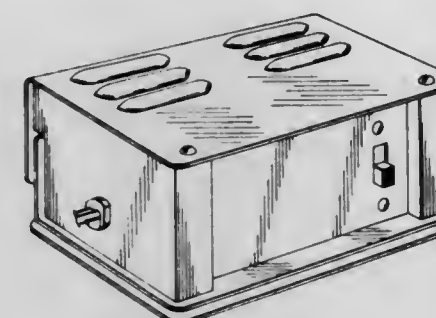
228,071

**BATTERY CHARGER**

Daniel A. Berkoff, Sherman Oaks, Calif., assignor to  
Orion Industries, Inc.

Filed Nov. 12, 1971, Ser. No. 198,501  
Term of patent 14 years  
Int. Cl. D13—02

U.S. Cl. D26—15 B



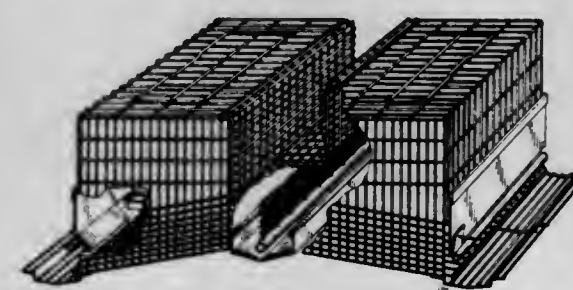
228,072

**POULTRY CAGE**

Gerald L. Kitson, 9709 Belding Road,  
Rockford, Mich. 49341

Filed Mar. 5, 1971, Ser. No. 121,629  
Term of patent 14 years  
Int. Cl. D30—02

U.S. Cl. D30—1



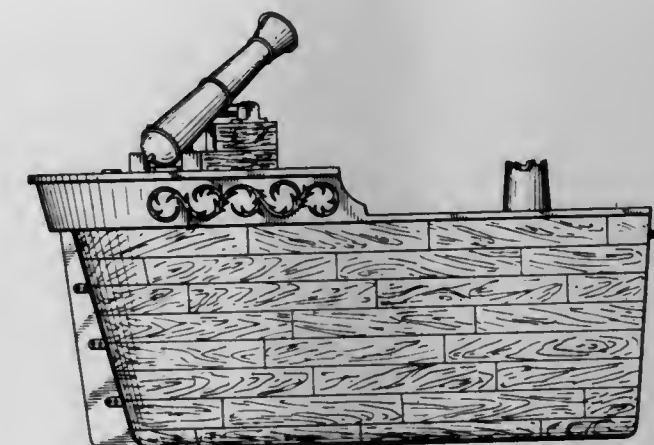
228,073

**FILTER FOR HOME AQUARIUM**

David D. Lovitz, Short Hills, N.J., assignor to Sternco  
Industries, Inc., Harrison, N.J.

Filed Nov. 19, 1971, Ser. No. 200,648  
Term of patent 14 years  
Int. Cl. D30—02

U.S. Cl. D30—9



228,074

**TOY FINGER PUPPET**

David S. Matteson, 1501 E. Broward Blvd., Apt. 704,  
Fort Lauderdale, Fla. 33301

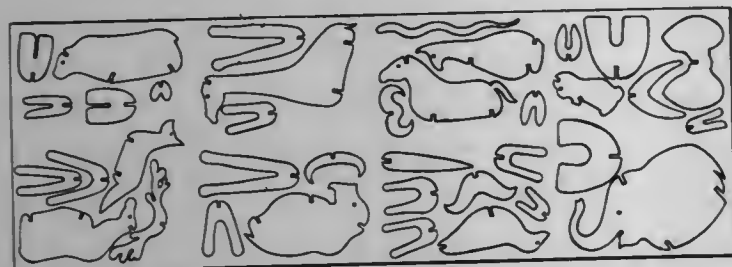
Filed Aug. 6, 1971, Ser. No. 122,649  
Term of patent 14 years  
Int. Cl. D21—01

U.S. Cl. D34—2 R

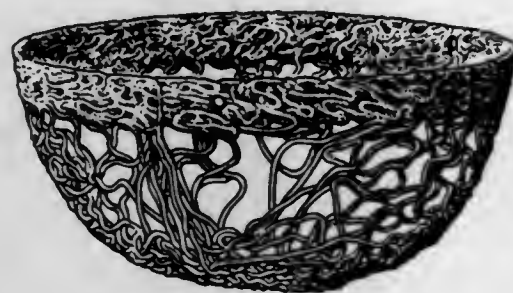




**228,075**  
**ANIMAL FIGURE PUNCH-OUT BOARD**  
 OR SIMILAR ARTICLE  
 Harry Zelenko, 150 E. 61st St.,  
 New York, N.Y. 10021  
 Term of patent 3½ years  
 Filed May 6, 1971, Ser. No. 141,097  
 Int. Cl. D21—01  
 U.S. Cl. D34—2 R



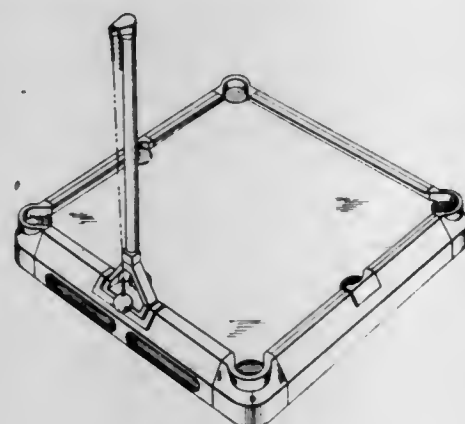
**228,078**  
**HANGING BASKET**  
 Russel Garnet Myles, 1770B Albion Road,  
 Rexdale, Ontario, Canada  
 Continuation-in-part of abandoned design application Ser.  
 No. 26,696, Dec. 29, 1970. This application Oct. 8,  
 1971, Ser. No. 187,939  
 Term of patent 7 years  
 Int. Cl. D11—02  
 U.S. Cl. D35—3 C



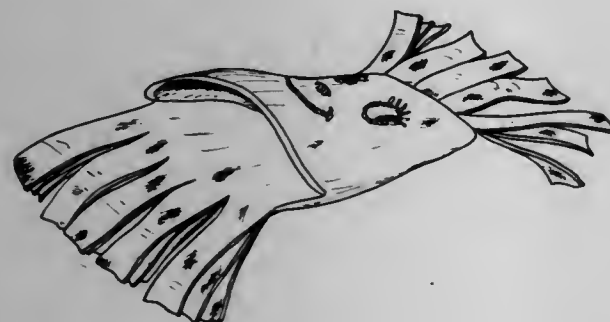
**228,076**  
**GAMES BOARD FOR A GAME**  
 Thomas Kirkland Robertson, Bosham Hoe, England, as-  
 signor to Premium Publications Limited, London, Eng-  
 land  
 Filed Aug. 26, 1971, Ser. No. 175,421  
 Term of patent 14 years  
 Int. Cl. D21—01  
 U.S. Cl. D34—5 TT



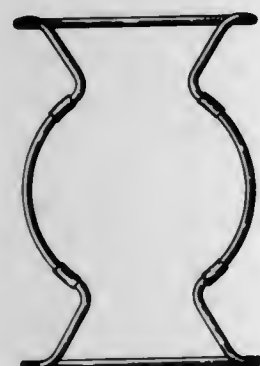
**228,079**  
**TETHERED BALL GAME BOARD**  
 Donald Huffman, Montreal, Quebec, Canada, assignor to  
 Coleco Industries, Inc., Hartford, Conn.  
 Filed Sept. 9, 1971, Ser. No. 179,265  
 Term of patent 14 years  
 Int. Cl. D21—01  
 U.S. Cl. D34—5 BB



**228,077**  
**TOY COMFORTER OR THE LIKE**  
 Norma E. MacKenzie, 425 Sussex Drive,  
 Ottawa, Ontario, Canada  
 Filed Oct. 15, 1971, Ser. No. 189,810  
 Term of patent 14 years  
 Int. Cl. D21—01  
 U.S. Cl. D34—4 R



**228,080**  
**BOWLING BALL RACK**  
 Thomas Kelly Ferguson, Eminence, Ky., assignor to  
 The Brunswick Corporation  
 Filed Apr. 27, 1971, Ser. No. 138,014  
 Term of patent 14 years  
 Int. Cl. D21—02  
 U.S. Cl. D34—5 DD



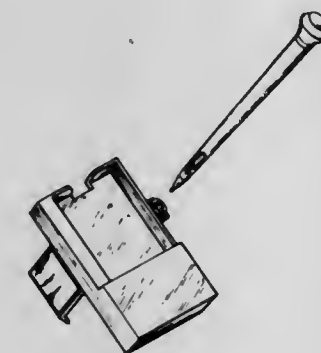
**228,081**  
**BALANCING BIRD TOY**  
 Alexander L. Baksai, 11125 Runnymede,  
 Sun Valley, Calif. 91352  
 Filed Nov. 22, 1971, Ser. No. 201,264  
 Term of patent 14 years  
 Int. Cl. D21—01  
 U.S. Cl. D34—15 N



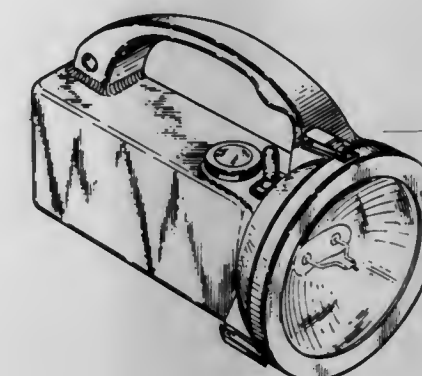
**228,082**  
**FRICTION GRIP FASTENER FOR**  
**ARTICLES OF JEWELRY**  
 John Bertil Waller, Barrington, R.I., assignor to A. E.  
 Waller Company, Inc., Providence, R.I.  
 Filed June 16, 1971, Ser. No. 153,928  
 Term of patent 14 years  
 Int. Cl. D11—01  
 U.S. Cl. D45—9



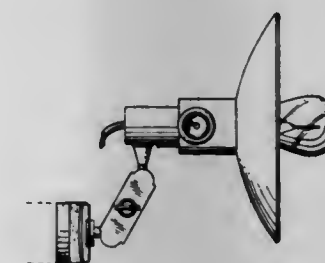
**228,083**  
**COMBINED MEMO PAD HOLDER, WRITING**  
**INSTRUMENT AND HOLDER THEREFOR**  
 Roland Longarzo, Valley Stream, N.Y., assignor to  
 Consolidated Foods Corporation, Chicago, Ill.  
 Filed Dec. 2, 1971, Ser. No. 204,398  
 Term of patent 14 years  
 Int. Cl. D19—02  
 U.S. Cl. D45—9 A



**228,084**  
**UNDERWATER LIGHT**  
 Allan Thomas Beer, Redwood City, Calif., assignor to  
 Darrell-Allan Corporation, Belmont, Calif.  
 Filed Jan. 17, 1972, Ser. No. 218,654  
 Term of patent 14 years  
 Int. Cl. D26—02  
 U.S. Cl. D48—24 R



**228,085**  
**PHYSICIAN'S SPOTLIGHT**  
 Michael N. Foster, 1409 Ruth Ave.,  
 Arlington, Tex. 76010  
 Filed Dec. 10, 1970, Ser. No. 26,398  
 Term of patent 14 years  
 Int. Cl. D26—99  
 U.S. Cl. D48—20 H



**228,086**  
**CIGARETTE LIGHTER**  
 Sadao Yoshinaga, Tokyo, Japan, assignor to Yoshinaga  
 Prince Co., Ltd., Tokyo, Japan  
 Filed Sept. 11, 1972, Ser. No. 287,691  
 Claims priority, application Germany, Apr. 27, 1972  
 Term of patent 14 years  
 Int. Cl. D27—05  
 U.S. Cl. D48—27 R





228,087

**SCRUBBING MACHINE**

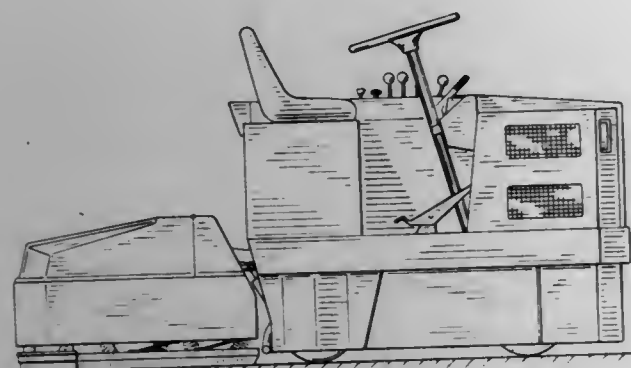
Joseph G. Kasper, Minneapolis, and John N. Polivka, Hopkins, Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed June 28, 1971, Ser. No. 157,784

Term of patent 14 years

Int. Cl. D15—05

U.S. Cl. D49—9.1



228,088

**DIFFERENTIAL PRESSURE GAUGE**

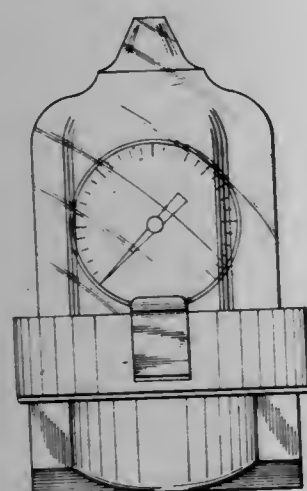
John Vander Horst, Lakewood, Colo., assignor to Wilkerson Corporation, Englewood, Colo.

Filed June 21, 1971, Ser. No. 155,395

Term of patent 14 years

Int. Cl. D10—04

U.S. Cl. D52—6 R



228,089

**ROTARY TABLE-TYPE MILLING MACHINE**

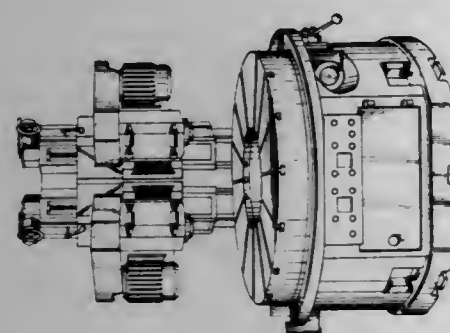
Sadayoshi Sakurai, 830 Sukenobu-cho, Hamamatsu, Japan

Filed Oct. 15, 1971, Ser. No. 189,799

Term of patent 14 years

Int. Cl. D15—09

U.S. Cl. D54—14 A



228,090

**FEED IDLER CORNER**

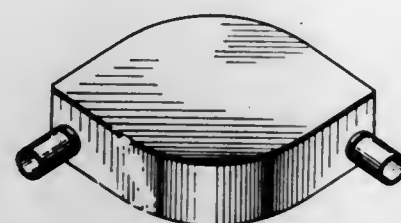
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341

Filed July 6, 1971, Ser. No. 160,262

Term of patent 14 years

Int. Cl. D15—99

U.S. Cl. D55—1 C



228,091

**KNOCKDOWN POTTER'S WHEEL**

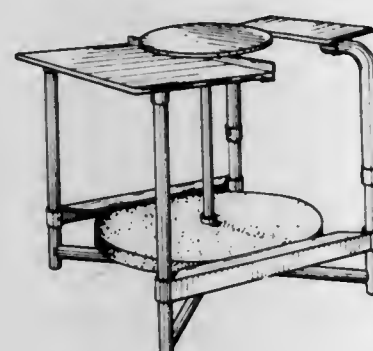
Paul E. Soldner, P.O. Box 90, Aspen, Colo. 81611

Filed Aug. 9, 1971, Ser. No. 170,400

Term of patent 14 years

Int. Cl. D15—05

U.S. Cl. D55—1 R



228,092

**ASPHALT MILL**

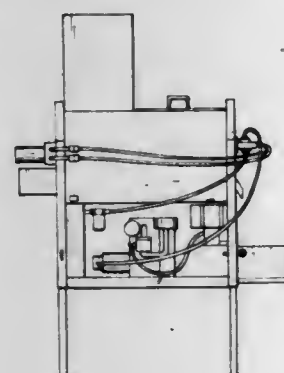
Sylvan G. Stepp, North Branch, Minn. 55056

Filed Dec. 17, 1971, Ser. No. 209,506

Term of patent 14 years

Int. Cl. D15—99

U.S. Cl. D55—1 R



228,093

**CONTACT LENS CASE**

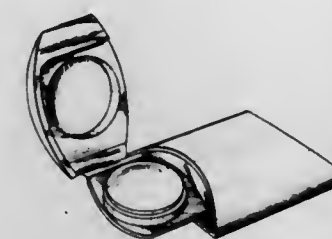
Robert E. Middleton, Englewood, and Gary L. Switzer, Boulder, Colo., assignors to R & F Products, Inc., Englewood, Colo.

Filed July 30, 1971, Ser. No. 167,887

Term of patent 14 years

Int. Cl. D16—06

U.S. Cl. D57—1 B



228,094

**COMBINED MOTION PICTURE PROJECTOR AND CARRYING CASE OR SIMILAR ARTICLE**

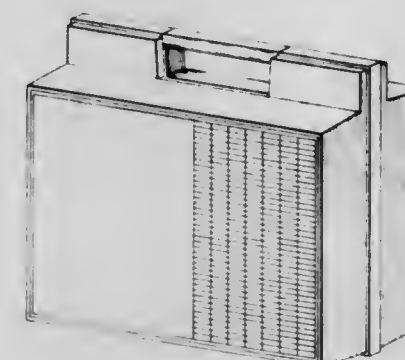
Robert E. Bourke, Weston, Conn., assignor to GAF Corporation, New York, N.Y.

Filed Nov. 1, 1971, Ser. No. 194,784

Term of patent 14 years

Int. Cl. D16—02

U.S. Cl. D61—1 K



228,095

**COMBINED BODY REST AND FOOT SUPPORT UNIT**

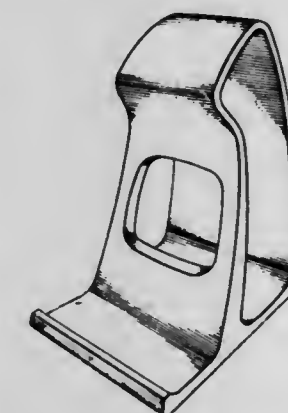
Fred A. Schmitt, Nutley, N.J., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed Sept. 2, 1970, Ser. No. 24,815

Term of patent 14 years

Int. Cl. D6—02

U.S. Cl. D6—64



228,096

**BULK MATERIALS CAR BODY**

Jack Hickman, 5766 Fair Oaks Blvd., Carmichael, Calif. 95608

Filed Mar. 1, 1971, Ser. No. 119,994

Term of patent 14 years

Int. Cl. D12—03

U.S. Cl. D66—1



228,097

**SEWING MACHINE EDGE GUIDE ATTACHMENT**

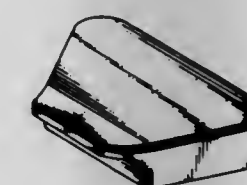
Lawrence M. Dunne, Massapequa Park, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Nov. 23, 1971, Ser. No. 201,610

Term of patent 14 years

Int. Cl. D15—06

U.S. Cl. D70—2 B



228,098

**LID FOR A BASKET PURSE OR THE LIKE**

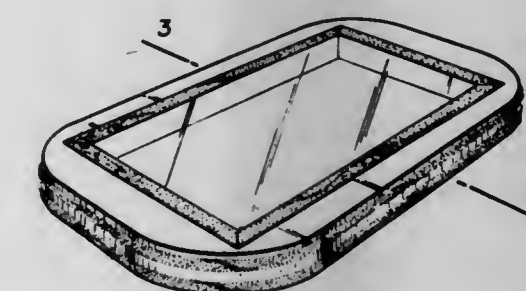
Patricia A. Simmons, 16125 Mack Ave., Grosse Pointe, Mich. 48224

Filed June 21, 1971, Ser. No. 155,396

Term of patent 14 years

Int. Cl. D3—01

U.S. Cl. D87—3 F



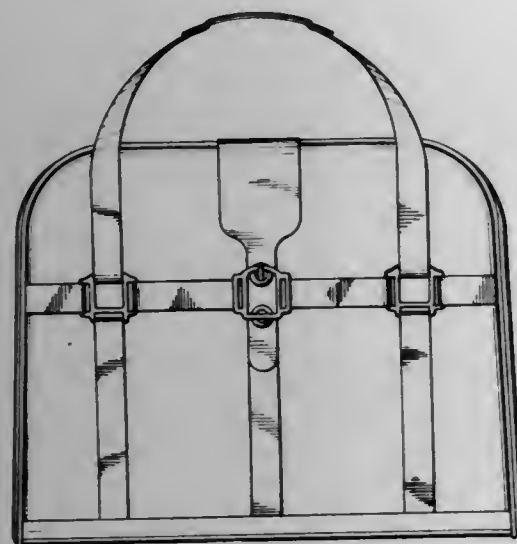


228,099

**LUGGAGE BAG**

Leslie Marshall, 15 Pine St., Woodmere, N.Y. 11598  
Original design application Jan. 28, 1971, Ser. No. 21,123,  
now Patent No. 221,318, dated July 27, 1971. Divided  
and this application July 15, 1971, Ser. No. 163,116  
Term of patent 14 years  
Int. Cl. D3—01

U.S. Cl. D87—5 G

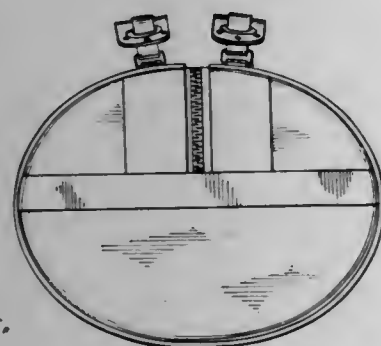
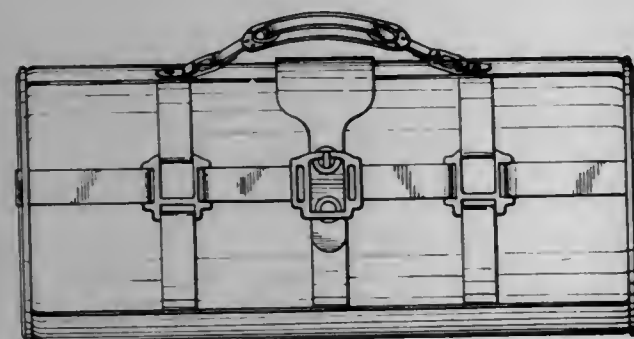


228,100

**LUGGAGE BAG**

Leslie Marshall, 15 Pine St., Woodmere, N.Y. 11598  
Original design application Jan. 28, 1970, Ser. No. 21,123,  
now Patent No. 221,318, dated July 27, 1971. Divided  
and this application July 16, 1971, Ser. No. 163,564  
Term of patent 14 years  
Int. Cl. D3—01

U.S. Cl. D87—5 G



228,101

**CARRYING CASE FOR A FLAT FOLDED UMBRELLA**

Hans Hoffmann, Essen, Germany, assignor to Telesco  
Brophey Limited, Quebec, Canada  
Filed Feb. 18, 1972, Ser. No. 227,697  
Claims priority, application Germany Aug. 20, 1971  
Term of patent 14 years  
Int. Cl. D3—07

U.S. Cl. D87—1 R

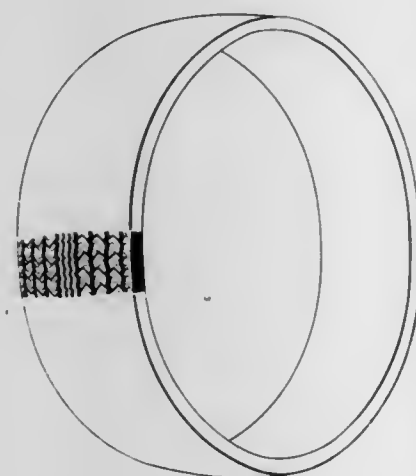


228,102

**PNEUMATIC TIRE TREAD AND BUTTRESS COMBINATION**

Arthur C. Blankenship, Detroit, Mich., assignor to  
Uniroyal, Inc., New York, N.Y.  
Filed Nov. 23, 1971, Ser. No. 201,630  
Term of patent 14 years  
Int. Cl. D12—15

U.S. Cl. D90—20 R

**LIST OF PATENTEEES**

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF AUGUST, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

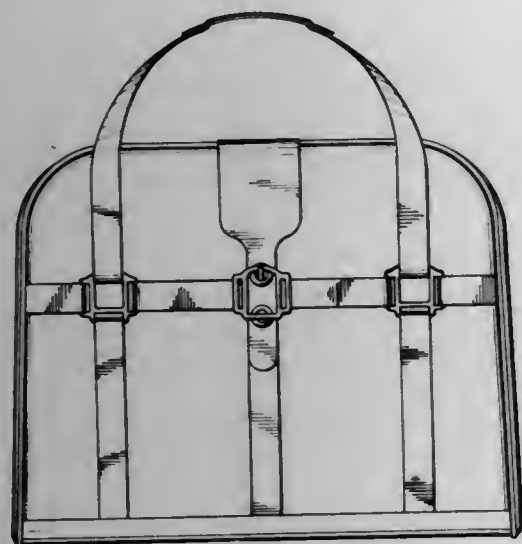
- Abex Corporation: See—  
Gilbert, Richard H., 3,751,330.  
Kubilos, Charles A., 3,750,532.
- Ace General Corporation: See—  
Brydolf, Robert; and Kellems, Kenneth K., 3,750,337.
- Acosta, William A. Filter tube. 3,750,889, Cl. 210-497.000.
- Acuff, Kenneth L.: See—  
Bauerlein, Carl; Wertz, Linda M.; and Acuff, Kenneth L., 3,750,908.
- Adams, Alan D., to Atlas Chemical Industries, Inc. Sludge dispersant compositions. 3,751,236, Cl. 44-66.000.
- Adams, Alan Douglas, to Atlas Chemical Industries, Inc. Fuel oil sludge dispersant composition. 3,751,234, Cl. 44-66.000.
- Addressograph Multigraph Corporation: See—  
Wernikoff, Robert E.; Van Horn, Joseph M.; and Mignone, Albert E., 3,751,582.
- Addressograph-Multigraph Corporation: See—  
Janik, Walter E., 3,750,569.
- Printy, Helen C.; and Baltazzi, Evan S., 3,751,246.
- Adelizzi, Richard S.; and Laurelli, James A., to Westinghouse Electric Corporation. Static seal structure. 3,750,398, Cl. 60-39.370.
- Adolph, Horst G.; and Kamlet, Mortimer J., to United States of America, Navy. Bis (2-fluoro-2,2-dinitroethyl) nitrosamine. 3,751,476, Cl. 260-583.000.
- Advance Transformer Company: See—  
Fisher, Clarence E., 3,751,574.
- Adwest Engineering Limited: See—  
Jenvey, Leslie Richard; and Millard, Barry John, 3,750,835.
- Aerojet-General Corporation: See—  
Vander Wall, Eugene M.; and Lucas, James M., 3,751,311.
- Witz, Samuel, 3,751,340.
- Aerosonic Corporation: See—  
Pollack, Dale, 3,750,474.
- Aerotherm Corporation: See—  
Husome, Robert G.; and Sweet, John R., III, 3,750,881.
- Affiliated Hospital Products, Inc.: See—  
Juster, Robert W., 3,750,875.
- Aga AB: See—  
Haselmann, Severin, 3,750,958.
- Agee, Charles W.: See—  
Kinley, John C.; Agee, Charles W.; and Fowler, Charles N., 3,750,748.
- Agfa-Gevaert AG: See—  
Engelsmann, Dieter; and Karl, Horst, 3,750,548.
- Putscher, Johann; Gersch, Josef; Wiedemann, Otto; and Winkler, Alfred, 3,750,542.
- Agfa-Gevaert Aktiengesellschaft: See—  
Pfeifer, Josef; Hofmann, Wilfried; and Dietrich, Karl-Heinz, 3,750,553.
- Szostak, Roland; and Krueger, Wilm, 3,751,156.
- Agustein, Gustav: See—  
Ruckert, Hans; Kramer, Heinz; and Agustein, Gustav, 3,751,285.
- Aida, Takemi: See—  
Inose, Fumiyuki; Takahashi, Masahiro; and Aida, Takemi, 3,751,613.
- Air Guard Inc.: See—  
Duke, Douglas Roy; and Pearson, Asa M., 3,750,556.
- Air Logistics Corporation: See—  
Schirtzinger, Joseph F., 3,750,723.
- Air-O-Matic Power Steer Corporation: See—  
Kristof, John J., 3,750,836.
- Aisin Seiki Kabushiki Kaisha: See—  
Hayashi, Masaharu, 3,751,181.
- Ajax Hardward Manufacturing Corporation: See—  
Read, George, 3,750,993.
- AKG Akustische u. Kino-Gerate Gesellschaft: See—  
Weingartner, Bernhard, 3,751,608.
- Akin, Cavit, to Standard Oil Company. Process for texturizing microbial cells by induced cell leakage. 3,751,260, Cl. 99-14.000.
- Akiyama, Hideaki, to Kabushiki Kaisha Ricoh. Exposure control device for camera. 3,750,544, Cl. 95-10.000.
- Akkerman, Allardus A., to Domtar Limited. Carton. 3,750,935, Cl. 229-52.000.
- Aktiebolaget Arboga Mekaniska Verkstad: See—  
Rabe, Karl Lars Gunnar; and Hanaeus, Karl Sune Ingemar, 3,750,449.
- Aktiebolaget Bofors: See—  
Johansson, Bengt Henri, 3,751,586.
- Simmons, Bjorn Herman Olof, 3,750,577.
- Aktiengesellschaft Brown, Boveri & Cie: See—  
Bellati, Hans; Huber, Hans; and Rutti, Willi, 3,751,119.
- Niederer, Adolf, 3,751,619.
- Albee Homes, Inc.: See—  
Drescher, Warren F., 3,750,594.
- Albers, Walter A., Jr.; and Swets, Don E., to General Motors Corporation. Abrasive composition of tetragonal germanium dioxide. 3,751,237, Cl. 51-309.000.
- Alcan Research and Development, Limited: See—  
McLeod, Melvin Elliott, 3,751,243.
- Alco Standard Corporation: See—  
Huebscher, David A., 3,751,305.
- Aldrich Chemical Company Inc.: See—  
Hopps, Harvey B.; Jackman, Dennis; and Biel, John H., 3,751,390.
- Alexander, Stephen H., to Tosco-Lion, Inc. Method of treating asphalt. 3,751,278, Cl. 106-273.000.
- Alexander, William M.; and Stancik, Lawrence J. Method and apparatus for towing trailers. 3,751,073, Cl. 280-482.000.
- Alfa-Laval AB: See—  
Nilsson, Vilgot Raymond, 3,750,940.
- Alfrey, Turner, Jr.; Behr, Raymond Douglas; and Chisholm, Douglas Stewart, to Dow Chemical Company, The. Solidifying a thin layer of metal on plastic film. 3,751,288, Cl. 117-114.000.
- Alinder, Gilbert L.: See—  
Anderson, Lloyd E.; Alinder, Gilbert L.; and Thompson, Donlin, 3,750,811.
- Allegri, Theodore Henry; Chelin, Charles R.; Evans, Dafydo W.; and Thompson, Norman D., to Twomotor Corporation. Expandable top-handling container attachment. 3,750,814, Cl. 214-621.000.
- Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, to American Cyanamid Company. 3-(2-(4-Phenyl-1-piperazinyl)ethyl)indolines. 3,751,416, Cl. 260-268.000.
- Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, to American Cyanamid Company. 1-Acyl-3-(2-(4-phenyl-1-piperazinyl)ethyl)indolines. 3,751,417, Cl. 260-268.000.
- Allen-Bradley Company: See—  
Struger, Odo J., 3,751,680.
- Allied Breweries (UK): See—  
Hall, Ronald David, 3,751,263.
- Allied Chemical Corporation: See—  
Kraljic, John; Hartford, Winslow H.; and Good, Millard F., 3,751,347.
- Ku, Yuoh; and Simon, Paul W., 3,751,262.
- Oxenrider, Bryce C.; Woolf, Cyril; and Beyleveld, Wilhelmus M., 3,751,469.
- Allied Plastics Company: See—  
Crane, Walton B., 3,750,936.
- Allis-Chalmers Corporation: See—  
Rossi, Eugene F., 3,751,220.
- Allmanna Svenska Elektriska Aktiebolaget: See—  
Nilsson, Jan, 3,750,264.
- Allstar Verbrauchsgueter GmbH & Co., KG.: See—  
Krusche, Kurt R., 3,750,224.
- Allsup, John R., Sr. Variable speed power transmission. 3,750,493, Cl. 74-720.000.
- Alm, Karl Olof: See—  
Ljungberg, Stellan; and Alm, Karl Olof, 3,751,382.
- Altamil Corporation: See—  
Norman, Noah M., 3,751,105.
- Aluminium Foils Limited: See—  
Kay, Albert Ernest; and Clark, Arthur Wellesley Stewart, 3,750,275.
- Aluminum Company of America: See—  
Binger, Wayne W.; Zelly, Walter O.; Hoch, Fred R.; and Dickerson, Paul B., 3,751,626.
- Schultz, Fred R., 3,750,606.
- Alvey, Inc.: See—  
Myles, Charles E., 3,751,095.
- Amann, August: See—  
Osieka, Hans; Koenig, Karl Heinz; Bolz, Gerhard; and Amann, August, 3,751,425.
- Amberg, Rudolf: See—  
Heierli, Werner; and Amberg, Rudolf, 3,750,407.
- American Can Company: See—  
Peterson, James Thomas; and Shida, Mitsuzo (said Peterson assor. to), 3,751,281.
- American Cyanamid Company: See—  
Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, 3,751,416.
- Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, 3,751,417.



# 228,099 LUGGAGE BAG

Leslie Marshall, 15 Pine St., Woodmere, N.Y. 11598  
Original design application Jan. 28, 1971, Ser. No. 21,123,  
now Patent No. 221,318, dated July 27, 1971. Divided  
and this application July 15, 1971, Ser. No. 163,116  
Term of patent 14 years  
Int. Cl. D3—01

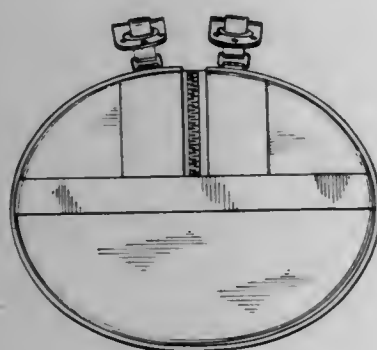
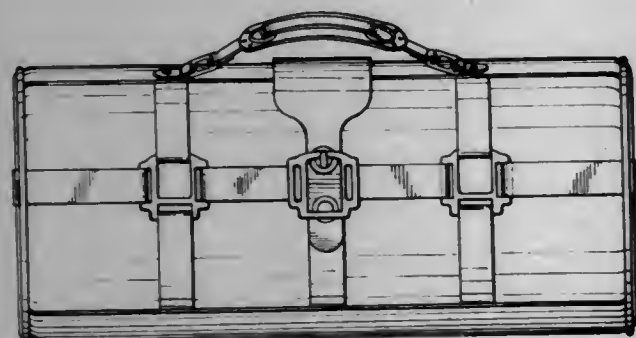
U.S. Cl. D87—5 G



# 228,100 LUGGAGE BAG

Leslie Marshall, 15 Pine St., Woodmere, N.Y. 11598  
Original design application Jan. 28, 1970, Ser. No. 21,123,  
now Patent No. 221,318, dated July 27, 1971. Divided  
and this application July 16, 1971, Ser. No. 163,564  
Term of patent 14 years  
Int. Cl. D3—01

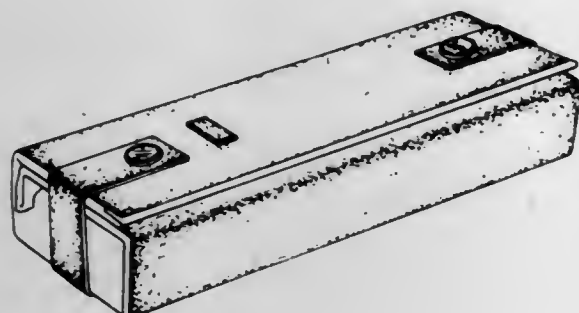
U.S. Cl. D87—5 G



# 228,101 CARRYING CASE FOR A FLAT FOLDED UMBRELLA

Hans Hoffmann, Essen, Germany, assignor to Telesco  
Brophey Limited, Quebec, Canada  
Filed Feb. 18, 1972, Ser. No. 227,697  
Claims priority, application Germany Aug. 20, 1971  
Term of patent 14 years  
Int. Cl. D3—07

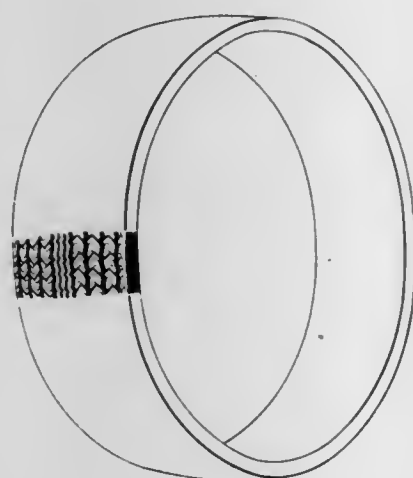
U.S. Cl. D87—1 R



# 228,102 PNEUMATIC TIRE TREAD AND BUTTRESS COMBINATION

Arthur C. Blankenship, Detroit, Mich., assignor to  
Uniroyal, Inc., New York, N.Y.  
Filed Nov. 23, 1971, Ser. No. 201,630  
Term of patent 14 years  
Int. Cl. D12—15

U.S. Cl. D90—20 R



# LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 7TH DAY OF AUGUST, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Abex Corporation: See—  
Gilbert, Richard H., 3,751,330.  
Kubilos, Charles A., 3,750,532.
- Ace General Corporation: See—  
Brydolf, Robert; and Kellems, Kenneth K., 3,750,337.
- Acosta, William A. Filter tube. 3,750,889, Cl. 210-497,000.
- Acuff, Kenneth L.: See—  
Bauerlein, Carl; Wertz, Linda M.; and Acuff, Kenneth L., 3,750,908.
- Adams, Alan D., to Atlas Chemical Industries, Inc. Sludge dispersant compositions. 3,751,236, Cl. 44-66,000.
- Adams, Alan Douglas, to Atlas Chemical Industries, Inc. Fuel oil sludge dispersant composition. 3,751,234, Cl. 44-66,000.
- Addressograph Multigraph Corporation: See—  
Wernikoff, Robert E.; Van Horn, Joseph M.; and Mignone, Albert E., 3,751,582.
- Addressograph-Multigraph Corporation: See—  
Janik, Walter E., 3,750,569.
- Printy, Helen C.; and Baltazzi, Evan S., 3,751,246.
- Adelizzi, Richard S.; and Laurelli, James A., to Westinghouse Electric Corporation. Static seal structure. 3,750,398, Cl. 60-39,370.
- Adolph, Horst G.; and Kamlet, Mortimer J., to United States of America, Navy. Bis (2-fluoro-2,2-dinitroethyl) nitrosamine. 3,751,476, Cl. 260-583,000.
- Advance Transformer Company: See—  
Fisher, Clarence E., 3,751,574.
- Adwest Engineering Limited: See—  
Jenvey, Leslie Richard; and Millard, Barry John, 3,750,835.
- Aerojet-General Corporation: See—  
Vander Wall, Eugene M.; and Lucas, James M., 3,751,311.
- Witz, Samuel, 3,751,340.
- Aerosonic Corporation: See—  
Pollack, Dale, 3,750,474.
- Aerotherm Corporation: See—  
Husome, Robert G.; and Sweet, John R., III, 3,750,881.
- Affiliated Hospital Products, Inc.: See—  
Juster, Robert W., 3,750,875.
- Aga AB: See—  
Haselmann, Severin, 3,750,958.
- Agee, Charles W.: See—  
Kinley, John C.; Agee, Charles W.; and Fowler, Charles N., 3,750,748.
- Agfa-Gevaert AG: See—  
Engelsmann, Dieter; and Karl, Horst, 3,750,548.
- Putscher, Johann; Gersch, Josef; Wiedemann, Otto; and Winkler, Alfred, 3,750,542.
- Agfa-Gevaert Aktiengesellschaft: See—  
Pfeifer, Josef; Hofmann, Wilfried; and Dietrich, Karl-Heinz, 3,750,553.
- Szostak, Roland; and Krueger, Wilm, 3,751,156.
- Agustein, Gustav: See—  
Ruckert, Hans; Kramer, Heinz; and Agustein, Gustav, 3,751,285.
- Aida, Takemi: See—  
Inose, Fumiyuki; Takahashi, Masahiro; and Aida, Takemi, 3,751,613.
- Air Guard Inc.: See—  
Duke, Douglas Roy; and Pearson, Asa M., 3,750,556.
- Air Logistics Corporation: See—  
Schirtzinger, Joseph F., 3,750,723.
- Air-O-Matic Power Steer Corporation: See—  
Kristof, John J., 3,750,836.
- Aisin Seiki Kabushiki Kaisha: See—  
Hayashi, Masaharu, 3,751,181.
- Ajax Hardward Manufacturing Corporation: See—  
Read, George, 3,750,993.
- AKG Akustische u. Kino-Gerate Gesellschaft: See—  
Weingartner, Bernhard, 3,751,608.
- Akin, Cavit, to Standard Oil Company. Process for texturizing microbial cells by induced cell leakage. 3,751,260, Cl. 99-14,000.
- Akiyama, Hideaki, to Kabushiki Kaisha Ricoh. Exposure control device for camera. 3,750,544, Cl. 95-10,000.
- Akkerman, Allardus A., to Domtar Limited. Carton. 3,750,935, Cl. 229-52,000.
- Aktiebolaget Arboga Mekaniska Verkstad: See—  
Rabe, Karl Lars Gunnar; and Hanaeus, Karl Sune Ingemar, 3,750,449.
- Aktiebolaget Bofors: See—  
Johansson, Bengt Henri, 3,751,586.
- Simmons, Bjorn Herman Olof, 3,750,577.
- Aktiengesellschaft Brown, Boveri & Cie: See—  
Bellati, Hans; Huber, Hans; and Rutti, Willi, 3,751,119.
- Niederer, Adolf, 3,751,619.
- Albee Homes, Inc.: See—  
Drescher, Warren F., 3,750,594.
- Albers, Walter A., Jr.; and Swets, Don E., to General Motors Corporation. Abrasive composition of tetragonal germanium dioxide. 3,751,237, Cl. 51-309,000.
- Alcan Research and Development, Limited: See—  
McLeod, Melvin Elliott, 3,751,243.
- Alco Standard Corporation: See—  
Huebscher, David A., 3,751,305.
- Aldrich Chemical Company Inc.: See—  
Hopps, Harvey B.; Jackman, Dennis; and Biel, John H., 3,751,390.
- Alexander, Stephen H., to Tosco-Lion, Inc. Method of treating asphalt. 3,751,278, Cl. 106-273,000.
- Alexander, William M.; and Stancik, Lawrence J. Method and apparatus for towing trailers. 3,751,073, Cl. 280-482,000.
- Alfa-Laval AB: See—  
Nilsson, Vilgot Raymond, 3,750,940.
- Alfrey, Turner, Jr.; Behr, Raymond Douglas; and Chisholm, Douglas Stewart, to Dow Chemical Company, The. Solidifying a thin layer of metal on plastic film. 3,751,288, Cl. 117-114,000.
- Alinder, Gilbert L.: See—  
Anderson, Lloyd E.; Alinder, Gilbert L.; and Thompson, Donlin, 3,750,811.
- Allegri, Theodore Henry; Chelin, Charles R.; Evans, Dafydo W.; and Thompson, Norman D., to Twomotor Corporation. Expandable top-handling container attachment. 3,750,814, Cl. 214-621,000.
- Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, to American Cyanamid Company. 3-(2-(4-Phenyl-1-piperazinyl)ethyl)indolines. 3,751,416, Cl. 260-268,000.
- Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, to American Cyanamid Company. 1-Acyl-3-(2-(4-phenyl-1-piperazinyl)ethyl)indolines. 3,751,417, Cl. 260-268,000.
- Allen-Bradley Company: See—  
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- Allied Breweries (UK): See—  
Hall, Ronald David, 3,751,263.
- Allied Chemical Corporation: See—  
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- Ku, Yuoh; and Simon, Paul W., 3,751,262.
- Oxenrider, Bryce C.; Woolf, Cyril; and Beyleveld, Wilhelmus M., 3,751,469.
- Allied Plastics Company: See—  
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- Allis-Chalmers Corporation: See—  
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- Allmanna Svenska Elektriska Aktiebolaget: See—  
Nilsson, Jan, 3,750,264.
- Allstar Verbrauchsgueter GmbH & Co., KG.: See—  
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- Allsup, John R., Sr. Variable speed power transmission. 3,750,493, Cl. 74-720,000.
- Alm, Karl Olof: See—  
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- Altamil Corporation: See—  
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- Aluminium Foils Limited: See—  
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- Aluminum Company of America: See—  
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- Schultz, Fred R., 3,750,606.
- Alvey, Inc.: See—  
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- Amann, August: See—  
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- Amberg, Rudolf: See—  
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- American Can Company: See—  
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- American Cyanamid Company: See—  
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- Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, 3,751,417.



- Ohsol, Ernest Osborne; and Perlmutter, Arthur, 3,750,600.  
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 American Home Products Corporation: See—  
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 American Maize-Products Company: See—  
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 American Metal Climax, Inc.: See—  
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 Peill, Jurgen Eberhardt; Gerritse, Alf; Osmera, Miroslav S.; and Andersen, Christian Karmark, 3,750,557.  
 Andersen, John S.; and Lindquist, Urban C. Locking ring for corners of plywood form panels. 3,750,997, Cl. 249-47.000.  
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 Anderson, Adolph. Gravity operated mechanical grab. 3,750,311, Cl. 37-188.000.  
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 Anderson Brass Company: See—  
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 Anderson, Byron C., to Rohr Industries, Inc. Lock mechanism employing balloon valves for vacuumized tube transportation system. 3,750,592, Cl. 104-138.000.  
 Anderson, Lloyd E.; Alinder, Gilbert L.; and Thompson, Donlin. Carpet unloading and transporting assembly. 3,750,811, Cl. 214-394.000.  
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 Angelini, Sergio. Method of carrying out continuous thick chrome plating of bars. 3,751,344, Cl. 204-28.000.  
 Angell, Robert H.; and Frielich, Robert S. Dual protection safety device for semi-automatic pistol. 3,750,531, Cl. 89-148.000.  
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 Anon, Modesto Vazquez. Hanging telephone booth. 3,750,350, Cl. 52-27.000.  
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 Babington, Robert S.; and Velie, Wallace W., to North American Rockwell Corporation. Two-stage vaporizing fuel oil burner. 3,751,210, Cl. 431-237.000.  
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 Back, John H.; Johnson, Elling Z.; Kranc, Stanley J.; and McDowell, Robert D., to Caterpillar Tractor Company. Fuel injector. 3,750,960, Cl. 239-533.000.  
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 Bailey, John M.; and Zook, Donald G., to Caterpillar Tractor Company. Connecting rod manufacturing. 3,751,080, Cl. 287-52.030.

- Bajek, Walter A.; and McLaughlin, James H., to Universal Oil Products Company. Control of reaction zone severity by response to octane number of effluent liquid at reaction pressure. 3,751,229, Cl. 23-253.00a.  
 Bakanowsky, Louis J., to Cambrige Seven Associates, Inc. Detachable writing surface for director's chair. 3,751,108, Cl. 297-160.000.  
 Baker, Donald J.; Gartner, Stanley J.; and Oberg, Robert S., to Sylvania Electric Products, Inc. Printed circuit board with through connection and method and machine for making the through connection. 3,750,278, Cl. 29-628.000.  
 Baker, Harold L., to Rayette-Faberge, Inc. Apparatus for screen molding three-dimensional objects. 3,751,204, Cl. 425-127.000.  
 Baker, Joseph W.; and Schumacher, Ingatus, to Monsanto Company. Preparation of esters of phosphorus acids. 3,751,529, Cl. 260-973.000.  
 Bakker, Wate T., to General Refractories Company. Plastic alumina-silica refractory. 3,751,274, Cl. 106-68.000.  
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 Balco, Inc.: See—  
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 Balzer, Claude P.; Corman, Edward M.; and Reiff, Almer A., to Balco, Inc. Expansion joint cover assembly. 3,750,359, Cl. 52-468.000.  
 Bancel, Joseph Emmanuel. Farming implement for ridging. 3,750,758, Cl. 172-58.000.  
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 Barker, Charles J.; and Perry, John H., to Mead Corporation, The. Web sterilizing system. 3,750,367, Cl. 53-180.000.  
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 Barnes, Charles E., to Carborundum Company, The. Pipe cleaning apparatus. 3,750,339, Cl. 51-9.000.  
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 Bartok, Stephen; Kennedy, Melvin R.; Klose, George J.; Landsinger, Edmund E.; and Stewart, George W., to Mattel, Inc. Mechanically keyed optical organ. 3,751,573, Cl. 84-1.180.  
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 Bauerlein, Carl; Wertz, Linda M.; and Acuff, Kenneth L., to Lykes Pasco Packing Co., Dispenser Manufacturing Div. Concentrate dispenser with supply container removable from peristaltic pump. 3,750,908, Cl. 222-80.000.  
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 Bealle, John; and Cash, John H., Jr., to Texas Instruments Incorporated. Method of making glass bonded recording heads. 3,750,274, Cl. 29-603.000.  
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 Beckers, Norman L., to Diamond Shamrock Corporation. Purification of chlorinated hydrocarbons employing molecular sieves. 3,751,494, Cl. 260-654.00s.  
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 Bellington, Larry D. Shotgun shell wad. 3,750,579, Cl. 102-95.000.  
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 Bemis Company, Inc.: See—  
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 Bender, Newell R.; and Spacht, Ronald B., to Goodyear Tire & Rubber Company. The. Stabilization of polyurethane compositions and resins used to prepare polyurethane compositions. 3,751,375, Cl. 260-2.5bb.  
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 Benko, Pal; Budai, Zoltan; Pallos, Laszlo; and Berenyi, Edit, to Egyt Gyogyszervegyeszeti Gyar. Trichloroethylidene-amino-thiazoles. 3,751,423, Cl. 260-306.80r.  
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 Bennett, Michael C.; and Mattaliano, John A., to Becton, Dickinson and Company. Method of collecting blood and separating cellular components thereof. 3,750,645, Cl. 128-2.00g.  
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 Beresic, John I. Hat-mounted container for accessories. 3,750,192, Cl. 2-185.00r.  
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- Brusa, Ugo. Continuous steel casting apparatus. 3,750,742, Cl. 164-276.000.
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- Buchelt, Benno E., to Avco Corporation. Centrifugal hydraulic operated clutch. 3,750,789, Cl. 192-105.00a.
- Bucher, Joyce L. Leg-stabilized embroidery hoop. 3,750,312, Cl. 38-102.200.
- Buchwald, Fritz; and Pienkny, Dieter, to International Standard Electric Corporation. Pneumatic tube system with stand-by blower. 3,751,184, Cl. 417-4.000.
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- Bunn, Dorrance P., Jr., to Texaco Inc. Conversion of hydrocarbons. 3,751,359, Cl. 208-155.000.
- Bunting, Leslie J., to Eastman Kodak Company. Control device for projector film stripping and threading mechanism. 3,750,975, Cl. 242-192.000.
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- Burris, Donald J., to Outdoor Sports Industries, Inc. Rifle scope mount. 3,750,318, Cl. 42-1.00s.
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- Burrows, Owen M., to Norton Company. Refractory cement lining for coreless induction furnaces. 3,751,571, Cl. 13-35.000.
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- Campbell, Robert H.; and Cloyd, Harold S., to Continental Can Company, Inc. and Nosco Plastics, Incorporated. Impact absorbing corner structure. 3,750,598, Cl. 108-51.000.
- Cannon, David C.; Johnson, Walter E.; and Turnage, Richard W., to Sonoco Products Company. Apparatus for making a concrete column form. 3,751,196, Cl. 425-4.000.
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- Yamanaka, Torakiyo; Shigeta, Yoshihiro; and Suzuki, Kuniyoshi, 3,750,977.
- Yanagisawa, Takeshi; Tahikoshi, Kinzi; and Ono, Yusuke, 3,750,540.
- Yazaki, Mutsunobu, 3,750,552.
- Capp, Clifford William; and Brown, Peter John Nicholas, to BP Chemicals Limited. Isomerisation process. 3,751,493, Cl. 260-654.00r.
- Caracci, Joseph R.; Germino, Felix Joseph; and Yoshida, Tokuji Daniel, to CPC International, Inc. Starch derivatives. 3,751,410, Cl. 260-233.500.
- Carbonnel, Emile: See—  
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- Carborundum Company, The: See—  
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- Carrie, Charles O.; Wensell, Edward W.; and Majusick, Thaddeus W., to Brooks, Bobbie, Incorporated. Sewing method. 3,750,604, Cl. 112-265.000.
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- Cason, George A.: See—  
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- Ceccato, Alberto P. Inflatable water ski. 3,750,203, Cl. 9-310.00d.
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- Clark, Frank S.; and Bannister, Loren W., to Monsanto Company. Compositions comprising boron compounds and polyphenyl thioethers. 3,751,368, Cl. 252-78.000.
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- Cogan, Richard, to General Electric Company. Compressive forming. 3,750,442, Cl. 72-57.000.



- Cohen, Joseph David; Brookes, Neil Roger; Stark, Herbert Carl; Hirschhorn, Robert; and Lawson, Gerald William, to General Electric Company. Area control insert for maintaining air flow uniformity around the combustor of a gas turbine engine. 3,750,397, Cl. 60-39,360.
- Cohen, Leonard H.; Zweidler, Alfred; Hafner, William F.; and Ellis, Robert J., to Institute for Cancer Research, The. Isolation and fractionation of organs of small animals. 3,750,964, Cl. 241-29,000.
- Cohn, Mark J. Film package. 3,751,253, Cl. 96-67,000.
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- De Frate, Louis A.: See—
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- De Luca, Raymond F., to Georgia-Pacific Corporation. Disposable diapers with adhesive fastening tapes. 3,750,669, Cl. 128-287,000.
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- Dibrell, James W., to Microwave Corporation. Method of and apparatus for wire receiving and storing. 3,750,974, Cl. 242-83.000.
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- Drummond, Carl N.; Bybee, Richard T.; Mason, Fred L.; and Worsham, Herbert J., Jr. Nuclear reactor core monitoring system. 3,751,333, Cl. 176-19.00r.
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- Edwards, Floyd F. Chain links. 3,750,390, Cl. 59-78.000.
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Hansen, Niels S., to Foundation and Bridge Corporation. Support pad for conveyor chain and combination thereof with conveyor chain. 3,750,798, Cl. 198-1.000.

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 Fridman, Georg Nikolaevich; Fialkov, Abram Samuilovich; Davidovich, Yakov Gilievich; Ivanova, Irina Dmitrievna; Sysoeva, Ljudmila Petrovna; Gluskin, Abram Ykovlevich; Galiskarov, Rimm Zigangirovich; Liberman, Esfir Lvovna; and Pomortseva, Vera Stepanovna, 3,751,294.  
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 Jaffre, Felicien. Automatic discharge trays. 3,750,860, Cl. 198-144.000.  
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 Jakob, Horst, to Societe Financiere Francaise de Licences et Brevets. Process for the making of slide fasteners, means for carrying out this process and fastener chain made by said process. 3,750,260, Cl. 29-408.000.  
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- Jenvey, Leslie Richard; and Millard, Barry John, to Adwest Engineering Limited. Steering arrangements for motor vehicles. 3,750,835, Cl. 180m79.20r.
- Jepson, Robert M., to Ramsey Steel Company, Inc. Horizontal metal-working machine. 3,750,454, Cl. 72-441.000.
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- Jodoin, Joseph J. L. Smoking pipe and method of manufacture. 3,750,677, Cl. 131-172.000.
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- Johannes, Marie Jose: See—  
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- Johansson, Bengt Henri, to Aktiebolaget Bofors. Circuit system for compensating the influence of the back-ground radiation on the picture display in an infra-red camera. 3,751,586, Cl. 178-7.100.
- Johne, Hans; and Graupner, Eberhard, to Veb Polygraph Leipzig Kombinat für Polygraphische Maschinen und Austustungen. Device for cleaning color stirrer and color chests of printing machines. 3,750,570, Cl. 101-364.000.
- Johnsen, Carsten Ingeman. Generating alternating and direct electric currents by modified fuel cells. 3,751,302, Cl. 136-86.00e.
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- Johnson, Eugene. Transformer mounting assembly. 3,750,992, Cl. 248-221.000.
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- Johnson Products Company, Inc.: See—  
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- Johnson, Robert E., to Whirlpool Corporation. Vacuum cleaner structure. 3,750,222, Cl. 15-416.000.
- Johnson, Robert P. Means and technique for removing flux on a welding rod. 3,750,348, Cl. 51-391.000.
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- Jokieli, Theodor; and Bracht, Karl, to Clag Dominit Aktiengesellschaft. Apparatus for producing clean air. 3,750,558, Cl. 98-40.00d.
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- Jones, Robert L.; and Jones, Harold H. Adjustable engine lift. 3,751,097, Cl. 294-78.00a.
- Jones, Waymond R., to Pullman Incorporated. Railway car corner construction. 3,750,352, Cl. 52-282.000.
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- Jukes, Norman Alfred, to Lucas, Joseph, (Industries) Limited. Ignition distributor cap with isolated capacitor and resistor. 3,751,609, Cl. 200-19.00c.
- Jureit, John Calvin, to Automated Building Components, Inc. Fluid-actuated press. 3,750,562, Cl. 100-100.000.
- Juster, Robert W., to Affiliated Hospital Products, Inc. Packaged catheter arrangement. 3,750,875, Cl. 206-63.20r.
- Jutzi, Wilhelm, to International Business Machines Corporation. Integrated semiconductor circuit for data storage. 3,751,687, Cl. 307-279.000.
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- Kabushiki Kaisha Ricoh: See—  
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- Kalmar Verkstadsakiebolag: See—  
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- Kalwaites, Frank, to Johnson & Johnson. Method and apparatus (discontinuous impermeate portions on backing means of open sandwich). 3,750,236, Cl. 19-161.00p.
- Kalwaites, Frank, to Johnson & Johnson. Method for producing non-woven fabrics having a plurality of patterns. 3,750,237, Cl. 19-161.00p.
- Kamata, Masamoto: See—  
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- Kamineski, Conrad W.; and Merkley, Joseph H., to Lithium Corporation of America. Telomerization reactions utilizing liquid hydrocarbon solutions of certain organometallic complexes. 3,751,501, Cl. 260-668.00b.
- Kamlet, Mortimer J.: See—  
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- Kammermayer, Wolfgang: See—  
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- Kao Soap Co., Ltd.: See—  
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- Karass, Hans-Joachim; and Kroger, Heinz, to Holstein & Kappert Maschinenfabrik. Conveying device. 3,750,801, Cl. 198-43.000.
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- Karlheinz, Hammelmann: See—

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- Kartiganer, Norman, to Kartiganer, Norman, Inc. Combination carrying case and wig stand. 3,750,869, Cl. 206-8.000.
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- Kasemeier, Rolf; and Mehr, Karl Gunter, to Minox GmbH. Optische und Feinmechanische Werke. Still camera with an electronically controlled shutter and a receiver for a photo-flash device. 3,750,550, Cl. 95-11.001.
- Kass, Gerald H., to Anderson Brass Company. Fluid valve. 3,751,003, Cl. 251-312.000.
- Kast, Howard B., to United States of America, Army. High speed overspeed sensor. 3,750,482, Cl. 73-521.000.
- Kato, Toshio: See—  
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- Kauranen, Herbert A., to Kelvinator, Inc. Oven and control circuit therefor. 3,751,632, Cl. 219-492.000.
- Kawabata, Kazuharu: See—  
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- Kawai, Kakutaro: See—  
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- Kawakami, Hiroshi; Satoh, Hideshi; Miyoshi, Akira; Kawabata, Kazuharu; and Kimura, Kohkichi, to Unitika Limited. Process for producing high modulus polyvinyl alcohol synthetic fibers. 3,751,547, Cl. 264-210.00f.
- Kawasaki, Kikuo; and Oose, Katsuhiko, to Fuji Denki Deizo Kabushiki Kaisha. Circuit breaker device. 3,751,678, Cl. 307-136.000.
- Kay, Albert Ernest; and Clark, Arthur Wellesley Stewart, to Aluminium Foils Limited. Manufacture of electrical coils. 3,750,275, Cl. 29-605.000.
- Kay, Edward L.; Roberts, Durward T., Jr.; Calihan, Lawrence E.; and Wakefield, Lynn B., to Firestone Tire & Rubber Company, The. Isomerization of z-butylene to 1,2-butadiene. 3,751,511, Cl. 260-680.00r.
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- Kelvinator, Inc.: See—  
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- Kennedy, Edwin K.; and Latzko, Richard I., to Pratt & Whitney Inc. Turret lathe. 3,750,245, Cl. 29-39.000.
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- Keown, Philip E.; Meyers, Clyde C.; and Wetherold, Robert G., to Mobil Oil Corporation. Vapor-phase alkylation in presence of crystalline a lumnosilicate catalyst with separate transalkylation. 3,751,504, Cl. 260-672.00t.
- Kerr, Charles E., Jr., to Eltec, Inc. Electrical switch assembly with tension-transmitting insulator. 3,751,611, Cl. 200-48.00r.
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- Kesler, George H.: See—  
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- Khcheian, Khachik Egorovich; Revenko, Olga Mikhailovna; and Shatalova, Alla Nikolaevna. Method of producing acrylonitrile. 3,751,443, Cl. 260-465.900.
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- Kietz, Lothar, to Kabelschlopp Gesellschaft mit beschränkter Haftung. Device for protecting the guiding path of a machine tool. 3,751,120, Cl. 308-3.00a.
- Kilduff, Timothy J., to United States of America, Army. Reserve battery electrodes using bonded active materials. 3,751,301, Cl. 136-26.000.
- Kimura, Hiroshi; Arimoto, Heiji; Nara, Hirohisa; and Mitsuo, Kyoto, to Unitaka Ltd. Apparatus for supplying weft yarns. 3,750,716, Cl. 139-122.000.
- Kimura, Kazuo: See—  
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- Kimura, Kohkichi: See—  
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- Kimura, Takashi; Hamamoto, Hiroshi; Majima, Azusa; Awano, Yoji; Inaguma, Yukio; and Tomatsu, Mitsuo, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Sintered filter having straight holes therethrough. 3,751,271, Cl. 106-40.00r.
- Kimura, Yoshitomo: See—  
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- Kindl, George F.; and Michaud, Olean E., to Pratt & Whitney Inc. Precision measuring device having two scales. 3,750,296, Cl. 33-166.000.
- Kinetics Corporation: See—  
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- King, Graham Garton, to Societe PIV. Automatic chain or belt re-tensioning device for variable-speed drive. 3,750,487, Cl. 74-252.800.
- Kingston, George W., to Timber Engineering Company. Sill plate anchor device. 3,750,360, Cl. 52-714.000.
- Kinley, John C.: See—  
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- Kinley, John C.; Agee, Charles W.; and Fowler, Charles N., said Agee and said Fowler assors. to Kinley, John C. Liner separation apparatus. 3,750,748, Cl. 166-55.000.
- Kinoshita, Kazuhisa: See—  
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- Kintish, Irving L.; and Marcus, Irwin, to United States of America, Army. Projectile with differential tandem shaped charges. 3,750,582, Cl. 102-56.000.
- Kirchhoff, Kurt. Variable focal length anamorphic cinecamera systems. 3,751,136, Cl. 350-181.000.
- Kirin Beer Kabushiki Kaisha, a/k/a Kirin Brewery Co., Ltd.: See—  
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Kittl, Emil, to United States of America, Army. Energy conversion system. 3,751,303, Cl. 136-89.000.

Klaus, Kaspar. Garage for the storage of vehicles. 3,750,808, Cl. 214-16.1ed.

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Klein, Norman E., to Deering Milliken Research Corporation. Coating apparatus. 3,750,923, Cl. 226-112.000.

Kleiner, Hans-Jerg; and Rosing, Sigurd, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of 2-chlorethane-phosphonic acid dichloride. 3,751,353, Cl. 204-158.0he.

Klemme, Kurt, to Hauni-Werke Korber & Co. KG. Method and apparatus for the production of tobacco rods. 3,750,675, Cl. 131-21.00b.

Klenosky, Robert: See—  
Phillips, Morton; and Klenosky, Robert, 3,750,307.

Klinkhamir, Jacob Fridrik: See—  
Brandsma, Johan Rudolf; Klinkhamir, Jacob Fridrik; and Wau-mans, Benny Louisa Angelina, 3,751,645.

Klinkman, Richard A.; and Mueller, Louis E., to Mac-Fab Products, Inc. Plural-cell duct. 3,751,576, Cl. 174-48.000.

Klose, George J.: See—  
Bartok, Stephen; Kennedy, Melvin R.; Klose, George J.; Landsinger, Edmund E.; and Stewart, George W., 3,751,573.

Klupfel, Kurt-Walter: See—  
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Knipe, Leonard E., to Continental Can Company, Inc. Feed dog link assembly for sprocket chain. 3,750,862, Cl. 198-189.000.

Knoch, Max. Intrauterine contraceptive device. 3,750,661, Cl. 128-130.000.

Knoepfel, Hanspeter: See—  
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Knox Manufacturing Company: See—  
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Genger, Horst, 3,750,995.

Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans Georg, to Eisenwerk-Gesellschaft Maximilianshutte m.b.H. Process for making chromium alloys. 3,751,242, Cl. 75-49.000.

Kobari, Kiyoshi: See—  
Toyohama, Yukio; and Kobari, Kiyoshi, 3,750,786.

Kobayashi, Kazutsugu: See—  
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Koberstein, Edgar; and Lakatos, Eduard, to Laporte Industries Limited. Catalyst for purification of waste gases. 3,751,386, Cl. 252-465.000.

Kocher, Hans. Calendar watch setting mechanism for various month lengths. 3,750,385, Cl. 58-58.000.

Koehn, William A., to Burroughs Corporation. Variable length arithmetic unit. 3,751,650, Cl. 235-175.000.

Koenig, Karl Heinz: See—  
Osieka, Hans; Koenig, Karl Heinz; Bolz, Gerhard; and Amann, August, 3,751,425.

Kokubo, Eiichi: See—  
Kuroiwa, Yoshiro; Kokubo, Eiichi; Aramaki, Koichiro; and Uehara, Hiroshi, 3,751,266.

Kolbel, Gert Frederick. Vibration massaging method and device. 3,750,655, Cl. 128-59.000.

Kolesar, Daniel J.; and Stahl, Charles W., to Babcock & Wilcox Company, The. Machine tool. 3,750,345, Cl. 51-101.00r.

Kollman Instrument Limited: See—  
Bennett, John Theodore George; and Read, John Anthony, 3,750,473.

Komori, Shigehiro, to Canon Kabushiki Kaisha. Electrophotographic copying apparatus. 3,751,158, Cl. 355-8.000.

Kongable, Lowell S., to Motorola, Inc. Multilayer metallization system. 3,751,292, Cl. 117-212.000.

Koninklijke Nederlandse Hoogovens en Staalfabrieken N.V.: See—  
Cramer, Rudolph E.; Van Der Vliet, Cornelis; and Ouwkerk, Johannes H. W., 3,750,629.

Konnerth, Karl L., Jr.: See—  
Dilli, Frederick H.; and Konnerth, Karl L., Jr., 3,751,643.

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Koppers Company, Inc.: See—  
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Kornltzky, Gunter: See—  
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Kowal, Leonard J.; and Saddler, William R., to Imperial-Eastman Corporation. Tube bender. 3,750,447, Cl. 72-319.000.

Koyama, Tadataka: See—  
Mochizuki, Mitsuaki; Tanaka, Minoru; and Koyama, Tadataka, 3,750,968.

Krajcik, Larry Lee. Trailer hitch installation apparatus. 3,750,254, Cl. 29-200.00p.

Kraljic, John; Hartford, Winslow H.; and Good, Millard F., to Allied Chemical Corporation. Reduction and control of trivalent chromium in hexavalent chromium processing solutions. 3,751,347, Cl. 204-51.000.

Kramer, Heinz: See—  
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Kramer, Jack M.; and Sitabkhan, Abdul N., to HTL Industries, Inc., mesne. Fire protection system. 3,750,755, Cl. 169-26.000.

Kranc, Stanley J.: See—  
Back, John H.; Johnson, Elling Z.; Kranc, Stanley J.; and McDowell, Robert D., 3,750,960.

Krauss u. Reichert Spezialmaschinenfabrik: See—  
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Krieger, Harold: See—  
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Kristof, John J., 1/2 to ApSCO Manufacturing Corporation and 1/2 to Air-O-Matic Power Steer Corporation. Power steering system. 3,750,836, Cl. 180-79.20r.

Kroger, Heinz: See—  
Karass, Hans-Joachim; and Kroger, Heinz, 3,750,801.

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Kruczek, Wolfgang: See—  
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Krumsiek, Uwe; and Holscher, Wilfried, to Rheinstahl AG. Device for use with land vehicles to make the same amphibious. 3,750,613, Cl. 115-50r.

Krusche, Kurt R., to Allstar Verbrauchsgueter GmbH & Co., KG. Textile brush. 3,750,224, Cl. 15-171.000.

Kruse, Erwin, to Werner Peddinghaus. Profile steel cutter. 3,750,509, Cl. 83-198.000.

Kruse, Friedel; Wahle, Gunter; Erdmann, Otto; and Rudzimat, Willy, to Hauni-Werke Korber & Co. KG. Method and machine for the production of cigarette packs or the like. 3,750,676, Cl. 131-25.000.

Ku, Yuoh; and Simon, Paul W., to Allied Chemical Corporation. Ruminant feed supplement. 3,751,262, Cl. 99-2.0nd.

Kubilos, Charles A., to Abex Corporation. Servoactuator with mechanical feedback. 3,750,532, Cl. 91-3.000.

Kubo, Seitoku: See—  
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Kubo, Tokuji: See—  
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Kuhlschmidt, Donald, to Arkla Industries, Inc. Cooling of absorption refrigeration system. 3,750,416, Cl. 62-101.000.

Kuhn, Karl Walter, to Societe d'Etudes de Machines Thermiques Saint-Denis. Emergency stopping device for a fuel-injection internal combustion engine. 3,750,640, Cl. 123-198.00d.

Kump, Ernest J. Structural building frame incorporating utilities. 3,750,697, Cl. 137-356.000.

Kunkel, Ernest O.: See—  
Young, James W.; Cason, George A.; and Kunkel, Ernest O., 3,750,763.

Young, James W.; Cason, George A.; and Kunkel, Ernest O., 3,750,769.

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Kuroiwa, Yoshiro; Kokubo, Eiichi; Aramaki, Koichiro; and Uehara, Hiroshi, to Kirin Beer Kabushiki Kaisha, a/k/a Kirin Brewery Co., Ltd. Production of isomerized hop extracts. 3,751,266, Cl. 99-50.500.

Kusaka, Hideo: See—  
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Kuwada, Yutaka: See—  
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Labarre, Maurice. Stopper. 3,750,820, Cl. 215-42.000.

Labbe, Francis A. M., to Molins Machine Company Limited. Cigarette making machines. 3,750,678, Cl. 131-84.00c.

Laboratories Pharmascience: See—  
Rancurel, Alain, 3,751,442.

Lachowicz, Donald R.; and Holder, Charles B., to Texaco Inc. Graft copolymers and process for their preparation. 3,751,522, Cl. 260-877.000.

Lachowicz, Donald R.; and Holder, Charles B., to Texaco, Inc. Two-stage process for preparing graft copolymers. 3,751,523, Cl. 260-877.000.

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L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: See—  
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L'Air Liquide, Societe Anonyme Pour l'Etude et l'Exploitation des Procedes Georges Claude: See—  
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Lakatos, Eduard: See—  
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Land, Edwin H.; and Carcia, Peter P., to Polaroid Corporation. Photographic apparatus and system with automatic film cover ejection. 3,750,551, Cl. 95-11.000.

Landman, Dirk, to Du Pont de Nemours, E. I., and Company. Solder terminal strip. 3,750,252, Cl. 29-191.600.

Landsinger, Edmund E.: See—  
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Landwehr, Heinz: See—  
Angelini, Antonio; Handel, Hubert; Landwehr, Heinz; Karlheinz, Hammelmann; Schoning, Josef; Schwenk, Bernd; and Huck, Gerhard, 3,751,336.

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Lange, Gerhardt: See—  
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Laporte Industries Limited: See—  
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Larsen, Agnew E.; deceased (by Larsen, William H.; executor); and Weinstock, Manuel, to United States of America, Navy. Starter engine. 3,750,394, Cl. 60-39.140.

Larsen, Bjorn Arild, to Spegerverk, Christiania. Combined snow shovel, wheel barrow and dolly. 3,751,058, Cl. 280-30.000.

Larsen, William H.: See—  
Larsen, Agnew E.; and Weinstock, Manuel, 3,750,394.

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Latash, Jury Vadimovich: See—  
Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Baglai, Vitaly Mikhailovich; Bondarenko, Oleg Petrovich; Medovar, Boris Izrailevich; Medvedenko, Nikolai Fedorovich; Pentegrov, Igor Vladimirovich; Latash, Jury Vadimovich; Emelyaneko, July Georgevich; Fedorovsky, Boris Borisovich; Shurue, Lev Andreevich; Schllkunov, Jury Andreevich; Loskutov, Pavel Petrovich; Khasin, Kim Moiseevich; Frolov, Jury Fedorovich; and Saimin, Valery Vasilievich, 3,751,572.

Latinen, George A.; deceased (by Latinen, May V.; administratrix), to Monsanto Company. Mixer. 3,751,010, Cl. 259-9.000.

Latinen, May V.: See—  
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Latzko, Richard I.: See—  
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Laurelli, James A.: See—  
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Lawson, Gerald William: See—  
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LeChall, Ruben A.: See—  
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Le Palicot, Christian; and Venegas, Juan Quintero. Multiple purpose foldable plastic handle for razors or the like. 3,750,280, Cl. 30-85.000.

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Paton, Boris Evgenievich; Lebedev, Vladimir Konstantinovich; Baglai, Vitaly Mikhailovich; Bondarenko, Oleg Petrovich; Medovar, Boris Izrailevich; Medvedenko, Nikolai Fedorovich; Pentegrov, Igor Vladimirovich; Latash, Jury Vadimovich; Emelyaneko, July Georgevich; Fedorovsky, Boris Borisovich; Shurue, Lev Andreevich; Schllkunov, Jury Andreevich; Loskutov, Pavel Petrovich; Khasin, Kim Moiseevich; Frolov, Jury Fedorovich; and Saimin, Valery Vasilievich, 3,751,572.

Lech, Richard J.; Ziskal, Joseph F.; Jennings, Marvin D.; Orth, Harold R.; and Virtue, Eugene P., to International Harvester Company. Closed center hydraulic system. 3,750,405, Cl. 60-422.000.

Lee, Ayleen Ito; and Yoder, Jean Marie. Musical game puzzle. 3,750,524, Cl. 84-476.000.

Lee, Chi-Hang, to General Foods Corporation. Method for producing sugar acetals. 3,751,409, Cl. 260-210.00r.

Lee, Harold Barry, to Bond's Wear Pty. Limited. Apparatus for edge finishing body opening in garments. 3,750,601, Cl. 112-121.120.

Lee, Henry L., Jr.; and Stoffey, Donald G., to Lee Pharmaceuticals, mesne. Polycrylate resin compositions. 3,751,399, Cl. 260-47.00a.

Lee, James W.: See—  
De Graff, Peter H.; and Lee, James W., 3,750,796.

Lee Pharmaceuticals, mesne: See—  
Lee, Henry L., Jr.; and Stoffey, Donald G., 3,751,399.

Lefebvre, Yvon, to American Home Products Corporation. Derivatives of 2H-pyran-3(6H)-ones. 3,751,434, Cl. 260-345.900.

Lefeuve, Andre, to Regie Nationale des Usines Renault and Automobiles Peugeot. Frangible shock absorbing bumper. 3,751,089, Cl. 293-1.000.

Lefort, Pierre: See—  
Llop, Helenio; and Lefort, Pierre, 3,751,168.

Leifheit, Gunter, to Leifheit International Gunter Leifheit KG. Foam producing and applying device. 3,750,216, Cl. 15-50.00c.

Leifheit, Gunter, to Leifheit International Gunter Leifheit KG. Cleaning apparatus. 3,750,223, Cl. 15-50.00c.

Leifheit International Gunter Leifheit KG.: See—  
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Leifheit International Gunter Leifheit K.G., Firma: See—  
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Lemelson, Jerome H., to Triax Company, The. Load handling mechanism and automatic storage system. 3,750,804, Cl. 214-16.40a.

Lemelson, Jerome H. Communication system. 3,751,583, Cl. 178-6.000.

Lemieux, Roland G. Multiple driver tool. 3,750,729, Cl. 145-64.000.

Lemmens, Alphonse A. A., to Societe Hamon Sobelco S.A. Cooling tower. 3,751,017, Cl. 261-111.000.

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Verhulst, Antonius Gerardus Hendrikus; Holtwijk, Theodoor; Lems, Willem; and Enz, Ulrich Ernst, 3,751,663.

Lengsfeld, Karl. Electric-motor with built-in electromagnetic disk clutch and brake. 3,750,781, Cl. 192-18.00b.

Lening, George O., to Master Fence Fittings, Inc. Translating gate latch. 3,751,084, Cl. 292-114.000.

Lenz, George R.; and Pappo, Raphael, to Searle, G. D., & Company. Hydrolysis of 3-oximino-delta 5(10) steroids. 3,751,438, Cl. 260-397.400.

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Lerich, Lester, to Wej-It Expansion Products, Inc. Anchor bolt with expansion sleeve. 3,750,519, Cl. 85-77.000.

Lerich, Lester, to Wej-It Expansion Products, Inc. Expansion bolt with unitary wedge assembly. 3,750,526, Cl. 85-79.000.

Lerner, Irwin S., to Robins, A. H., Company, Incorporated. Intra-uterine contraceptive device. 3,750,662, Cl. 128-130.000.

Leroi, Eugene L., to Societe d'Etudes de Produits Chimiques. Polynicotinic esters of hesperidin. 3,751,570, Cl. 424-180.000.

Leslie, Allen R.: See—  
Insler, Julius R.; Leslie, Allen R.; and Vigneri, Ronald J., 3,751,587.

Leutner, Volkmar; and Romes, Romand, to Bosch, Robert, GmbH. Fluidic regulating apparatus for a reversible hydraulic pump or motor. 3,750,534, Cl. 91-506.000.

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- Leydon, Arthur J.: See—  
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- Liakumovich, Alexandr Grigorievich; Michurov, Jury Ivanovich; Kiam, Nonna Fedorovna; Sobolev, Valerian Mikhailovich; and Ponomarenko, Vladimir Ivanovich. Process for isolating isobutylene from butane-butylene fraction. 3,751,509, Cl. 260-677.00a.
- Lieberman, Esfir Lvovna: See—  
Fridman, Georgy Nikolaevich; Fialkov, Abram Samuilovich; Davidovich, Yakov Gilievich; Ivanova, Irina Dmitrievna; Sysoeva, Ljudmila Petrovna; Gluskin, Abram Ykovlevich; Galiskarov, Rimm Zigangirovich; Lieberman, Esfir Lvovna; and Pomortseva, Vera Stepanovna, 3,751,294.
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Habicht, Ernst; and Libis, Bernard, 3,751,436.
- Libis, Bernard; and Habicht, Ernst, to Ciba-Geigy Corporation. 5-Acyl-2,3-dihydrobenzothiothene-2-carboxylic acids. 3,751,430, Cl. 260-330.500.
- Licentia Patent-Verwaltungs-GmbH: See—  
Petrovsky, Peter; and Bohm, Max, 3,750,880.
- Liddell, Norman E.; and Siddall, John B., to Zeecon Corporation. Oxo-substituted aliphatic hydrocarbons. 3,751,479, Cl. 260-593.00r.
- Lidolph, Ben B. Combined pump and permanent siphon tube. 3,750,691, Cl. 137-142.000.
- Lieberman, Hilleg; and Graffeo, Anthony J., to Betz Laboratories, Inc. Petroleum sulfonic acid foam control composition and its use. 3,751,373, Cl. 252-321.000.
- Liebscher, Johannes, to Leifheit International Gunter Leifheit KG. Sweeping apparatus. 3,750,215, Cl. 15-42.000.
- Liebscher, Johannes, to Leifheit International Gunter Leifheit K.G., Firma. Apparatus for treating floor and other surfaces. 3,750,217, Cl. 15-50.00c.
- Liechty, Karl E., to Xerox Corporation. Pre-development exposure assembly. 3,751,155, Cl. 355-3.000.
- Lignes Telegraphiques et Telephoniques: See—  
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- Lihit Industrial Co., Ltd.: See—  
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- Liles, George N., to National Cash Register Company. Automatic media thickness compensator for a printer. 3,750,792, Cl. 197-1.00r.
- Lilliston Corporation: See—  
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- Lin, Chao H.: See—  
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- Lindquist, Urban C.: See—  
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- Link, Helmut, to Index-Werke KG Hahn & Tessky. Hydraulically operated friction clutch. 3,750,787, Cl. 192-85.0ab.
- Linley, Francis M., Jr. Ultra-accurate gauging apparatus. 3,750,297, Cl. 33-174.001.
- Lissarrague, Maurice, to Boussois Souchon Neuvesel. Opening with sliding leaf and especially a glazed opening. 3,750,338, Cl. 49-413.000.
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- Allen, George Rodger, Jr.; McEvoy, Francis Joseph; DeVries, Vern Gordon; Moran, Daniel Bryan; and Littell, Ruddy, 3,751,417.
- Livingston, James M., 5% to Jackson, Herman E., 45% to Mims, H. M., Jr. and Hill, George S. Mechanical grade control. 3,750,756, Cl. 172-4.500.
- Ljungberg, Stellan; and Alm, Karl Olof, to Food Control AB. Enzymatic indicator and method of making it. 3,751,382, Cl. 252-408.000.
- Llop, Helenio; and Lefort, Pierre, to Societe d'Optique Precision, Electronique et Mecanique-Sopelem. Indicating apparatus for the varying concentration of a solution. 3,751,168, Cl. 356-135.000.
- Lloyd, Neil E.; Owen, Archibald A.; and Brenner, David C., to Celanese Corporation. Yarn compacting apparatus. 3,750,242, Cl. 28-1.400.
- Lockwood, John W. Set of golf irons. 3,751,035, Cl. 273-77.00a.
- Lohbauer, Kenneth R.: See—  
Bubula, Thomas J.; and Lohbauer, Kenneth R., 3,750,690.
- Lohberg, Peter, to Braun Aktiengesellschaft. Circuit arrangement for producing a high voltage spark. 3,751,713, Cl. 315-209.00t.
- Lohkamp, Carl W., to United States of America, Navy. Illuminating round having dual range capability. 3,750,574, Cl. 102-34.100.
- Lonati, Francesco. Pushing device in double cylinder circular knitting machines. 3,750,426, Cl. 66-149.00r.
- Long Manufacturing Co., Inc.: See—  
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- Long, Richard H. Refractometer and reflectometer. 3,751,162, Cl. 356-30.000.
- Longbottom, Eric: See—  
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- Lookabaugh, Clair E.: See—  
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- Loomans, David C. Orthopedic apparatus for legs to enable standing. 3,750,659, Cl. 128-80.00r.
- Loser, Alois. Web dryer. 3,750,305, Cl. 34-56.000.
- Loskutov, Pavel Petrovich: See—  
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- Lovett, Jack R. Shrimp separating methods. 3,750,233, Cl. 17-45.000.
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- Lucas, James M.: See—  
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- Luderer, Manfred H.; and Ettenhofer, Anton, to Atlas Copco Aktiebolag. Spray gun for pulverulent material entrained in a gaseous stream. 3,750,949, Cl. 239-15.000.
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- Lyon, T. Goodwin, to Relaxaway Corporation. Combination bath aerator and hair dryer. 3,750,657, Cl. 128-66.000.
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- Maag, Oskar; and Wenger, Otto, to Maag Gear Wheel & Machine Company, Limited. Gear rolling machines. 3,750,443, Cl. 72-72.000.
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- Machlanski, Sigmund H. Orchard heating system and burner. 3,750,642, Cl. 126-59.500.
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- Macula, John T.: See—  
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- Madsen, Thomas Lund. Apparatus for measuring the degree of thermal discomfort and a system comprising such an apparatus. 3,751,634, Cl. 219-497.000.
- Maeder, Roger A.; Oster, Frederick W.; and Soderman, Richard J., to International Business Machines Corporation. Semiconductor and integrated circuit device yield modeling. 3,751,647, Cl. 235-151.110.
- Magerle, Karl, to Tubmatic Inter AG. Device for closing a mould cavity. 3,751,189, Cl. 425-258.000.
- Mahan, Guy S., to International Basic Economy Corporation. Fluidic resistance-capacitance device. 3,750,702, Cl. 137-608.000.
- Mahler, Gert; and Zwirner, Gerhard, to Gebr. Happich GmbH. Securement of covering about vehicle contoured sunvisor. 3,751,106, Cl. 296-97.00h.
- Maier, Josef. Device for spacing sheeting of a construction form. 3,750,996, Cl. 249-43.000.

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Minks, Floyd M. Alternator-rectifier electronic charging and discharging apparatus for ignition systems and the like. 3,750,637, Cl. 123-148.00e.  
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Kawakami, Hiroshi; Satoh, Hideshi; Miyoshi, Akira; Kawabata, Kazuharu; and Kimura, Kohkichi, 3,751,547.  
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Mobil Oil Corporation: See—  
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- Mochizuki, Mitsuaki; Tanaka, Minoru; and Koyama, Tadataka, to Okazaki Manufacturing Company. Article winding device. 3,750,968, Cl. 242-7.150.  
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Morris, Geoffrey William, to Rolls-Royce Limited. Gas turbine ducted fan engines for aircraft. 3,750,983, Cl. 244-54.000.  
Morris, Herbert R., to Emhart Corporation. Method for making evaporator or condenser construction. 3,750,248, Cl. 29-157.30r.  
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Motorola, Inc.: See—  
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Mott Corporation: See—  
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- Mott, James D., to Hydrill Company. Subsurface safety valve. 3,750,751, Cl. 166-224.00s.
- Mott, James D., to Hydrill Company. Completion and kill valve. 3,750,752, Cl. 166-224.000.
- Mount Sinai School of Medicine of the City: See—  
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- Mouttet, Henri; and Lafortune, Gerard, to Societe National, Industrielle Aerospatiale. Mechanical transmission relay for a control facility comprising a manual element and a servomotor, and its use in aircraft control systems. 3,750,984, Cl. 244-76.00r.
- Moyer, Craig R.: See—  
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- MSI Data Corporation: See—  
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- M.U. Engineering & Mfg., Inc.: See—  
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- Mueller, Albrecht: See—  
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- Mueller, Arthur C., to Bell & Howell Company. Camera shutter control system. 3,751,149, Cl. 352-177.000.
- Mueller, Louis E.: See—  
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- Muller, Louis F., to Medical Enterprises, Inc. Method and means for making a splint. 3,750,660, Cl. 128-89.00r.
- Mundorff, Sheila Ann; Biddy, Basil Glover; and Shrestha, Buddhi Man, to Eastman Dental Center. Method of coating teeth with a durable glaze. 3,751,568, Cl. 424-131.000.
- Muns, Joseph C. Gravity action tipless tray with verticle cushion means. 3,750,597, Cl. 108-45.000.
- Muraoka, Shigetaro. Magnetic record-playback device. 3,751,598, Cl. 179-100.2md.
- Murato, Kieichi; Maruyama, Yasuo; Wakao, Mitsuro; Takahashi, Shogo; and Takami, Hisao, to Japanese National Railways and Kayabakogyo Kabushikikaisha. Automatic releasing apparatus for couplers of railway vehicles. 3,750,897, Cl. 213-211.000.
- Murfitt, Donald: See—  
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- Murphy, Howard E.: See—  
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- Murray, Gordon E., to Hughes Aircraft Company. Digital differential analyzer spiral scan generator. 3,751,712, Cl. 315-24.000.
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- Musitronic Inc.: See—  
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- Musson, Ian M.: See—  
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- Muto, Kazuki, to Mitsui Petrochemical Industries, Ltd. Propylene polymer composition containing glass fibers. 3,751,397, Cl. 260-41.0ag.
- Myles, Charles E., to Alvey, Inc. Universal suction head conveyor. 3,751,095, Cl. 294-64.00r.
- Nagy, Stanley S.: See—  
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- Naito, Mirihisa, to Matsushita Electric Industrial Co., Ltd. Projector. 3,751,153, Cl. 353-27.000.
- Nakai, Susumu; and Sameshima, Tadanori, to Honshu Paper Company, Limited. Spray coating apparatus. 3,750,955, Cl. 239-420.000.
- Nakajima, Yasuo; and Etoo, Yukihiro, to Nissan Motor Company, Limited. Crankcase ventilating system for fuel injection type internal combustion engine. 3,750,634, Cl. 123-119.00b.
- Nakayama, Hirokazu: See—  
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- Nakayama, Horokazu: See—  
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- Nakayama, Shozo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for lubricating a rotary swash plate type compressor. 3,750,848, Cl. 184-6.160.
- Nakazima, Yoshiharu: See—  
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- Nakoji, Masateru: See—  
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- Nambu, Shyuya, to Nissan Motor Company, Limited. Exhaust gas after-burning system for automotive internal combustion engine. 3,750,401, Cl. 60-286.000.
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- Narahari, Gatiu, to Sycon Corporation. Wheel suspension system. 3,751,066, Cl. 280-124.00f.
- Nardi, Giancarlo, to Compagnia Italiana Westinghouse Freni e Segnali. Carburetion system. 3,751,016, Cl. 261-36.00a.
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- National Mine Service Company: See—  
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- National Research Development Corporation: See—  
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- Natkanski, Zygmunt, to Minnesota Mining and Manufacturing Company. Valve construction. 3,751,000, Cl. 251-77.000.
- Natsugari, Hideaki; Meguro, Kanji; and Kuwada, Yutaka, to Takeda Chemical Industries, Ltd. 2-Amino-1,5-benzociazocine derivatives. 3,751,412, Cl. 260-239.0bd.
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- Nauta, Jan P., to Rowland Development Corporation. Method for making differential durometer faced rolls. 3,751,550, Cl. 264-275.000.
- Negus, George T., to Eastman Kodak Company. Control strip holder. 3,750,867, Cl. 206-1.00r.
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- Nelson, Donald E. Educational demonstration model. 3,750,308, Cl. 35-45.000.
- Nelson, Donald F. Power transmission system. 3,750,616, Cl. 115-35.00r.
- Nelson, Michael A.; Patrick, Robert F.; and Wehrenberg, Thomas M., to Corhart Refractories Company. Burned basic refractory and batch therefor. 3,751,273, Cl. 106-57.000.
- Nerurkar, Mohanlal Shantaram; and Dawson, Paul Ernest, to Imperial Chemical Industries Limited. Method of producing a photographic film base having a subbing layer. 3,751,280, Cl. 117-73.000.
- Nerwin, Robert, to Eastman Kodak Company. Photographic film unit. 3,751,254, Cl. 96-76.00r.
- Nestork, William John, to International Business Machines Corporation. Radially oriented monolithic circuit masterslice. 3,751,720, Cl. 317-234.00r.
- Nettleton, David John, to Rank Organisation Limited, The. Rotary couplings. 3,750,424, Cl. 64-31.000.
- Neukirchner, Peter H.: See—  
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- Neumann, Gerhard Max, to Delbag-Luftfilter Gesellschaft mit beschränkter. Gas filters. 3,750,374, Cl. 55-484.000.
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- Newman, Douglas A., to Columbia Ribbon and Carbon Manufacturing Co., Inc. Thermographic transfer sheet and process of copying therewith. 3,751,286, Cl. 117-36.200.
- Newman, Douglas A., to Columbia Ribbon and Carbon Manufacturing Co., Inc. Thermographic transfer process. 3,751,318, Cl. 156-234.000.
- Newman, Vernon E., to Yakima Tent and Awning Co., Ltd. Flexible closure for log steaming vat. 3,750,740, Cl. 160-354.000.
- Niagara Machine & Tool Works: See—  
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- Niagara Wire Weaving Company, Limited: See—  
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- Nicholas, Chris: See—  
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- Nichols, Herbert E.; and Mason, Harvey W., to General Electric Company. Interblade baffle and damper. 3,751,183, Cl. 416-220.000.
- Nichols, Joseph, to Princeton Biomedix Incorporated. Medicated gelled oils. 3,751,562, Cl. 424-45.000.
- Nicolay, Theodore E. Container and closure for the same. 3,750,933, Cl. 229-39.00r.

- Niederer, Adolf, to Aktiengesellschaft Brown, Boveri & Cie. Electrical contact structure of the plug-and socket type circuit breakers. 3,751,619, Cl. 200-166.0bh.
- Niedzielski, Albert. Apparatus for use in treating fluids. 3,751,231, Cl. 23-260.000.
- Nielsen, Edwin A.; and Stopek, Benjamin, to Ideal Toy Corporation. Winding mechanism having platform for supporting spring motor driven vehicle. 3,750,328, Cl. 46-1.00k.
- Nikka Kabushiki Kaisha: See—  
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- Nilsson, Jan, to Allmanna Svenska Elektriska Aktiebolaget. Method of manufacturing rod, wire or tube shaped products of compound material by means of hydrostat extrusion. 3,750,264, Cl. 29-474.300.
- Nilsson, Vilgot Raymond, to Alfa-Laval AB. Control means for self-discharging centrifuge. 3,750,940, Cl. 233-19.00a.
- Nippon Denon Co., Ltd.: See—  
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- Nippon Gakki Seizo Kabushiki Kaisha: See—  
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- Nippon Oil Company, Ltd.: See—  
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- Nishino, Hisashi, to Minolta Camera Kabushiki Kaisha. Color separation optical system. 3,751,133, Cl. 350-54.000.
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- Nishizuka, Hiroshi: See—  
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- Nissan Motor Company: See—  
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- Nissan Motor Company, Limited: See—  
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- Nojiri, Howard H., to Honeywell, Inc. Electrical wiring bushing with strain relief. 3,751,579, Cl. 174-153.00g.
- Nolan, Clyde E., Jr., to Brown & Root, Inc. Internal tensioning system for laying pipeline. 3,750,451, Cl. 72-393.000.
- Nolte, Gunther. Material conveyors. 3,750,864, Cl. 198-201.000.
- Nomura, Junichi; and Andoo, Takemitsu, to Asahi Kasei Kogyo Kabushiki Kaisha. Wads for charging shot of shot gun. 3,750,580, Cl. 102-42.00c.
- Noranda Metal Industries, Inc., mesne: See—  
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- Nordgren, John Lennart, to U.S. Philips Corporation. Arrangement in an electrical fuse for projectiles. 3,750,588, Cl. 102-70.20p.
- Nordischer Maschinenbau Rud. Baader: See—  
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- Nordmann, Edwin; and Erler, Gerhard, to VEB Werkzeugmaschinenkombinat "Fritz Heckert" Karl-Marx-Stadt. Measuring machine. 3,750,295, Cl. 33-174.001.
- Norland, Kenneth S.: See—  
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- Norman, Noah M., to Altamil Corporation. Corner construction for vehicle trailers. 3,751,105, Cl. 296-28.00m.
- Norris Industries, Inc.: See—  
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- Notaro, Peter J. Appointment board. 3,750,313, Cl. 40-63.000.
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- Nozake, Hiroshi; and Yamazaki, Masaki, to Stanley Electric Co., Ltd. Method for electrolytically forming a coating of titanium-alkaline earth metal compound oxide. 3,751,349, Cl. 204-56.00r.
- N.V. Industriele Handelscombinatie Holland: See—  
den Hartog, Willem Cornelis, 3,750,408.
- Nyquist, Richard A.; and Reder, Thomas L., to Dow Chemical Company. The. Substituted 3,5,6-trihalo-2-pyridyl carbonates. 3,751,421, Cl. 260-295.00r.
- Oberg, Robert S.: See—  
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- O'Brian, John Leslie; Finnimore, Bryan; and Hogg, John Arthur. Pipe joints. 3,751,078, Cl. 285-339.000.
- Ockerman, John B.: See—  
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- Ogawa, Toshiya, to Kabushiki Kaisha Ricoh. Device for controlling the feeding of copy sheets to a small offset printing machine. 3,750,566, Cl. 101-144.000.
- Ogren, John R.: See—  
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- Oguro, Takeshi: See—  
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- O'Hara, Mark J., to Universal Oil Products Company. Method of preparing a catalyst. 3,751,380, Cl. 252-439.000.
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- Olivares, Ismael A.: See—  
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- Roberts, Durward T., Jr.: See—  
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- Roberts, Richard W., to Borg-Warner Corporation. Audio-visual apparatus. 3,751,150, Cl. 353-7.000.
- Roberts, Walter L.; and Burch, Paul F., to Superior Cable Corporation. Corrugated polyethylene terephthalate film and preparation thereof. 3,751,328, Cl. 161-133.000.
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- Robertson, Robert H. Interior assembly for a pickup camper. 3,751,103, Cl. 296-23.00r.
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- Rode, John E., to Temper Corporation. Seal element. 3,751,048, Cl. 277-200.000.
- Rodgers, Nellie Hunt; Hunt, William P.; and Wenstrom, Richard T., to Sea Savory, Inc. Crab picking machine. 3,750,234, Cl. 17-71.000.
- Rodwin, Stephen Anthony; and Descary, John Gilbert, to Dominion Engineering Works, Limited. Sonic drying of webs on rolls. 3,750,306, Cl. 34-69.000.
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- Rogers, James B.: See—  
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- Rohm and Haas Company: See—  
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- Roller, Gilbert. Synchronizing device. 3,751,142, Cl. 352-12.000.
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- Sakata, Haruo; Tanimura, Hiroshi; Kaneko, Ryuichi; Kusaka, Hideo; Sato, Eiichi; and Kubo, Tokuji, to Nippon Hoso Kyokau. Color television standard system converting equipment. 3,751,581, Cl. 178-5.460.
- Salm, Gerlof Berthy. Apparatus for maintaining the potability of cistern water. 3,750,886, Cl. 210-111.000.
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- Sedgewick, Richard D. Method and apparatus for winding and inserting stator coils. 3,750,718, Cl. 140-92.100.
- Seemann, Fritz; and Troxler, Franz, to Sandoz, Ltd. 4-(3-Amino-2-substituted propoxy)indole derivatives. 3,751,429, Cl. 260-326.14r.
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- Shepherd, Lawrence H., Jr.: See—  
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- Whitehurst, Gerald E.: See—  
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- Whitener, Robert V. Liquid sensing switch assembly. 3,750,950, Cl. 239-63.000.
- Wick, Helmut, to Nordischer Maschinenbau Rud. Baader. Containers. 3,750,827, Cl. 220-74.000.
- Wicki, Heinz, to Sandoz, Ltd. Hydroxymethylated polyazo dyes. 3,751,407, Cl. 260-169.000.
- Wiedemann, Otto: See—  
Putscher, Johann; Gersch, Josef; Wiedemann, Otto; and Winkler, Alfred, 3,750,542.
- Wieneke, Franz. Roll condenser for producing a rolled strap of stalk and/or leaf material. 3,750,561, Cl. 100-89.000.
- Wightman, Warren J. Connector for ski training. 3,751,056, Cl. 280-11.37e.
- Wild, Heinz K., to TeWilo Industries, Inc. Solid-foods dispenser. 3,750,913, Cl. 222-387.000.
- Wildi, Bernard S.; Westman, Thomas L.; and Keay, Leonard, to Monsanto Company. Stable polymer-enzyme oral hygiene compositions. 3,751,561, Cl. 424-48.000.
- Wiley, Richard H., to Miles Laboratories, Inc. Citroylformic acid and its production. 3,751,458, Cl. 260-535.00p.
- Wilhelm, Frederick C.: See—



- Hayes, John C.; Mitsche, Roy T.; Rausch, Richard E.; and Wilhelm, Frederick C., 3,751,502.
- Wilhelm, George E.; Nagy, Stanley S.; and Hahn, Moon T., to Sperry Rand Corporation, mesne. Method of producing a magnetic storage medium. 3,751,345, Cl. 204-29.000.
- Wilhelm, John Raymond. Fire escapes. 3,750,843, Cl. 182-72.000.
- Wilkins, Malcolm: See—  
Dodman, David; Wilkins, Malcolm; and Woolley, John Mathers, 3,751,490.
- Willen, Charles, to Willen, Charles, & Cie. Tool holders for machine tools. 3,750,498, Cl. 82-36.00r.
- Willen, Charles, & Cie: See—  
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- Williams, Frank Ronald: See—  
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- Williams, Galen. Swinging type trailer hitch. 3,751,072, Cl. 280-49.000.
- Williams, Geoffrey A.: See—  
Seager, Brent H. A.; and Williams, Geoffrey A., 3,751,631.
- Williams, Jack C., to Texaco Inc. Method and system for transporting different types of fluid in a pipeline. 3,750,687, Cl. 137-1.000.
- Williams, Leonard H. Sprinkler system and adapter valve therefor. 3,750,954, Cl. 239-178.000.
- Williams, Nathan P.: See—  
Betts, Robert E.; and Williams, Nathan P., 3,750,581.
- Williams, Robert Carl, to Dresser Industries, Inc. Borehole shock absorber. 3,750,423, Cl. 64-23.000.
- Williams, Robert G.; Howard Lawrence W.; Thompson, Richard J.; Prater, Johnny L.; and Ryder, Steven P., to United States of America, Army. Hydro-dynamic testing apparatus. 3,750,459, Cl. 73-49.400.
- Williams, William D., to Aquology Systems, Inc. Apparatus for emptying sewage or waste facility of a boat. 3,751,187, Cl. 417-234.000.
- Williamson, Herschel M.: See—  
Goade, James C.; McDonald, John A.; and Williamson, Herschel M., 3,750,537.
- Williamson, Kenneth D.: See—  
Caelisch, Howard G.; Keister, Robert O.; Reed, Denvil E., Jr.; and Williamson, Kenneth D., 3,751,361.
- Willinger, Allan H.; and Kennedy, Melvin R., to Mattel, Inc. Valveless pump. 3,751,188, Cl. 417-240.000.
- Wilson, Burton D.; Haist, Grant M.; and Olivares, Ismael A., to Eastman Kodak Company. Photosensitive and thermosensitive element, composition and process. 3,751,255, Cl. 96-66.00r.
- Wilson, Herbert L.; Pommerrenig, Hans D.; and Gutierrez, William A., to United States of America, Army. Internal tube peltier cooling of image intensification photocathodes. 3,751,709, Cl. 315-50.000.
- Wilson, John B.: See—  
Schleppnik, Alfred A.; and Wilson, John B., 3,751,486.
- Wilson, John Edwin. Base support assembly for vacuum vessels. 3,750,819, Cl. 215-13.00r.
- Winkler, Alfred: See—  
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- Winkler, Charles L.; and Wavre, Andre, to Westinghouse Electric Corporation. Floor selector for an elevator car. 3,750,850, Cl. 187-29.00r.
- Winters, Mary M. Aquatic apparatus with bouyancy control structure. 3,751,030, Cl. 272-1.00b.
- Wintrell, Reginald, to Koppers Company, Inc. Hydraulic venturi. 3,750,375, Cl. 55-223.000.
- Wise, Cecil S., to Fiber Controls Corporation. Textile processing equipment. 3,750,235, Cl. 19-105.000.
- Wiseman, Robert E. Plastic closure for paper containers and method of making same. 3,750,938, Cl. 229-77.000.
- Wisler, Lee Gail, to Electric Furnace, The. Heat treating furnace. 3,750,904, Cl. 214-21.000.
- Witte, Donald H.: See—  
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- Witz, Samuel, to Aerojet-General Corporation. Method for detecting the presence and concentration of heme containing particles and heavy metal ions in fluid media. 3,751,340, Cl. 195-103.50r.
- Wo, Su-Lin, to Phillips Petroleum Company. Disproportionation of aromatic monocarboxylates. 3,751,456, Cl. 260-515.00p.
- Woernle, Peter: See—  
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- Wolf, Victor: See—  
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- Wolfgang, Niehaus. Temperature control circuit. 3,751,635, Cl. 219-499.000.
- Wolfrom, Norman S., to Hardman Incorporated. Hand-held extruding apparatus. 3,750,905, Cl. 222-23.000.
- Wood, Charles D., to Southwest Research Institute. Explosive seismic energy source with quick release valve. 3,750,837, Cl. 181-50h.
- Wood, Prentice J., to Mead Corporation, The. Article carrier and method of interlocking a pair of panels in face contacting relation. 3,750,363, Cl. 53-32.000.
- Woodward, Roger V. Adjustable width folding door. 3,750,737, Cl. 160-206.000.
- Woody, Bernard A.: See—  
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- Woolf, Cyril: See—  
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- Woolley, John Mathers: See—  
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- Woskow, Marvin Z.; and Christmann, Harold F., to Petro-Tex Chemical Corporation. Promoted oxidative dehydrogenation process. 3,751,512, Cl. 260-680.00e.
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- Wright, Charles D.; Zollinger, Joseph La Mar; Mitsch, Ronald A.; and Dybvig, Douglas H., to Minnesota Mining and Manufacturing Company. Fluorinated oxidant compounds containing a fluoramino group. 3,751,312, Cl. 149-109.000.
- Wright, David M.; and Dean, Carl J., to Wright, Barry, Corporation. Card tray. 3,751,129, Cl. 312-185.000.
- Wu, William W., to Communications Satellite Corporation. Generalized shift register pulse sequence generator. 3,751,648, Cl. 235-152.000.
- Wyandotte Corporation: See—  
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- Wyatt, William P. Display form for footwear. 3,750,208, Cl. 12-115.800.
- Wyon, Andrew Stewart, to Stothert & Pitt Limited. Twistlock device for load handling apparatus. 3,751,096, Cl. 294-67.00r.
- XAR Industries Incorporated: See—  
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- Xerox Corporation: See—  
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- Gregory, Paul M., 3,751,216.
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- Mason, Lawrence J., 3,750,539.
- Xomox Corporation: See—  
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- Yabe, Shinichi; and Okada, Tomio. Preheat type copying apparatus. 3,751,665, Cl. 250-317.000.
- Yakima Tent and Awning Co., Ltd.: See—  
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- Yamada, Yasuteru: See—  
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- Yamamoto, Masaki: See—  
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- Yamamoto, Shohei; Watanabe, Jun; Hosoi, Susumu; and Hirano, Akira, to Matsushita Electric Industries Co., Ltd. Method for manufacturing a cadmium oxide electrode with a resin fiber. 3,751,300, Cl. 136-24.000.
- Yamamura, Takashi, to Victor Company of Japan, Ltd. Channel Indicator. 3,750,619, Cl. 116-124.100.
- Yamanaka, Torakiyo; Shigeta, Yoshihiro; and Suzuki, Kuniyoshi, to Canon Kabushiki Kaisha. Stripping and feeding device for strip material. 3,750,977, Cl. 242-192.000.
- Yamauchi, Noriyuki. Weighted belt type exercising device. 3,751,031, Cl. 272-57.00r.
- Yamazaki, Masaki: See—  
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- Yanagisawa, Takeshi; Tanikoshi, Kinzi; and Ono, Yusuke, to Canon Kabushiki Kaisha. Electric exposure control device. 3,750,540, Cl. 95-10.0ct.
- Yashica Company, Ltd.: See—  
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- Yasuda, Toshio, to Wyandotte Corporation. Polyurethane compositions containing polyvinylidene fluoride. 3,751,520, Cl. 260-859.00r.
- Yasuno, Kiyoshi: See—  
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- Yazaki, Mutsunobu, to Canon Kabushiki Kaisha. Exposure control apparatus for flash cameras. 3,750,552, Cl. 95-11.50r.
- Yoder, Jean Marie: See—  
Lee, Aylene Ito; and Yoder, Jean Marie, 3,750,524.
- Yokogawa Electric Works, Ltd.: See—  
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- Yoshida, Tokuji Daniel: See—  
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- Yoshioka, Junichi: See—  
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- Young, James W.; Cason, George A.; and Kunkel, Ernest O., to Dresser Industries, Inc. Reaction post for an earth boring machine. 3,750,763, Cl. 173-34.000.
- Young, James W.; Cason, George A.; and Kunkel, Ernest O., to Dresser Industries, Inc. Drill pipe positioner for earth boring machine. 3,750,769, Cl. 175-85.000.
- Young, Loren H.: See—  
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- Yuasa Battery Company Limited: See—  
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- Yuasa, Teruhisa, to Yuasa Battery Company Limited. Electric garment. 3,751,620, Cl. 219-211.000.
- Zadra, Mario D., to Goodyear Tire & Rubber Company, The. Hydrogenation process. 3,751,515, Cl. 260-683.900.
- Zahler, Wolf-Dietrich: See—  
Schmitt, Werner; Purrmann, Robert; Jochum, Peter; and Zahler, Wolf-Dietrich, 3,751,395.
- Zankowski, John S., to Eastman Kodak Company. Electrolytic cell for recovering metal from a solution containing ions thereof, and method for operating same. 3,751,351, Cl. 204-109.000.
- Zaun, Richard David; and Clausen, Howard Fred, to Deere & Company. Beet-cleaning and conveying apparatus. 3,750,211, Cl. 15-3.110.
- Zbikowski, Theodore H.; and Pauly, Ronald R., to Tonka Corporation. Wheeled toy with sounding rasp and rotating head member. 3,750,329, Cl. 46-107.000.
- Zecher, David C., to Hercules Incorporated. Scale and corrosion control in circulating water using polyphosphates and organophosphonic acids. 3,751,372, Cl. 252-181.000.
- Zechnall, Richard, to Bosch, Robert, GmbH. Electronic control for the air-fuel mixture and for the ignition of an internal combustion engine. 3,750,632, Cl. 123-32.0ea.
- Zellweger Ltd.: See—  
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- Zelly, Walter O.: See—  
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- Zetterlund, Stanley L., to SI Handling Systems, Inc. Tow vehicle with anti-back up wheels. 3,750,593, Cl. 104-172.0bt.
- Ziegler, Erich, to Ciba-Geigy AG. Bi-isoquinolinone compounds. 3,751,419, Cl. 260-288.00r.
- Ziemba, Richard T.: See—  
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- Ziskal, Joseph F.: See—  
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- Zoecon Corporation: See—  
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- Zoll, August H., to Curtiss-Wright Corporation. High energy ignition device. 3,750,392, Cl. 60-39.82s.
- Zollinger, Howard A.: See—  
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- Zollinger, Joseph La Mar: See—  
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- Zook, Donald G.: See—  
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- Zweidler, Alfred: See—  
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- Zwimer, Gerhard: See—  
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Breen, Alvin L., and M. Sussman, to E. I. du Pont de Nemours and Co. Fluid jet process for twisting yarn. Re. 27,717, 8-7-73, Cl. 57—157.  
 Brumlik, George C. Self-gripping fastening device. Re. 27,725, 8-7-73, Cl. 24—204.  
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 Hansen, Richard C., and A. P. Yesul, to Xerox Corp. Signal storage device. Re. 27,720, 8-7-73, Cl. 355—13.  
 Jennings, Thomas C., to The Lubrizol Corp. Crosslinking of unsaturated polyesters with N-3-oxohydrocarbon-substituted acrylamides. Re. 27,722, 8-7-73, Cl. 204—159.15.  
 Jackson, Byron, Inc.: See—  
 Johnson, Noel E. Re. 27,724.  
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 Klock, John W., to Research Corp. Method and apparatus for treating waste-containing liquor. Re. 27,721, 8-7-73, Cl. 210—14.  
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 McGraw-Edison Co.: See—  
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 McKee, Edward S., to Eastman Kodak Co. Reel for cartridge-loading motion picture projectors. Re. 27,719, 8-7-73, Cl. 242—71.8.  
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 Santilli, Ermanno. Annular saw with circular safety guard. Re. 27,716, 8-7-73, Cl. 30—389.  
 Sennewald, Kurt, W. Vogt, J. Kandler, R. Sommerfeld, and G. Sorbe, to Knapsack Aktiengesellschaft. Process for preparing unsaturated nitriles. Re. 27,718, 8-7-73, Cl. 260—465.3.  
 Sorbe, Gunter: See—  
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 Stewart, Victor E., Jr., to McGraw-Edison Co. Radiation sensitive position encoder using coded discs. Re. 27,723, 8-7-73, Cl. 250—219.  
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 Anthonson, Arthur G., B. Rubenstein, and S. C. Schechter. Lock operated stereo tape cartridge display case. 228,049, 8-7-73, Cl. D6—130.  
 Armstrong, William R., to Sealed Air Corp. A packaging cushion or the like. 228,062, 8-7-73, Cl. D9—294.  
 Bakast, Alexander L. Balancing bird toy. 228,081, 8-7-73, Cl. D34—15.  
 Beer, Allan T., to Darrell-Allan Corp. Underwater light. 228,084, 8-7-73, Cl. D48—24.  
 Berkoff, Daniel A., to Orion Industries, Inc. Battery charger. 228,071, 8-7-73, Cl. D26—15.  
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 Blumcraft of Pittsburgh: See—  
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 Bourke, Robert E., to GAF Corp. Combined motion picture projector and carrying case or similar article. 228,094, 8-7-73, Cl. D61—1.  
 Brunswick Corp.: See—  
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 Comroe, Daniel B., to Ecodyne Corp. Water conditioner. 228,065, 8-7-73, Cl. D23—3.  
 Consolidated Foods Corp.: See—  
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 Darrell-Allan Corp.: See—  
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 Elsenhoffer, Joseph T. Butter spreader. 228,055, 8-7-73, Cl. D7—99.  
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 Hohullin, Samuel E., to National Union Electric Corp. Suction cleaner. 228,058, 8-7-73, Cl. D7—168.  
 Horgan, William J., to Blumcraft of Pittsburgh. Combined door handle and lock housing. 228,060, 8-7-73, Cl. D8—138.  
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 Keeshin, Ira A., and R. J. Kruse, to Federated Dept. Stores, Inc. Food cart. 228,063, 8-7-73, Cl. D14—3.  
 Kitson, Gerald L. Poultry cage. 228,072, 8-7-73, Cl. D30—1.  
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 Longarzo, Roland, to Consolidated Foods Corp. Combined memo pad holder, writing instrument and holder therefor. 228,083, 8-7-73, Cl. D45—9.  
 Lovitz, David D., to Sternco Industries Inc. Filter for home aquarium. 228,073, 8-7-73, Cl. D30—9.  
 MacKenzie, Norma E. Toy comforter or the like. 228,077, 8-7-73, Cl. D34—4.  
 Marshall, Leslie. Luggage bag. 228,099, 8-7-73, Cl. D87—5.  
 Marshall, Leslie. Luggage bag. 228,100, 8-7-73, Cl. D87—5.  
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 Oka, Shunzo, and A. Miyashita, to Matsushita Electric Industrial Co., Ltd. Duplex variable resistor. 228,070, 8-7-73, Cl. D26—1.  
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 Lovitz, David D. 228,073.  
 Switzer, Gary L.: See—  
 Middleton, Robert E., and Switzer. 228,093.  
 Telesco Brophrey Ltd.: See—  
 Hoffmann, Hans. 228,101.  
 Tennant Co.: See—  
 Kasper, Joseph G., and Polvka. 228,087.  
 Torin Corp.: See—  
 Larala, Anthony C., and Najaman. 228,068.  
 Uniroyal Inc.: See—  
 Blankenship, Arthur C. 228,102.  
 Vernon Co., The: See—  
 Woofter, Cecil B. 228,059.  
 Waller, A. E., Co. Inc.: See—  
 Waller, John B. 228,082.  
 Waller, John B., to A. E. Waller Co. Inc. Friction grip fastener for articles of jewelry. 228,082, 8-7-73, Cl. D45—9.  
 Wieland, Melvin L. Inflatable car bed. 228,050, 8-7-73, Cl. D6—201.  
 Wigo-Gottlob Widmann and Sohne KG: See—  
 Knox, John E., and Hubner. 228,053.  
 Wilkerson Corp.: See—  
 Horst, John V. 228,088.  
 Woofter, Cecil B., to The Vernon Co. Litter box. 228,059, 8-7-73, Cl. D7—193.  
 Yoshinaga Prince Co.: See—  
 Yoshinaga, Sadao. 228,086.  
 Yoshinaga, Sadao, to Yoshinaga Prince Co. Cigarette lighter. 228,086, 8-7-73, Cl. D48—27.  
 Zelenko, Harry. Animal figure punch-out board. 228,075, 8-7-73, Cl. D34—2.



# CLASSIFICATION OF PATENTS

ISSUED AUGUST 7, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

185R	CLASS 2	279	3,750,241	63	CLASS 40	58.95	3,750,380	441	3,750,453	77	3,750,519
237	3,750,192			125H	3,750,313	157TS	Re.27,717	466	3,750,454	79	3,750,526
	3,750,193	2.1R	3,751,376	137	3,750,314				3,750,455		
1	CLASS 3			158	3,750,316	30	CLASS 58		CLASS 73	1	3,750,527
	3,750,194	1.4	3,750,242	310	3,750,317	50R	3,750,386	12	3,750,456	37	3,750,528
45	CLASS 4					58	3,750,385	45.1	3,750,457		
166	3,750,195	25.35	3,750,243	1S	3,750,318	90B	3,750,387	49.4	3,750,458	1.8	3,750,529
172.19	3,750,196	27R	3,750,244	70F	3,750,319	90R	3,750,388	61.1R	3,750,459	1.87	3,750,530
	3,750,197	39	3,750,245			144	3,750,389	67.5	3,750,460	148	3,750,531
2R	CLASS 5	130	3,750,246	15	3,750,320			67.7	3,750,461		
63	3,750,198	148.4D	3,750,250	42.1	3,750,321	78	CLASS 59	113	3,750,462	3	3,750,532
66	3,750,199	149.5NM	3,750,249	42.14	3,750,322			117	3,750,463	498	3,750,533
263	3,750,200	157R	3,750,247	42.25	3,750,323	24	CLASS 60	117.3	3,750,464	506	3,750,534
343	3,750,201	157.3R	3,750,248	42.28	3,750,324	36	3,750,391	159	3,750,465		
	3,750,202	173	3,750,251	44.88	3,750,325	39.14	3,750,392	169	3,750,466		
241	CLASS 7	191.6	3,750,252	131	3,750,326	39.36	3,750,393	194EM	3,750,467	121	3,750,535
	3,751,686	196.3	3,750,253	139	3,750,327	39.37	3,750,394	194F	3,750,468	165	3,750,536
94.16	CLASS 8	200B	3,750,254			39.74R	3,750,395	205D	3,750,469		
111	3,751,221	200P	3,750,255	58	3,751,235	39.82S	3,750,396	212	3,750,470		
151	3,751,222	208B	3,750,256	66	3,751,234			342	3,750,471	94R	3,750,538
155.1	3,751,223	212R	3,750,257			73	3,750,397	379	3,750,472		
		221.5	3,750,258	1K	3,751,236	108	3,750,398	386	3,750,473	1.1	3,750,539
310AA	CLASS 9	401	3,750,259			261	3,750,399	387	3,750,474	4.5R	3,750,540
310D	3,750,204	408	3,750,260	107	3,750,328	269	3,750,400	398AR	3,750,475	4.5	3,750,541
345	3,750,203	427	3,750,261	119	3,750,329	286	3,750,401	398C	3,750,476	10CE	3,750,542
	3,750,205	470.3	3,750,262			323	3,750,402	421B	3,750,477	10CT	3,750,543
155A	CLASS 10	471.3	3,750,263	35	3,750,331	413	3,750,403	423R	3,750,478		
115.8	3,750,206	474.3	3,750,264	74	3,750,332	422	3,750,404	506	3,750,479	10C	3,750,544
128H	CLASS 12	490	3,750,265	177	3,750,333	442	3,750,405	515	3,750,480	11UW	3,750,545
146C	3,750,207	507	3,750,266	220	3,750,334			521	3,750,481	11L	3,750,546
	3,750,209	558	3,750,267	371	3,750,335	2	CLASS 61		3,750,482	11R	3,750,547
9	CLASS 13	571	3,750,268	411	3,750,336	41A	3,750,408	50	3,750,483		
35	3,751,572	587	3,750,269	413	3,750,337	42	3,750,409	84.5	3,750,484	11	3,750,548
	3,751,571	596	3,750,270	501	3,750,338	43	3,750,410	125.5	3,750,485	11.5R	3,750,549
1	CLASS 14	603	3,750,271			46	3,750,411	230.17E	3,750,486	18R	3,750,550
	3,750,210	605	3,750,272	8	3,750,341			242.8	3,750,487	31CA	3,750,551
3.11	CLASS 15	622	3,750,273	9	3,750,342	42	3,750,412	337	3,750,488	31FM	3,750,552
21D	3,750,211	624	3,750,274	12	3,750,343	44	3,750,413	434	3,750,489		
	3,750,212	628	3,750,275	34R	3,750,344	55	3,750,414	469	3,750,490	1.5	3,751,246
26	3,750,213			50R	3,750,345	93	3,750,415	523	3,750,491		
42	3,750,214	43.9	3,750,276	97R	3,750,346	101	3,750,416	625	3,750,492	36	3,751,247
50C	3,750,215	85	3,750,277	101R	3,750,347	114	3,750,417	720	3,750,493	36.2	3,751,248
	3,750,216	90.8	3,750,278	134	3,750,348	141	3,750,418	820	3,750,494	50A	3,751,249
	3,750,217	254	3,750,279	206.5	3,750,349	290	3,750,419	866	3,750,495	50R	3,751,250
	3,750,218	338	3,750,280	391	3,750,350	331	3,750,420			63	3,751,251
	3,750,219	346.58	3,750,281			476	3,750,421			66R	3,751,252
	3,750,220	380	3,750,282	23	3,750,349					67	3,751,253
	3,750,221	389	3,750,283	27	3,750,350	11R	3,750,422	49	3,751,241	76C	3,751,254
	3,750,222			64	3,750,351	23	3,750,423	63	3,751,242	76R	3,751,255
171	3,750,223	46	3,750,284	79	3,750,352	31	3,750,424	128G	3,751,243	81	3,751,256
182	3,750,224	32	3,750,285	204	3,750,353			130.5	3,751,244	81R	3,751,257
187	3,750,225	3	3,750,286	236	3,750,354	30	3,751,238		3,751,245	91R	3,751,258
228	3,750,226	14A	3,750,287	282	3,750,355	86	3,750,425			115P	3,751,259
250.32	3,750,227	32	3,750,288	309	3,750,356	149R	3,750,426	454	3,750,514		
256.53	3,750,228			400	3,750,357	172R	3,750,427		3,750,515	2.01	3,750,555
304	3,750,229	1R	3,750,289	468	3,750,358			20	3,750,497	2.11	3,750,556
317	3,750,230	2A	3,750,290	714	3,750,359	35S	3,750,428	36R	3,750,498	33	3,750,557
404	3,750,231	20D	3,750,291	745	3,750,360	12R	3,750,429	39	3,750,499	40D	3,750,558
416	3,750,232	41D	3,750,292					59R	3,750,501		
11	3,750,233	147L	3,750,293	13	3,750,361			101	3,750,502		
32	3,750,234	166	3,750,294	22A	3,750,362	1.5	3,750,430		3,750,503	2ND	3,751,262
45	3,750,235	172R	3,750,295	29	3,750,363	21	3,750,431		3,750,504	11	3,751,263
71	3,750,236	174L	3,750,296	32	3,750,364	38R	3,750,432		3,750,505	14	3,751,264
	3,750,237			180	3,750,365	146	3,750,433		3,750,506	48	3,751,265
105	3,750,238			329	3,750,366	172	3,750,434		3,750,507	50.5	3,751,266
161P	3,750,239					272	3,750,435		3,750,508	81	3,751,267
	3,750,240			8	3,750,367				3,750,509	100	3,751,268
230EP	3,751,225					118	3,751,239		3,750,510	139	3,751,269
253A	3,751,226	9.5	3,750,303						3,750,511	140R	3,751,270
254EF	3,751,227	54	3,750,304						3,750,512	141A	3,751,271
260	3,751,228	56	3,750,305						3,750,513	279	3,750,559
	3,751,229	69	3,750,306						3,750,514	408	3,750,560
	3,751,230	154	3,750,307						3,750,515		
	3,751,231								3,750,516		
	3,751,232	35J	3,750,308						3,750,517		
	3,751,233	45	3,750,309						3,750,518		
	3,751,234	53	3,750,310						3,750,519		
272	3,751,235								3,750,520		
288R	3,751,236								3,750,521		
289	3,751,237								3,750,522		
	3,751,238								3,750,523		
	3,751,239								3,750,524		
	3,751,240								3,750,525		
	3,751,241								3,750,526		
	3,751,242								3,750,527		
	3,751,243								3,750,528		
	3,751,244								3,750,529		
	3,751,245								3,750,530		
	3,751,246								3,750,531		
	3,751,247								3,750,532		
	3,751,248								3,750,533		
	3,751,249								3,750,534		
	3,751,250								3,750,535		
	3,751,251								3,750,536		
	3,751,252								3,750,537		
	3,751,253								3,750,538		
	3,751,254								3,750,539		
	3,751,255								3,750,540		
	3,751,256								3,750,541		
	3,751,257								3,750,542		
	3,751,258								3,750,543		
	3,751,259								3,750,544		
	3,751,260								3,750,545		
	3,751,261								3,750,546		
	3,751,262								3,750,547		
	3,751,263								3,750,548		
	3,751,264								3,750,549		
	3,751,265								3,750,550		
	3,751,266								3,750,551		
	3,751,267								3,750,552		
	3,751,268								3,750,553		
	3,751,269								3,750,554		
	3,751,270								3,750,555		
	3,751,271								3,750,556		
	3,751,272								3,750,557		
	3,751,273								3,750,558		
	3,751,274										



# CLASSIFICATION OF PATENTS

16	CLASS 102	3,750,586	32EA	3,750,631	16	3,750,714	99B	3,751,575	96	3,751,339	6B	3,750,900
34.1	3,750,574	102	3,750,632	110	3,750,715	103.5R	3,751,340	65	3,750,901	54R	3,750,943	
37.6	3,750,577	119B	3,750,634	122R	3,750,716	153G	3,751,579	139	3,751,341	60TK	3,750,944	
38	3,750,578	140MC	3,750,635	207	3,750,717	CLASS 175	3,750,766	1R	3,750,792	61.11C	3,751,641	
42C	3,750,580	140MP	3,750,636	92.1	3,750,718	50	3,750,767	6.7	3,750,791	61.11E	3,751,636	
49.7	3,750,581	148E	3,750,637	92.2	3,750,719	53	3,750,768	19	3,750,793	11	3,750,999	
56	3,750,582	187.5	3,750,638	149	3,750,720	72	3,750,769	49	3,750,794	77	3,751,639	
67	3,750,585	198D	3,750,639	CLASS 141	3,750,721	85	3,750,770	68	3,750,795	141	3,751,640	
69	3,750,587	23	3,750,641	10	3,750,722	173	3,750,771	107	3,750,796	148	3,751,643	
70.02G	3,750,588	CLASS 124	3,750,642	332	3,750,723	269	3,750,772	176	3,750,797	38CC	3,750,803	
70.2P	3,750,589	59.5	3,750,643	388	3,750,724	364	3,750,773	184	3,750,804	38R	3,750,802	
70.2R	3,750,590	197	3,750,644	CLASS 126	3,750,725	19R	3,751,333	1	3,750,798	84	3,750,805	
79	3,750,591	197	3,750,645	28.1	3,750,726	36R	3,751,334	20R	3,750,799	152	3,750,807	
81	3,750,592	CLASS 128	3,750,646	178	3,750,727	78	3,751,335	33AA	3,750,800	314	3,750,810	
87	3,750,593	1D	3,750,647	240	3,750,728	CLASS 178	3,751,581	43	3,750,801	394	3,750,811	
95	3,750,594	2B	3,750,648	312	3,750,729	5.4C	3,751,582	115	3,750,802	450	3,750,812	
112	3,750,595	2F	3,750,649	315	3,750,730	5.4R	3,751,583	136	3,750,803	518	3,750,813	
138	3,750,596	2G	3,750,650	64	3,750,731	5.4R	3,751,584	144	3,750,804	621	3,750,814	
172BT	3,750,597	2.06E	3,750,651	CLASS 148	3,750,732	6	3,751,585	159	3,750,805	730	3,750,815	
243	3,750,598	2.1Z	3,750,652	33.3	3,750,733	6.6R	3,751,586	189	3,750,806	767	3,750,816	
376	3,750,599	17	3,750,653	127	3,750,734	6.7A	3,751,587	201	3,750,807	9	3,750,817	
38.3	3,751,276	20	3,750,654	171	3,750,735	6.8	3,751,588	211	3,750,808	13R	3,750,819	
40R	3,751,271	57	3,750,655	175	3,750,736	6.8	3,751,589	220CB	3,750,809	42	3,750,820	
47Q	3,751,272	59	3,750,656	36	3,750,737	7.1	3,751,590	CLASS 200	3,751,609	52	3,750,822	
57	3,751,273	66	3,750,657	109	3,750,738	7.2	3,751,591	19DC	3,751,610	67	3,751,623	
68	3,751,274	75	3,750,658	8	3,750,739	7.3S	3,751,592	19R	3,751,611	69S	3,751,622	
90	3,751,275	80R	3,750,659	52R	3,750,740	68	3,751,593	48R	3,751,612	70	3,751,625	
213	3,751,277	89R	3,750,660	CLASS 150	3,750,741	88	3,751,594	52R	3,751,613	85	3,751,624	
273R	3,751,278	130	3,750,661	2A	3,750,742	CLASS 179	3,751,595	61.08	3,751,614	103	3,751,621	
288Q	3,751,279	132D	3,750,662	175	3,750,743	5P	3,751,596	84C	3,751,615	118	3,751,626	
43	3,750,596	146.6	3,750,663	220	3,750,744	15AL	3,751,597	86R	3,751,616	131R	3,751,627	
45	3,750,597	156	3,750,664	16	3,750,745	15AQ	3,751,598	144B	3,751,617	137	3,751,628	
51	3,750,598	215	3,750,665	17	3,750,746	15BC	3,751,599	159R	3,751,618	201	3,751,629	
161	3,750,599	227	3,750,666	71	3,750,747	15C	3,751,600	166BH	3,751,619	211	3,751,630	
CLASS 110	3,750,600	287	3,750,667	100L	3,751,601	CLASS 152	3,750,733	141	3,751,342	390	3,751,633	
CLASS 112	3,750,601	303.1	3,750,668	100.1	3,751,602	100.1	3,751,603	CLASS 202	3,751,634	485	3,751,632	
121.12	3,750,602	305	3,750,669	100.2A	3,751,604	100.2A	3,751,605	CLASS 204	3,751,635	497	3,751,634	
252	3,750,603	376	3,750,670	100.2M	3,751,606	100.2M	3,751,607	15	3,751,343	499	3,751,635	
265	3,750,604	465	3,750,671	100.2P	3,751,608	100.2P	3,751,609	26	3,751,344	3	3,750,823	
267	3,750,605	17R	3,750,672	100.2C	3,751,610	100.2C	3,751,611	28	3,751,345	20.5	3,750,824	
CLASS 113	3,750,606	21B	3,750,673	107R	3,751,612	107R	3,751,613	51	3,751,346	35	3,750,825	
1F	3,750,607	25	3,750,674	175.2R	3,751,614	175.2R	3,751,615	55Y	3,751,347	55G	3,750,826	
CLASS 114	3,750,608	84C	3,750,675	182R	3,751,616	182R	3,751,617	56R	3,751,348	74	3,750,827	
103	3,750,609	140C	3,750,676	CLASS 180	3,750,773	1F	3,750,773	58	3,751,349	2	3,750,828	
206A	3,750,610	172	3,750,677	1F	3,750,774	5R	3,750,774	109	3,751,350	8	3,750,829	
210	3,750,611	11R	3,750,678	5R	3,750,775	145R	3,750,775	145R	3,751,351	81	3,750,830	
218	3,750,612	11R	3,750,679	9.36	3,750,776	158HE	3,751,352	158HE	3,751,353	188	3,750,831	
221	3,750,612	11R	3,750,680	9.62	3,750,777	159.15	3,751,354	159.15	3,751,355	211	3,750,832	
CLASS 115	3,750,613	49	3,750,681	99.1	3,750,778	198	3,751,356	198	3,751,357	23	3,750,905	
17	3,750,614	53	3,750,682	99.2C	3,750,779	199	3,751,358	199	3,751,359	74	3,750,906	
18R	3,750,615	55	3,750,683	99.2R	3,750,780	CLASS 206	3,750,867	CLASS 222	3,750,905	80	3,750,907	
35R	3,750,616	88.5	3,750,684	99.2R	3,750,781	1R	3,750,868	CLASS 224	3,750,918	107	3,750,908	
41R	3,750,617	30	3,751,297	CLASS 181	3,750,837	8	3,750,869	CLASS 226	3,750,919	148	3,750,909	
CLASS 116	3,750,618	57R	3,750,685	31B	3,750,838	45.14	3,750,870	CLASS 228	3,750,926	239	3,750,910	
115.5	3,750,619	95	3,750,686	33R	3,750,839	46FC	3,750,871	CLASS 230	3,750,927	254	3,750,911	
124.1	3,750,620	6F	3,751,298	50	3,750,840	46FN	3,750,872	CLASS 232	3,750,928	59R	3,750,873	
7	3,751,280	9	3,751,299	57	3,750,841	59R	3,750,873	CLASS 234	3,750,929	63.2R	3,750,874	
13	3,751,282	24	3,751,300	58	3,750,842	65E	3,750,875	CLASS 236	3,750,930	65S	3,750,876	
22	3,751,283	26	3,751,301	72	3,750,843	65S	3,750,876	CLASS 238	3,750,931	11	3,751,358	
28	3,751,284	86E	3,751,302	121	3,750,844	CLASS 208	3,751,358	CLASS 240	3,751,636	61	3,751,360	
34	3,751,285	89	3,751,303	127	3,750,845	CLASS 210	3,750,890	CLASS 242	3,751,637	155	3,751,359	
36.2	3,751,286	158	3,751,304	141	3,750,846	CLASS 212	3,750,891	CLASS 244	3,751,638	255	3,751,361	
47A	3,751,287	221	3,751,305	CLASS 184	3,750,847	CLASS 214	3,750,892	CLASS 246	3,751,639	73	3,750,877	
111R	3,750,746	13	3,751,282	CLASS 186	3,750,848	CLASS 216	3,750,893	CLASS 248	3,751,640	74R	3,750,878	
114B	3,750,747	22	3,751,283	CLASS 188	3,750,849	CLASS 218	3,750,894	CLASS 250	3,751,641	111.6	3,750,879	
126R	3,750,748	28	3,751,284	CLASS 190	3,750,850	CLASS 220	3,750,895	CLASS 252	3,751,642	284	3,750,880	
130R	3,750,749	34	3,751,285	CLASS 192	3,750,851	CLASS 222	3,750,896	CLASS 254	3,751,643	14	3,750,881	
140A	3,750,750	36.2	3,751,286	CLASS 194	3,750,852	CLASS 224	3,750,897	CLASS 256	3,751,644	14	3,750,882	
212	3,751,292	47A	3,751,287	CLASS 196	3,750,853	CLASS 226	3,750,898	CLASS 258	3,751,645	107	3,750,883	
217	3,751,293	111R	3,750,746	CLASS 198	3,750,854	CLASS 228	3,750,899	CLASS 260	3,751,646	269	3,750,884	
226	3,751,294	114B	3,750,747	CLASS 200	3,750,855	CLASS 230	3,750,900	CLASS 262	3,751,647	287	3,750,885	
227	3,751,295	126R	3,750,748	CLASS 202	3,750,856	CLASS 232	3,750,901	CLASS 264	3,751,648	345	3,750,886	
230	3,751,296	130R	3,750,749	CLASS 204	3,750,857	CLASS 234	3,750,902	CLASS 266	3,751,649	497	3,750,887	
CLASS 118	3,750,620	140A	3,750,750	CLASS 206	3,750,858	CLASS 236	3,750,903	CLASS 268	3,751,650	15	3,750,929	
49.5	3,750,621	212	3,751,292	CLASS 208	3,750,859	CLASS 238	3,750,904	CLASS 270	3,751,651	17B	3,750,930	
326	3,750,622	217	3,751,293	CLASS 210	3,750,860	CLASS 240	3,750,905	CLASS 272	3,751,652	37R	3,750,931	
637	3,750,624	226	3,751,294	CLASS 212	3,750,861	CLASS 242	3,750,906	CLASS 274	3,751,653	103R	3,750,986	
CLASS 119	3,750,625	227	3,751,295	CLASS 214	3,750,862	CLASS 244	3,750,907	CLASS 276	3,751,654	1	3,750,987	
44	3,750,627	230	3,751,296	CLASS 216	3,750,863	CLASS 246	3,750,908	CLASS 278	3,751,655	4	3,750,988	
51R	3,750,628	CLASS 122	3,750,629	CLASS 218	3,750,864	CLASS 248	3,750,909	CLASS 280	3,751,656	146	3,750,989	
72.5	3,750,629	CLASS 124	3,750,713	CLASS 220	3,750,865	CLASS 250	3,750,910	CLASS 282	3,751,657	206R	3,750,990	
6R	3,750,630	CLASS 126	3,750,714	CLASS 222	3,750,866	CLASS 252	3,750,911	CLASS 284	3,751,658	221	3,750,991	
8.19	3,750,630	CLASS 128	3,750,715	CLASS 224	3,750,867	CLASS 254	3,750,912	CLASS 286	3,751,659	298	3,750,992	
		CLASS 130	3,750,716	CLASS 226	3,750,868	CLASS 256	3,750,913	CLASS 288	3,751,660	324	3,750,993	
		CLASS 132	3,750,717	CLASS 228	3,750,869	CLASS 258	3,750,914	CLASS 290	3,751,661	15	3,750,929	
		CLASS 134	3,750,718	CLASS 230	3,750,870	CLASS 260	3,750,915	CLASS 292	3,751,662	17B	3,750,930	
		CLASS 136	3,750,719	CLASS 232	3,750,871	CLASS 262	3,750,916	CLASS 294	3,751,663	37R	3,750,931	
		CLASS 138	3,750,720	CLASS 234	3,750,872	CLASS 264	3,750,917</					



## CLASSIFICATION OF PATENTS

100	3,751,197	133	3,751,202	326	3,751,207	69	3,751,212	8	3,751,195	80	3,751,217
119	3,751,198	190	3,751,203	388	3,751,208	237	3,751,210	15	3,751,214	115	3,751,199
123	3,751,200	253	3,751,205	461	3,751,209	328	3,751,213	49	3,751,215		3,751,220
127	3,751,201	258	3,751,189							134	3,751,218
	3,751,204	264	3,751,206	9	CLASS 431		CLASS 432	62	3,751,216	257	3,751,219

## CLASSIFICATION OF DESIGNS

D 2—	46	228,047		128	228,056		49	228,066		228,075	D48—	20	228,085	D57—	228,093		
	233	228,048		129	228,057			228,067		4	228,077		24	228,084	D61—	228,094	
D 6—	64	228,095		168	228,058		74	228,068		5	228,076		27	228,086	D66—	228,096	
	130	228,049		193	228,059	D26—	1	228,069			228,079	D49—	9	228,087	D70—	2	228,097
	181	228,051	D 8—	138	228,060			228,070			228,080	D52—	6	228,088	D87—	1	228,101
	184	228,052		179	228,061		15	228,071		15	228,081	D54—	14	228,089		3	228,098
	201	228,050	D 9—	294	228,062	D30—	1	228,072	D35—	3	228,078	D55—	1	228,090		5	228,099
D 7—	63	228,053	D14—	3	228,063			228,073	D45—	9	228,082			228,091			228,100
	98	228,054	D16—		228,064	D34—	2	228,074			228,083			228,092	D90—	20	228,102
	99	228,055	D23—		228,065												

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

## PATENTS

1 : 3,750,459	3,750,530	3,750,974	3,751,573	3,751,053	3,750,865
3,750,479	3,750,532	3,750,978	3,751,605	3,751,167	3,751,159
3,750,581	3,750,541	3,750,985	3,751,618	3,751,200	3,751,366
3,750,734	3,750,547	3,750,993	3,751,637	3,751,225	14 : 3,751,576
3,750,979	3,750,585	3,751,004	3,751,650	3,751,283	15 : 3,750,536
3,750,992	3,750,586	3,751,006	3,751,666	3,751,393	16 : 3,750,691
3,751,105	3,750,592	3,751,020	3,751,673	3,751,428	3,750,838
3,751,166	3,750,607	3,751,027	3,751,680	3,751,470	17 : 3,750,206
3,751,441	3,750,616	3,751,035	3,751,693	3,751,472	3,750,220
Re.27,721	3,750,642	3,751,042	3,751,696	3,751,545	3,750,231
3,750,192	3,750,649	3,751,059	3,751,699	3,751,550	3,750,232
3,750,226	3,750,657	3,751,084	3,751,701	3,751,566	3,750,240
3,750,268	3,750,660	3,751,085	3,751,712	3,751,630	3,750,249
3,750,377	3,750,670	3,751,086	3,751,718	3,751,661	3,750,250
3,750,454	3,750,671	3,751,087	3,751,722	3,751,664	3,750,263
3,750,647	3,750,673	3,751,088	3,751,732	3,751,664	3,750,267
3,750,648	3,750,681	3,751,093	3,751,745	3,751,664	3,750,267
3,750,720	3,750,693	3,751,100	3,751,755	3,751,664	3,750,294
3,751,193	3,750,697	3,751,101	3,751,761	3,751,664	3,750,315
3,751,205	3,750,723	3,751,104	3,751,766	3,751,664	3,750,323
3,751,240	3,750,732	3,751,107	3,751,775	3,751,664	3,750,334
3,751,292	3,750,738	3,751,111	3,751,785	3,751,664	3,750,379
3,751,649	3,750,745	3,751,122	3,751,790	3,751,664	3,750,391
3,751,718	3,750,753	3,751,127	3,751,795	3,751,664	3,750,405
5 : 3,751,377	3,750,754	3,751,128	3,751,809	3,751,664	3,750,409
6 : 3,750,203	3,750,755	3,751,137	3,751,816	3,751,664	3,750,447
3,750,204	3,750,760	3,751,138	3,751,822	3,751,664	3,750,485
3,750,257	3,750,771	3,751,139	3,751,836	3,751,664	3,750,489
3,750,258	3,750,791	3,751,151	3,751,841	3,751,664	3,750,499
3,750,259	3,750,800	3,751,152	3,751,846	3,751,664	3,750,501
3,750,266	3,750,803	3,751,154	3,751,851	3,751,664	3,750,518
3,750,283	3,750,805	3,751,157	3,751,856	3,751,664	3,750,537
3,750,285	3,750,810	3,751,172	3,751,861	3,751,664	3,750,572
3,750,289	3,750,812	3,751,175	3,751,866	3,751,664	3,750,625
3,750,292	3,750,831	3,751,221	3,751,871	3,751,664	3,750,635
3,750,322	3,750,846	3,751,227	3,751,876	3,751,664	3,750,639
3,750,330	3,750,851	3,751,295	3,751,881	3,751,664	3,750,663
3,750,332	3,750,878	3,751,311	3,751,886	3,751,664	3,750,664
3,750,337	3,750,881	3,751,320	3,751,891	3,751,664	3,750,690
3,750,346	3,750,883	3,751,335	3,751,896	3,751,664	3,750,694
3,750,373	3,750,887	3,751,340	3,751,901	3,751,664	3,750,695
3,750,384	3,750,890	3,751,341	3,751,906	3,751,664	3,750,744
3,750,404	3,750,894	3,751,345	3,751,911	3,751,664	3,750,759
3,750,410	3,750,899	3,751,352	3,751,916	3,751,664	3,750,761
3,750,433	3,750,909	3,751,355	3,751,921	3,751,664	3,750,785
3,750,438	3,750,912	3,751,398	3,751,926	3,751,664	3,750,807
3,750,439	3,750,936	3,751,399	3,751,931	3,751,664	3,750,814
3,750,476	3,750,938	3,751,427	3,751,936	3,751,664	3,750,817
3,750,522	3,750,947	3,751,453	3,751,941	3,751,664	3,750,834
3,750,524	3,750,956	3,751,473	3,751,946	3,751,664	3,750,856
3,750,529	3,750,966	3,751,549	3,751,951	3,751,664	3,750,866



## GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

3,750,888	3,750,843	3,750,589	3,751,417	3,751,590	3,750,928
3,750,893	3,750,981	3,750,658	3,751,420	3,751,591	3,750,988
3,750,914	3,751,062	3,750,728	3,751,433	3,751,593	3,751,041
3,750,918	3,751,226	3,750,777	3,751,459	3,751,594	3,751,192
3,750,927	3,751,274	3,750,811	3,751,468	3,751,596	3,751,363
3,750,933	3,751,301	3,750,885	3,751,478	3,751,601	3,751,456
3,750,933	3,751,476	3,750,931	3,751,481	3,751,624	3,751,457
3,750,960	3,751,648	3,750,937	3,751,482	3,751,633	3,751,517
3,750,971	3,751,253	3,751,037	3,751,487	3,751,642	3,751,642
3,750,991	3,750,277	3,751,118	3,751,491	3,751,654	3,750,463
3,750,994	3,750,343	3,751,202	3,751,530	3,751,670	3,750,508
3,750,995	3,750,397	3,751,212	3,751,531	3,751,715	3,750,591
3,750,997	3,750,442	3,751,233	3,751,562	3,751,716	3,750,696
3,751,000	3,750,512	3,751,257	3,751,567	3,751,720	3,750,737
3,751,038	3,750,525	3,751,304	3,751,583	3,751,722	3,750,900
3,751,076	3,750,543	3,751,312	3,751,587	3,750,235	3,750,941
3,751,077	3,750,543	3,751,449	3,751,597	3,750,288	3,750,945
3,751,080	3,750,551	3,751,579	3,751,606	3,750,341	3,750,954
3,751,081	3,750,603	3,751,679	3,751,657	3,750,674	3,751,068
3,751,098	3,750,677	3,751,682	3,751,706	3,750,741	3,751,162
3,751,112	3,750,710	3,751,682	3,751,721	3,751,813	3,751,174
3,751,149	3,750,722	3,750,291	3,751,726	3,751,815	3,751,185
3,751,150	3,750,799	3,750,692	3,750,641	3,750,870	3,751,611
3,751,191	3,750,869	3,750,193	3,750,702	3,750,872	Re.27,717
3,751,229	3,750,973	3,750,238	3,750,719	3,750,916	3,750,197
3,751,235	3,751,010	3,750,579	Re.27,720	3,751,013	3,750,212
3,751,260	3,751,043	3,750,604	3,750,214	3,751,110	3,750,230
3,751,268	3,751,083	3,750,623	3,750,219	3,751,232	3,750,247
3,751,281	3,751,108	3,750,656	3,750,221	3,751,328	3,750,248
3,751,291	3,751,125	3,750,683	3,750,273	3,751,477	3,750,252
3,751,313	3,751,129	3,750,714	3,750,278	3,751,501	3,750,265
3,751,317	3,751,143	3,750,735	3,750,287	3,751,622	3,750,340
3,751,324	3,751,161	3,750,844	3,750,287	3,751,691	3,750,375
3,751,365	3,751,178	3,750,875	3,750,307	Re.27,722	3,750,394
3,751,379	3,751,218	3,750,939	3,750,313	3,750,282	3,750,395
3,751,380	3,751,400	3,751,063	3,750,316	3,750,304	3,750,418
3,751,383	3,751,406	3,751,070	3,750,317	3,750,308	3,750,468
3,751,410	3,751,451	3,751,095	3,750,328	3,750,325	3,750,477
3,751,438	3,751,495	3,751,204	3,750,347	3,750,361	3,750,488
3,751,474	3,751,525	3,751,278	3,750,368	3,750,396	3,750,593
3,751,489	3,751,540	3,751,364	3,750,369	3,750,402	3,750,598
3,751,498	3,751,571	3,751,367	3,750,399	3,750,429	3,750,606
3,751,502	3,751,582	3,751,368	3,750,430	3,750,452	3,750,612
3,751,574	3,751,636	3,751,371	3,750,446	3,750,482	3,750,704
3,751,607	3,751,638	3,751,486	3,750,458	3,750,569	3,750,743
3,750,196	3,751,656	3,751,529	3,750,471	3,750,594	3,750,764
3,750,213	3,751,681	3,751,561	3,750,531	3,750,698	3,750,794
3,750,229	3,751,717	3,751,569	3,750,539	3,750,701	3,750,850
3,750,335	3,751,723	3,750,762	3,750,545	3,750,733	3,750,854
3,750,336	3,750,293	3,750,816	3,750,653	3,750,776	3,750,863
3,750,352	3,750,314	3,750,953	3,750,668	3,750,792	3,750,889
3,750,416	3,750,321	3,751,097	3,750,684	3,750,836	3,750,896
3,750,419	3,750,327	3,750,652	3,750,739	3,750,847	3,750,906
3,750,421	3,750,345	3,750,718	3,750,796	3,750,902	3,750,917
3,750,574	3,750,353	3,751,724	3,750,867	3,750,904	3,750,964
3,750,597	3,750,356	Re.27,725	3,750,873	3,750,913	3,750,999
3,750,621	3,750,427	3,750,225	3,750,915	3,750,934	3,751,014
3,750,730	3,750,492	3,750,236	3,750,921	3,750,942	3,751,047
3,750,779	3,750,494	3,750,237	3,750,930	3,750,951	3,751,065
3,750,798	3,750,595	3,750,262	3,750,950	3,750,959	3,751,164
3,750,859	3,750,622	3,750,305	3,750,975	3,750,962	3,751,182
3,750,861	3,750,688	3,750,312	3,750,976	3,750,986	3,751,195
3,750,871	3,750,731	3,750,357	3,751,048	3,750,990	3,751,209
3,750,932	3,750,780	3,750,358	3,751,056	3,750,998	3,751,215
3,751,032	3,750,782	3,750,362	3,751,116	3,751,005	3,751,231
3,751,079	3,750,795	3,750,389	3,751,121	3,751,012	3,751,239
3,751,219	3,750,825	3,750,392	3,751,134	3,751,034	3,751,241
3,751,273	3,750,919	3,750,398	3,751,140	3,751,066	3,751,250
3,751,277	3,750,924	3,750,413	3,751,142	3,751,102	3,751,309
3,751,431	3,751,002	3,750,462	3,751,155	3,751,123	3,751,338
3,751,575	3,751,003	3,750,527	3,751,160	3,751,131	3,751,342
3,751,600	3,751,007	3,750,578	3,751,163	3,751,179	3,751,358
3,751,602	3,751,008	3,750,582	3,751,188	3,751,183	3,751,373
3,750,211	3,751,021	3,750,596	3,751,238	3,751,246	3,751,378
3,750,456	3,751,025	3,750,645	3,751,249	3,751,265	3,751,485
3,750,484	3,751,039	3,750,682	3,751,251	3,751,270	3,751,507
3,750,845	3,751,067	3,750,746	3,751,252	3,751,298	3,751,527
3,750,989	3,751,082	3,750,804	3,751,254	3,751,305	3,751,554
3,751,050	3,751,091	3,750,849	3,751,255	3,751,308	3,751,617
3,751,411	3,751,141	3,750,891	3,751,256	3,751,343	3,751,626
3,750,351	3,751,237	3,750,905	3,751,258	3,751,348	3,751,644
3,750,359	3,751,288	3,750,980	3,751,282	3,751,374	3,751,653
3,750,858	3,751,289	3,751,029	3,751,286	3,751,375	3,751,669
3,751,026	3,751,297	3,751,040	3,751,293	3,751,401	3,751,689
3,751,036	3,751,323	3,751,045	3,751,318	3,751,437	3,751,700
3,751,072	3,751,346	3,751,057	3,751,326	3,751,464	3,750,747
3,750,420	3,751,354	3,751,069	3,751,347	3,751,467	3,751,639
3,750,643	3,751,421	3,751,145	3,751,351	3,751,494	3,750,242
3,750,708	3,751,424	3,751,176	3,751,357	3,751,499	3,750,400
3,750,784	3,751,426	3,751,187	3,751,387	3,751,505	3,750,528
3,750,852	3,751,444	3,751,248	3,751,409	3,751,510	3,750,756
3,750,925	3,751,461	3,751,253	3,751,439	3,751,511	3,750,907
3,751,402	3,751,462	3,751,262	3,751,440	3,751,513	3,750,922
3,750,700	3,751,484	3,751,264	3,751,458	3,751,514	3,750,923
3,750,721	3,751,524	3,751,269	3,751,488	3,751,515	3,751,196
3,750,766	3,751,610	3,751,287	3,751,500	3,751,516	3,751,284
3,751,171	3,751,632	3,751,303	3,751,519	3,751,522	3,751,302
3,751,432	3,751,640	3,751,310	3,751,522	3,751,625	3,750,560
3,751,543	3,751,710	3,751,314	3,751,523	3,751,667	3,750,680
3,750,194	Re.27,726	3,751,330	3,751,537	3,751,668	3,751,094
3,750,208	3,750,222	3,751,360	3,751,548	3,751,684	3,751,332
3,750,339	3,750,256	3,751,369	3,751,563	3,751,705	Re.27,724
3,750,360	3,750,329	3,751,381	3,751,565	3,750,255	3,750,198
3,750,583	3,750,378	3,751,384	3,751,568	3,750,478	3,750,233
3,750,590	3,750,511	3,751,396	3,751,580	3,750,749	3,750,261
3,750,611	3,750,516	3,751,404	3,751,584	3,750,802	3,750,269
3,750,823	3,750,563	3,751,416	3,751,588		

## GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

3,750,274	3,750,763	3,751,504	3,751,714	3,750,301	3,750,967
3,750,365	3,750,767	3,751,506	3,750,311	3,750,390	3,751,099
3,750,412	3,750,768	3,751,512	3,750,348	3,750,481	3,751,220
3,750,423	3,750,769	3,751,518	3,750,493	3,750,500	3,751,321
3,750,440	3,750,797	3,751,558	3,750,740	3,750,615	3,751,390
3,750,451	3,750,824	3,751,643	3,750,901	3,750,659	3,751,595
3,750,465	3,750,837	3,751,647	3,750,970	3,750,774	3,751,695
3,750,480	3,750,862	3,751,647	3,751,483	3,750,809	3,751,697
3,750,513	3,751,064	3,750,431	3,751,114	3,750,839	3,750,349
3,750,556	3,751,073	3,750,877	3,751,361	3,750,842	3,750,644
3,750,687	3,751,103	3,750,882	3,751,552	3,750,920	3,750,793
3,750,748	3,751,267	3,751,210	Re.27,723		
3,750,750	3,751,359	3,751,333	3,750,228		
3,750,751	3,751,385	3,751,686	3,750,254		
3,750,752	3,751,392	3,751,709	3,750,281		

## DESIGN PATENTS

6 : 228,051	9 : 228,052	26 : 228,064	228,087	36 : 228,048	37 : 228,066
228,071	228,068	228,072	228,092	228,049	228,067
228,081	228,094	228,090	228,050	228,075	228,063
228,084	228,074	228,098	228,055	228,083	42 : 228,060
228,096	228,057	228,102	228,062	228,097	44 : 228,082
228,088	228,058	228,061	228,073	228,099	48 : 228,054
228,091	228,059	228,065	228,095	228,100	228,085
228,093	228,080				



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# PATENT NOTICES

## Dedication

3,382,280.—*Clarence W. Huffman*, Glenview, Ill. 3'4'-DI-CHLOROPROPIONANILIDE. Patent dated May 7, 1968. Dedication filed Feb. 5, 1973, by the assignee, *Monsanto Company*.

Hereby dedicates to the Public the entire term of said patent.

## Disclaimers

3,565,904.—*Peter Frederick Juby*, De Witt, *Richard Anthony Partyka*, Liverpool, and *Thomas William Hudyma*, De Witt, N.Y. 1,2,3,4 - TETRAHYDRO - 1 - NAPHTHOIC ACIDS. Patent dated Feb. 23, 1971. Disclaimer filed Apr. 2, 1973, by the assignee, *Bristol-Myers Company*.

Hereby enters this disclaimer to claims 9 and 18 of said patent.

3,676,224.—*Charles Thomas Snee*, Willoughby, Ohio. PHOSPHATING SOLUTION WITH SCALE SUPPRESSING CHARACTERISTICS. Patent dated July 11, 1972. Disclaimer filed July 24, 1973, by the assignee, *The Lubrizol Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Aug. 3, 1988.

## National Technical Information Service

### GOVERNMENT-OWNED INVENTIONS

#### Notice of Availability

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

Copies of patent applications, either paper copy (PC) or microfiche (MF) can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title. Requests for licensing information should be directed to the address cited with each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at \$0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,  
Patent Program Coordinator,  
National Technical Information Service.

U.S. DEPARTMENT OF COMMERCE  
Assistant General Counsel for Administration,  
Washington, D.C. 20230

Patent 3,354,411. Coaxial Transmission Line T-Junction Having Rectangular Passageway Dimensioned Beyond Cutoff for Higher Order Modes. Filed Oct. 22, 1965. Patented Nov. 21, 1967. Not available NTIS.  
Patent 3,586,973. Standard Field Strength Meter. Filed Dec. 15, 1969. Patented June 22, 1971. Not available NTIS.  
Patent 3,609,541. Radio Frequency Coaxial Ammeter With Thermal Compensation. Filed Jan. 20, 1970. Patented Sept. 28, 1971. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR  
Branch of Patents, 18th and C Sts. NW.,  
Washington, D.C. 20240

Patent application 206,793. Method for Making a Hollow Fiber Separatory Element. Filed Dec. 10, 1971. PC \$3/MF \$1.45.  
Patent 3,725,268. Softening of Sea Water by Addition of Barium Carbonate and Mineral Acid. Filed Feb. 14, 1972. Patented Apr. 3, 1973. Not available NTIS.  
Patent 3,725,267. Softening of Sea Water by Addition of Barium Carbonate and CO<sub>2</sub>. Filed Feb. 14, 1972. Patented Apr. 3, 1973. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
Assistant General Counsel for Patent Matters, NASA—  
Code GP-2, Washington, D.C. 20546

Patent application 354,611. Chromato-Fluorographic Drug Detector. Filed Apr. 25, 1973. PC \$3/MF \$1.45.  
Patent application 192,803. Scan Converting Video Tape Recorder. Filed Oct. 27, 1971. PC \$3.25/MF \$1.45.  
Patent application 284,245. Banded Transformer Cores and a Method and Device for Providing the Same. Filed Aug. 28, 1972. PC \$3.50/MF \$1.45.  
Patent application 354,407. Means for Accommodating Large Overstrain in Lead Wires. Filed Apr. 25, 1973. PC \$3/MF \$1.45.  
Patent application 354,612. Fault-Tolerant Clock Apparatus. Filed Apr. 24, 1973. PC \$3.25/MF \$1.45.  
Patent application 354,408. Instrumentation for Measurement of Aircraft Noise and Sonic Boom. Filed Apr. 25, 1973. PC \$3/MF \$1.45.  
Patent application 356,554. Insulation Foil and Method of Making. Filed May 2, 1973. PC \$3/MF \$1.45.  
Patent application 356,555. Latching Device. Filed May 2, 1973. PC \$3/MF \$1.45.  
Patent application 357,312. Improved Coatings for Refractory Metals. Filed May 4, 1973. PC \$3/MF \$1.45.  
Patent application 354,060. Electronic Optical Transfer Function Analyzer. Filed Apr. 24, 1973. PC \$3/MF \$1.45.  
Patent application 352,381. Dished Ion Thruster Grids. Filed Apr. 18, 1973. PC \$3/MF \$1.45.

[FR Doc. 73-15085; Filed 7-24-73; 8:45 am]

## Certificates of Correction for the Week of Aug. 14, 1973

D. 226,556	3,681,332	3,700,660	3,711,553
3,305,520	3,681,735	3,700,852	3,711,618
3,418,263	3,682,628	3,700,967	3,711,807
3,442,536	3,682,901	3,701,317	3,711,962
3,518,880	3,682,966	3,701,658	3,712,184
3,561,052	3,683,081	3,701,659	3,712,358
3,561,875	3,683,767	3,701,782	3,712,378
3,568,909	3,684,166	3,702,143	3,712,869
3,577,244	3,684,170	3,702,287	3,712,873
3,577,982	3,684,330	3,702,983	3,712,901
3,578,703	3,684,443	3,703,527	3,712,903
3,582,809	3,684,468	3,704,291	3,712,920
3,593,598	3,684,782	3,704,760	3,713,004
3,597,087	3,685,046	3,705,063	3,713,140
3,597,571	3,685,171	3,705,741	3,713,768
3,606,078	3,685,625	3,705,928	3,714,104
3,607,909	3,686,293	3,706,475	3,714,268
3,609,332	3,687,671	3,706,749	3,714,367
3,609,356	3,688,284	3,706,916	3,714,465
3,615,417	3,689,012	3,707,114	3,714,471
3,615,467	3,689,360	3,707,208	3,714,639
3,615,516	3,690,837	3,707,316	3,714,675
3,627,523	3,691,065	3,707,366	3,714,759
3,636,431	3,691,152	3,707,478	3,714,867
3,639,331	3,691,199	3,707,518	3,714,924
3,644,355	3,691,372	3,707,569	3,714,995
3,644,682	3,691,553	3,707,608	3,715,130
3,645,726	3,692,546	3,708,534	3,715,558
3,646,066	3,692,643	3,708,590	3,715,668
3,646,647	3,692,773	3,708,606	3,716,100
3,649,411	3,693,489	3,708,613	3,716,511
3,652,518	3,693,581	3,708,614	3,716,530
3,657,353	3,694,465	3,708,662	3,716,579
3,658,775	3,694,707	3,708,789	3,716,643
3,659,323	3,695,925	3,709,025	3,716,829
3,659,885	3,695,933	3,709,306	3,716,888
3,661,841	3,696,108	3,709,602	3,716,997
3,662,184	3,696,117	3,709,796	3,717,069
3,666,707	3,696,795	3,709,850	3,717,222
3,666,713	3,697,546	3,709,968	3,717,318
3,666,983	3,697,578	3,710,127	3,717,324
3,669,829	3,698,337	3,710,526	3,717,409
3,671,487	3,698,701	3,710,737	3,717,654
3,672,049	3,699,026	3,710,780	3,717,671
3,673,246	3,699,298	3,711,132	3,717,708
3,674,048	3,699,306	3,711,374	3,717,959
3,676,271	3,699,498	3,711,444	3,718,228
3,678,355	3,699,511	3,711,492	3,718,333

AUGUST 14, 1973

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## Certificates of Correction—Continued

3,718,517	3,720,805	3,723,602	3,725,440
3,718,560	3,720,837	3,723,606	3,725,693
3,718,567	3,720,857	3,723,715	3,725,700
3,718,603	3,721,174	3,723,759	3,725,801
3,718,639	3,721,334	3,733,770	3,725,826
3,718,643	3,721,525	3,723,778	3,725,830
3,718,711	3,721,554	3,723,797	3,726,100
3,718,780	3,721,583	3,723,930	3,726,312
3,718,811	3,721,631	3,724,094	3,726,546
3,718,885	3,721,637	3,724,131	3,726,552
3,718,918	3,721,795	3,724,208	3,726,671
3,719,111	3,721,871	3,724,269	3,726,672
3,719,367	3,721,907	3,724,275	3,726,682
3,719,371	3,721,958	3,724,416	3,726,742
3,719,411	3,722,123	3,724,625	3,726,841
3,719,506	3,722,209	3,724,718	3,726,881
3,719,567	3,722,326	3,724,801	3,726,906
3,719,616	3,722,431	3,724,804	3,727,147
3,719,669	3,722,486	3,724,819	3,727,151
3,719,748	3,722,638	3,724,821	3,727,299
3,719,996	3,722,890	3,724,957	3,727,376
3,720,065	3,722,881	3,724,989	3,727,566
3,720,092	3,722,918	3,725,000	3,727,737
3,720,148	3,722,957	3,725,079	3,727,935
3,720,262	3,722,999	3,725,099	3,728,025
3,720,456	3,723,077	3,725,105	3,728,038
3,720,458	3,723,169	3,725,116	3,728,216
3,720,554	3,723,200	3,725,238	3,728,669
3,720,712	3,723,221	3,725,262	
3,720,731	3,723,259	3,725,306	
3,720,763	3,723,355	3,725,380	

## Patents Available for Licensing or Sale

2,970,783. COMPOSITE WEARING PARTS FOR CRUSHERS AND THE LIKE. A. H. Piyer, 55 E. Monroe, Chicago, Ill., 60603.

2,995,619. SYSTEM OF TELEVISION TRANSMISSION AND PHOTOGRAPHIC REPRODUCTION OF THE TELE-VISED IMAGE. Samuel Freeman, 13 Birchwood Court East, Syosset, N.Y., 11791.

3,007,661. FISHING ROD HOLDER. Mrs. Walter E. Knopf, 1015 SW. 16th St., Lincoln City, Oreg., 97367.

3,263,535. CLAMPING PLIERS HAVING THREE JAWS, TWO OF WHICH ARE CONNECTED BY LEVERS TO THE HANDLE MEMBERS. Erwin Zurcher, Switzerland. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,461,803. UNDERGROUND PUMPING STATION. Wm. Stothoff Co., Inc., P.O. Box 68, Flemington, N.J., 08822.

3,474,799. TOOTH SPACE DENTAL FLOSS HOLDER CLEANER. Vito P. Capello, 1047 Franklin St., Santa Monica, Calif., 90403.

3,556,581. FOLDING CAMPING TRAILER. Correspondence to: A. W. Breiner, P.O. Box 2728, 727 23rd St. S., Arlington, Va., 22202.

3,586,371. SEATING ARRANGEMENT. Rudolf Baresel-Bofinger, Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,604,418. APPARATUS FOR STRIPPING FLUID FROM FLEXIBLE PLASTIC TUBING. Y. C. Jones, Gulfport, Mississippi. Correspondence to: L. S. Van Landingham, 10726 Stanmore Drive, Potomac, Md., 20854.

3,614,968. APPARATUS FOR SLICING LUMBER. John R. Hirz, 1233 S. Boyden, Mount Collins, Colo., 80521.

3,652,997. CONTROL SYSTEM FOR MULTIPLE SIGNAL CHANNELS. Ralph G. Cromleigh, P.O. Box 751, La Canada, Calif., 91011.

3,667,844. MULTIPLE MASKING ATTACHMENT FOR PHOTO EASEL. Lloyd W. Pittman, Correspondence to: Richard G. Heywood, Haverstock & Heywood, 611 Olive St., St. Louis, Mo., 63101.

3,687,061. METHOD AND DEVICE FOR BUILDING UP AND REMOVING A FLAT MASS OF GOODS. Alfred Eggenmuller et al., Correspondence to: David G. Boutell, 2026 Rambling Road, Kalamazoo, Mich., 49001.

3,720,100. APPARATUS FOR THE MEASUREMENT OF TENSILE STRESSES ON BANDS, FILAMENTS OR THE LIKE. Indur Power Transmission Ltd., Switzerland. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,727,118. CONTACTLESS REVERSIBLE DEVICE IN AN ELECTRIC CAR. Nippon Gijutsu Boeki Co., Ltd., 32F Kasumigaseki Bldg., 2-5 Kasumigaseki 3-chome, Chiyoda-ku, Tokyo 100, Japan.

3,733,985. CAMERA FILM IMAGING DEVICE. Lester Gordon, 10 Louise St., Lewiston, Maine.

3,734,047. DETACHABLE DINGHY OR TENDER FOR SAIL BOATS. J. R. Burton, Seabrook, Md. Correspondence to: Sherman Levy, Suite 635, Washington Bldg., 15th and New York Ave. NW., Washington, D.C., 20005.

3,735,428. COMBINATION TOILET AND URINAL. Carlo F. Olivero, 66 Saunder St., Daltzell, Ill. 61320.

3,736,614. ABRADING DEVICE FOR ATTACHMENT TO ELECTRIC KNIFE DRIVE. Sharon Crostic, 1423 Twin Oaks Drive, Arnold, Mo., 63010.

The following 2 patents are offered by: Cecil J. Krow, P.O. Box 264, Ralston, Okla., 74650.

3,509,403. REMOVABLE RENEWABLE ELECTRODE SPARK PLUG.

3,725,715. .090 INCH FIRE SPARK PLUG.

General Electric Company is prepared to grant non-exclusive licenses under the following 10 patents upon reasonable terms to domestic manufacturers.

Application for license may be addressed to: Division Patent Counsel, Switchgear Equipment Business Div., General Electric Co., 6901 Elmwood Ave., Philadelphia, Pa., 19142.

Re. 27,440. SEMICONDUCTOR RECTIFIER WITH IMPROVED TURN-ON AND TURN-OFF CHARACTERISTICS.

3,673,503. HARMONIC SUPPRESSION CIRCUIT.

3,723,859. TESTING APPARATUS HAVING IMPROVED MEANS FOR MEASURING PERMEABILITY AND SPECIFIC LOSS IN A MOVING STRIP OF METAL.

3,725,778. TESTING APPARATUS HAVING IMPROVED MEANS FOR MAINTAINING A CONSTANT DENSITY OF MAGNETIC FLUX INDUCED IN A MOVING STRIP OF METAL.

Applications for license under the following 6 patents may be addressed to: Patent Counsel LSRG-I & MT Divisions, General Electric Co., 1 River Road, Bldg. No. 43, Schenectady, N.Y., 12305.

3,619,076. LIQUID-COOLED TURBINE BUCKET.

3,658,439. METERING OF LIQUID COOLANT IN OPEN-CIRCUIT LIQUID-COOLED GAS TURBINES.

3,678,987. ELASTOMERIC MOLD LINING FOR MAKING WAX REPLICA OF COMPLEX PART TO BE CAST.

3,693,347. STEAM INJECTION IN GAS TURBINES HAVING FIXED GEOMETRY COMPONENTS.

3,722,624. BEARING SEAL AND OIL TANK VENTILATING SYSTEM.

3,728,306. COMPOSITIONS.

Eastman Kodak Company announces that non-exclusive licenses are available to responsible applicants under the following 27 patents.

Applications for licenses may be addressed to: Director, Patent Department, Eastman Kodak Company, 343 State St., Rochester, N.Y., 14650.

3,402,006. MOTION PICTURE PROJECTOR.

3,402,007. FILM FEEDING MECHANISM.

3,493,381. HALFTONE SCREEN HAVING MORE THAN ONE TYPE OF DOT.

3,514,196. MOTION PICTURE PROJECTOR.

3,536,388. MOTION-PICTURE PROJECTOR GATE SYSTEM FOR ACCOMMODATING MULTIPLE FILM FORMATS.

3,537,106. MOTION PICTURE PROJECTOR GATE SYSTEM FOR ACCOMMODATING MULTIPLE FILM FORMATS.

3,542,306. CARTRIDGE FOR ROLL OF WEB MATERIAL.

3,545,970. PHOTOGRAPHIC PROCESSES UTILIZING SILOXANE WATER SPOTTING INHIBITORS.

3,550,881. MANUALLY OPERATED FILM STRIPPER MECHANISM.

3,551,038. SINGLE-POINT LATCH AND INTERLOCK FOR A CARTRIDGE LOADED MOTION PICTURE PROJECTOR.

3,554,748. SILVER HALIDE NUCLEATING COMPOSITION CONTAINING IONIC BORON HYDRIDES.

3,556,435. FILM-THREADING APPARATUS.

3,584,943. SELF-THREADING MOTION PICTURE PROJECTOR OR THE LIKE.



3,628,749.	AUTOMATIC FILM THREADING DEVICE.	3,739,818.	WIRE STRIPPING APPARATUS AND METHOD.
3,628,751.	AUTOMATIC FILM THREADING DEVICE.	3,739,969.	RECORDING WEB TRANSPORT APPARATUS.
3,647,449.	NEUTRALIZING BATH FOR USE IN PHOTOGRAPHIC PROCESSING.	3,740,110.	FABRICATION METHOD FOR GAS LASERS HAVING INTEGRAL MIRRORS.
3,661,063.	MECHANISM FOR SENSING THE CONDITION OF A PERCUSSIVE FLASH DEVICE FOR EFFECTING SYNCHRONOUS PERCUSSIVE FLASH EXPOSURES.	3,740,111.	HOLOGRAPHIC RECORDING SYSTEM FOR LARGE OBJECTS.
3,672,813.	ADAPTER FOR IGNITING ELECTRICALLY IGNITABLE FLASHLAMPS.	3,740,261.	MODIFIED CZOCHRALSKI GROWN SPINEL SUBSTRATE BY SOLID STATE DIFFUSION.
3,675,565.	PHOTOGRAPHIC APPARATUS.	3,740,280.	METHOD OF MAKING SEMICONDUCTOR DEVICE.
3,677,156.	SIMPLIFIED SYNCHRONIZING MECHANISM FOR CAMERAS ADAPTED TO USE MECHANICALLY FIRED FLASH LAMPS.	3,740,342.	METHOD FOR SEPARATING CHEMICALLY-OXIDIZABLE PHOSPHOR PARTICLES FROM MIXTURES WITH ESSENTIALLY NONOXIDIZABLE PHOSPHOR PARTICLES.
3,677,157.	CONTROL SIGNAL AND ACTUATING MECHANISM FOR USE WITH PHOTOFLASH LAMP UNITS HAVING PRE-ENERGIZED STRIKERS.	3,740,453.	ADAPTER FOR COAXIAL CABLE CONNECTOR.
3,677,158.	MECHANISM FOR SYNCHRONIZING OPERATION OF A CAMERA SHUTTER AND A MECHANICALLY ACTUATED FLASH DEVICE.	3,740,456.	ELECTRONIC SIGNAL PROCESSING CIRCUIT.
3,677,163.	METHOD AND APPARATUS FOR PROCESSING PHOTOGRAPHIC FILM.	3,740,461.	DETECTOR CIRCUITS WITH SELF-REFERENCED BIAS.
3,687,033.	MECHANISM FOR OPERATING A CAMERA SHUTTER AND A MECHANICALLY OPERABLE FLASH DEVICE IN SYNCHRONISM.	3,740,462.	AUTOMATIC CHROMA GAIN CONTROL SYSTEM.
3,690,236.	SYNCHRONIZING MECHANISM FOR PHOTOGRAPHIC CAMERAS ADAPTED TO USE MECHANICALLY FIRED FLASH LAMPS.	3,740,465.	TELEVISION FRAME STORAGE APPARATUS.
3,706,265.	PHOTOGRAPHIC APPARATUS FOR FIRING A PLURALITY OF FLASH LAMPS.	3,740,472.	WIDTH CONTROL CIRCUIT FOR A TELEVISION RECEIVER.
3,715,960.	CAMERA MECHANISM ADAPTED TO FIRE MECHANICALLY-ACTUABLE FLASH UNITS.	3,740,474.	VOLTAGE SUPPLIES.
		3,740,489.	HORIZONTAL OSCILLATOR CONTROL FOR PLURAL OPERATING MODE TELEVISION RECEIVERS.
		3,740,582.	POWER CONTROL SYSTEM EMPLOYING PIEZO-FERROELECTRIC DEVICES.
		3,740,621.	TRANSISTOR EMPLOYING VARIABLE RESISTANCE BALLASTING MEANS DEPENDENT ON THE MAGNITUDE OF THE EMITTER CURRENT.
		3,740,622.	ELECTROLUMINESCENT SEMICONDUCTOR DEVICE FOR GENERATING ULTRA VIOLET RADIATION.
		3,740,639.	TRANSFORMER COUPLED SWITCHING REGULATOR.
		3,740,669.	M-ARY FSK DIGITAL MODULATOR.
		3,740,672.	SEMICONDUCTOR CARRIER FOR MICROWAVE APPLICATIONS.
		3,740,693.	BUS BAR WITH INTEGRAL TERMINALS.
		3,740,717.	LIQUID CRYSTAL DISPLAY.
		3,741,825.	METHOD OF DEPOSITING AN EPITAXIAL SEMICONDUCTOR LAYER FROM THE LIQUID PHASE.
		3,742,126.	AMPLITUDE CONTROL CIRCUITS.
		3,742,248.	FREQUENCY DIVIDER.
		3,742,337.	PROTECTIVE SWITCHING CIRCUIT FOR PROVIDING POWER TO A LOAD FROM AN ALTERNATING CURRENT SOURCE HAVING PEAK-TO-PEAK EXCURSIONS WITHIN OR ABOVE A GIVEN RANGE.
		3,742,376.	VIDEO AMPLIFIERS.
		3,742,392.	SELF LOADED UNEVEN POWER DIVIDER.
		3,742,464.	ELECTRICALLY AND OPTICALLY ACCESSIBLE MEMORY.
3,737,345.	PROTECTED THERMOELECTRIC ELEMENTS AND METHOD OF PROTECTING SAME.		
3,737,682.	TRIGGERED FLIP-FLOP.		
3,737,706.	NUMERICAL DISPLAY DEVICE HAVING FILAMENTARY LIGHT SOURCES.		
3,737,715.	BISTABLE STORAGE DEVICE AND METHOD OF OPERATION UTILIZING A STORAGE TARGET EXHIBITING ELECTRICAL BREAKDOWN.		
3,737,797.	DIFFERENTIAL AMPLIFIER.		
3,738,880.	METHOD OF MAKING A SEMICONDUCTOR DEVICE.		
3,739,193.	LOGIC CIRCUIT.		
3,739,235.	TRANSCALET SEMICONDUCTOR DEVICE.		
3,739,297.	SINGLE BORE TUBE GAS LASER.		
3,739,388.	ANTENNA STRUCTURES.		

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 40 patents.

Inquiries respecting licenses under RCA patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

## PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF JULY 21, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	5-30-72
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director.....	8-01-72
Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Acting Director.....	7-03-72
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director....	5-24-72
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director..	3-06-72
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	12-13-72
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Records; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director.....	11-02-72
Ordnance, Firearms and Ammunition; Radar, Underwater Signaling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	10-02-72
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director..	2-23-72
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	11-13-72
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 290—R. L. CAMPBELL, Director.....	11-17-71
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. BUCHLER, Acting Director.....	10-02-72
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	7-03-72
Manufacturing Processes; Assembling; Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding; Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director.....	10-16-72
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletary; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director.....	9-15-72
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director.....	8-14-72
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

Expiration of patents: The patents within the range of numbers indicated below expire during August 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 263. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,757,378 to 2,761,141, inclusive  
Plant Patents..... Numbers 1,505 to 1,508, inclusive



# DEFENSIVE PUBLICATIONS

PUBLISHED AUGUST 14, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

## T913,001 PROCESS FOR THE PREPARATION OF 2-STYRYLBENZOXAZOLES AND 2-STYRYLBENZOTHIAZOLES

Robert D. Burpitt, 1405 Van Oaks Drive 37665, and Robert H. Hasek, 4503 Mitchell Road 37664, both of Kingsport, Tenn.

Filed Apr. 17, 1972, Ser. No. 244,936

Int. Cl. C07d 85/48

U.S. Cl. 260-240 D

No Drawing. 9 Pages Specification

This invention relates to a process for the preparation of 2-styrylbenzoxazoles and 2-styrylbenzothiazoles by the condensation of a 2-methylbenzoxazole or 2-methylbenzothiazole with an aryl aldehyde or thienyl aldehyde in the presence of a catalyst system comprising a sulfonic acid and an N-alkylpyrrolidone.

## T913,002 FRICTION-WELDED BOTTOM SEALS ON THERMOPLASTIC BOTTLES

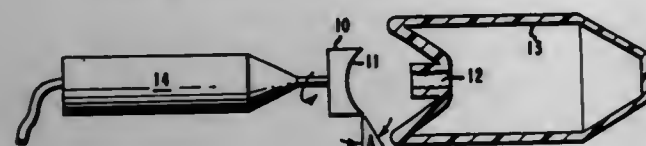
Keith Stewart Carmichael, 8 Janice Drive, Beverly Woods, Wilmington, Del. 19803

Continuation of abandoned application Ser. No. 57,679, July 23, 1970. This application May 22, 1972, Ser. No. 255,843

Int. Cl. B29c 27/08

U.S. Cl. 264-68

1 Sheet Drawing. 10 Pages Specification



A process and apparatus for sealing a bottom opening in a thermoplastic bottle by:

- contacting the bottom of the thermoplastic bottle in the area immediately adjacent the bottom opening with a rotating friction sealing head to raise the temperature of the thermoplastic material to about its melting point, working the hot thermoplastic material into and sealing the bottom opening, and thereafter
- quenching the sealed opening.

## T913,003 TERNE METAL BATH COMPOSITION

James C. Siple, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation

Filed Sept. 25, 1972, Ser. No. 291,848

Int. Cl. C23c 1/06

U.S. Cl. 117-51

No Drawing. 3 Pages Specification

The subject invention is directed to the use of an economic terne-coating bath composition which provides protective coatings at least equivalent to those of conventional terne-alloy baths. Such conventional baths generally contain about 85 percent lead and about 15 per-

cent tin. Significant economies are achieved in the instant invention by substituting antimony for a major portion of the tin. The new bath composition contains only about 5 to 10 percent tin, .2 to 4% antimony, balance lead.

## T913,004 ELECTRICAL WINDING WITH COOLING PASSAGES AND METHOD OF FABRICATING THE SAME

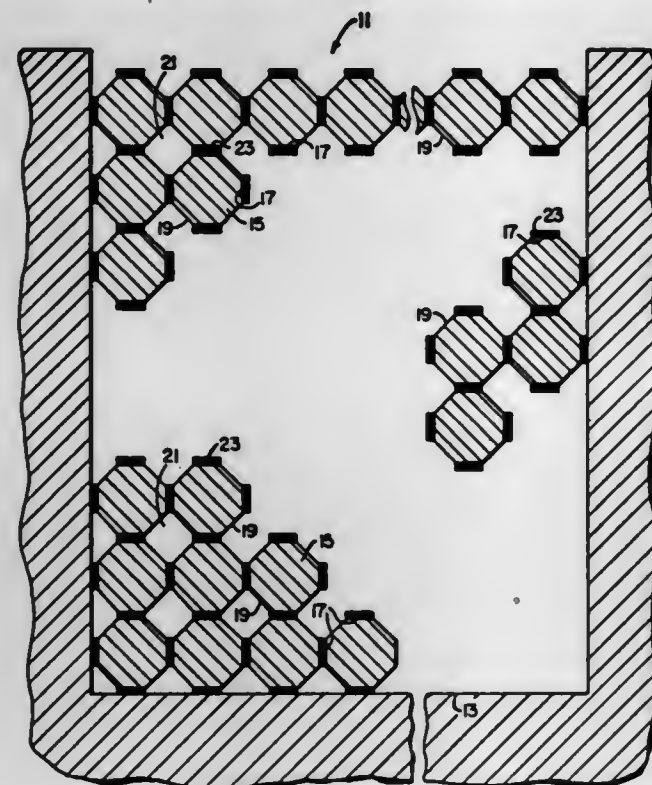
Thomas J. Fagan, Jr., Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 16, 1972, Ser. No. 307,315

Int. Cl. H01f 7/22

U.S. Cl. 335-216

1 Sheet Drawing. 10 Pages Specification



Individual wires in a winding are formed as polygons having contacting faces and noncontacting faces. Contacting faces of adjacent wires are positively engaged, while the noncontacting faces of adjacent wires form the periphery of openings that extend through the winding. Insulation may be removed from the noncontacting faces to facilitate cooling.

## T913,005 METHOD OF TOW SPLICING

Robert E. Duram, Route #10, Galloway Road, Kingsport, Tenn. 37664

Filed Jan. 26, 1973, Ser. No. 327,063

Int. Cl. B65h 69/02

U.S. Cl. 156-158

3 Sheets Drawing. 4 Pages Specification

Disclosed is a method of splicing the trailing end of a first tow of thermoplastic fibers to the leading end of a

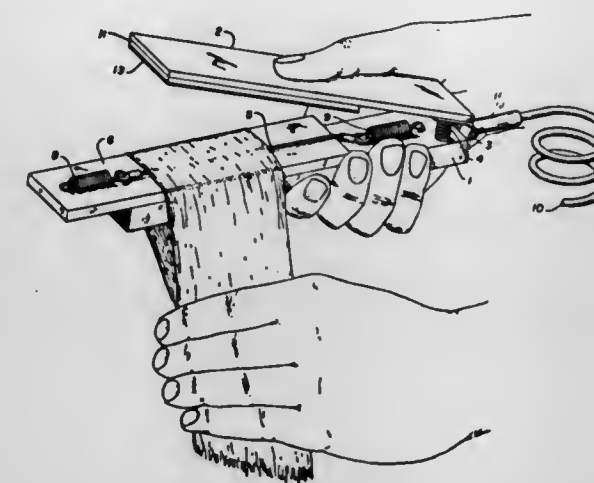
AUGUST 14, 1973

U. S. PATENT OFFICE

393

second tow of thermoplastic fibers comprising folding the first and second tows into a "side by side" relationship and heating both tension tows in a region which is substantially perpendicular to the length of the tows so as

this process is continued until the size of the subsets is small enough so that they can be conveniently sorted into respective ordered sequences, preferably employing a tree type sort. The ordered sequences are then concatenated to form the sorted file. The random sample



to thermoplastically splice both tension tows together and sever from the remainder of the tows the portion of both tows from the end of the tows to the heated region. Cellulose acetate fiber is a particularly desirable fiber for use in this invention.

## T913,006 ANTIOXIDANT DISPERSION AND PROCESS

Michael A. Lynch, LaPlace, La., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 145,905, May 21, 1971. This application Feb. 20, 1973, Ser. No. 333,518

Int. Cl. B01j 1/16; C08d 7/18

U.S. Cl. 260-17 R

No Drawing. 8 Pages Specification

The high temperature reaction product of diphenylamine and acetone is an effective antioxidant for rubber and rubbery polymers, but is difficult to disperse directly in water to form suspensions stable against settling. This tendency of the antioxidant to separate out is avoided by providing an aqueous dispersion containing (1) at least 25% by weight of the antioxidant as the dispersed phase, and (2) an aqueous phase having a viscosity of about 3-2000 centipoises and consisting of (a) methyl cellulose having a methoxyl content of 27.5-31.5% and a viscosity, as a 2% by weight aqueous solution, of about 10-1000 centipoises, and (b) up to 3% by weight of an alkali metal alkyl sulfate surfactant, the antioxidant being dispersed as droplets of which over 90% have a particle size of less than about 1.5 microns.

## T913,007 SORT PROCESS

Archie Charles McKellar, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

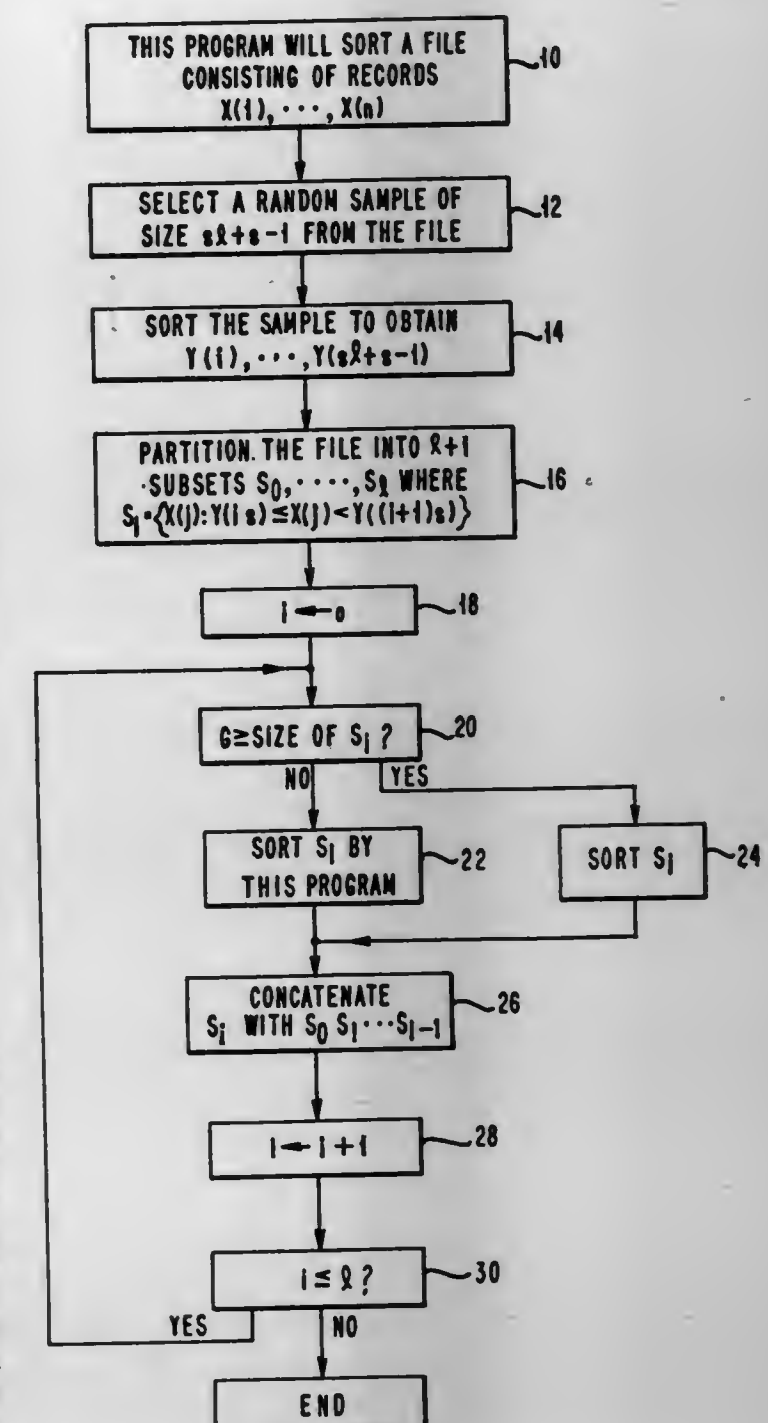
Continuation of application Ser. No. 214,200, Dec. 30, 1971. This application Feb. 20, 1973, Ser. No. 333,920

Int. Cl. G06f 7/06, 7/22

U.S. Cl. 444-1

8 Sheets Drawing. 25 Pages Specification

In the sort process disclosed herein, there is first selected a random sample of the records of a file to be sorted into an ordered sequence. This sample may suitably have the size  $sl+s-1$  wherein  $l+1$  is the quantity of subsets desired from a particular distribution pass and  $s$  is a selectable parameter. The selected sample is sorted into an ordered sequence and the file is then partitioned in accordance with every  $s$ th key of the sorted sample into  $l+1$  subsets. The records of each of the subsets are again partitioned into  $l+1$  subsets as described above and



may be provided, for example, by using a random number generator to generate integers in the range of 1 to  $n$  wherein  $n$  is the total quantity of records in the file until  $sl+s-1$  distinct integers have been generated. The records at these integer addresses in the file can then be selected to constitute the sample.

## T913,008 DYNAMIC SHIFT REGISTER WITH STATIC REGENERATION

William F. Beausoleil, Poughkeepsie, N.Y. assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 50,618, June 29, 1970. This application Feb. 26, 1973, Ser. No. 335,841

Int. Cl. G11c 11/40

U.S. Cl. 307-221 C

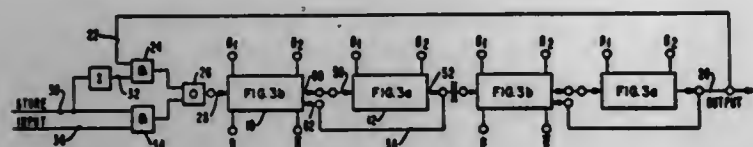
3 Sheets Drawing. 16 Pages Specification

Data stored in dynamic shift registers must be periodically regenerated to preserve the data. This shift register utilizes a feed-back loop which allows data bits to



be recycled within individual bit stages or groups of bit stages. This allows the register to have the effect of being static without the cost of static shift register cells.

When operating in the static mode, data are regenerated by shifting the output of a single bit position or a group of bit positions back to the input of the same bit position or the beginning of the group. This, in effect, reduces the regeneration loop from a full shift register length to some subset of a full shift register length.



The shift register is comprised of a plurality of stages, the number of which is chosen to equal the desired capacity of the memory. The output of the last stage of the shift register is fed back to a gating circuit at the input to the first stage in a conventional manner.

Static regeneration is provided, for example, over every two bit positions. That is, data are shifted for two positions and then returned to its initial position. This is accomplished by feed-back loops which feed back the output of one stage to a feed-back input of a prior stage. The remaining stages of the shift register are wired in a similar manner. Now when a regeneration input R is made positive, the information stored in the shift register stages is held static.

T913,009

**PROCESS FOR ELECTROSTATIC DEPOSITION**  
Frederick D. Petke, 1333 Post St. 37664, and Peter M. Grant, Hemlock Park 37663, both of Kingsport, Tenn.

Filed Mar. 8, 1973, Ser. No. 339,235

Int. Cl. C09j 5/00

U.S. Cl. 156—283

No Drawing. 4 Pages Specification

Disclosed is a process comprising electrostatically depositing on a fabric a powdered fusible adhesive which has a particle size in the range of 10 to 200 microns and is composed of (1) a copolyester of terephthalic acid, adipic acid, ethylene glycol, and 1,4-butanediol, or (2) an admixture of (1) and a vinyl polymer.

T913,010

**METHOD AND APPARATUS FOR DETERMINING SOLIDS PRODUCTION FROM A WELL**

Thomas Ben Arnold, 4422 Glenwood Lane 75205, Don R. Patterson, 2822 Whitewood Drive 75233, both of Dallas, Tex.

Filed Mar. 15, 1973, Ser. No. 341,475

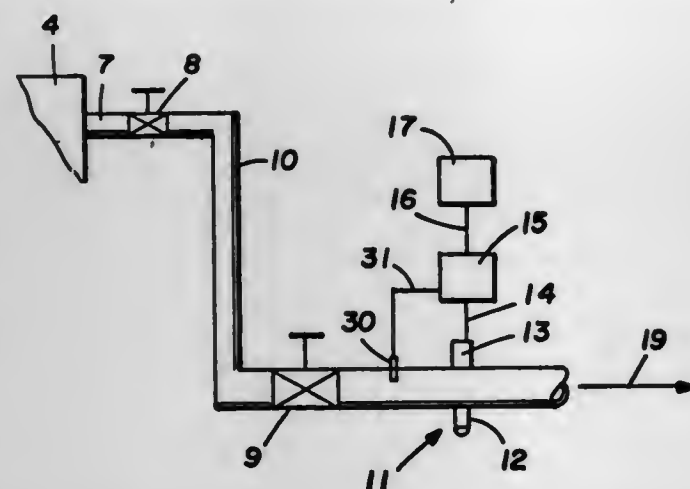
Int. Cl. G01n 23/12

U.S. Cl. 250—308

1 Sheet Drawing. 13 Pages Specification

A method and apparatus for determining, qualitatively and quantitatively, when solid particulate matter, such as sand, is being produced from a well along with the normal well fluid. The method and apparatus utilize at

least one densitometer which operates on either a nuclear radiation (e.g., neutrons or gamma rays) attenuation mechanism or a vibrating mechanical element mechanism. The densitometer is used in conjunction with the wellhead and its associated production piping. In one embodiment the densitometer is placed on a wellhead production outlet pipe upstream of any choke in said pipe, the densitometer being employed without any temperature compensating device. In another embodiment the densitometer (11) is employed downstream of a



choke, and temperature compensating means (30, 15) is employed so that the output of the densitometer is adjusted to a constant temperature value. The densitometer can be set to energize an alarm (17), immediately or after a preset time delay, when the detected specific gravity of the well fluid varies beyond a preset minimum and/or maximum. One or more densitometers can be used on a given production outlet pipe. Densitometers can be employed on part or all of the production outlet pipes of a given wellhead.

T913,011

**CALCIUM ADDITION TO THORIUM OXIDE**  
Richard W. Pensak, Pittsburgh, Pa., assignor to the United States of America as represented by the U.S. Atomic Energy Commission

Filed Mar. 16, 1973, Ser. No. 342,130

Int. Cl. C01f 15/00

U.S. Cl. 252—301.1 R

No Drawing. 2 Pages Specification

This invention relates to a novel process for attaining a well defined and uniform microstructure and a high sintered density for thorium oxide fuel components. These highly desirable features are achieved by the addition of about 50 to 150 parts per million of calcium to thorium oxide powder. Blending is carried out either by mechanically adding calcium to thorium oxide powder or by adding calcium nitrate or other calcium salt in the correctly calculated amount to the thorium oxide production facility. Fuel components prepared from thorium oxide containing this small amount of calcium are particularly suitable in breeder type reactors.

## REISSUES

AUGUST 14, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

**27,727**  
**METHOD FOR MAKING YARN BY FIBRILLATION OF RIBBONS OF PLASTIC MATERIAL**

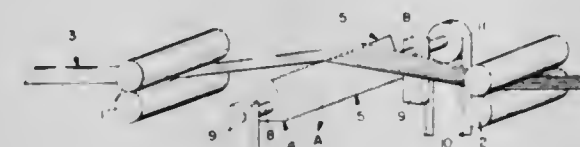
Charles W. Kim, Heritage Park, Wilmington, and Stanley D. Samluk, Chestnut Hill, Newark, Del., assignors to Hercules Incorporated, Wilmington, Del.

Original No. 3,495,752, dated Feb. 17, 1970, Ser. No. 822,625, May 7, 1969, which is a division of application Ser. No. 696,376, Jan. 8, 1968. Application for reissue Nov. 23, 1970, Ser. No. 92,334

Int. Cl. B26f 3/02

U.S. Cl. 225—3

9 Claims



The present invention relates to a method for making a bulky synthetic fiber with a spun-like appearance by fibrillation of a ribbon of straited film of plastic material that has been oriented predominantly uniaxially in the direction of the striations, the method comprising a serrated edge means that engages the ribbon periodically and includes teeth that contact the ribbon on alternate engagements at points spaced laterally of the ribbon. Preferably, the serrated edge means comprises a threaded rod slabbed to provide a plurality of relatively sharp edges having teeth formed by the original screw thread and which progress spirally of the rod.

27,728

**DIGITAL METER SYSTEM**

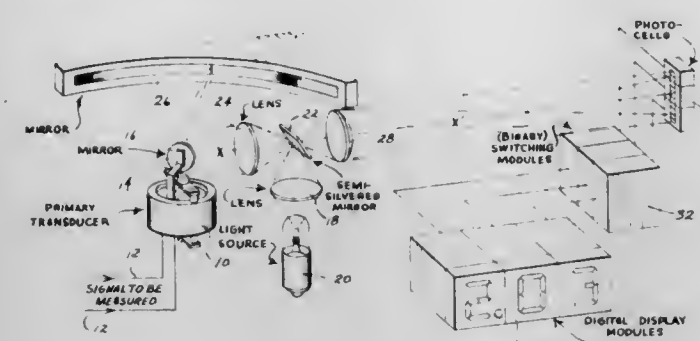
Gerald Raymond Hosker and Theodore Otto Froelich, London, Ontario, Canada, by American Gage and Machine Company, Chicago, Ill., assignee

Original No. 3,534,348, dated Oct. 13, 1970, Ser. No. 607,017, Jan. 3, 1967. Application for reissue Dec. 1, 1971, Ser. No. 203,919

Int. Cl. G08c 19/36

U.S. Cl. 340—190

6 Claims



An apparatus for measuring variable conditions of a moveable element including a reflecting means attached

to the element for directing light to a coded mirror. The light is reflected back to photo-sensitive means which are connected to digital display means so that digital representations can be produced depending on the position of the moveable element.

27,729

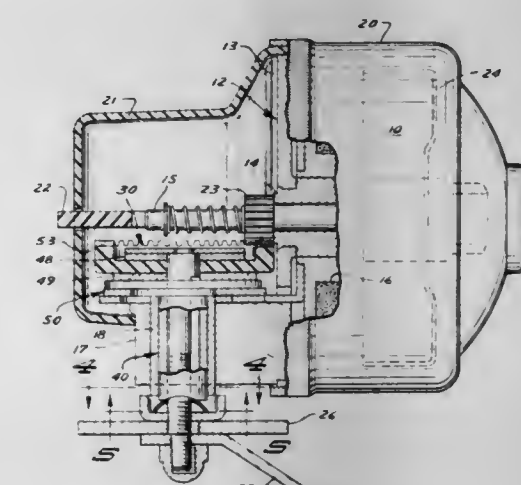
**FISHING REEL DRIVE**

Lloyd E. Johnson, deceased, by W. T. Arnold, executor, Mankato, Minn., assignor to Johnson Diversified, Inc. Original No. 3,487,658, dated Jan. 6, 1970, Ser. No. 704,645, Feb. 12, 1968. Application for reissue Aug. 13, 1971, Ser. No. 171,783

Int. Cl. F16d 7/02

U.S. Cl. 64—30 C

8 Claims



A driving mechanism for a fishing reel embodying a frictional coupling, or clutch for connecting a crank handle to a line spool. A driven element is disposed between the enlarged inner ends of a pair of concentric shaft members which are provided at their outer ends with a position responsive biasing means for effecting an axially directed tension intermediate the two shaft members to thereby produce a frictional coupling with the driven gear member. Limited relative rotation of the shaft members, one with respect to the other, cooperates with an axially directed camming surface on the outer end of one of the shaft members and a biasing means disposed intermediate the outer ends of the shaft members so that at one relative radial position of the shaft members, the axial tension intermediate the shaft members is of one value and, upon relative rotation of the shaft members to a second radial position, the axial tension intermediate the shaft members is increased or decreased to a different value. This provides, for example, an increased tension when power is applied to the shaft members for reeling in the line onto a fishing reel and a decrease in the tension to allow controlled removal, or unreeling of the line from the reel. The biasing means may be made adjustably variable in nature to provide for a range of operation at the discretion of an operator.



27,730

**DIFFERENCE AMPLIFIER WITH PARALLEL ISOLATED EMITTER CONFIGURATION**

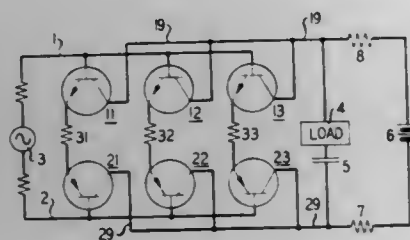
Robert Victor Goordman, Hackettstown, and Ronald Charles Petersen, Bedminster, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Original No. 3,559,087, dated Jan. 26, 1971, Ser. No. 851,378, Aug. 19, 1969. Application for reissue Apr. 26, 1971, Ser. No. 137,283

Int. Cl. H03f 3/68

U.S. Cl. 330—15

10 Claims



A transistor difference amplifier is disclosed in which one side thereof, called side A, contains a plurality of n transistor elements equal in number to the transistor elements in the other side, called side B. Moreover, each of the emitters in side A is separately electrically connected, through a resistor for example, to a corresponding emitter in side B. The electrical midpoint, or balance point, of the electrical path defined by each emitter to emitter acts as a virtual ground. The existence of the virtual ground permits the transfer of emitter signal current from side A to side B through n separate emitter to emitter paths without the necessity of passing through an actual earth or chassis ground return path, thereby enabling high power handling capacity while minimizing emitter circuit lead and ground plane inductance. In addition, parasitic coupling to adjacent circuits through the ground plane is avoided.

27,731

**TRIPLE STAGE UPRIGHT FOR LIFT TRUCK**

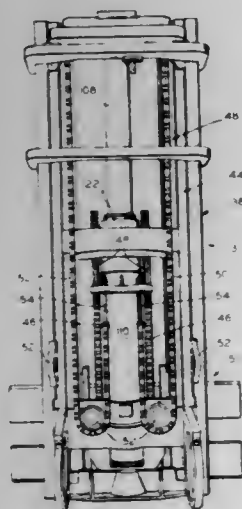
Richard F. McIntosh, Battle Creek, Mich., assignor to Clark Equipment Company

Original No. 3,298,463, dated Jan. 17, 1967, Ser. No. 368,064, May 18, 1964. Application for reissue Feb. 16, 1971, Ser. No. 115,895

Int. Cl. B66b 9/20

U.S. Cl. 187—9

6 Claims



This invention relates generally to a triple-stage telescopic extensible upright or mast assembly supported from the truck and supporting a lift fork or other load

engaging means employed with such trucks. More specifically, the invention comprises an improvement in triple-stage upright constructions of the type disclosed in Patent No. 3,213,967.

27,732

**REINFORCEMENT OF CONCRETE STRUCTURES**

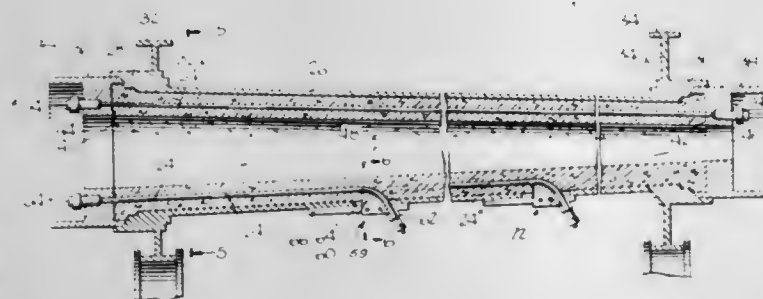
Myers Van Buren, Cheriton, Va., assignor to Bayshore Concrete Product Corp., Cape Charles Va.

Original No. 3,501,881, dated Mar. 24, 1970, Ser. No. 639,371, May 8, 1967. Application for reissue Feb. 22, 1971, Ser. No. 117,827

Int. Cl. E04c 3/10, 3/34; F16l 9/04

U.S. Cl. 52—223

3 Claims



Use of pretension elongated reinforcing rods in concrete structures, the rods being terminated at various intermediate ends of the structure, and special anchor arrangements for permitting intermediate termination of the rods.

27,733

**METHOD OF SEALING AND EVACUATING VACUUM ENVELOPES**

Albert Bereza, Elmira, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original No. 3,656,225, dated Apr. 18, 1972, Ser. No. 862,401, Sept. 30, 1969. Application for reissue Oct. 13, 1972, Ser. No. 297,527

Int. Cl. B23k 31/02

U.S. Cl. 29—472.7

8 Claims



The two insulating casings of a vacuum envelope are placed in close proximity, and a plurality of spaced U-shaped brazing shims are disposed in spaced relation around an annular brazing shim, the latter being positioned between the confronting ends of the two ceramic, or insulating rings constituting the envelope of the enclosure. The envelope is placed within a vacuum furnace and heated to a temperature just below the melting temperature of the U-shaped brazing shims. In effect, this creates a peripheral opening permitting thereby a communicating passage between the interior and the exterior of the envelope for outgassing procedures.

When the desired degree of outgassing and evacuation has occurred, the temperature of the vacuum furnace is raised to the melting point of the plurality of spaced braz-

ing shims, and they melt flowing into the space between the two ceramic or insulating casings, and sealing the same together. No tubulation is needed with this method.

27,734

**WIDE BAND RECORDING AND REPRODUCING SYSTEM**

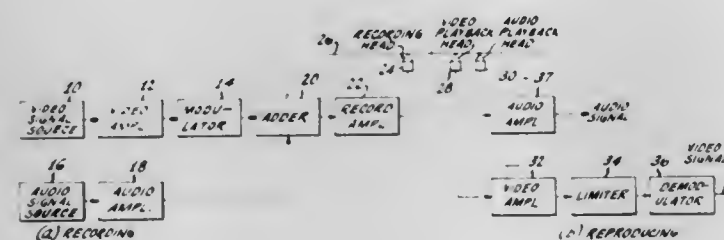
Henry Ray Warren, Indianapolis, Ind., assignor to RCA Corporation

Original No. 3,482,038, dated Dec. 2, 1969, Ser. No. 515,931, Dec. 23, 1965. Application for reissue Nov. 24, 1971, Ser. No. 202,044

Int. Cl. G11b 5/04; H04n 5/78

U.S. Cl. 178—6.6 A

12 Claims



27,735

**METHOD FOR ATTACHING SUTURE NEEDLE**

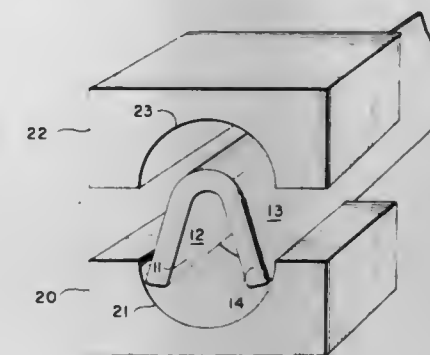
William H. Shave, Roosevelt, Long Island, and Leonard D. Kurtz, Woodmere, N.Y., assignors to Deknatel, Incorporated, Queens Village, N.Y.

Original No. 3,611,551, dated Oct. 12, 1971, Ser. No. 852,785, Aug. 25, 1969. Application for reissue Aug. 29, 1972, Ser. No. 284,543

Int. Cl. B21d 39/00; B23p 11/00

U.S. Cl. 29—515

6 Claims



A method of attaching a suture to a suture needle of the type initially having a V-shaped cross-section channel while substantially eliminating annealing. The channel is forcefully partially closed before hardening the needle, after which the needle is hardened, after which suture is placed into the channel. The walls of the channel are then further and finally closed against each other normally without annealing, to hold the suture.

A television signal to be recorded is divided into its video and audio information signals. The video signal is used to frequency modulate a carrier wave. The resultant frequency modulated carrier wave is then added to the audio signal and applied to a recording head for recording on a single track of a magnetic tape.



# PATENTS

GRANTED AUGUST 14, 1973

## GENERAL AND MECHANICAL

3,751,727  
SPACE SUIT

Leonard F. Shepard; George P. Durney; Melvin C. Case; A. J. Kenneway, III; Robert C. Wise; Dixie Rinehart, all of Dover; Ronald J. Bessette, Wyoming, and Richard C. Pulling, Dover, all of Del., assignors to The United States National Aeronautics and Space Administration Under The Provisions of 42 U.S.C. 2457, Washington, D.C.  
Filed Aug. 5, 1968, Ser. No. 750,031  
Int. Cl. A62b 17/00

U.S. Cl. 2-2.1 A

11 Claims



Disclosed is a pressure suit for high altitude flights and particularly space missions. The suit is designed for astronauts in the Apollo Space Program and may be worn both inside and outside a space vehicle, as well as on the lunar surface. It comprises an integrated assembly of inner comfort liner, intermediate pressure garment, and outer thermal protective garment with removable helmet and gloves. The pressure garment comprises an inner convoluted sealing bladder and outer fabric restraint to which are attached a plurality of cable restraint assemblies. It provides versatility in combination with improved sealing and increased mobility for internal pressures suitable for life support in the near vacuum of outer space.

3,751,728  
FOOTBALL HELMET

Johnnie Thompson, Rialto, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest  
Filed Feb. 7, 1972, Ser. No. 224,060  
Int. Cl. A42b 3/00

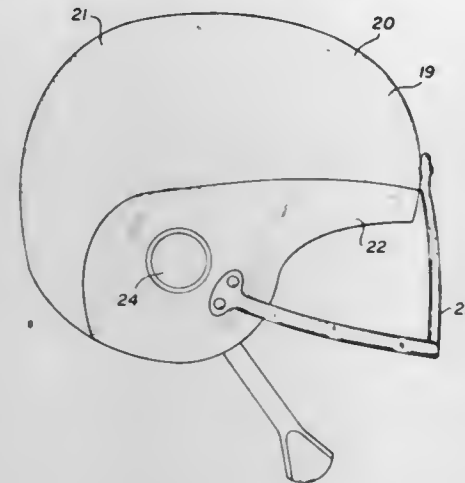
U.S. Cl. 2-3 R

2 Claims

An improved football helmet in which the lower section of the helmet is fabricated of transparent plastic so as to eliminate blind areas of vision caused by use of pressure helmets.

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A safety hazard in the use of football helmets occurs from restriction of sidewise and upwards vision. Football players



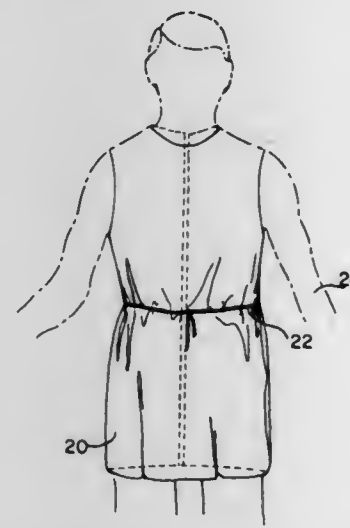
wearing conventional helmets have been injured because they did not avoid objects which were obscured by the sides or rim of the helmets they were wearing.

3,751,729  
REINFORCED EXAMINATION GOWN

Michael E. Trombly, Livonia, and Samuel H. Cowen, Southfield, both of Mich., assignors to Chemed Corporation, Cincinnati, Ohio  
Filed Nov. 16, 1971, Ser. No. 199,149  
Int. Cl. A41d 9/00

U.S. Cl. 2-114

4 Claims



The invention disclosed is for a method and apparatus for preparing new improved reinforced examination gowns which are disposable after use.

3,751,730  
TOGA-LIKE DISPOSABLE GARMENTS  
Sophie Zamist, 3010 Grand Concourse, New York, N.Y.  
Filed Mar. 24, 1971, Ser. No. 127,713  
Int. Cl. A41b 9/00

U.S. Cl. 2-114

8 Claims

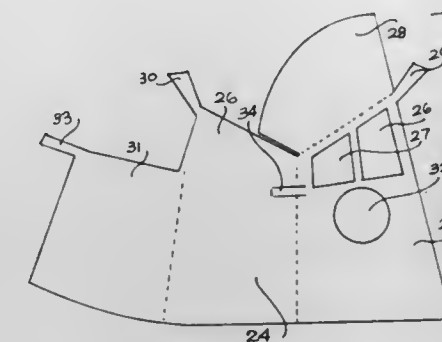
A toga-like disposable article of apparel suitable as a medical examination gown or for other purposes. The gown is constituted by a two-dimensional contoured blank formed of sheet material having fabric properties, the contours being

AUGUST 14, 1973

GENERAL AND MECHANICAL

399

such as to define a front section having access openings therein, and a flap extension adapted to fold over the front section normally to cover the openings. The front is integral with a back section, the front and back sections being provided at their opposing upper corners with complementary tab

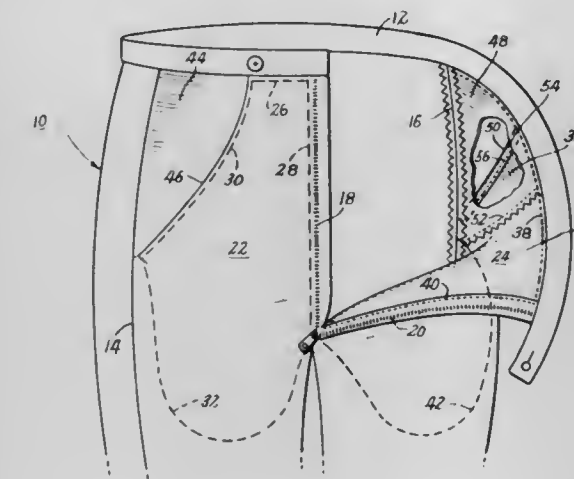


extensions whereby when the blank is wrapped about the wearer with the junction of the sections lying against one side of the wearer under one arm, the garment may be held in place by tying the tabs together over the shoulder above the other arm.

3,751,731  
GARMENT CONSTRUCTION

Robert B. Bennett, Englewood, N.J., assignor to Chromalloy American Corporation, New York, N.Y.  
Filed July 12, 1972, Ser. No. 270,943  
Int. Cl. A41d 1/06, 27/20

U.S. Cl. 2-227



A garment such as trousers, slacks and shorts including a pair of pockets so constructed and arranged as to provide an abdominal supporting band. One side edge of each pocket is secured to the garment fabric near a conventional fly closure and the other side edge of each pocket is secured to the garment cloth near the side seam of the pocket. The widths of the pockets are made slightly less than the confronting portions of the garment cloth so that the pockets form an abdominal supporting band and the garment cloth is allowed to hang freely from the waist band of the garment.

3,751,732  
TROUSER-SUSPENDER CONNECTING TROLLEY  
MEANS FOR TOILET CONVENIENCE

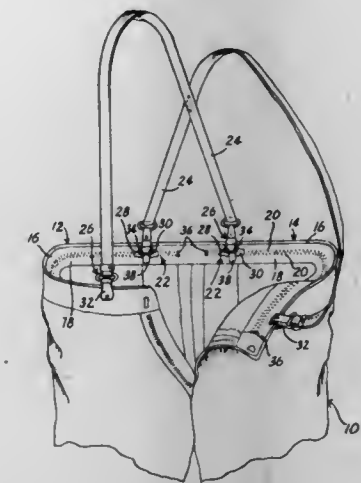
John L. Mott, 1114 N.W. Highlands, P. O. Box 1106, Grants Pass, Oreg.  
Filed June 19, 1972, Ser. No. 264,344  
Int. Cl. A41d 1/06, 13/02

U.S. Cl. 2-230

5 Claims

For toilet purposes a novel trouser and suspender connecting trolley arrangement is provided consisting of zipper trol-

leys that extend along the waistline of the trousers from rear to front, and trolley followers carried by the suspender straps for operation around the hips of the wearer. Each follower includes two opposed, zipper operating slides disposed at a fixed short distance from one another, so arranged that in either

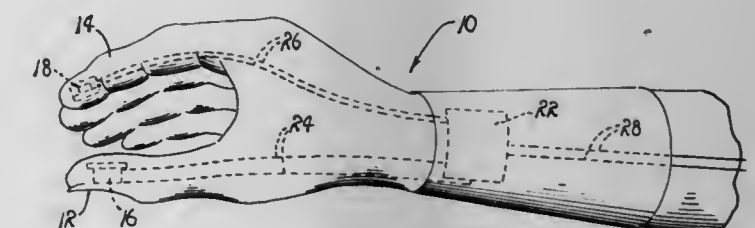


direction of operation the leading slide opens the zipper and the following slide immediately closes the zipper, there being no opportunity for clothing to get caught in the open zipper and to interfere with the intended, smooth operation of the follower along the zipper trolley in closing direction.

3,751,733  
TACTILE SENSING MEANS FOR PROSTHETIC LIMBS  
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Walter L. Scott, Anaheim, Calif.  
Filed Feb. 22, 1972, Ser. No. 228,150  
Int. Cl. A61f 1/00, 1/06, 1/08

U.S. Cl. 3-1.1

1 Claim



An improved prosthetic device characterized by a frame including a socket for mounting the frame on the stump of a truncated human appendage and having a plurality of flexible digits extended from the distal end thereof. Within the digits there are transducers, provided as sensing device for detecting tactile stimuli, connected through a power circuit with a slave unit supported by a strap and fixed to the stump, whereby the tactile stimuli detected at the sensing devices are reproduced and applied to the skin of the appendage for thus stimulating sensory organs located therein

3,751,734  
DRAIN TRAP  
Robert B. Lumadue, R.D. No. 2, Clearfield, Pa.  
Filed May 21, 1971, Ser. No. 145,637  
Int. Cl. E03c 1/28, 1/282, 1/22

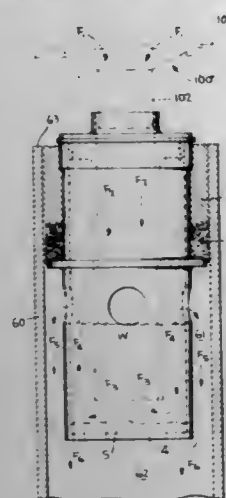
U.S. Cl. 4-197

7 Claims

Disclosed is an improved drain trap for use in plumbing installations characterized by ease of installation and resistance



to evaporation of the water contained therein and constructed of a series of concentric, coaxial cylindrical members in



telescoped relationship to each other thereby providing a tortuous flow drain path, an enlarged water reservoir and an easily cleaned sediment trap.

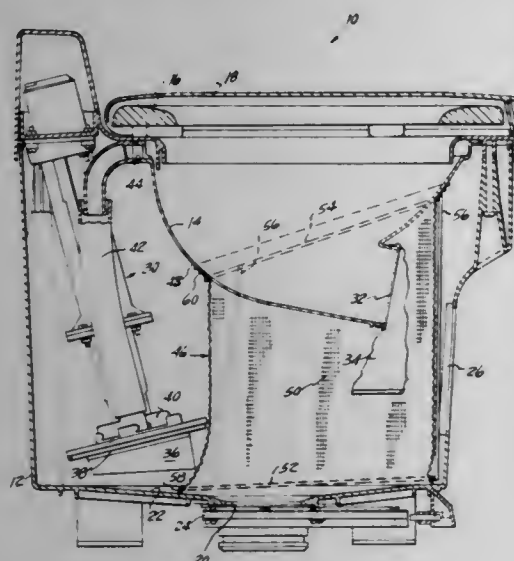
### 3,751,735 RECIRCULATING TOILET WITH FILTER SCREEN ASSEMBLY

Charles L. Sargent, Ypsilanti; Marshall W. Miller, Ann Arbor, and Gary R. Adiska, Milan, all of Mich., assignors to Thetford Corporation, Ann Arbor, Mich.

Filed Dec. 17, 1971, Ser. No. 209,308  
Int. Cl. E03d 5/01, 5/016

U.S. Cl. 4-10

8 Claims



Apparatus in a self-contained toilet system that protects the recirculating pump from becoming clogged, improves cleaning of the liquids in the system and facilitates improved evacuation of the waste materials from the holding tank of the system. The apparatus includes a filter cone of wire mesh that is positioned in the holding tank between the tank and the toilet bowl for confining solid matter in a selected location of the tank spaced from the inlet of the circulating pump but in direct communication with the evacuation opening of the tank.

### 3,751,736 AUTOMATICALLY FLUSHING SANITARY APPLIANCE

Richard Egli, Eichenweg 4, Kusnacht, Switzerland

Filed Nov. 4, 1971, Ser. No. 195,645

Claims priority, application Switzerland, Nov. 12, 1970, 16766/70

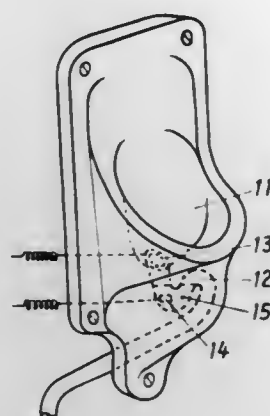
Int. Cl. E03d 5/10, 13/00

U.S. Cl. 4-100

14 Claims

Electrodes are located in the appliance which has normally a water level, in a bowl. Water supply is controlled by an elec-

tromagnetically operating valve. Upon sensing of change of resistance between a pair of electrodes, for example upon bridging of the electrodes by urine, a time delay period is initiated and a relay pulls in, charging a capacitor. When the resistance between the electrodes reverts back to its normal



value, discharge of the condenser is initiated through a multivibrator circuit which triggers opening of the electromagnetic valve for a predetermined period of time, to flush the bowl. In case the drain from the bowl should be obstructed, the electrodes will not revert back to their normal resistance, so that repeated flushing is inhibited.

### 3,751,737 FREE-STANDING SHOWER STALLS

Bernard E. Mustee, Cleveland, Ohio, assignor to E. L. Mustee & Sons, Inc., Cleveland, Ohio

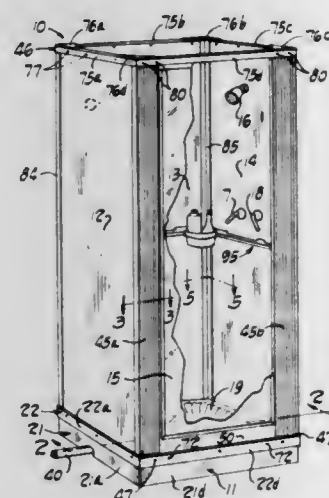
Division of Ser. No. 864,716, Oct. 8, 1969, Pat. No. 3,609,773.

This application July 1, 1971, Ser. No. 158,927

Int. Cl. A47k 3/22

U.S. Cl. 4-146

14 Claims



A free-standing shower stall including a base, wall panels joined to the base, a rail connected to the wall panels to impart rigidity to the stall, and a drain connection in the base which permits the shower stall to be placed in any desired location. A shower stall as described wherein the wall panels are plastic and are joined together by imperforate, water tight hinges which permit the panels to be folded for shipment in association with other parts of the stall and to be easily erected during assembly.

### 3,751,738 DISPENSER FOR TOILET SEAT COVERS

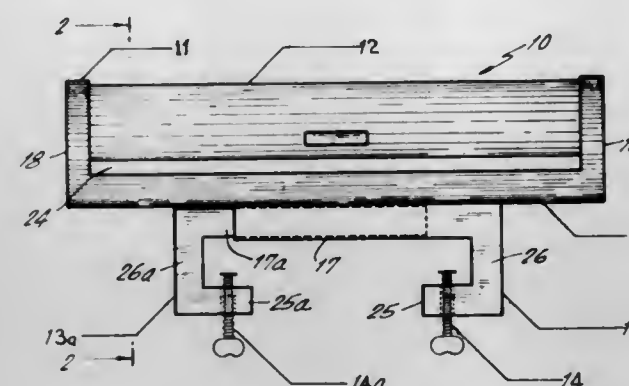
Nicola Vairo, 2855 Lafayette Ave., Bronx, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,330

Int. Cl. A47k 13/16, 13/22; B23q 3/02

U.S. Cl. 4-247

1 Claim



A dispenser for toilet seat covers including a cylindrical roll of discrete sheets arranged in a housing. The sheets are provided with depending tabs so arranged that upon flushing of a toilet bowl, the flushing water automatically removes a used sheet and feeds a new sheet from the housing.

### 3,751,739 CONVERTIBLE FURNITURE

Allo Assmann, Enger, Germany, assignor to Profilia-Werke Preckel & Waltermann GmbH & Co. KG, Ennigerloh BRD, Germany

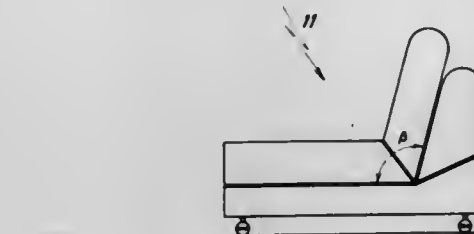
Filed Nov. 23, 1971, Ser. No. 201,285

Claims priority, application Germany, Dec. 28, 1970, G 70 47 847.6

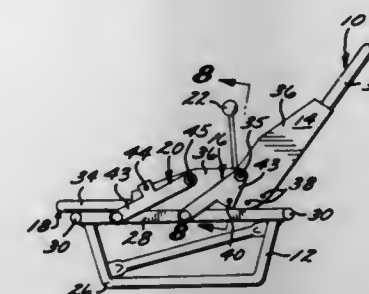
Int. Cl. A47c 13/00, 17/14

U.S. Cl. 5-12 R

7 Claims



facing in one direction the other becomes the seat bottom. In their reversed positions, the seat back becomes the seat bottom and the first seat bottom becomes a seat back facing in an opposite direction. Both seat portions may be arranged



horizontally to form a bed. Locking means enable the seat portions to be locked positively in various pivoted positions, preventing movement of the seat portions during a vehicle accident or the like.

### 3,751,741 SLEEPING BAG

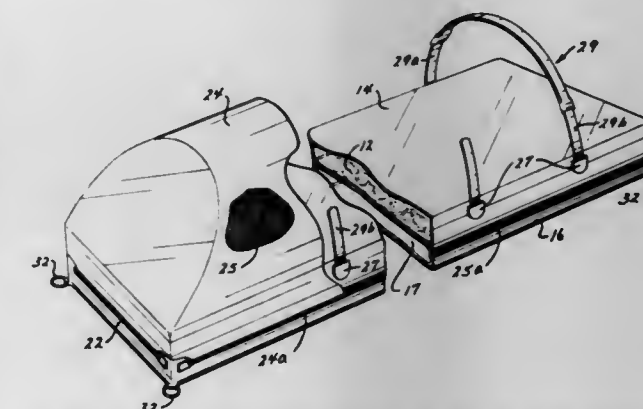
David V. Hendry, 615 Berkely Ave., Evansville, Ind.

Filed June 11, 1971, Ser. No. 152,340

Int. Cl. A47g 9/00; A451 3/22

U.S. Cl. 5-343

8 Claims



A sleeping bag characterized by an arrangement of components which provide compactness in a transporting condition and ease in use, typically including a kapok filled layer supported by an inflatable air mattress, a self-contained mosquito netting and protective cover, and a collapsible framework.

### 3,751,742 FILLER FOR USE BETWEEN A BEDSPRING AND A SEPARATE MATTRESS

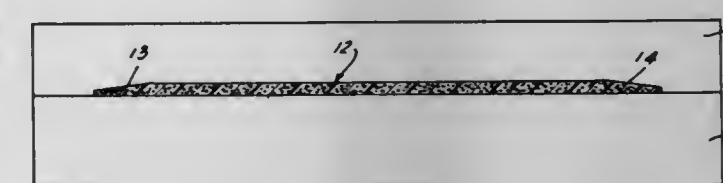
Richard A. Worley, 458 W. 150th St., Harvey, Ill.

Filed June 21, 1971, Ser. No. 154,937

Int. Cl. A47c 23/04, 27/22

U.S. Cl. 5-317 R

10 Claims



A piece of furniture convertible from a couch to a chair is formed of a base having at one end an upwardly sloping portion and a back piece hinged at the upper end of the upwardly sloping portion and movable between a position in which it engages the upwardly sloping portion and is upright to form a backrest and a position in which it extends downwardly and rests on the floor. Two cushion members are provided, the first being hinged at the other end of the base portion and the second to the other side of the first cushion. These can be folded on each other and then onto the base portion to form a chair or seat, with the outer cushion resting against the upright back member.

### 3,751,740 REVERSIBLE RECLINER

Earl H. Belk, 2438 San Francisco Ave., Long Beach, Calif.

Filed Sept. 10, 1971, Ser. No. 179,366

Int. Cl. B60n 1/02

U.S. Cl. 5-37

6 Claims

A reversible recliner particularly adapted for use in recreational vehicles. The recliner includes a pair of seat portions whose positions are reversible so that when one is a seat back

A sheet of polyurethane foam is provided that has beveled edges at least along its longitudinal marginal portions. The beveled sheet is laced on a box spring with its beveled surface directed upwardly and on which a coil-spring or foam-type of mattress is disposed and is thereby supported.

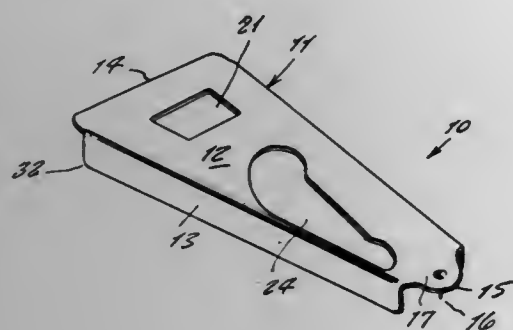


3,751,743

**FIVE WAY KITCHEN OPENER**

Tom E. Buck, 1318 Stogdill Rd., Bluffton, Ind.  
 Filed Oct. 19, 1971, Ser. No. 190,570  
 Int. Cl. B25f 1/00; B67b 7/44  
 U.S. Cl. 7-14.6

2 Claims



A kitchen tool for opening up various containers such as jars, beverage, and other bottles, and metal cans containing juices or canned milk; the device comprising a one piece member joined of molded tough plastic and having openings for grasping various sizes and shapes of caps in trying to remove them from their containers, and the device having a piercing prong for punching pouring openings in metal cans.

3,751,744

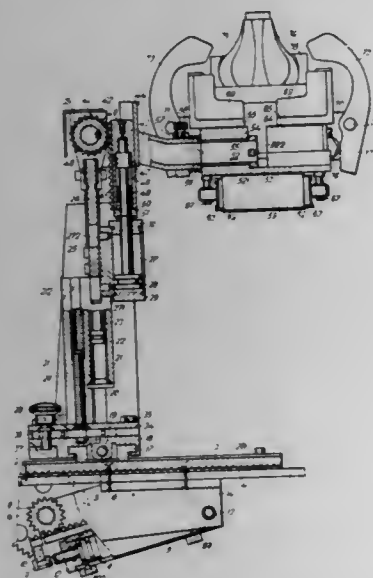
**ARRANGEMENT FOR TENSIONING THE SHANK PART OF A SHOE-UPPER**

Miloslav Valasek, and Frantisek Zak, both of Gottwaldov, Czechoslovakia, assignors to Zavody Presneko Strojrenstvi Gottwaldov, Narodni Podnik, Gottwaldov, Czechoslovakia  
 Filed Mar. 22, 1972, Ser. No. 236,869  
 Claims priority, application Czechoslovakia, Apr. 9, 1971, 2557

Int. Cl. A43d

U.S. Cl. 12-1 A

6 Claims



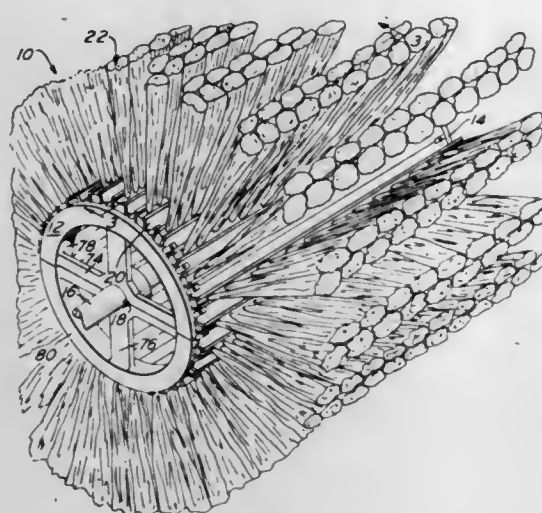
An arrangement for tensioning the shank part of a shoe upper, which shoe upper has been prior tensioned in its toe and heel part, particularly suitable for machines using glueing for connection of individual parts of the manufactured footwear, which arrangement is provided on means transferring the last with the lasted shoe upper to a storage place or to a working site for subsequent treatment of the manufactured footwear, increasing thus the output of the machine.

3,751,745

**ROTARY BRUSH APPARATUS**

Courtland N. Smith, Jr., Glen Ridge, and Edward L. Verhagen, Rahway, both of N.J., assignors to Sherman Car Wash Equipment Co., Palmyra, N.J.  
 Filed Apr. 27, 1971, Ser. No. 137,927  
 Int. Cl. A46b 3/16, 7/10, 13/00  
 U.S. Cl. 15-183

8 Claims



A brush apparatus which comprises a pair of disc members coupled to a shaft. Individual brush elements which comprise anchor strips having axially spaced bristle securing means thereon are provided. Individual bristle tufts are associated with the anchor strips and retained therein.

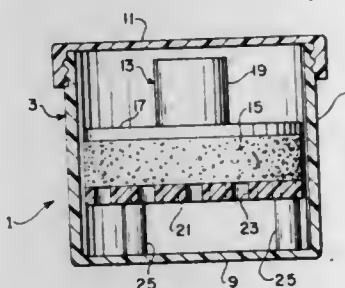
3,751,746

**APPARATUS FOR COLLECTING LIQUID MERCURY**

Charles H. Elbreder, 1702 Chase Dr., Fenton, Mo.  
 Filed Nov. 29, 1971, Ser. No. 202,871  
 Int. Cl. A47i 13/16, 13/58

U.S. Cl. 15-1

3 Claims



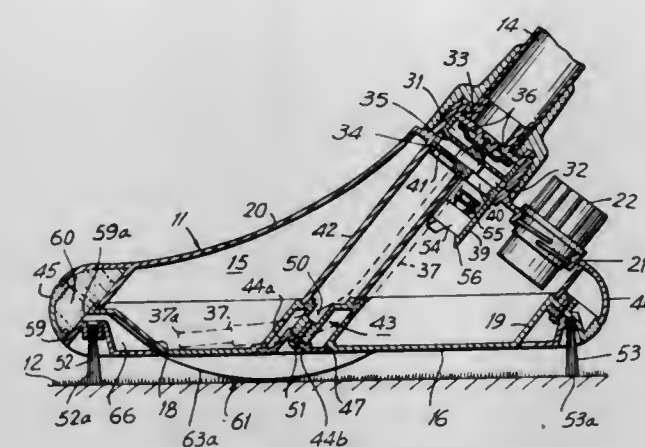
Apparatus for collecting spilled liquid mercury comprising a container and a pad of nonrigid, open-cell foam material for entrapping drops of spilled mercury to permit the transferring of the mercury to the container for release of the mercury therefrom for collection in the container. The pad entraps the spilled mercury when it is compressed against a surface having drops of mercury thereon and holds the mercury within the pad when it is lifted clear of the surface. A perforate plate is mounted in the container spaced above the bottom thereof so as to support the pad when the pad is pressed downwardly thereagainst to effect compression of the pad and release of the mercury entrapped within the pad. A lid is removably secured to the mouth of the container. The container's height is such that a space is provided between the perforate plate and the undersurface of the lid sufficient to permit the pad to rest in a stored position on the perforate plate without compression of the pad.

3,751,747

**SURFACE CLEANING APPARATUS**

Erik Arne Blaedh, Skarholmen, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden  
 Filed Aug. 25, 1971, Ser. No. 174,786  
 Int. Cl. A47i 11/03, 11/34, 11/40  
 U.S. Cl. 15-50 R

14 Claims



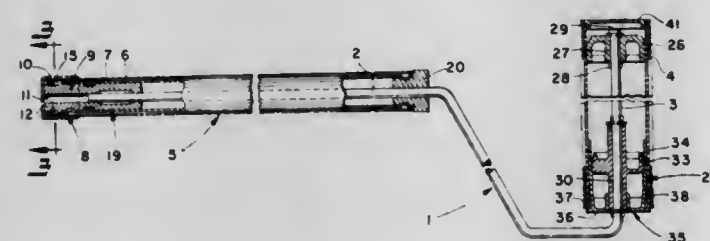
This invention relates to surface cleaning apparatus having a base providing a housing in which foam is generated and from which the foam is discharged on a surface by a distributor in the bottom of the housing. Foam present in the distributor and passageway connected thereto changes into liquid when cleaning is terminated and foam generation is stopped. When normal cleaning ceases the base is supported in an inclined position on the surface so that liquid, which otherwise will drip on the surface from the distributor, is discharged therefrom and directed to flow along the bottom face of the housing which provides a surface to which liquid tends to adhere and along which liquid tends to flow from the distributor toward a place which receives the liquid.

3,751,748

**HAND HELD ROLLER FRAME**

Elverton O. Roe, and Charles Gregg Moore, both of Wooster, Ohio, assignors to The Wooster Beush Company, Wooster, Ohio  
 Filed Dec. 15, 1971, Ser. No. 208,132  
 Int. Cl. B05c 1/08; B44d 3/28; F16b 7/14  
 U.S. Cl. 15-230.11

6 Claims



Roller frame includes an expandable core on the roller frame shaft having plural expandable fingers which are forced radially outwardly into frictional engagement with the inner diameter of a roller cover telescoped over the expandable fingers during axial movement of the expandable core in one direction relative to an axially stationary cam hub on the shaft. Removal of the roller cover merely requires the application of thumb pressure to the inboard end of the expandable core which forces the expandable core in the opposite direction releasing the expandable fingers from the locking tension of the cam hub and thereby permitting radial inward movement of the expandable fingers to release the roller cover from the frame. A telescoping handle extension may be attached to the frame handle permitting extension of both the handle and handle extension to any desired length and releasably locked in place for reaching different heights.

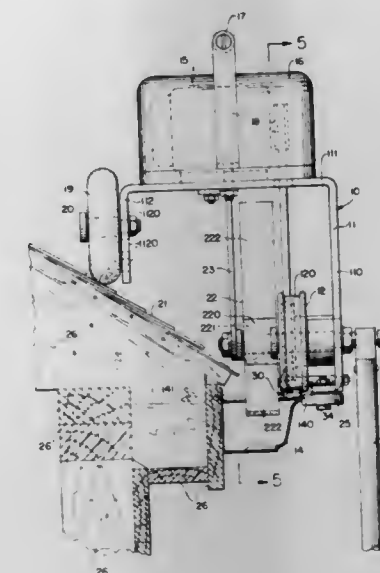
3,751,749

**POWER GUTTER CLEANERS**

Jimmie L. Wilson, 19967 Monte Vista, Detroit, Mich.  
 Filed Oct. 24, 1972, Ser. No. 300,427  
 Int. Cl. A46b 13/02

U.S. Cl. 15-92

5 Claims



A portable power gutter cleaner for cleaning conventional gutters normally installed below and along the lower edge of a sloping roof comprising a preferably aluminum frame formed at the rear thereof to accommodate a pair of longitudinally spaced vertically adjustable roof contacting rollers thereon, and formed at the front thereof to accommodate a pair of non-adjustable longitudinally spaced gutter contacting rollers thereon that are preferably provided with laterally spaced edge flanges which ride the outer flange of the gutter during the cleaning thereof. The said gutter contacting rollers raise momentarily when passing over conventional gutter securing spikes generally employed at selected intervals to secure the gutter to the building structure below the lower edge of the sloping roof.

The frame of the portable power gutter cleaner has an electric motor mounted at the top thereof which drives a rotating cleaner element having a plurality of relatively stiff yet pliable cleaner arms which beat the inside of the gutter as the gutter cleaner is manually moved along a gutter. This beater action knocks loose and drives accumulations of dirt, dried or wet leaves, twigs and other accumulated refuse from the gutter.

The novel power gutter cleaner is manipulated manually along the gutter to be cleaned either from a ladder or from the ground, and is constructed to ride over the transverse gutter-securing spikes generally employed to secure the gutter to the house or other structure below the lower edge of the sloping edge of the roof.

3,751,750

**MAGNETIC WINDOW CLEANING APPARATUS WITH IMPROVED CLEANING MATERIAL AND LOCATOR**

John A. Kaftan, Marengo, Ill.  
 Continuation-in-part of Ser. No. 807,524, March 17, 1969, Pat. No. 3,609,793. This application Nov. 19, 1970, Ser. No. 90,900

Int. Cl. A47i 1/08

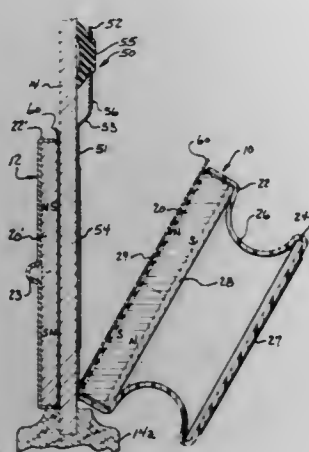
U.S. Cl. 15-220 A

14 Claims

Master and slave units are provided and each has a one-piece, plural-polarized permanent magnet. A locator is provided for holding the slave unit in position until the master unit can be brought in position opposite the slave unit. The locator is formed of magnetically-attracted material and has a suction cup for temporary mounting on the window. The cleaning material is formed from a layer of absorbent paper having a discontinuous layer of polyethylene thereon. By being discontinuous, portions of the paper are exposed so that



it can perform its absorption function. The plastic also reduces the friction between the cleaning material and window, while each magnet has a rubber surface to provide maximum friction between it and the cleaning material. In this manner the cleaning material stays in place without an external fastener.



The cleaning material is made by spreading polyethylene chips on absorbent paper, heating the paper and chips to soften the chips, and passing the paper and chips between two rollers to press the chips into the paper to provide a discontinuous surface of plastic on the paper.

3,751,751

## STUDENT'S AND ARTIST'S PAINT BRUSHES

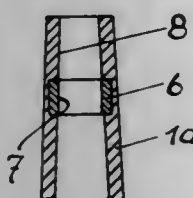
George Karl, 8802 Waizendorf-Bechhofen, Germany  
Filed Dec. 8, 1971, Ser. No. 206,100

Claims priority, application Germany, Dec. 21, 1970, P 20 62 815.3

Int. Cl. A46b 3/02

U.S. Cl. 15—192

1 Claim



To enable the usual ferrule of a student's or artist's painting brush to be made of a plastics material, and to provide for secure anchorage of the usual hair or bristle tuft into said ferrule, the latter accommodates a metal insert which surrounds one end of the tuft and is firmly located in the ferrule, such insert constituting an element to which the tuft can be reliably adhered.

3,751,752

## BRUSH WITH ROTATABLE BASE

Kurt Krusche, Frankfurt/Main, and Hubert Zimmermann, Mannheim, both of Germany, assignors to Allstar Verbrauchsgüter GmbH, Frankfurt/Main, Germany  
Division of Ser. No. 31,670, April 24, 1970, Pat. No. 3,619,846. This application Aug. 23, 1971, Ser. No. 174,208

Claims priority, application Germany, May 10, 1969, G 69 19 050.7

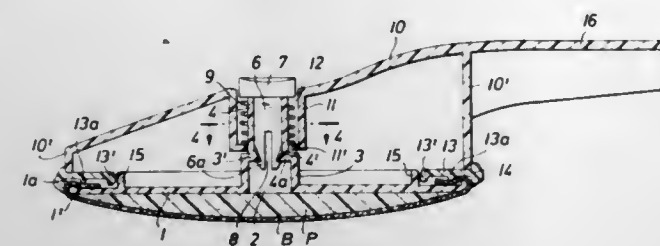
Int. Cl. A46b 9/10; A47l 13/46

U.S. Cl. 15—231

4 Claims

Improved brush with a main body and a selectively rotatable bristle-bearing base on the body. The brush is of the type having at least a predominant part of its bristles inclined in the same direction and is adapted for cleaning purposes. The brush of the invention employs a fabric to carry the bristles, the fabric preferably being backed by a resilient pad. The in-

vention provides improved means for securing the fabric to the base of the brush, improved means for rotatably mounting the base of the brush on the brush body whereby the brush



base can be turned by manipulations above the brush body, and means for indicating from above the body of the brush the position of the brush base relative thereto.

3,751,753

## PORTABLE BOOT SCRAPER

Arthur O. Drewitz, Box 111, Assinibola, Saskatchewan, Canada

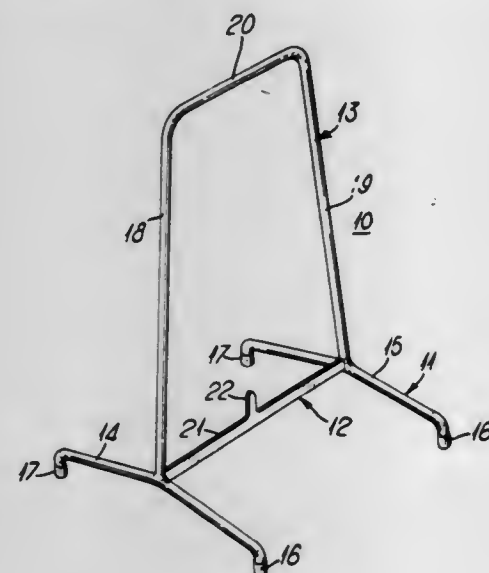
Filed Dec. 13, 1971, Ser. No. 207,484

Claims priority, application Canada, Dec. 17, 1970, 100,922

Int. Cl. A47l 23/22

U.S. Cl. 15—237

1 Claim



A portable boot scraper having a base structure with spaced-apart, ground-engaging members providing feet to support the same, a horizontally extending scraper bar secured to the base for use in removing debris from one's shoes by dragging the same over such bar and a frame projecting upwardly from the base and secured thereto providing a handle to be grasped by a person while scraping his shoes on the horizontal bar.

3,751,754

## WINDSHIELD WIPER ASSEMBLY

William J. Quinlan, and Lawrence L. Huver, both of Hastings, Mich., assignors to Hastings Manufacturing Company, Hastings, Mich.

Continuation-in-part of Ser. No. 190,067, Oct. 18, 1971, which is a continuation-in-part of Ser. No. 90,987, Nov. 19, 1970, Pat. No. 3,717,900. This application June 5, 1972, Ser. No. 259,672

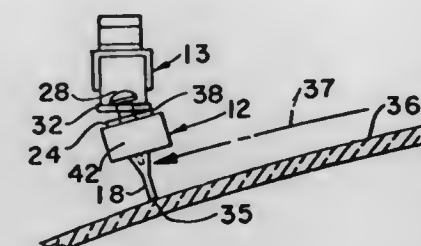
Int. Cl. B60s 1/40

U.S. Cl. 15—250.42

11 Claims

A wiper blade unit has fasteners extending through clearance apertures in an arm connector so that the blade unit may become laterally canted within limits relative to the arm connector in both wiping directions. The blade unit includes a resilient blade body having a crown portion with a cavity containing metallic leaf springs and a wiping portion beneath the

crown portion including a narrow wiping lip and an intermediate body portion which is progressively narrower in cross section from the base of the crown portion in the direction of the wiping lip. A longitudinally extending hollow core which is capable of cross sectional deformation to correspondingly deform and vary the resiliency of the body portions surround-



ing the core as a function of changes in direction and pressure of wiping forces at the wiping lip is provided in the blade body spaced below the spring cavity and extending into the progressively narrower intermediate portion. Straps inserted into end portions of the cavity are provided with closure caps which abuttingly engage the leaf springs and prevent longitudinal movement of the springs relative to the blade body.

3,751,755

## VACUUM CLEANER HAVING A FOAM GENERATOR

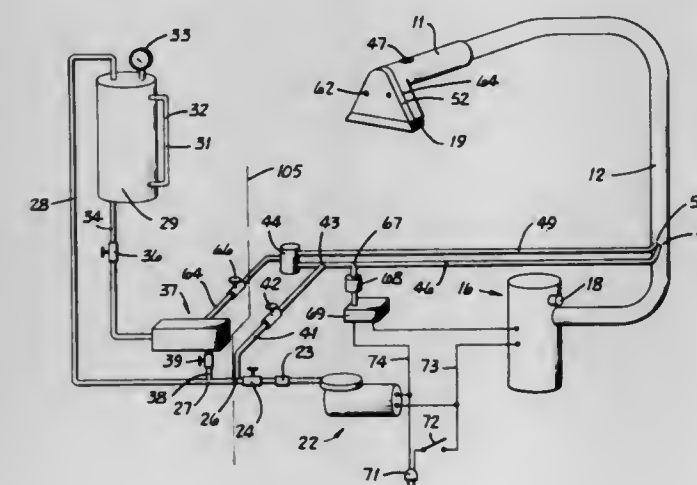
Judson L. Smith, 3714 S. Juniper St., Tempe, Ariz.

Filed Mar. 12, 1971, Ser. No. 123,566

Int. Cl. A47k 5/14; A47l 5/36

U.S. Cl. 15—302

8 Claims



A vacuum cleaner has a cleaning foam generating and conveying means for selectively discharging cleaning foam at the nozzle, brushing the surface to be cleaned, and sucking the dirt from the surface. An air bleed port at the nozzle controls application of foam or suction at the nozzle. Compressed air pressurizes and propels cleaning liquid from a reservoir to an air charged foam generator to generate the foam. An electric switch or a manual valve at the nozzle are included as alternate embodiments of the foam control.

3,751,756

## VACUUM STRIPPER

Joseph W. Arnett, Jr., Severna Park, Md., assignor to Concorde Fibers, Inc., Columbia, Md.

Filed Feb. 3, 1972, Ser. No. 223,129

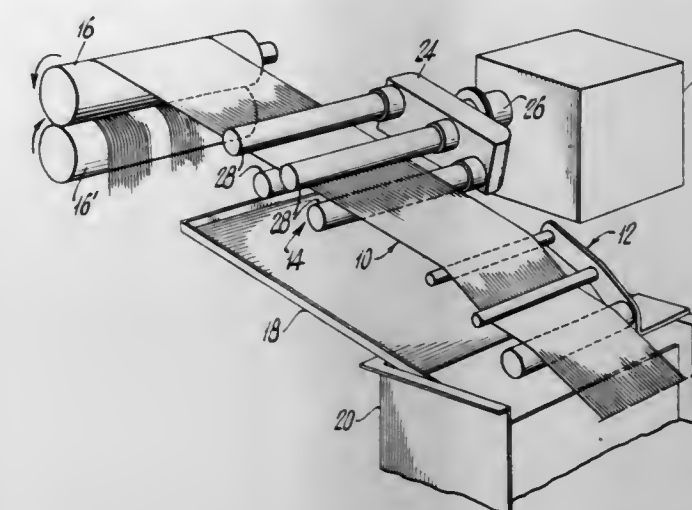
Int. Cl. A47l 5/38

U.S. Cl. 15—306 A

9 Claims

A vacuum stripper for removing excessive moisture from quenched extruded thermoplastic yarn ends which comprises a vacuum source, a manifold communicating with said

vacuum source, and a plurality of vacuum tubes disposed above and below the path of movement of said yarn ends,



communicating with said manifold, the vacuum tubes having openings over which the yarn ends pass for removing the moisture therefrom.

3,751,757

## SWIVEL CASTORS, PARTICULARLY FOR SHOPPING TROLLEYS

Herbert Stosberg; Horst Fleischmann, both of Wermelskirchen-Tente, Rhineland; Gunter Reinhardt, Wermelskirchen/Rhineland, and Siegfried Engels, Wermelskirchen-Tente, Rhineland, all of Germany, assignors to Tente-Rollen Gesellschaft Mit Beschränkter Haftung Company, Wermelskirchen-Tente ap Rhineland, Germany

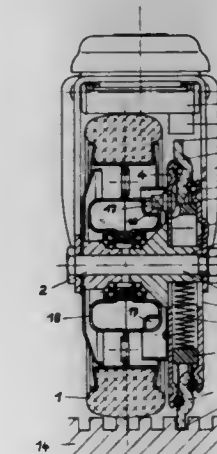
Filed June 3, 1971, Ser. No. 149,600

Claims priority, application Germany, Feb. 6, 1971, P 21 05 547.0

Int. Cl. B60b 33/00

U.S. Cl. 16—35

17 Claims



A swivel castor for use on appliances such as shopping trolleys, which are conveyed on a ribbed or grooved conveyors comprises a castor fork with a running wheel and a tracking wheel arranged for rotation with and on the same axle as the running wheel. The tracking wheel is movable vertically in respect of the running wheel so that when the appliance is placed on the conveyor the tracking wheel can drop into a groove thereof. While the castor is running on a flat floor the tracking wheel hold a locking mechanism in inoperative position. When the tracking wheel drops into a groove the locking mechanism locks the wheel against running movement. The locking mechanism also includes a vertically movable member which follows the downward movement of the tracking wheel to lock the castor against swivelling movement. The latter member may be a pawl which engages ratchet teeth on the backset bearing or in an incision or groove in the castor fork. The vertical movement of the member can be controlled by the periphery of the tracking wheel or by an upper extension of the bearing disc of the tracking wheel.



3,751,758

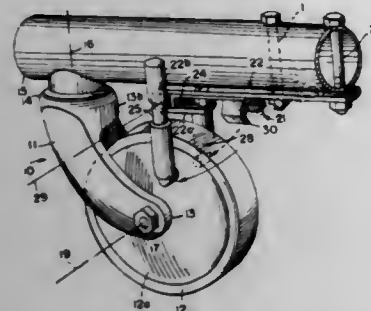
**CASTER AND SWIVEL LOCK ASSEMBLY**

Roland K. Higbee, and David C. Fleck, both of Cincinnati, Ohio, assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed July 5, 1972, Ser. No. 269,285  
Int. Cl. B60b 33/00

U.S. Cl. 16—35

9 Claims



A self-aligning swivel caster for use on carts and the like, the caster being equipped with a releasable locking member capable of selectively locking the caster against swivel movement. The locking member is gravity actuated and may be latched in an operative position as desired. The structural relationship of the caster and locking member are such that automatic camming and subsequent actuation of the locking member occur as the caster wheel is swiveled from an unlocked position into a position in which it is capable of being locked; during actuation of the locking member, direct contact is made between such member and the wheel until finally the member drops into its locking position to prevent further swivel action of the wheel.

3,751,759

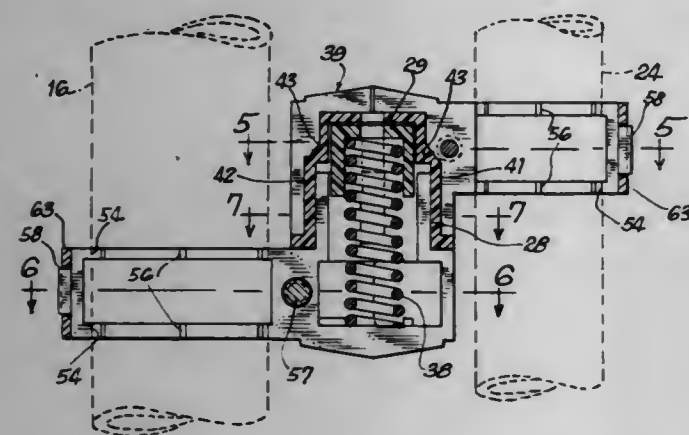
**GATE HINGE AND CLOSER ASSEMBLY**

Alan W. Duncan, River Forest, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed Mar. 8, 1972, Ser. No. 232,696  
Int. Cl. E05f 3/20

U.S. Cl. 16—50

8 Claims



A gate hinge and closer assembly arranged to close a fence gate includes a bearing component and a hanger component. Either component is attached to a fence post and the other attached to the fence gate. One of the components has a hollow open-ended pintle, a bearing member mounted in the pintle and biasing means while the other component has a pintle socket and a camming surface fixedly disposed in the pintle socket. When the gate is opened, the biasing means is compressed by the bearing member being cammed along the camming surface, thereby providing the necessary force for the return movement of the bearing member along the camming surface and the movement of the gate toward its closed position. The assembly is constructed for relative movement between the bearing member and the camming surface irrespective of whether the pintle or the camming surface is held stationary, and irrespective of the direction of the opening of the gate.

3,751,760

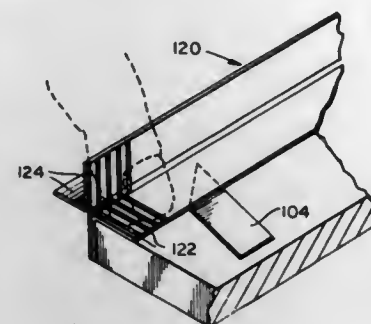
**PLIABLE TAPE STRUCTURE**

Alfred W. Wakeman, Madison Rd., Durham, Conn.  
Continuation-in-part of Ser. No. 859,619, Sept. 22, 1969. This application July 6, 1971, Ser. No. 159,796

Int. Cl. E05d 7/00

U.S. Cl. 16—150

24 Claims



A flexible longitudinally continuous tape construction is disclosed for use in joining mating edges of juxtaposed members, the tape having an X-like configuration transversely of its length to provide legs adapted to receive and be secured to the edges of the members to be joined. The tape is capable of serving as a pliable hinge to permit articulation of the joined members, or it may also serve simply as a binding for joining members intended to be fixed relative to each other. The tape construction combines longitudinally continuous marginal web portions or carriers, forming the extremities of the legs of the X, with longitudinally spaced strand or equivalent connector means running crosswise of and interconnecting pairs of marginal web portions. The connector means intersect and interlock forming the axis of the X-like configuration.

3,751,761

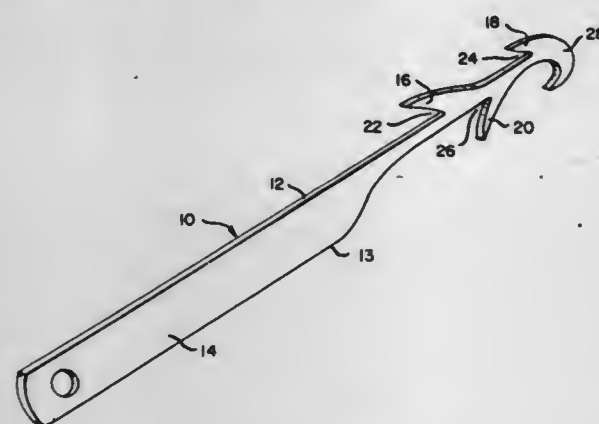
**EVISCERATING TOOL**

Richard J. Welland, 217 Wahl Ave., Evans City, Pa.  
Filed Aug. 3, 1972, Ser. No. 277,905

Int. Cl. A22b

U.S. Cl. 17—1 R

1 Claim



An eviscerating tool for removing the entrails of animals having an elongated body member with blunt edges and a handle portion at one end. At the other end, the tool has a plurality of lobes with blunt edges extending from both longitudinal blunt edges of the body member and forms acute angles with the body member in the direction opposite the handle. The body member has a curved tip portion at the end opposite the handle portion.

3,751,762

**MULTIPLE FOWL CARRYING APPARATUS**

Janus J. Dillon, Irving, Tex., assignor to Food Equipment Inc., Dallas, Tex.

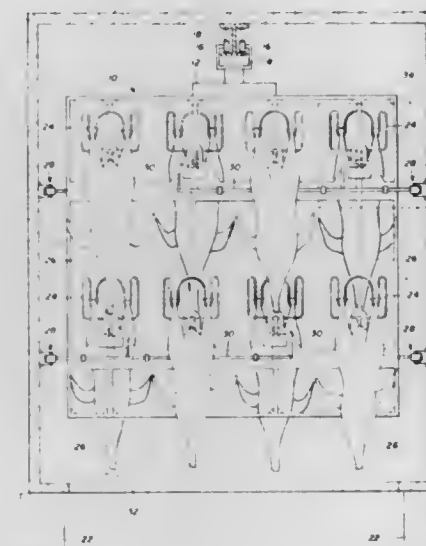
Filed Sept. 20, 1971, Ser. No. 181,840  
Int. Cl. A22c 21/00

U.S. Cl. 17—11 R

9 Claims

A multiple fowl carrying apparatus useful in automated fowl processing includes a shackle mounting frame. The mounting

frame is connected to a conveyor system that routes it through certain unit operations, which can include washing, chilling and preparation for packaging. The shackle mounting frame carries a plurality of pivotally mounted shackles, movable between a first and a second position. In the first position the shackles can suspend a fowl by its legs in a processing position. When the shackles are pivoted to the second position, the fowl



will drop from the shackles, readying them for further processing, packaging or the like. The apparatus includes mechanism for holding the shackles in the first position and for releasing the shackles so they can pivot to the second position. The shackles are counterweighted about the pivotal mounting so that in the absence of a fowl they are biased toward the first position.

3,751,763

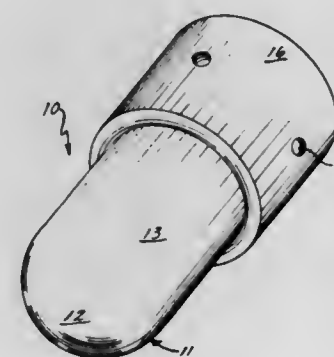
**POULTRY PICKING FINGER SUPPORT**

Edward J. Crane, Ottumwa, Iowa, assignor to International Agri-Systems, Inc., Ottumwa, Iowa

Filed Sept. 17, 1971, Ser. No. 181,439  
Int. Cl. A22c 21/02

U.S. Cl. 17—11.1 R

17 Claims



A picking finger support suitable for utilization in mechanical poultry picking machines including a bullet-shaped section formed from generally resilient material such as hard rubber. The bullet-shaped section is provided with a plurality of apertures at suitable locations thereover for receiving and retaining generally conventional picking fingers. The rear portion of the picking support is provided with a threaded interior so as to threadably receive the threaded hub on a picking apparatus. Positioned over the exterior of the threaded portion of the support is a reinforcing ring containing suitable apertures for a span wrench.

3,751,764

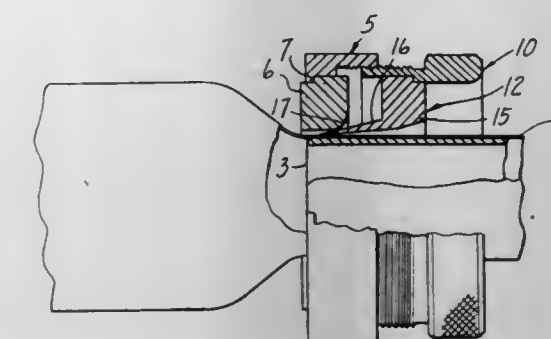
**CASING SIZER**

Arnold E. Dobbert, Fremont, Calif., assignor to Rheem Manufacturing Company, New York, N.Y.

Filed Mar. 31, 1971, Ser. No. 129,922  
Int. Cl. A22c 11/02

U.S. Cl. 17—35

2 Claims



A casing sizer including an annular resilient ring provided with a radially deformable portion and adjustment means for compressing said portion radially inwardly to increase the frictional drag on the casing and therefore the size of the stuffed sausage. A swingable mount is provided for disconnecting the sizer from the stuffing horn when desired.

3,751,765

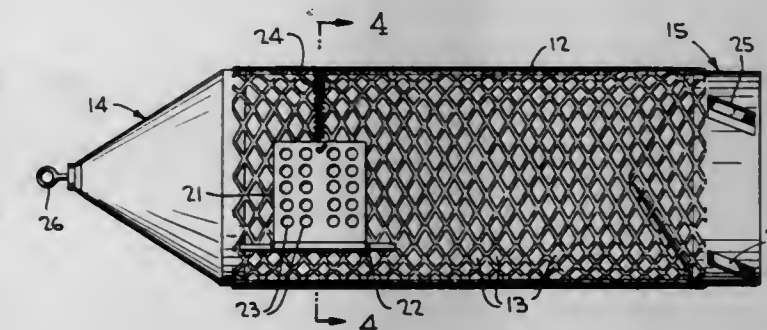
**FISH SCALER DEVICE**

Billy Joe Reeves, Campbellton Hwy., and James L. Chancey, 1111 Martin St., both of Dothan, Ala.

Filed June 21, 1971, Ser. No. 154,915  
Int. Cl. A22c 25/02

U.S. Cl. 17—64

4 Claims



A floatable fish scaler device and method of automatically removing scales from fish by means of water pressure as the device is towed through the water, including a cylindrical and rotatable water-permeable fish basket, a floatable nose cone at the forward end of the basket and a floatable rear cone at the rearward end of the basket having outer impeller blades thereon for imparting rotation to the device as it is towed through the water.

3,751,766

**SHRIMP PROCESSING MACHINE AND METHOD**

Gregor Jonsson, 1520 Berkeley Road, Lake Forest, Ill.

Division of Ser. No. 783,807, Dec. 16, 1968, Pat. No. 3,566,437. This application Feb. 18, 1971, Ser. No. 116,570  
Int. Cl. A22c 29/00

U.S. Cl. 17—71

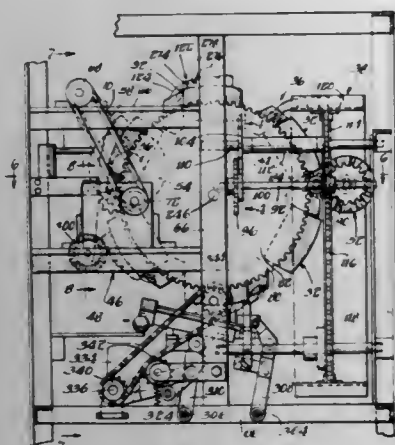
11 Claims

A shrimp processing machine and method including an intermittently operating conveyor from which beheaded shrimp are pulled tail first by sets of clamps on a rotary wheel turning at a uniform rate. The shrimp shells and part of the meat are



slit, and the sand vein is removed by the rotary brush. The intermittently operating conveyor mechanism is driven from the

manner that the fibers may be drafted at a higher draft and are capable of being drawn from the apron drafting means with



rotary wheel by a Geneva drive mechanism. The shrimp meat is finally removed from the shell by a shell separating mechanism and delivered to a discharge conveyor.

3,751,767

# PROCESS FOR THE FORMATION OF FIBROUS WEBS OF STAPLE FIBER FROM CONTINUOUS TEXTILE FILAMENTS

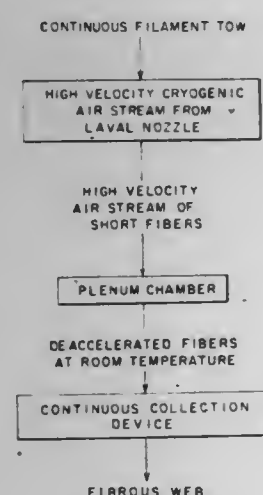
Preston F. Marshall, Walpole, Mass., assignor to The Kendall Company, Walpole, Mass.

Filed Jan. 28, 1971, Ser. No. 110,446

Int. Cl. D01g 1/00

U.S. Cl. 19—.58

1 Claim



Continuous textile filamentary material is converted into a web of short fibers of graduated length by shattering the filaments in an air jet stream of a velocity which is at least 1.5 times sonic velocity, at a calculated temperature of not over -100°F.; diffusing the resultant short fibers into a plenum chamber; and collecting the fibers in web form on a conveyor.

3,751,768

# APRON DRAFTER FOR TEXTILE SYSTEM

Elbert F. Morrison, and Raymond D. Joy, both of Clarksville, Va., assignors to Burlington Industries, Inc., Greensboro, N.C.

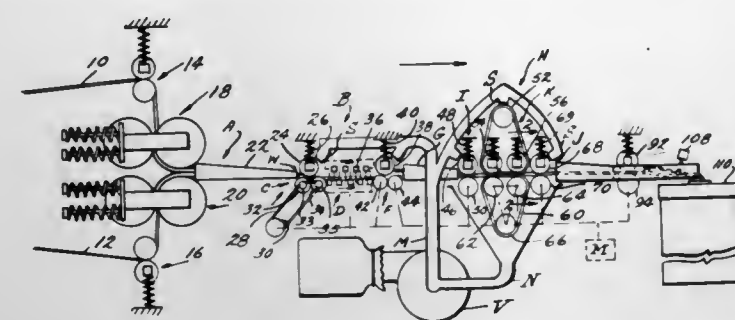
Division of Ser. No. 842,865, July 18, 1969, Pat. No. 3,609,836. This application Apr. 20, 1971, Ser. No. 135,587

Int. Cl. D01h 5/86

U.S. Cl. 19—244

7 Claims

An apron drafting means for controlling fibers in such a



pressure on substantially their entire length and without breaking of the fibers.

## ERRATUM

For Class 19—.58 see:  
Patent No. 3,751,767

3,751,769

## FASTENING DEVICES

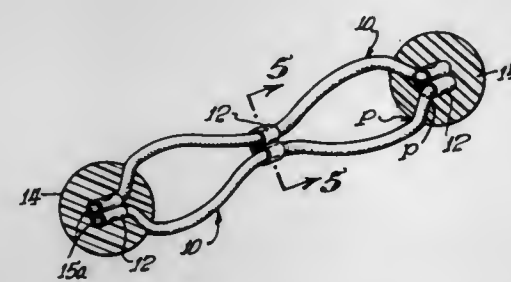
Kenneth Reiner, 7875 Telegraph Rd., Pico Rivera, Calif.

Filed Apr. 21, 1972, Ser. No. 246,340

Int. Cl. A44b 21/00; A45d 8/00

U.S. Cl. 24—73 ES

11 Claims



An improvement in fastening devices of the type comprising two centrally connected resilient loops and in which each loop has an enlargement (as a bead or other ornament) at its outer end, whereby the device may be stretched around an article, as for example a tress of hair, such as a pony tail and fastened by slipping the enlargement on the end of one loop under the enlargement at the end of the other loop. The improvement provides structures wherein the two loops are formed of the resilient material in such a manner that continuous lengths of the material pass through the central contiguous area of the two loops and all loose ends of the material are held within the end enlargements in such a way as to resist being pulled apart by strain or by necking down of the resilient material in normal use of the device. The enlargements are fixedly attached, one at each end to the double loop structure, in such a manner that the two lengths of material which protrude from each enlargement are each positioned at a substantial angle to the longitudinal axis of the device.

3,751,770

## CLOSURES

Larry Italiano, 235 North St., New Hyde Park, N.Y.

Continuation-in-part of Ser. No. 26,980, April 9, 1970, abandoned. This application July 26, 1971, Ser. No. 166,025

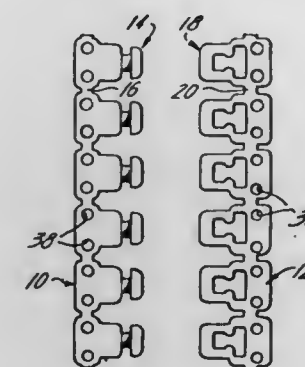
Int. Cl. A44b 19/04

U.S. Cl. 24—204

5 Claims

The disclosed closure for garments and the like includes a headed male member and a companion slotted female member, both blanked out of tough, pliant plastic sheets. The male member of sheet plastic is assembled to the female

member that is also of sheet plastic by inserting a male head portion of the blanked outlet into an opening in the female member having an outline that includes a transverse enlargement, then shifting the neck of the male member into a slot in the blanked opening of the female member. That opening has a guiding pair of divergent edges, leading first to a slot construction that is spaced from an end abutment of the slot. The



constriction inhibits the accidental separation of the closure members, but the related portions of the closure members promote assembly and disassembly in a way to overpower the constriction when manipulated deliberately.

Strips of the closures can be curved by bending the sheet material out of its plane and each strip is narrow or has narrow connections so that the strips can be flexed in their own planes.

3,751,771

## DEVICE FOR SECURING TEXTILE OR OTHER MATERIAL UNDER TENSION

Richard Gabriel Vipond, "Brackens," Bishops Walk, Addington, England

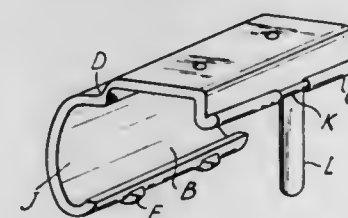
Filed Jan. 23, 1970, Ser. No. 5,222

Claims priority, application Great Britain, Jan. 27, 1969, 4,455/69

Int. Cl. A44b 21/00

U.S. Cl. 24—248 SL

6 Claims



A device for securing tensed fabric comprising a longitudinal clip of D-shape cross-section having the curved part hinged to the flat part along one side; the other side of the curved part bears teeth and clips onto the flat part. The clip is opened, the flat part attached to a base, the fabric is impaled onto the teeth and the clip is then snapped shut with the fabric gripped between the two parts, the action of closing the clip also serving to tension the fabric.

3,751,772

## TERMINAL GRIPPING DEVICE FOR ELASTIC CORD

Charles Grandjanny, 102, Avenue General Leclerc, 69 Caluire, France

Filed Apr. 23, 1971, Ser. No. 136,912

Claims priority, application France, May 13, 1970, 7017322

Int. Cl. F16g 11/00

U.S. Cl. 24—126 C

3 Claims

The invention is a terminal cord gripping device for securing a hook on the end of an elastic cord, the device comprising a gripper capping the end of the elastic cord and a hook

formed with a conical hole; the gripper having flexible gripping jaws and being inserted into the conical hole through



3,751,773

## OIL WELL SLIP HANDLE WITH ROTATABLE COMPONENTS

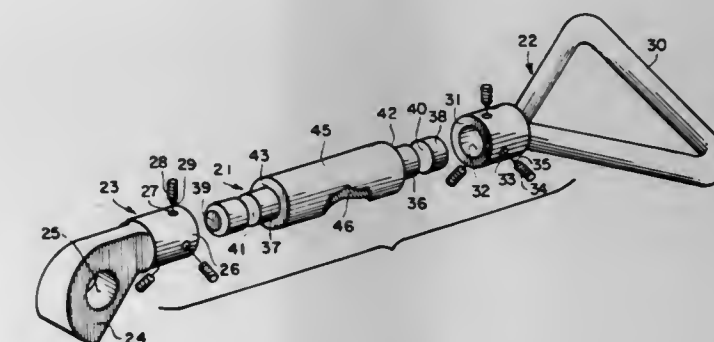
Harold C. Clark, 3486 N. Ventura Ave., Ventura, Calif.

Filed Aug. 21, 1972, Ser. No. 282,408

Int. Cl. A44b 21/00

U.S. Cl. 24—263 HA

7 Claims



An oil well slip handle has essentially three mutually rotatable parts constituting a virtually indestructible heavy duty slip handle.

A central holding unit has a rigid core and opposite ends formed with bearing raceways that aid in making swivel connections with a removable hand grip and a removable attachment element structured for securement to a slip body. The attachment element and hand grip are interchangeable.

3,751,774

## APPARATUS FOR CORRECTING WEFT DISTORTIONS IN WOVEN WEBS

John H. Hannaway, Pawtucket, R.I., assignor to Mount Hope Machine Company, Incorporated, Taunton, Mass.

Division of Ser. No. 874,503, Nov. 6, 1969, Pat. No. 3,636,598.

This application Oct. 12, 1971, Ser. No. 187,973

Int. Cl. D06h 3/12

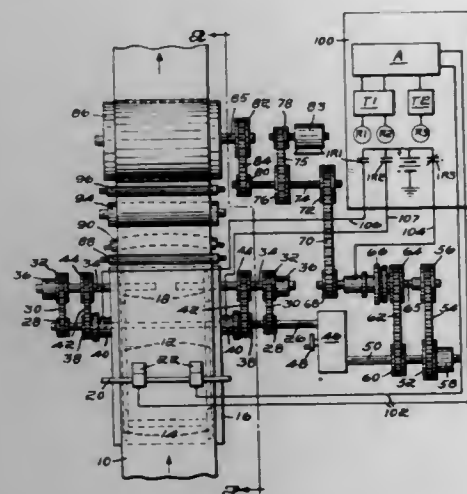
U.S. Cl. 26—51.4

11 Claims

Bow distortions of the weft threads of woven webs are removed by normally operating a tenter frame at a slightly faster speed than a roll feed drawing the web forwardly from the tenter, thereby intentionally inducing a lagging bow in the



web. Bow detection means are connected to momentarily slow the speed of the tenter to less than that of the roll feed when the lagging bow attains an acceptable maximum, allowing the



commingled with one another. This improved process of entangling multifilament yarn can operate at from about 3,000 to about 8,000 feet per minute by passing continuous multifilament yarn through the above-described vortex.

3,751,776

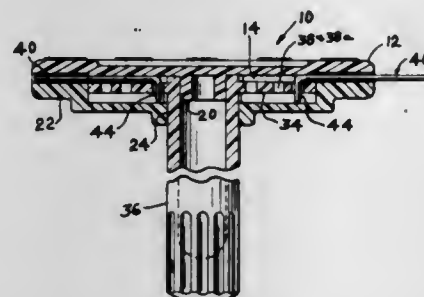
## YARN DESIGN FORMING TOOL

James B. Kruger, Oxford, and Joseph Cooper, Westport, both of Conn., assignors to Scoville Manufacturing Company, Waterbury, Conn.

Filed Feb. 15, 1972, Ser. No. 226,609  
Int. Cl. D04d 7/06

U.S. Cl. 28—2

5 Claims



weft threads to return to a straight configuration and eventually toward a leading bow of maximum acceptable magnitude, whereupon, the tenter is caused to resume its normal slightly faster speed.

3,751,775

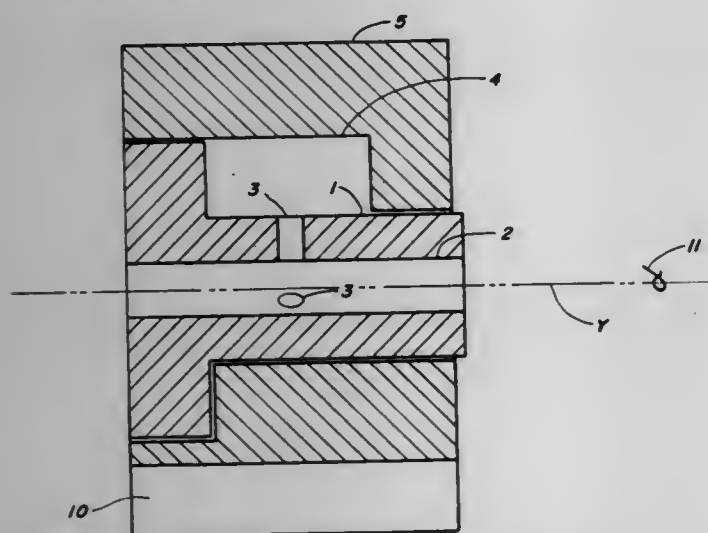
## APPARATUS AND PROCESS FOR COMMINGLING MULTIFILAMENT YARN

John Dimocritos Psaras, Richmond, Va., assignor to Allied Chemical Corporation, Morristown, N.J.

Filed June 7, 1972, Ser. No. 260,676  
Int. Cl. D02g 1/16

U.S. Cl. 28—1.4

13 Claims



An improved apparatus and method for commingling multifilament yarn has been found. The apparatus comprises an elongated body having a straight yarn passageway with at least three orifices substantially equally spaced about the periphery of the body at substantially the same level. The orifice center lines are offset so that at least two do not intersect with the center of the effective diameter of the yarn passageway, yet all pass within an imaginary circle having a diameter about one-third the effective diameter, and the same center as the effective diameter, at the orifice level. Also, at least two of the center lines extended from the orifices should pass outside the imaginary circle at the orifice level section having the same center but only 0.02 of the effective diameter of the yarn passageway. The plane at the orifice level must be located within a length one-half the length of the yarn passageway and centered on the midpoint of the yarn passageway. These orifices communicate with a source of high pressure fluid. The high pressure fluid flows through the orifices into the yarn passageway causing a vortex of swirling fluid so that any yarn passing linearly through the passageway would have filaments

A yarn design forming tool has upper and lower plates sandwiching for rotation a drive plate having arcuate slots, uniformly formed, radiating about its center. The slots each have a flat portion at its outer end. The slots receive the short legs of L-shaped pins respectively and drive them in or out from the periphery of the plates depending on the direction of rotation of the drive plate. The flat portions lock yarn-holding pins in their outward position during the design forming process. The pins move in precisely radial channels.

3,751,777

## PROCESS FOR MAKING TUFTED PILE CARPET

Hilaire Marcel Turmel, 260 Garceau St.; Dorothy Ellen Lackie, Hemmings Falls Rd., both of Drummondville, Quebec, and Sohinder Nath Chopra, 1379 Aberdeen St., Hawkesbury, Ontario, all of Canada

Filed July 9, 1971, Ser. No. 161,334  
Int. Cl. D05c 15/00

U.S. Cl. 28—72 P

8 Claims

The present invention relates to a carpet tufted with a fibrillatable yarn and a method of fibrillating the yarn in the carpet to thereby deluster and consolidate the pile. More particularly, the present invention relates to the discovery that a high velocity fluid stream directed at the pile of a carpet tufted of a fibrillatable yarn delusters, fibrillates, entangles and consolidates the pile thereof.

3,751,778

## PROCESS FOR THE SIMULTANEOUS TEXTURING AND DYEING OR FINISHING OF THERMOPLASTIC YARNS

Pierre Grosjean, Sainte-Foy-Les-Lyon; Rene Guillermin, Bron, and Roger Vidal, Champagne, all of France, assignors to Societe Rhodiaceta, Paris, France

Filed Oct. 7, 1971, Ser. No. 187,407

Claims priority, application France, Oct. 14, 1970, 7037348; July 26, 1971, 7127557

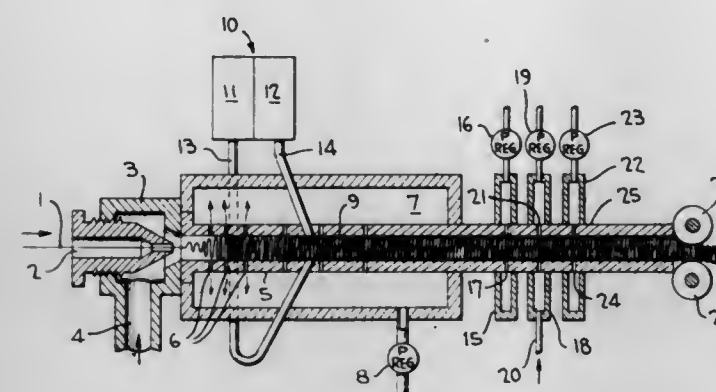
Int. Cl. D02g 1/12

U.S. Cl. 28—72.14

15 Claims

A process for the simultaneous texturing, i.e. crimping, and dyeing or finishing of thermoplastic yarns comprising packing and compressing the yarns into a confined space through introduction of a flow of a compressed fluid heated to a temperature sufficient to set the yarns, allowing a portion of the compressed fluid to provide movement of the yarns axially in the confined space with the remainder of the fluid escaping laterally from the confined space into further annular space under a pressure lower than the pressure of the confined

space, but higher than atmospheric pressure; and simultaneously introducing at least one dyeing solution or finishing agent into the confined space over the compressed yarns, such process being characterized in that the compressed yarn is continuously passed through at least one expansion zone and



thereafter through at least one zone in which a further fluid is introduced under pressure. Such process allows for the simultaneous dyeing or finishing of thermoplastic yarns in a high speed texturing process.

3,751,779

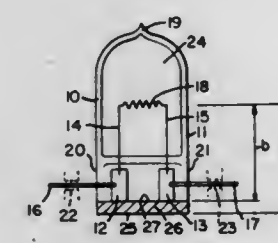
## PINCH BASE ELECTRIC LAMP WITH TRANSVERSELY ARRANGED SUPPLY WIRES

Riksterus Auguste Johannes Maria Meijer, Emmasingel, Eindhoven, and Jan Christiaan Pennekamp, Heerlen, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 824,478, May 14, 1969, Pat. No. 3,617,797. This application May 17, 1971, Ser. No. 144,342  
Int. Cl. H01j 9/18

U.S. Cl. 29—25.15

2 Claims



A pinch-base lamp and method of making same were foils are sealed in the pinch, and secured to each foil are one end of a pole wire oriented generally parallel to the lamp axis and one end of a supply wire oriented at a right angle to the pole wire. When the lamp is mounted the laterally-extending supply wires are subjected to torsional instead of bending stress, thereby reducing the likelihood of fracturing the pinch, and the base of the pinch, being free of supply wires, may be ground to provide an accurate reference surface from the filament.

3,751,780

## ULTRA SHARP DIAMOND EDGES FOR ULTRA THIN SECTIONING AND AS POINT CATHODE

Humberto Fernandez-Moran Villalobos, 5807 Dorchester Ave., Chicago, Ill.

Division of Ser. No. 829,267, June 2, 1969, Pat. No. 3,646,841, Continuation-in-part of Ser. No. 466,877, June 22, 1965, Pat. No. 3,447,366. This application Dec. 22, 1971, Ser. No. 211,138

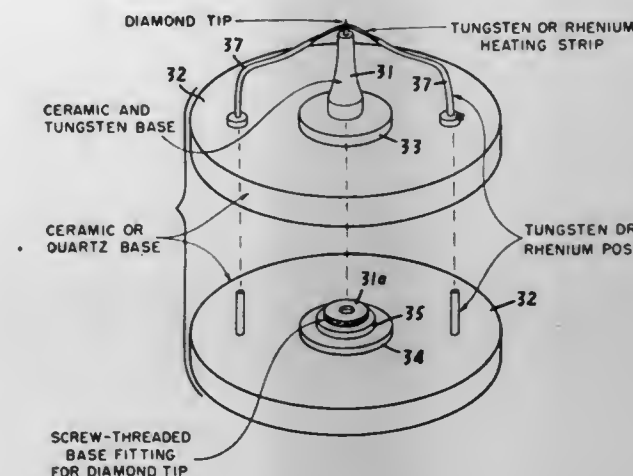
Int. Cl. B26d 1/00; B28b 5/04

U.S. Cl. 29—95 R

3 Claims

Ultra sharp diamond edge is used for molecular and sub-

molecular sectioning at ultra low temperature and as a high in-



tensity point source for the emission of electrons and neutrons.

3,751,781

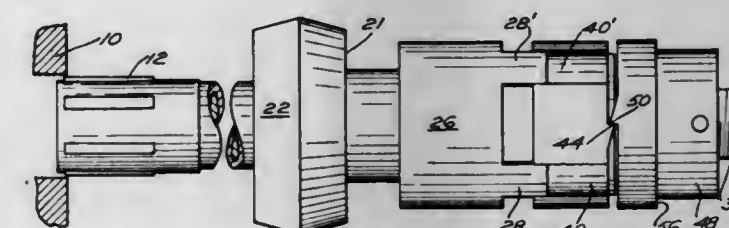
## ADJUSTABLE BURNISHING TOOL

Eldo K. Koppelman, Cumberland, R.I., assignor to Amtel, Inc., Providence, R.I.

Continuation-in-part of Ser. No. 27,628, April 13, 1970. This application Jan. 24, 1972, Ser. No. 220,295  
Int. Cl. B21c 37/30

U.S. Cl. 29—90 R

6 Claims



An adjustable burnishing tool with a mandrel member having a frusto-conical end portion and a roller cage for engagement therewith which receives a plurality of frusto-conical rollers that operate in a planetary system against the mandrel and which includes means for relatively moving the cage and the work while the mandrel moves the rollers into contact with the work and includes a mechanical means to lock the cage in size relation to the work, while the rollers are in contact therewith, and maintain this size adjustment while the roller burnishing tool is moved into the bore hole or around the cylindrical work piece to be burnished.

3,751,782

## THROW AWAY TIPS FOR METAL CUTTING TOOLS

Harvey Fruish, Northampton, England, assignor to Alfred Herbert Limited, Coventry, England

Filed May 12, 1971, Ser. No. 142,455

Int. Cl. B23p 15/30

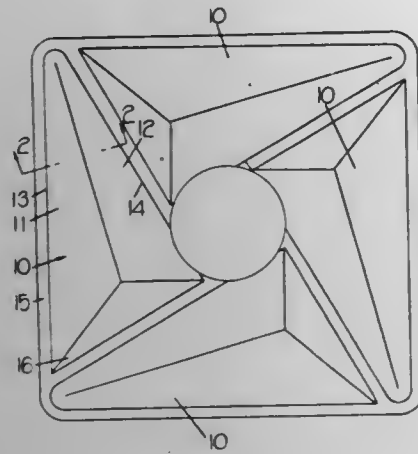
U.S. Cl. 29—95 R

7 Claims

A throw away tip for a metal cutting tool comprising a right prism of hard material, each end face of the prism having at



least two identical cutting corners and being formed with a plurality of tapering recesses of V-shaped section each recess



having its narrowest end adjacent one of said cutting corners of the associated end face.

3,751,783

# METHOD OF ERECTION OF HORIZONTAL SURFACED HEAT TRANSFER MODULES FOR STEAM GENERATING UNITS

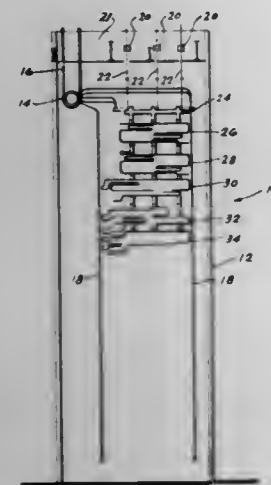
James C. Roberts, Jr., Avon, and Hersey B. Nelson, Granby, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed June 22, 1971, Ser. No. 155,460

Int. Cl. B23p 15/26, 19/00

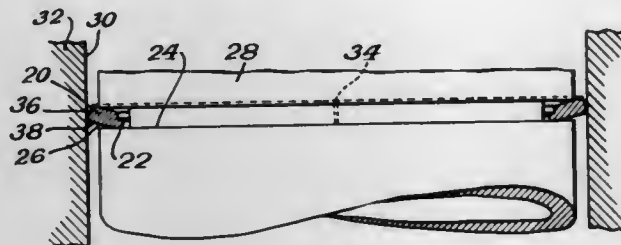
U.S. Cl. 29—157.4

3 Claims



A method of erection of heat transfer module sections for horizontal surfaced steam generating units wherein hydraulically operated jacks are placed on the overhead structure in the permanent hanger line. Threaded rods extend through the jacks to the grade elevation where they are attached to the permanent hanger system. The heat transfer modules which may be superheater, reheater or economizer sections are individually brought into the furnace cavity and put together at grade elevation raising each module just high enough to bring in the next module for connection to the preceding module until the total surface is assembled. The jacks are then run up to the fully erected position for the total surface arrangement and the permanent hanger system installed to the furnace structural support.

3,751,784  
MANUFACTURING PROCESS FOR PISTON ENGINES HAVING COMPRESSION RING SEALING  
Norman M. Packard, Des Plaines, Ill., assignor to International Harvester Company, Chicago, Ill.  
Division of Ser. No. 757,973, Sept. 6, 1968, Pat. No. 3,587,155. This application June 24, 1971, Ser. No. 156,558  
Int. Cl. B23p 15/00  
U.S. Cl. 29—156.4 R 5 Claims



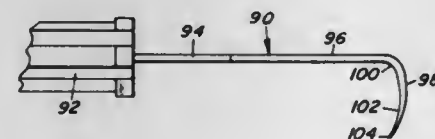
Manufacture of engines having grooved pistons and sealing rings fitting in the grooves of the pistons comprising: selection, by means of a selection-rejection process from a plurality of torsion type split compression rings, of rings for the grooved pistons each having at least the first one of its two opposite sides, in the free spring state of the ring, provided with a consistent overall flatness to at least about 10 to 5 light bands and, in the collapsed state with the ring closed or substantially so, said first side being frusto conical and so arranged with respect to the back of the ring that the intersecting portion of the inner periphery of the first side is substantially coplanar at all points on the periphery; sealing said pistons with such compression rings including those rings as so selected, by installation of a ring in an associated compression ring groove on each piston with an associated side of the groove confronting in the described way the first side of the ring; and construction of said engines by assembling such pistons in the respective cylinders with the face of each ring engaging a cylinder wall at all times to retain the ring in collapsed state on the piston, and with the ring effective during engine operation to establish a substantially continuous pressure ring of at least line contact between the coplanar inner periphery of said frusto conical first side and its associated confronting groove side to seal the piston.

3,751,785

TOOL FOR REMOVING MOLDINGS  
Morris W. Whitesell, P.O. Box 636, Waynesboro, Va.  
Filed May 25, 1971, Ser. No. 146,681  
Int. Cl. B23p 19/04

U.S. Cl. 29—267

10 Claims



A special purpose tool is disclosed for use in removing metal moldings from around the windshield or back light of automobiles in which the molding is secured by means of metal spring fasteners. The tool comprises an elongated metal blade terminating at its outer end in a tip portion curved to form an arcuate fulcrum, the outermost end of the tip being tapered so that it may be inserted between the molding and the automobile metal work. The tip portion forms approximately a right angle with the plane of the blade, and is sufficiently long to extend past the edge of the molding when the tool is in place, whereby upward movement of the handle of the tool will cause the tip to pivot against the metal work of the automo-

bile, with the end of the tip pressing against the fastener and releasing the molding.

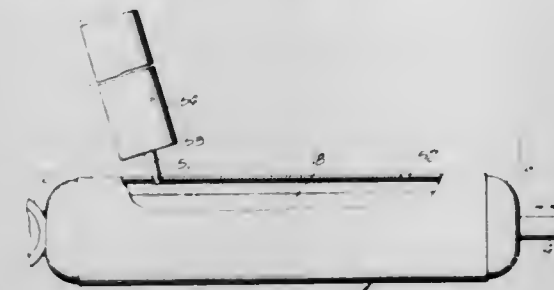
3,751,786

# METHOD AND SERVICE KIT FOR REVITALIZING SHOCK ABSORBERS

Thomas R. Lyon, 521 Terrado Dr., Monrovia, Calif.  
Filed Sept. 3, 1969, Ser. No. 854,868  
Int. Cl. B23p 7/00

U.S. Cl. 29—401

6 Claims



A method and kit accessories useful in extending the service life of a permanently assembled shock absorber. The kit includes a boring tool, one or more self-tapping plugs and a container of sufficient fluid to replace the original fluid charge and having a viscosity effective to substantially restore the original operating characteristics of the shock absorber. The invention also includes a permanently assembled shock absorber revitalized without need for disassembly.

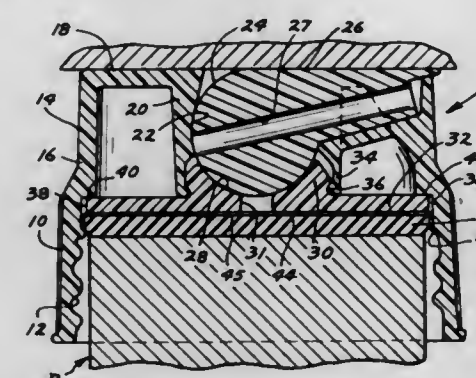
3,751,787

# METHOD OF MOUNTING A SEALING DISC IN A CAP FOR A CONTAINER

Alvin J. Porter, Minneapolis, Minn., assignor to Product Design & Engineering, Inc., Minneapolis, Minn.  
Filed Feb. 1, 1972, Ser. No. 222,536  
Int. Cl. B23p 17/00

U.S. Cl. 29—421 R

6 Claims



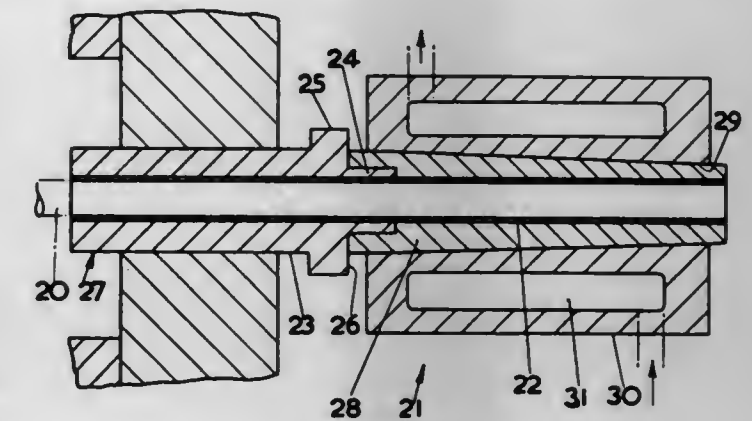
The method of mounting a sealing disc in a cap of a container having an open neck which consists in providing in the cavity of the cap and on the bottom of the cavity of a disc portion adapted to overlie the outer edge of the neck of the container with the sealing disc between the neck and the disc, constructing the cap with an inner perimetric groove extending outwardly of the disc, providing a plunger constructed with a portion at one end of compressible material with an upper end surface thereof conforming in configuration to the exposed surface of the disc of the cap and spaced laterally about its perimeter from the bottom of the perimetric groove bounded by a perimetric rib, a distance greater than the thickness of the sealing disc, in placing between said cap disc and the denoted end of said plunger a sealing disc blank having a peripheral flange with the peripheral flange about the end of the plunger and forcing the plunger into the cap with sufficient pressure to cause lateral movement of the peripheral flange portion of the sealing disc into the inner perimetric groove and within the perimetric rib of the cap to mount the flange therein and thereby mount the sealing disc in the cap.

3,751,788  
METHOD OF MANUFACTURING A REFRACTORY LINED CONTINUOUS CASTING DIE

Robert King, Sutton Coldfield, England, assignor to Imperial Metal Industries (Kynock) Limited, Birmingham, England  
Division of Ser. No. 775,774, Nov. 14, 1968, abandoned. This application Aug. 20, 1971, Ser. No. 173,556  
Int. Cl. B22c 9/06

U.S. Cl. 29—423

2 Claims



A method of manufacturing a die for the continuous casting of metals comprising depositing a layer of refractory material on a disposable mandrel, depositing a support of thermally conductive material around and in intimate contact with the outer surface of the layer, and subsequently removing the mandrel.

3,751,789

# METHOD FOR HINGING A FOLDABLE TABLET ARM TO A STACKABLE CHAIR

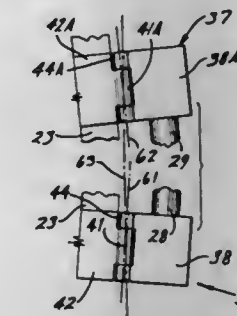
Roy W. Fink, Portage, Mich., assignor to The Vecta Group, Inc., Kalamazoo, Mich.

Division of Ser. No. 108,511, Jan. 21, 1971, Pat. No. 3,712,668. This application Sept. 15, 1972, Ser. No. 289,427

Int. Cl. B23p 11/00, 11/02; A47b 39/00

U.S. Cl. 29—434

2 Claims



A Method For Applying Torque To Support Members For A Foldable Tablet Mounted On An Arm Of A Stackable Chair.

3,751,790  
CONSTRUCTION OF A FORM FOR CONCRETE MOLDING

Stanley J. Frazier, 3206 S. Fudson St., Seattle, Wash.  
Division of Ser. No. 77,935, Oct. 5, 1970, Pat. No. 3,687,411.

This application Feb. 7, 1972, Ser. No. 224,322

Int. Cl. B21d 39/00; B23p 19/04

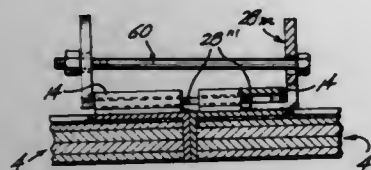
U.S. Cl. 29—455

6 Claims

A readily assembled and readily stripped, reusable concrete form is constructed from a plurality of similar flat-faced panels having spaced, co-planar, open-ended edge-oriented slots in the margins of the other or opposite faces thereof; and a plurality of elongated L-shaped keys which are employed both to interlock the panels on each side of the form, and to interlock



the form from side to side. The panels are arranged in two spaced, parallel, oppositely disposed, edge to edge, co-planer flat-faced array of the same; and are interlocked with one another in each array by placing a first set of the keys in the plane of the slots opposite points relatively within the margins of the panels, and slidably engaging the keys in the adjacent



slots of adjacent panels. The arrays are interlocked with one another by placing a second set of the keys in the plane of the slots opposite points relatively without the margins of the panels, slidably engaging the latter keys in the slots of the panels along corresponding edges of the arrays, and interconnecting the latter keys with one another transversely of the space between the arrays.

3,751,791

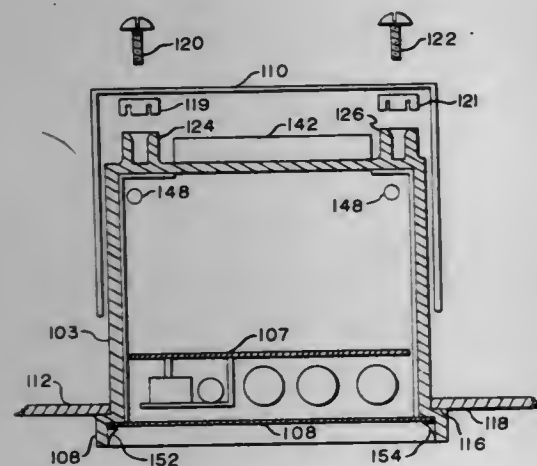
**METHOD FOR MOUNTING A PANEL METER**

Joshua Horwitz; Bernard M. Gordon, both of Magnolia, and Brant W. Becker, Sudbury, all of Mass., assignors to Gorcan Engineering Company, Wakefield, Mass.  
Division of Ser. No. 852,808, Aug. 25, 1969, abandoned. This application Mar. 17, 1971, Ser. No. 125,215

Int. Cl. B23p 21/00

U.S. Cl. 29—469

4 Claims



In a bipolar floating input device, particularly for dual-slope integration digital panel meters, an analog voltage is applied to a bipolar floating input circuit and a digital form of the analog voltage is presented by a display.

3,751,792

**METHOD OF FORMING A WELDED JOINT CONSTRUCTION**

Paul V. Frakes, Williamsport, Pa., assignor to The Gazer Corporation, Williamsport, Pa.

Filed June 23, 1971, Ser. No. 155,806

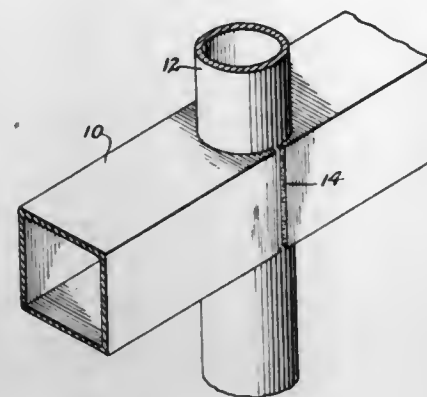
Int. Cl. B23k 31/02

U.S. Cl. 29—471.1

7 Claims

A welded joint construction for tubular members and a method of welding the same whereby a horizontal member of substantially rectangular cross section is radially notched to partially accommodate a vertically oriented cylindrical member having an outside diameter approximately equal to

the inside width of the rectangular member whereafter the cylindrical member is positioned within the partially accom-



modating notched portion of the rectangular member and the vertical edges of the rectangular member are welded to the face of the cylindrical member juxtaposed thereto.

3,751,793

**METHOD OF FORMING ATTACHMENT POINT ON THE CORNER OF A FABRIC SHEET**

Harry T. Davis, West Peabody, Mass., assignor to Hood Sailmakers, Inc., Marblehead, Mass.

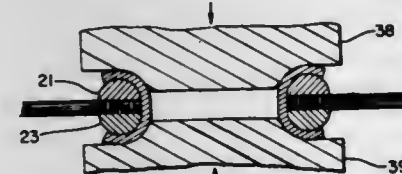
Division of Ser. No. 74,773, Sept. 23, 1970, Pat. No. 3,653,353.

Filed Jan. 3, 1972, Ser. No. 214,820

Int. Cl. B21d 39/00; B23p 11/02

U.S. Cl. 29—523

4 Claims



The attachment point disclosed herein is adapted for applying a substantial load to a fabric sheet. A particularly fitting example of an application for such an attachment point is at the clew of a sail such as a Genoa jib where, in a large sailboat, the jib sheet (a rope) may be holding the sail in position under a load of several hundreds to several thousands of pounds. The attachment point employs a pair of complementary ring members, each having a multiplicity of needle-like teeth. These ring members are clamped on opposite sides of a plurality of cloth layers by means of a metallic inner liner which is rimmed down over the ring members so as to apply a clamping force sufficient to prevent combing of the teeth through the cloth layers under a lateral pressure in the same order of magnitude as the strength of the cloth layers themselves.

3,751,794

**PANEL ASSEMBLY AND MACHINE**

Charles Kay, 6355 Thornapple River Dr., Alto, Mich.

Filed Aug. 13, 1971, Ser. No. 171,564

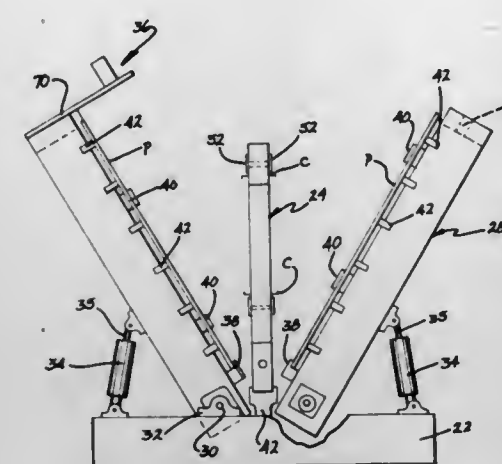
Int. Cl. B23p 19/00

U.S. Cl. 29—526

12 Claims

A method and apparatus for making structural building units from a pair of spaced panels and interconnecting metal plates, the plates being inserted by means of powered plate inserting means and powered panel holding means wherein the

plates are first positioned into recesses formed in the inner facing portions of the panels and then forced endwise into the ing surface, (on either an inside or outside diameter surface), a movable cap and a spring arrangement for forcing the cap panel.



Also disclosed are various panel-jointing plates having specially configured end portions to ensure positive holding action between the plates and panels.

3,751,795

**METHOD OF MAKING BEZELS FOR SETTING PRECIOUS STONES**

Henri Victor Favre, 44, rue du College, 39-Saint-Claude, France

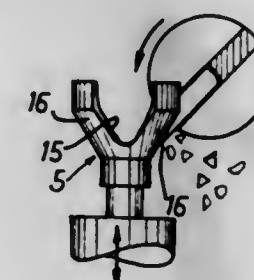
Continuation-in-part of Ser. No. 854,641, Sept. 2, 1969, abandoned, which is a continuation-in-part of Ser. No. 631,978, April 19, 1967, abandoned. This application Feb. 8, 1972, Ser. No. 224,492

Claims priority, application France, Apr. 28, 1966, 6659538; Oct. 4, 1966, 6678730

Int. Cl. B23p 13/04

U.S. Cl. 29—558

4 Claims



This method of manufacturing bezels for setting precious stones or the like comprises the steps of turning a stock rod in order to form a hollow head followed by a narrow stem therein, milling the lateral wall of the head with a cutter, and severing the stem from the remaining portion of the rod by cutting, so as to obtain a high-precision bezel having a perfect finish. (FIG. 7a).

3,751,796

**METHOD AND APPARATUS FOR BONDING AN ELEMENT TO A CONICAL SURFACE**

Walter R. Wise, Pittsford, N.Y., assignor to Garlock Inc., Palmyra, N.Y.

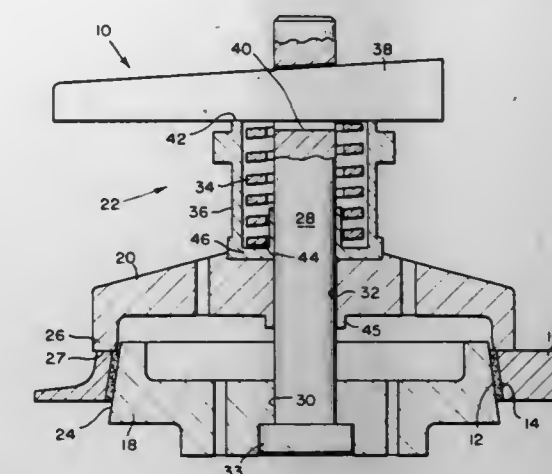
Filed May 26, 1972, Ser. No. 257,229

Int. Cl. B23q 7/00; B23p 19/00

U.S. Cl. 29—559

17 Claims

An installation fixture for use in holding, for bonding purposes, an annular, conical, liner against a conical surface of a member to which the liner is to be bonded, and for applying the same pressure each time regardless of variations in the thickness of the liner from one liner-member piece to the next. The fixture includes a stationary base having a conical receiv-



down on the member and liner with a predetermined repeatable pressure that is the same regardless of the thickness of the liner.

3,751,797

**METHOD OF MAKING A CAPACITOR HAVING A SELF-DEPOLARIZING ELECTROLYTE**

Thomas C. O'Nan; Charles W. Walters, and James M. Booe, all of Indianapolis, Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Division of Ser. No. 862,049, Sept. 29, 1969, Pat. No. 3,601,665. This application Feb. 12, 1971, Ser. No. 115,040

Int. Cl. H01g 9/02

U.S. Cl. 29—570

13 Claims

A method of making a self-depolarizing, silver cathode, sulfuric acid electrolytic capacitor, wherein silver sulfate is provided in the electrolyte by providing in the electrolyte a metal sulfate which etches the silver cathode.

3,751,798

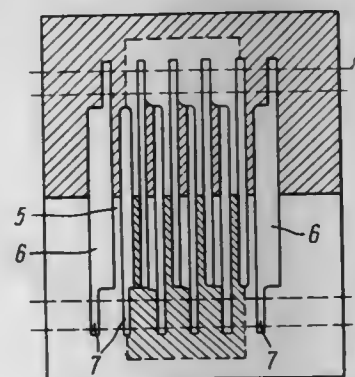
**METHOD OF MAKING THERMOPILES OF FOIL**  
Yakov Avramovich Altshuler, ulitsa Bokovaya Veresaeva 5, kv. 3, Lvov, U.S.S.R.

Filed Feb. 23, 1972, Ser. No. 228,589

Int. Cl. B01j 17/00

U.S. Cl. 29—573

6 Claims

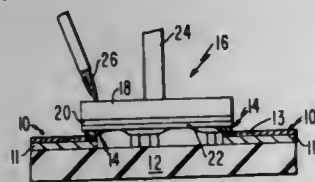


A method of making a thermopile in which a sheet of foil of one material is connected to a sheet of foil of another material so that these sheets are placed at both sides of a line of their connection thus forming a plate; next, apertures are cut in this plate which terminate in slots at two diagonally opposite angles so that two plates with thermocouples, formed by the partitions between the apertures are obtained, which plates are then piled up in such a manner that the sheet of foil of one material of one plate adjoins the sheet of foil of another material of the other plate and the slots in both plates coincide; the two plates are connected within the zone of the slots whose width is equal to the gap between the thermocouples;



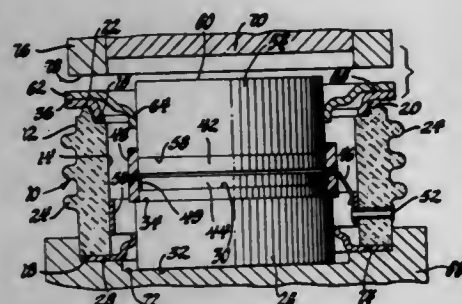
plates are attached to a framework and the ends of the sheels are cut off beyond the places of their connection, thereby obtaining a thermopile of a number of series connected thermocouples.

**3,751,799**  
**SOLDER TERMINAL REWORK TECHNIQUE**  
Jerald James Reynolds, Swanton, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.  
Filed Apr. 26, 1972, Ser. No. 247,613  
Int. Cl. B01j 17/00  
U.S. Cl. 29—574  
10 Claims



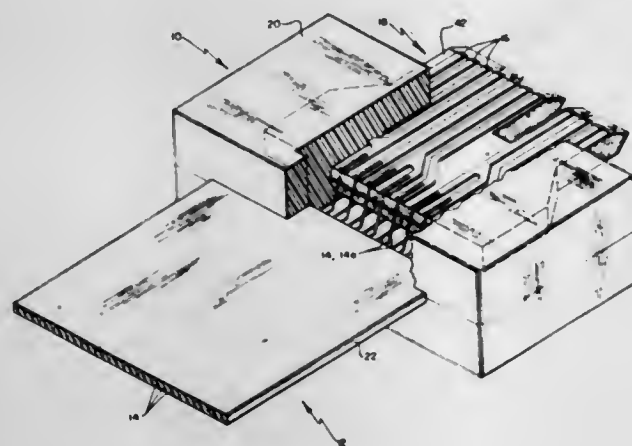
Excess solder is removed from contact elements to which a semiconductor device or integrated circuit chip is to be bonded on a multiple chip carrying substrate, without damaging chips solder bonded to adjacent contact elements. Typically, a chip not functioning according to test specifications is removed by reflowing its solder bonds in a carefully controlled heat cycle, then lifting it from the contact elements. The present process removes excess solder left behind by the removed chip. A layer of solderable metal is deposited on a member essentially duplicating the heat transfer characteristics of the chip. The excess solder is contacted with the solderable metal layer. The excess solder is heated to reflow temperatures in a heat cycle duplicating that used for reflowing the solder bond. The member simulating the chip is then removed, carrying with it the excess solder and restoring the contact elements to proper condition for receiving a replacement chip, without damage to adjacent chips.

**3,751,800**  
**METHOD OF FABRICATING A SEMICONDUCTOR ENCLOSURE**  
Dale L. Daniels, Kokomo, and Thomas J. Furnival, Logansport, both of Ind., assignors to General Motors Corporation, Detroit, Mich.  
Division of Ser. No. 60,865, Aug. 4, 1970, Pat. No. 3,688,163.  
This application Mar. 27, 1972, Ser. No. 238,373  
Int. Cl. H01l 7/00  
U.S. Cl. 29—589  
4 Claims



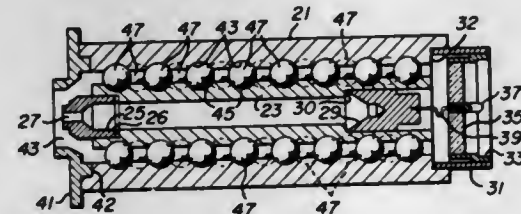
A hermetically sealed enclosure for a semiconductor device and method for making same which includes providing a tubular ceramic housing with a circumferential integral cold welding die on one end face thereof. A cold weldable layer is bonded to the one end face of the housing, with a portion of the layer overlying the die. A first cover member is cold welded to the layer over the die to provide a hermetic seal at the die end and a first electrical and thermal contact. A second cover member hermetically encloses the end opposite the integral die and provides an electrical and thermal contact at the opposite end of the housing.

**3,751,801**  
**METHOD AND APPARATUS FOR TERMINATING ELECTRICAL RIBBON CABLE**  
Everhardt P. Praeger, and Brian A. Wolfset, both of Framingham, Mass., assignors to Honeywell Inc., Minneapolis, Minn.  
Division of Ser. No. 750,291, Aug. 5, 1968, Pat. No. 3,605,060.  
This application May 3, 1971, Ser. No. 139,947  
Int. Cl. H01r 43/00  
U.S. Cl. 29—628  
8 Claims



A new termination, with which a miniature ribbon cable can be connected readily to other electrical devices, has adjacent cable conductors connected without fan-out to a connector plate having contacts on opposite sides of a board-like insulator. The cable insulation is removed from the conductors, prior to assembly of the cable with the connector plate, preferably along the entire conductor length that overlies the insulator.

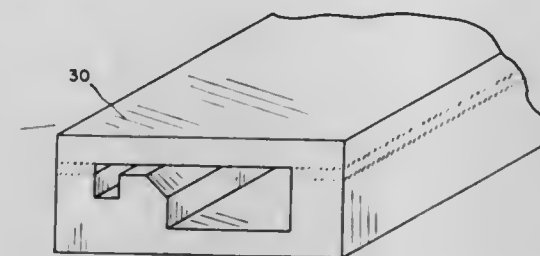
**3,751,802**  
**METHOD OF MANUFACTURING A CERAMIC BALL INSULATED DEPRESSED COLLECTOR FOR A MICROWAVE TUBE**  
Robert Leander Holm, Sunnyvale, and John Wesley Ashford, Los Altos, both of Calif., assignors to Litton Systems, Inc., San Carlos, Calif.  
Division of Ser. No. 94,387, Dec. 2, 1970, Pat. No. 3,679,929.  
This application Feb. 16, 1972, Ser. No. 226,723  
Int. Cl. H01p 11/00  
U.S. Cl. 29—600  
15 Claims



In an improved depressed collector assembly for a microwave tube a pair of metal cylindrical members are arranged concentrically, one within the other, and in that relationship are supported spaced apart and electrically insulated from one another by a fill of dielectric ceramic balls or spheres, suitably aluminum oxide or beryllium oxide, located within and about and along the space between the cylinders. The spheres are maintained therein embedded in indentations in the opposed walls of the cylindrical members. The inner cylinder forms the major part of the depressed collector electrode which is in the tube maintained at a high voltage, and the

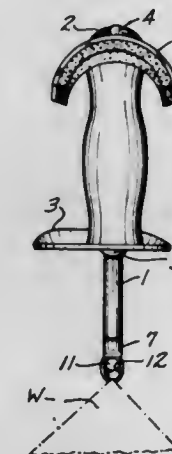
outer cylinder forms the collector shield maintained at a much lower voltage, normally ground. In the novel method of fitting such ceramic spheres between the inner and outer metal cylinders the annular space between the concentric cylinders is first filled with the relatively incompressible ceramic spheres, and the outer surface of the inner cylinder is forced outward to embed said spheres primarily in that outer surface while the inner surface of the outer cylinder is forced inwardly to embed the spheres primarily in the inner surface of the outer cylinder so that the spheres are seated in place and cannot move and, conversely, the balls preclude relative movement between the inner and outer cylinders.

**3,751,803**  
**METHOD OF MAKING A MAGNETIC HEAD**  
Robert D. Fisher, Woodstock, and George C. Puram, Saugerties, both of N.Y., assignors to Ferroxcube Corporation, New York, N.Y.  
Filed May 16, 1972, Ser. No. 253,796  
Int. Cl. G11b 5/42  
U.S. Cl. 29—603  
12 Claims



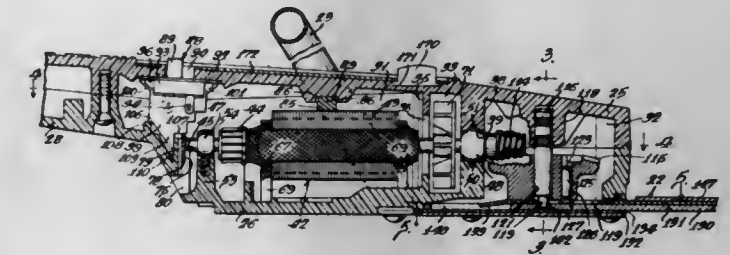
A recording head and a method of manufacturing a recording head wherein capillary techniques are employable for gap formation without compression by means of a pre-bonded head structure. By use of sputtering techniques, the correct gap length can be set into the recording head.

**3,751,804**  
**DEBURRING TOOL**  
Earl J. Pulrang, Seattle, Wash., assignor to Roy S. Rubrang, Kent, Wash.  
Filed Mar. 8, 1971, Ser. No. 121,674  
Int. Cl. B26b 3/00  
U.S. Cl. 30—169  
12 Claims



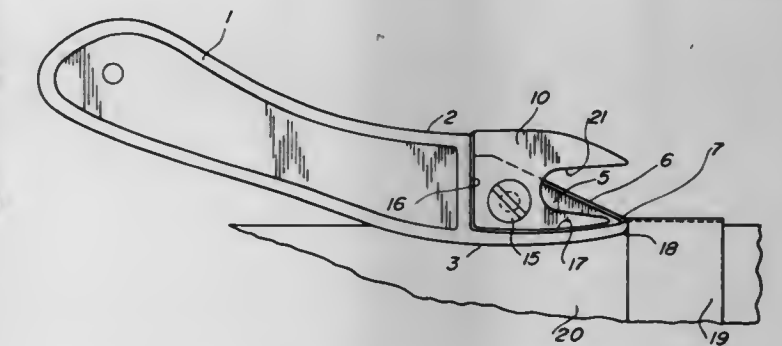
A grip has a tool shank projecting lengthwise from one end which carries a bit having a ring forming an eye with its axis extending transversely of the tool shank through its tip or a pair of skiving disks. The leading edge of the eye ring rim is sharpened to provide a concave arcuate cutting edge to straddle a workpiece ridge. The skiving disks are located in adjacent coplanar relationship to form a saddle slot between them for straddling a work sheet edge which will chamfer its two corner ridges. The upper end of the grip carries a brace rod having a wrist-engaging saddle. The lower grip end carries a guard plate.

**3,751,805**  
**HEDGE TRIMMER**  
Robert D. Grahn, Hinsdale, Ill., assignor to Sunbeam Corporation, Chicago, Ill.  
Division of Ser. No. 569,490, Aug. 1, 1966, Pat. No. 3,579,827.  
This application Apr. 29, 1971, Ser. No. 138,765  
Int. Cl. B26b 19/02  
U.S. Cl. 30—220  
7 Claims



An electric motor driven hedge trimmer having an elongated split housing and a forwardly extending reciprocating cutter and comb assembly. The split housing forms a gear chamber above a portion of the cutter and comb assembly and supports a stationary post at one end. The post rotatably supports one of the gears through which the cutter assembly is driven. The comb which is disposed below the reciprocating cutter supports the other end of the stationary post and the cutter is provided with a slot to provide clearance for the post. A saw blade is attached to the end of the cutter remote from the housing. The rear portion of the housing provides a handle and a transversely disposed loop-shaped handle is also provided. A level gauge is secured on top of the housing.

**3,751,806**  
**TAPE CUTTER**  
John Patrick, 233 N. Ward St., Macomb, Ill.  
Filed May 20, 1971, Ser. No. 145,432  
Int. Cl. B26b 3/08  
U.S. Cl. 30—294  
1 Claim



A tape cutter for cutting adhesive tape from human skin having a pointed blade positioned so that the point of the blade is near a rounded tip on the tape cutter. The blade being held in a guide extension that has an open area above the blade to force the tape to be cut against the blade and a bottom rounded portion to force the skin down and away from the tape to be cut.

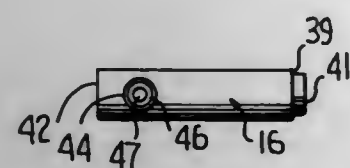
**3,751,807**  
**DENTAL INSTRUMENT**  
Carroll G. Noll, 4196 Abinadi Rd., and Alvan M. Morris, 7148 Loch Lomond Dr., both of Bethesda, Md.  
Filed Mar. 3, 1972, Ser. No. 231,681  
Int. Cl. A61c 3/10  
U.S. Cl. 32—52  
15 Claims

A dental instrument for dispensing tooth filling material into a cavity and for compacting the filling material in the cavity. The compacting element of the instrument ejects the tooth filling material and then closes a dispensing opening of the filling material container so the instrument can be used to compact the dispensed filling material. The container and compacting element are releasably secured to the instrument



as a unit with the compacting element closing the dispensing opening of the container. The container can be prefilled with

and mounted on the top surface of the blade and a stationary guiding cord secured at the bottom of the board and extending



the ingredients of the tooth filling amalgam and can be shaken to mix same, or alternatively, the container can be filled with mixed amalgam just before use.

3,751,808

# APPARATUS FOR USE IN MAKING PATTERNS FOR ELBOWS FOR CYLINDRICAL PRODUCTS, AND OTHER LAYOUTS

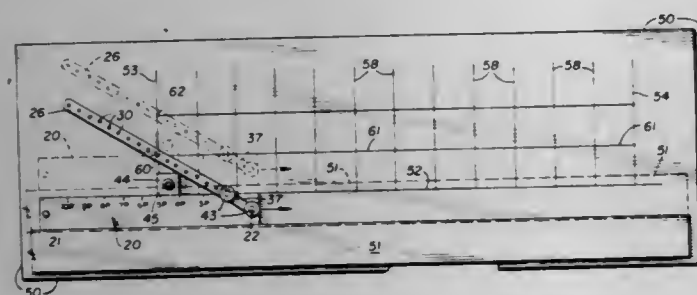
James D. Price, 635 Joyce St., Golden, Colo.

Filed Aug. 23, 1971, Ser. No. 174,067

Int. Cl. B43I 7/06

U.S. Cl. 33-75 R

4 Claims



Apparatus for use in making patterns for multi-piece elbows for cylindrical products such as pipes and the like, and for other layouts, comprising a flat elongated base bar marked with designations indicating numbers of pieces which may be embodied in the elbow, a spacing bar marked with designations indicating numbers of spaces into which the pattern stretch-out is to be divided, and also marked with designations indicating diameters, a pattern marking bar provided with holes arranged in rows for coinciding with space indicating lines on the pattern and for marking intersection lines as a guide to drawing the pattern, a pair of short bars, and means connecting bars in certain combinations and angular arrangements for use in dividing the pattern into a selected number of equal spaces, for establishing throat and pitch lines, and for marking intersections as a guide to drawing the pattern. The apparatus is useful for both "parallel line development" and "radial line development," and is not limited to making elbow patterns.

3,751,809

# PORTABLE DRAFTING APPARATUS

William F. Burgess, Jr., 1314 Penobscot Bldg., Detroit, Mich.

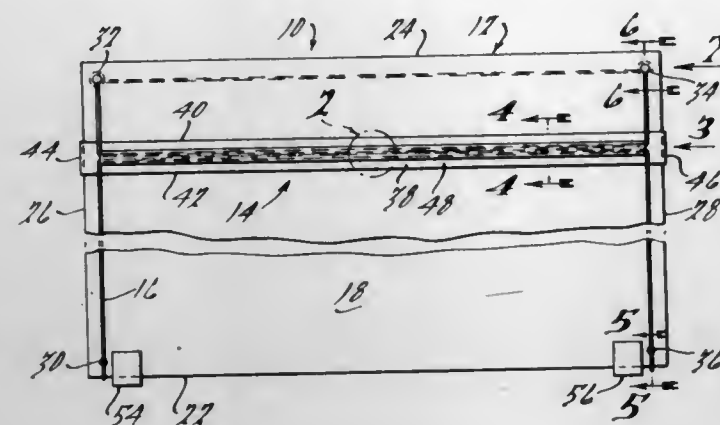
Filed May 6, 1971, Ser. No. 140,696

Int. Cl. B43I 5/00, 13/02

U.S. Cl. 33-80

5 Claims

There is herein disclosed a new and novel portable drafting apparatus comprising a board, a straightedge slidably supported on the board and consisting of an elongated blade of substantial width and having parallel longitudinal drawing instrument guiding edges, an elongated crown unit having a longitudinal tunnel for housing crossed portions of a guiding cord



throughout the entire length of the crown unit and under the upper surface of the board so as to guide the straightedge in its movement about the board.

3,751,810

# MASONS' LINE HOLDER

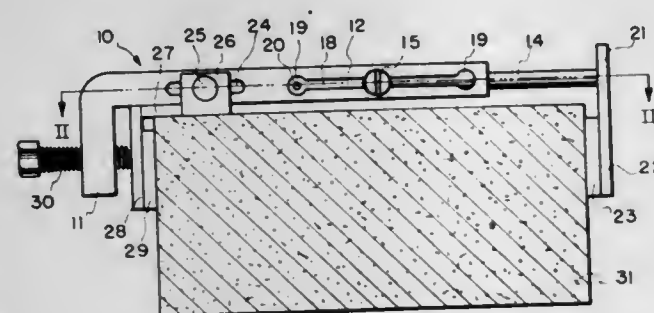
Anthony A. Valva, 298 Sanderson Ave., Campbell, Ohio

Continuation-in-part of Ser. No. 873,386, Nov. 3, 1969, abandoned. This application Jan. 18, 1971, Ser. No. 107,143

Int. Cl. E04g 21/18

U.S. Cl. 33-86

8 Claims



A device for securing a masons' line to a brick or block wall. The line holding device consists of a L-shaped body member and a L-shaped clamp, the longer portion of which is slideably received within the longer leg of the body member and is secured in any of a number of spaced positions to vary the overall span of the device. A sliding clamp is mounted on the longer portion of the body member and is forced by means of a screw extending through the short portion of the body member toward the clamping face of the L-shaped clamp member. The clamping faces of the sliding member and of the L-shaped clamping member are provided with renewable rubber faces. A U-shaped clamping member is also provided which may be substituted for the L-shaped clamp to permit the device to be clamped to the side wall of a concrete block.

3,751,811

# MEASURING DEVICE

Paul Pajevic, 475 N. Northwest Hwy., Park Ridge, Ill.

Filed Sept. 15, 1971, Ser. No. 180,561

Int. Cl. G01b 3/12

U.S. Cl. 33-141 R

24 Claims

A friction wheel measuring apparatus for measuring distances traveled along a machine surface, said apparatus including a counting wheel with a circular groove containing a

continuous number of balls each of which actuates a counting mechanism during rotation of the counting wheel, said counting wheel being driven by tapered motion transfer rollers

3,751,813

# SLIDE RULE AND COMPASS DEVICE

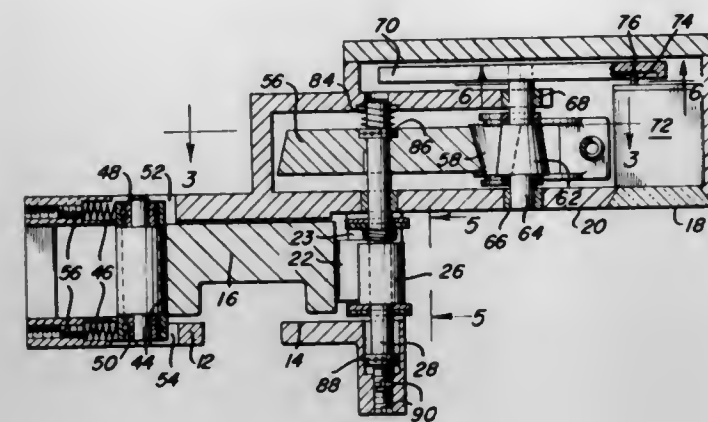
Edward A. Kuwada, 1053 S. Kingsley Dr., Los Angeles, Calif.

Filed Nov. 11, 1971, Ser. No. 197,791

Int. Cl. B43I 9/04

U.S. Cl. 33-27 C

15 Claims



which are axially adjustable with respect to each other to change the diameter ratio therebetween for compensation of measuring errors due to gathering effect and wear of the internal parts over a period of time.

3,751,812

# MEASURING APPARATUS

Franz-Josef Meyer, Opladen, Germany, assignor to Goetzwerke Friedrich Goetze, Burscheld, Germany

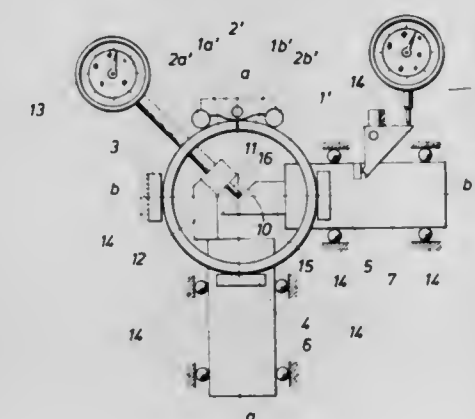
Filed May 19, 1971, Ser. No. 144,785

Claims priority, application Germany, May 20, 1970, P 20 24 461.5

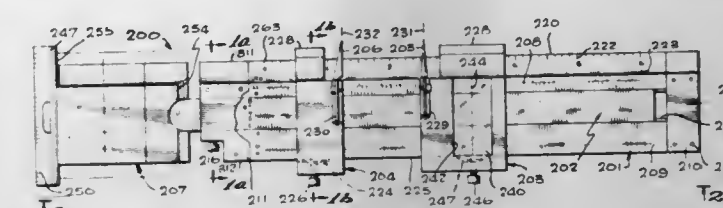
Int. Cl. G01b 5/08, 5/00

U.S. Cl. 33-178 R

7 Claims



Apparatus for measuring the outer diameter and ovality of out-of-round articles has a first defined axis of movement and first displaceable means mounted for movement along that axis, a second defined axis of movement different from the first axis and second displaceable means mounted for movement along the second axis. A counterjaw is mounted on the first displaceable means for movement therewith and cooperates with a separate pivotally mounted jaw. The pivotally mounted jaw and the separate counterjaw are arranged for measuring the ovality of an out-of-round article to be measured. A jaw is mounted on a second displaceable means for movement therewith and cooperates with a fixed jaw for measuring the outer diameter of the article to be measured. A member is mounted on the first displaceable means which defines a surface inclined at 45° with respect to the second axis. Means having a sensing tip is mounted on the first displaceable means and arranged perpendicularly with respect to and in contact with the inclined surface for measuring the ovality of the article to be measured.



A combined slide rule and compass device including a slide rule type body and an elongated main slide mounted for longitudinal movement within a guideway in the body, with two external slide elements being disposed about the body and carrying a pair of compass points which are adjustable toward and away from one another for use in drawing or measuring circles. One of these external slides also carries a hairline for coaction with the scales on the body and main slide in making a slide rule calculation. Preferably, the main slide has an enlarged head at one of its ends, which may be detachable from the main slide and onto which at least one and preferably both of the external slides are movable to a retracted position in which they do not interfere with use of the device as a conventional marking or measuring ruler.

3,751,814

# SLIDE CALIPER

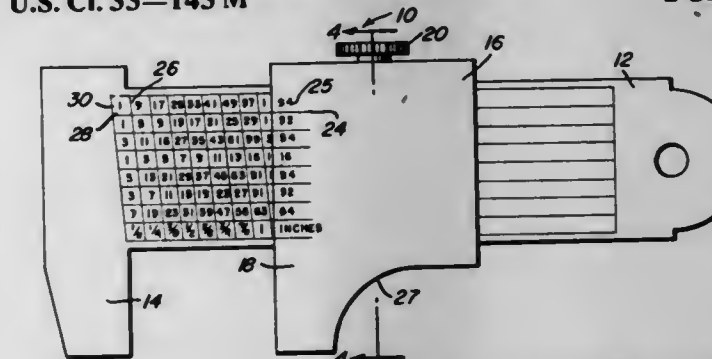
Howard H. Crawford, 206 Reynolds, El Paso, Tex.

Filed Sept. 28, 1971, Ser. No. 184,529

Int. Cl. G01b 5/00

U.S. Cl. 33-143 M

2 Claims



A slide caliper device having a rule provided with a plurality of inscribed, spaced, parallel, vertical and horizontal lines on the face thereof. Numerals indicating the numerator of fractional distances are inscribed in the spaces created by the vertical and horizontal lines. A slidable member or indicator engages the rule and also has indicia and numerals inscribed thereon indicating the denominator of fractional lengths. When the indicia of the indicator is moved to the point of intersection of horizontal and vertical lines on the rule, a direct reading between end portions of the rule and indicator is obtained.

3,751,815

# MOBIL TRACK SURVEY APPARATUS FOR DETERMINING THE TRACT CAMBER

Franz Plasser; Josef Theurer, both of Vienna, and Manfred Schweinhammer, Deutsch-Wagram, all of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed June 23, 1971, Ser. No. 155,852

Claims priority, application Austria, July 9, 1970, 6270

Int. Cl. G11b 9/08

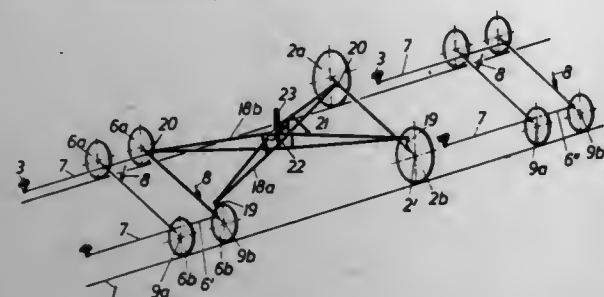
U.S. Cl. 33-146

3 Claims

Two sensing elements each having two sensing members respectively engaged with the two rails and spaced apart in the



track elongation direction survey the vertical positions of the rails to determine the track camber. Two link elements respectively interconnect opposite sensing members of the



respective sensing elements. An electric measuring signal generator is connected between the two links and transmits to an indicator an electric measuring signal proportional to any movement between the two links relative to each other.

3,751,816

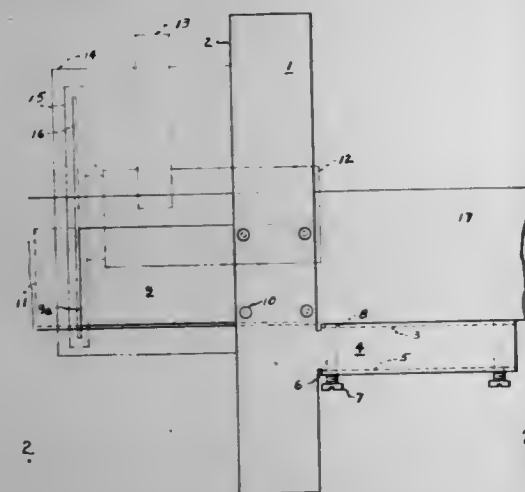
## GUIDE FOR HAND-HELD ELECTRIC SAW

George W. Hayes, 15032 Regina, Allen Park, Mich.  
Filed June 7, 1971, Ser. No. 150,295

Int. Cl. B27g 19/04

U.S. Cl. 33-185 R

1 Claim



A guide formed with a guide face elongated parallel to a line of proposed cut, and provided with a squaring member projecting from said guide transversely to said face to engage a surface of a workpiece. A saw cut indicator projecting transversely to said guide face in the direction opposite from said squaring member, and terminating in a saw cut indicating edge predeterminedly spaced from and parallel to said guide face, said saw cut indicator being made of a material of some permanence, but readily cut by a saw blade, so that on an initial cut using a specific electric saw, the blade will permanently establish the saw cut indicator edge for that particular saw. Screws threadably received in said squaring member and adjustable to establish angular divergency between said squaring member and the surface of a workpiece engaged thereby and consequently a corresponding divergency of a saw cut.

3,751,817

## METHOD OF REGISTERING FILM NEGATIVES

Lyle G. Willis, 19261 S. W. 93rd Rd., Miami, Fla.  
Filed Aug. 19, 1970, Ser. No. 64,965

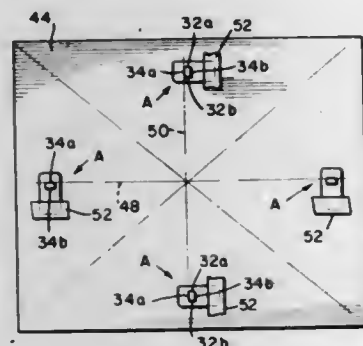
Int. Cl. B41b 1/00

U.S. Cl. 33-184.5

9 Claims

The method of establishing accurate registry of one or more superposed flexible sheets relative to first and second support surfaces whereby the sheets can be removed from the first support surface and placed in proper registry on the second support surface. The method comprises the steps of defining in a first sheet a plurality of elongated, rectangular openings, placing the sheet on the first support surface and firmly

anchoring on the first support surface a plurality of upstanding first pins of corresponding elongated rectangular cross section with each first pin conformingly penetrating one of the openings, removing the sheet from the first support surface and placing it on the second support surface and firmly anchoring on the second support surface a plurality of upstanding second pins with each second pin penetrating one of the openings. At least one of the second pins is square in cross



3,751,818

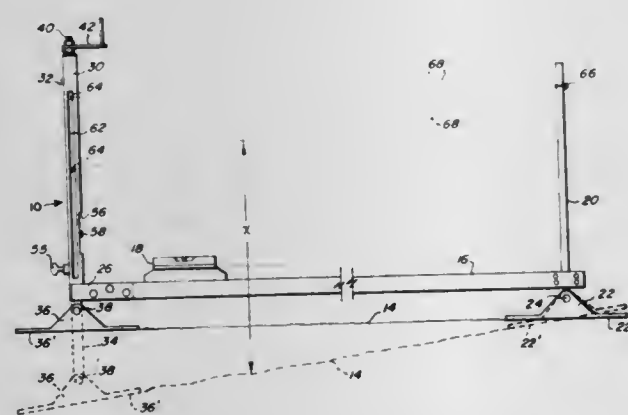
## INSTRUMENT FOR CHECKING AND DETERMINING THE GRADE AND SLOPE OF A SURFACE

Kyle Clifton Eller, Jr., P.O. Box 868, Statesville, N.C.  
Filed Feb. 14, 1972, Ser. No. 226,103

Int. Cl. G01c 9/28

U.S. Cl. 33-375

5 Claims



An instrument for checking the grade and slope of a surface, such as a road bed, which includes a pair of spaced vertical stanchions interconnected by a horizontally extending cross member having a spirit level mounted thereon. One stanchion member is fixed to the cross member and the other stanchion member includes a telescopically received movable element having a manually operated screw actuator to raise and lower the movable element with respect to the cross member. A cord extends tautly between points on the fixed stanchion member and the movable element, respectively, these points being spaced equidistant from the supporting surfaces of the foot members of the fixed stanchion member and the movable element, respectively.

3,751,819

## DEVICE FOR INDICATING SLOPE OF GREEN ON GOLF COURSE

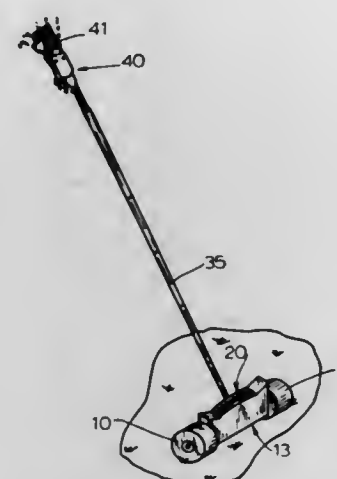
Harry F. Dixon, L-1 Atlantic St., Durham, N.C.

Filed May 14, 1971, Ser. No. 143,546

Int. Cl. G01c 9/24

U.S. Cl. 33-389

2 Claims



A device to be carried by a golfer for indicating during putting the slope of a golf course green incorporates a bubble type level supported on a wheeled structure secured to a handle. The level bubble is referenced to appropriate index marks so as to indicate the relative pitch or slope of the green during putting.

3,751,820

## CHARGING AND DISCHARGING OF LYOPHILISATION APPARATUS

Jacques Brilloit, Grenoble, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation des Procédes Georges Claude, Paris, France

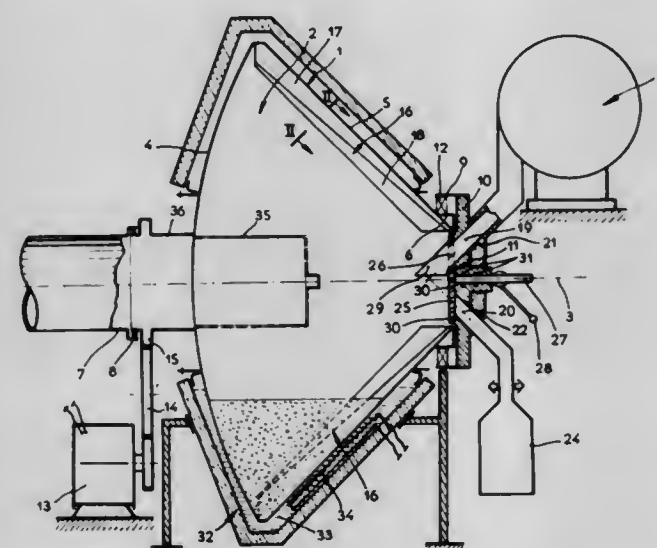
Filed Dec. 14, 1971, Ser. No. 207,933

Claims priority, application France, Dec. 16, 1970, 7045384

Int. Cl. F26b 13/30, 5/04

U.S. Cl. 34-92

10 Claims



This invention relates to apparatus for lyophilising geogated or frozen product particles. Such apparatus usually comprises a box-like sublimation enclosure in which the particles are placed, and having bladed stirring means which are rotatable about an axis, together with heating means and filling and discharging conduits, one end of the discharge conduit being situated in an axial discharge zone and said conduit having an obturating member or shutter. According to this invention, the stirring means operates as a removal device in the lower part of the enclosure and has a flow gutter directed towards the said axial zone in the upper part of the enclosure. Discharge means situated close to the axial zone are also incorporated.

3,751,821

## RAISIN GRAPE SPREADER

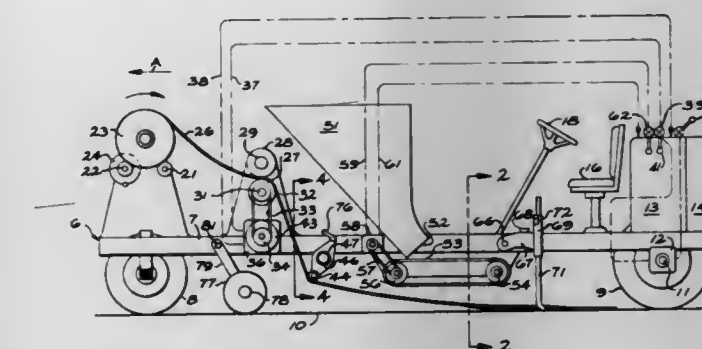
Harold P. Olmo, and Henry E. Studer, both of Davis, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Dec. 13, 1971, Ser. No. 207,133

Int. Cl. F26b 19/00

U.S. Cl. 34-93

8 Claims



A raisin grape spreader has a carriage movable over the ground and supports a roll of paper fed from the roll at controlled rates relative to the carriage advance and laid as a strip on the ground under raisin grapes from a hopper on the carriage deposited by a feeding conveyor. Guides on the carriage temporarily lift the paper strip edges as the carriage advances, and a knife severs the strip at the end of a deposit operation.

3,751,822

## WEB DRYER

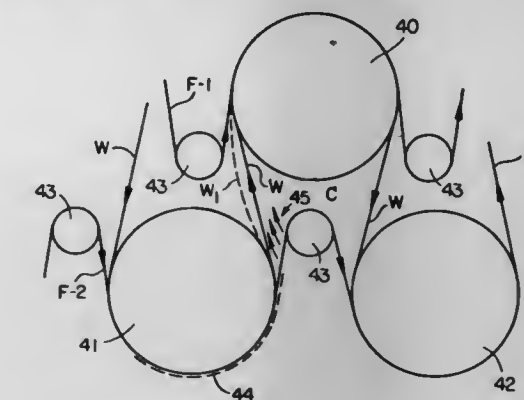
Elmer E. Crist, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 17, 1971, Ser. No. 209,205

Int. Cl. F26b 13/06

U.S. Cl. 34-116

17 Claims



A web dryer structure for thermal removal of moisture from a traveling web such as a web of paper coming from the press section of a papermaking machine including a row of upper dryer drums and a row of lower dryer drums with the drums positioned to carry the web in a serpentine path successively between the upper and lower drums and the web wrapping the upper and lower surfaces of the drums, respectively, with upper and lower looped felts wrapping the webs on the upper and lower surfaces of the drums and the felts guided by felt rolls positioned intermediate the spaces between the drums so that the web is controlled by felts in all locations as it travels between the drums.

3,751,823

## DRYING APPARATUS

Fritz Ernst Hansen, Ittigen, Switzerland, assignor to Multitec A.G., Canton of Berne, Switzerland

Filed Dec. 7, 1971, Ser. No. 205,505

Claims priority, application Switzerland, Dec. 9, 1970, 18226

Int. Cl. F26b 9/00

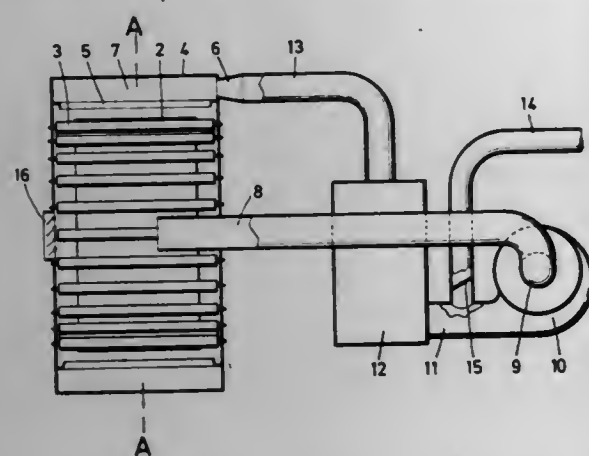
U.S. Cl. 34-155

10 Claims

The invention concerns drying apparatus suitable for drying strip material, which comprises a drying chamber through



which strip material may be passed, a strip entrance and exit aperture in the chamber to allow passage of strip material into and out of the drying chamber, a plurality of rotatable support rolls being disposed in parallel and spaced apart relationship to define a cylindrical cage within the chamber and over



which strip material may be passed, means cooperating with the rolls of the cage to enable strip material passing thereover to be supported by a part of the peripheral surface of each roll of the cage and drying means for drying strip material passing over the rolls of the cage.

3,751,824

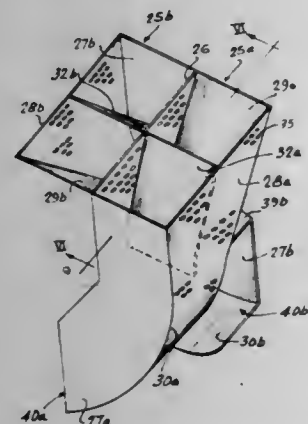
## FLOW INVERTER FOR GRAIN DRIERS

Thomas H. Kyle, P.O. Box 194, Blenheim, Ontario, Canada  
Continuation of Ser. No. 835,955, June 24, 1969, abandoned.  
This application Aug. 25, 1971, Ser. No. 174,966

Int. Cl. F26b 17/12

U.S. Cl. 34-167

12 Claims



Flow inverter for use in a gravity flow grain drier of the type having drying chambers with perforated walls through which drying air passes. The flow inverter has two flow directing portions for separating portions of the flow of grain adjacent the air inlet wall and adjacent the air outlet wall respectively and simultaneously smoothly deflecting the separated portions laterally angularly into chutes which direct the portion separated from the flow adjacent the air inlet wall downstream adjacent the air outlet wall and direct the portion of the flow adjacent the air outlet wall downstream adjacent the air inlet wall.

3,751,825

## TEACHING OR TRAINING AID SYSTEM

Jack H. Barrett, 861 Atlanta Ct., Claremont, Calif.  
Filed Mar. 2, 1971, Ser. No. 120,117

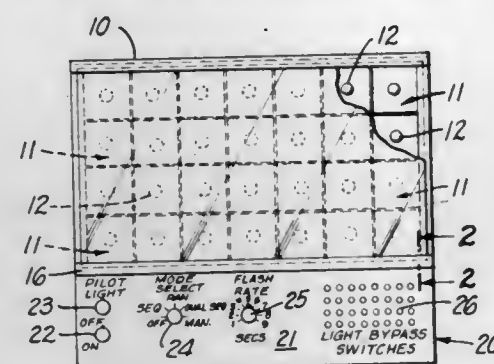
Int. Cl. G09b 13/00

U.S. Cl. 35-6

4 Claims

There is disclosed herein a teaching or training aid system wherein a display array of individual illuminated indicia-covered nacelles are disposed. Each of the nacelles can be illuminated individually or in any combination, or sequence, or at any rate or frequency in response to a pre-recorded training

program to operate independently, or in synchronism with pre-recorded teacher's commentary. The pre-recorded material may be changed or the control data sequences may be changed at will, or the system may be operated by the



teacher manually from a keyboard. Alternative means are provided so that a student can pace his own learning by controlling the system from a student keyboard corresponding in part to the teacher's control panel.

3,751,826

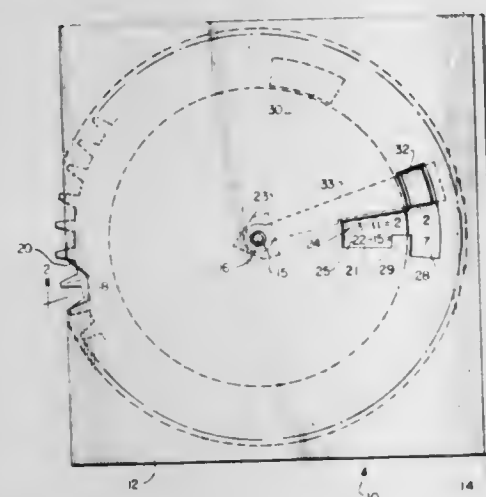
## DEVICE FOR THE APPLICATION OF PRINTED LEARNING PROGRAMS

Heinz Kunert, Belvederestr. 15, Cologne, Germany  
Filed Sept. 3, 1971, Ser. No. 177,793  
Claims priority, application Germany, Sept. 28, 1970, P 20 47 599.4

Int. Cl. G09b 3/02

U.S. Cl. 35-9 F

9 Claims



A programmed learning device employing a plurality of rotating discs with questions and answers provided thereon and an erasable surface with cooperating eraser in a housing provided with windows.

3,751,827

## EARTH SCIENCE TEACHING DEVICE

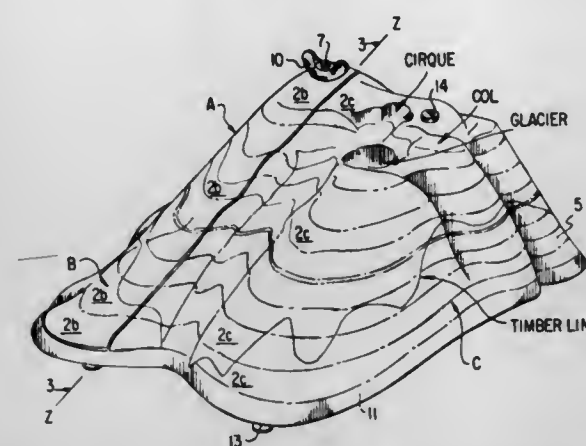
Theodore Alfred Gaskin, 378 Warren Ave., Hawthorne, N.Y.  
Filed June 8, 1971, Ser. No. 151,101  
Int. Cl. G09b 23/40, 25/06

U.S. Cl. 35-10

2 Claims

A teaching device comprising a three-dimensional model of a land mass incorporating various geological and topographical formations. The model comprises an assembly of two or more sections taken along parallel vertical planes whereby when the sections are disassembled they disclose selected illustrative subterranean formations, such as various rock strata, oil pools, mineral veins, and the like. When assembled, the outer surface of the model shows selected topographical formations. Each section is made up of matching layers, the thickness of each layer representing an increment in altitude. Thus, when the layers and sections are assembled to form the model, the edges of the faces of the contacting layers form al-

titude or elevations designated by contour lines. The model may also be utilized to illustrate the correlation between the contour lines and profile map taken on a vertical plane



crossed by said contour lines. The individual layers may also be used as templates to draw a topographical map of the terrain at any desired elevation.

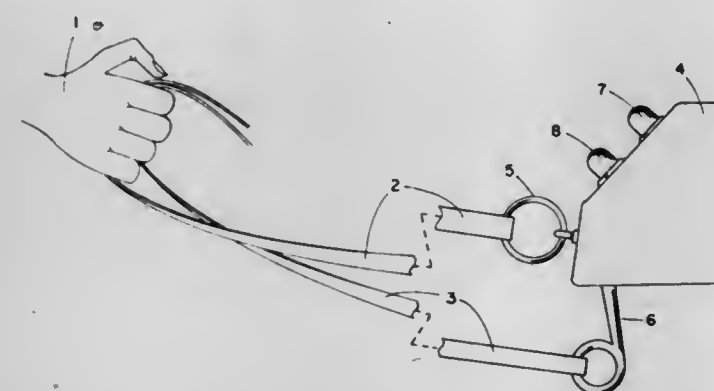
3,751,828

## REIN MANIPULATION TRAINING DEVICE

Wayne W. Frame, 3300 Bridger Trl., Apt. 109, Boulder, Colo.  
Filed Feb. 16, 1971, Ser. No. 115,563  
Int. Cl. G09b 9/00

U.S. Cl. 35-11

2 Claims



This invention relates to a training apparatus and more particularly to an apparatus for training a person to manipulate the reins of a full or double bridle as used in equitation.

3,751,829

## COLOR ORDER SYSTEM

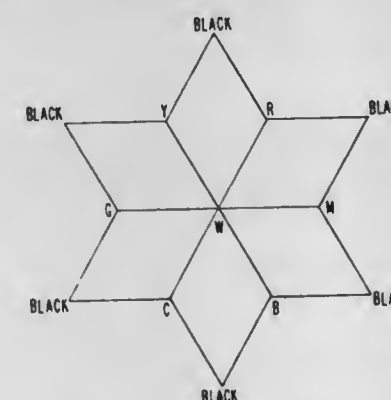
Carl E. Foss, Princeton, N.J., assignor to Kollmorgen Corporation, Hartford, Conn.

Filed Apr. 28, 1972, Ser. No. 248,454

Int. Cl. G09b 19/00

U.S. Cl. 35-28.3

8 Claims



The present invention provides a series of color charts or color order system in which the colors shown in any one of the

color charts are obtained by systematic variations of the combination of three or more primary colorants, and are colors that are represented by a portion of the surface of one of a series of concentric and similarly oriented cubic volumes of the color-order space. The basic color-order space is cubic and has a coordinate system of three axes, each of which represents varying amounts of one of the primary colorants. The surface of the basic color cube or any of the series of progressively smaller concentric cubes is divided into several parts by a number of planes that intersect the surfaces of the cube in such a way that each part consists of contiguous portions of more than one face of the color cube. These colors are then represented by projection in a single two-dimensional color chart.

3,751,830

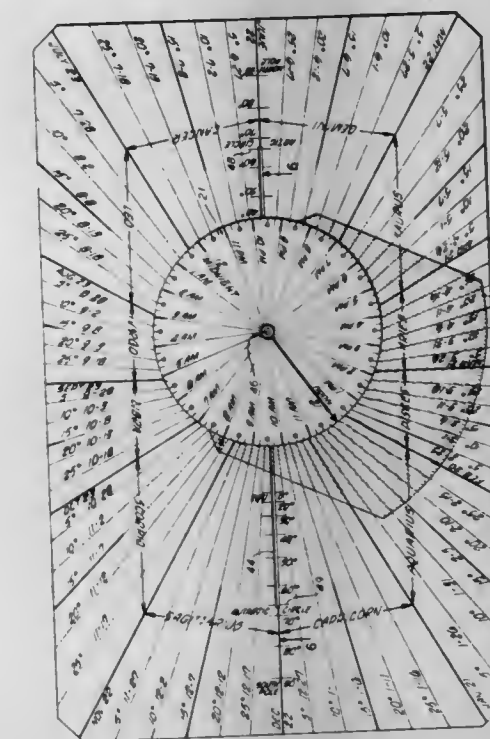
## ASTROLOGICAL TIME CORRECTOR

Olaf G. Brynjegard, 7433 Irondale Ave., Canoga Park, Calif.  
Filed Dec. 4, 1972, Ser. No. 311,918

Int. Cl. G09b 29/00

U.S. Cl. 35-44

7 Claims



A base sheet is divided into calendar year date segments in accordance with the astrological "houses" in the plane of the ecliptic. The base sheet data is a projection at a 23°28' tilt with respect to the earth's polar axis.

A circular time chart divided at its periphery into 24 hours of the day overlies a transparent sheet divided by parallel lines extending from a line passing through the common center of both time chart and transparent sheet. Both are movable along an axis of the base sheet marked in degrees of latitude north and south of the equator. A common pivot enables the transparent sheet and the time chart to rotate with respect to the base sheet to accommodate settings for any birthdate and birth time at any birthplace latitude, and to read on the base sheet the ascendant (or rising) sign at the instant of birth.

3,751,831

## APPARATUS FOR EVALUATING PUPILS REPLIES

Peter Gebhardt-Seele, Wettersteinstrasse 3, 8023 Grosshesselohe bei Munich, Germany

Filed Mar. 10, 1971, Ser. No. 122,943

Int. Cl. G09b 7/00

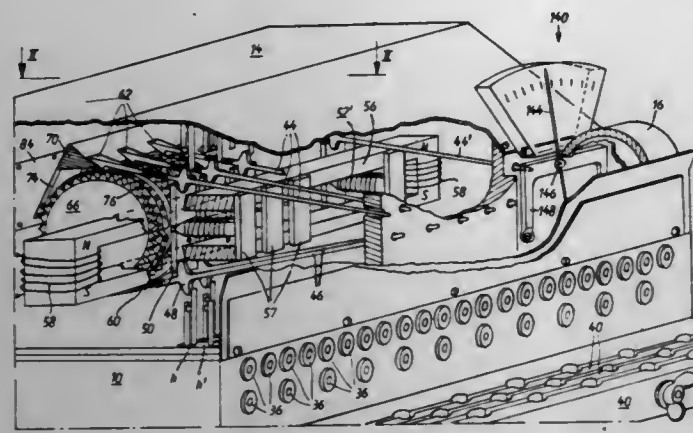
U.S. Cl. 35-48 B

13 Claims

Apparatus for grading answers of students, having a plurality of student answering stations each connected to a central recording apparatus having marking means therein controlled by one or more switches of the student station; and a recording medium in the central recording apparatus arranged to



pass by each marking means for having a marking placed thereon; and a preselecting means in the central recording ap-



paratus which is responsive to the answering station marking means for evaluating the reply on the recording medium.

3,751,832

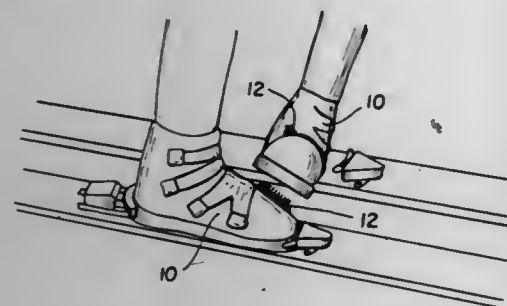
## SKI BOOT WITH CLEANING DEVICE

Edward J. Baryluk, Verdun, Quebec, Canada, assignor to The Raymond Lee Organization, Inc., New York, N.Y.; a part interest

Filed June 14, 1972, Ser. No. 262,712  
Int. Cl. A43b

U.S. Cl. 36-2.5 AL

1 Claim



Each of the ski boots of a pair has a cleaning brush secured thereto to permit each boot to be cleaned with the use of the device on the other boot.

3,751,833

## EXTENSION BOOT

Irvin R. Humphrey, Box 665, Sundance, Wyo.

Filed Mar. 21, 1972, Ser. No. 236,752  
Int. Cl. A43b 7/16

U.S. Cl. 36-81

8 Claims



An extension boot having a telescoping extension composed of sections adapted to interlock in extended position. The extension includes a sole and together with the sole of the boot, defines an enclosed chamber. Located in the chamber is a flexible air-tight bag having a valved connection to the exterior for applying air under pressure to the interior of the bag.

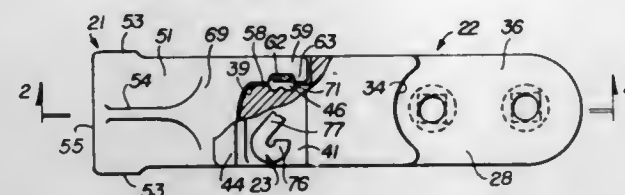
3,751,834  
SPREAD-LEGGED STAPLE RETAINER FOR  
EXCAVATING TOOTH

Gerald A. Petersen, Villa Pengopia, Chemin des Salles, 06, Vence, France

Filed Jan. 6, 1972, Ser. No. 215,739  
Int. Cl. E02f 9/28

U.S. Cl. 37-142 R

8 Claims



A retainer of approximately U-shape but with the legs initially slightly diverging or converging, detachably secures the proximal part of an excavating tooth within a complementary recess in its holder. The holder has holes through which the legs of the retainer fit in approximately parallel relation to each other, thereby stressing the legs from their diverging or converging position and causing them frictionally to engage the walls of the holes so that the retainer does not move inward or outward unintentionally. One or both legs of the retainer or portions thereof engage in notches formed in the proximal part of the tooth only when the retainer is in its inward position. The legs are offset so that when the retainer is depressed an upper offset portion engages in the notches in the tooth and prevents the withdrawal of the tooth. When the retainer is partially withdrawn from the holder, the lower offset portions of the retainer legs do not fit in the notches in the tooth, and hence the tooth may be withdrawn. Means is provided to prevent complete unintentional withdrawal of the retainer from the holder.

3,751,835

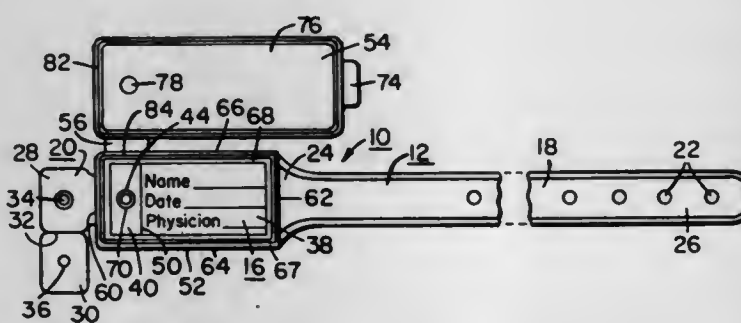
## IDENTIFICATION SYSTEM

Ward C. Smith, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,875  
Int. Cl. G09f 3/14

U.S. Cl. 40-21 C

7 Claims



In an identification assembly of the type having an elongated flexible band with fastening means for locking to the limb of a patient wherein the improvement comprises the addition thereto of an identification label dispenser holding a plurality of patient identification labels, with the dispenser including means for holding the labels so that no label can be added without resultant indication thereof. All but one of the labels are removably held and removal thereof requires a pulling force which results in tearing of the label (in the vicinity of the holding means), with the securing of the pulling force insuring that no tampering has occurred. A method of correlating the identity between the patient and specimens taken therefrom sets forth the dispenser-attaching, specimen-drawing, label-removing and label-attaching steps required in carrying out this method.

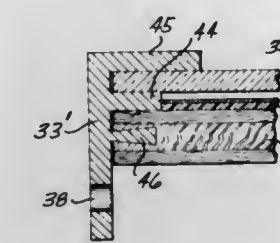
3,751,836  
INDICIA DISPLAY

William B. Frost, 1717 99th N.E., Bellevue, Wash., and Edward N. K. Cooper, 7673 6th St., Burnaby, British Columbia, Canada

Filed Oct. 30, 1970, Ser. No. 85,518  
Int. Cl. G09f 11/30

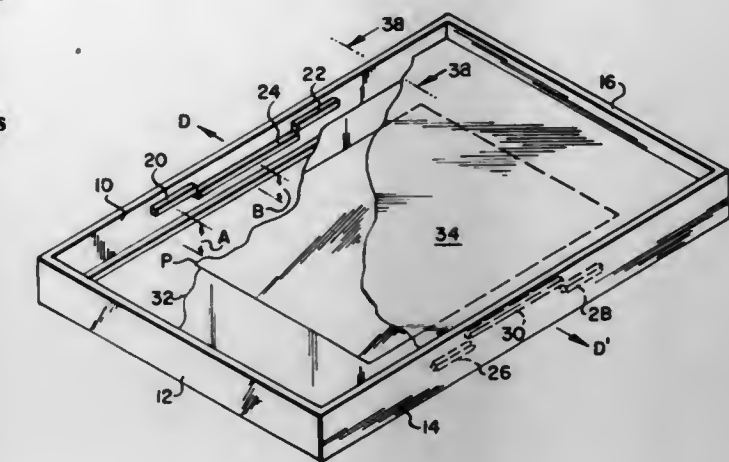
U.S. Cl. 40-64

5 Claims



Indicia bearing strips are mounted in a groove so that their outer surfaces will lie in flush relationship to a backing in which the groove is formed or to adjacent indicia bearing strips between which grooves are formed. Such strips may be replaceable and held in place by fitting undercut grooves and/or by retaining detents or by magnetic attraction. Individual strips may be mounted in grooves in office doors, for example, or may be assembled in edge-to-edge relationship with other strips to form a directory.

thicknesses, the assembly includes a frame structure, a plurality of snap ridges or detents fixed to the inner edge surface



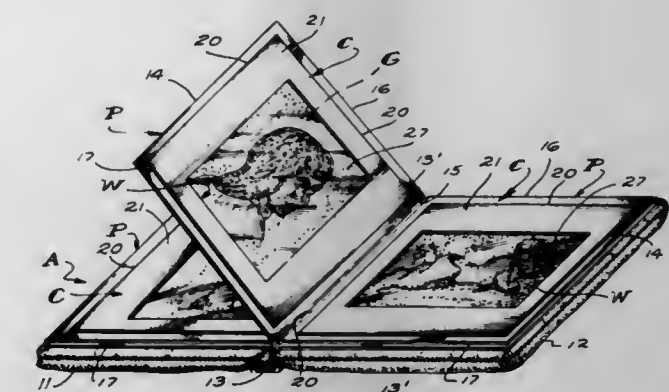
3,751,839  
DISPLAY DEVICE

Ray M. Mitchell, 6437 Sunset Blvd., Hollywood, Calif.

Filed Dec. 27, 1971, Ser. No. 212,286  
Int. Cl. G09f 1/10

U.S. Cl. 40-158 R

19 Claims



A picture album structure having a plurality of pages, a pair of flat, square, picture carriers with rectangular picture viewing windows related to each page, an orienting and holding means to selectively orient and releasably hold the carriers on the pages with the major axes of the carrier windows on central horizontal or vertical axes of the pages. The orienting and holding means comprising elements on the pages with four like portions on right angularly related axes relative to and spaced equal distances radially of the central axes of the pages and elements of similar configuration and arrangement on the carriers, the elements on the pages or on the carriers being magnetic elements and the other of said elements being ferrous whereby the magnetic and ferrous elements align and hold the carriers on the pages when the carriers are arranged adjacent thereto.

3,751,840

## CAP AND BALL RIFLE

Richard J. Casull, 3270 Del Mar Dr., Salt Lake City, Utah

Filed Feb. 25, 1972, Ser. No. 229,371  
Int. Cl. F41c 11/00

U.S. Cl. 42-9

10 Claims

A single shot cap and ball gun features a rotary or faucet breech block having a chamber for black powder and a ball. Loading is accomplished with the breech block turned so that the axis of the chamber is across the axis of the gun barrel. Ignition is obtained from a single toy gun cap which fires

3,751,838  
PICTURE FRAME

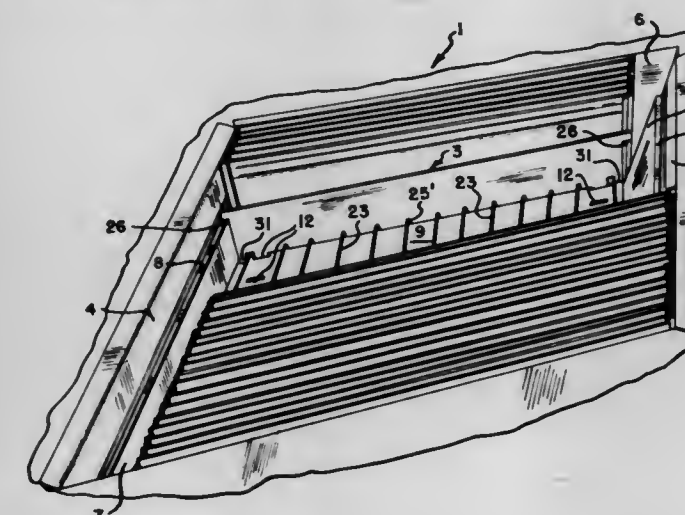
Samuel Wiener, Jr., 451 W. Broadway, New York, N.Y.

Filed July 15, 1971, Ser. No. 162,860  
Int. Cl. G09f 1/12

U.S. Cl. 40-156

12 Claims

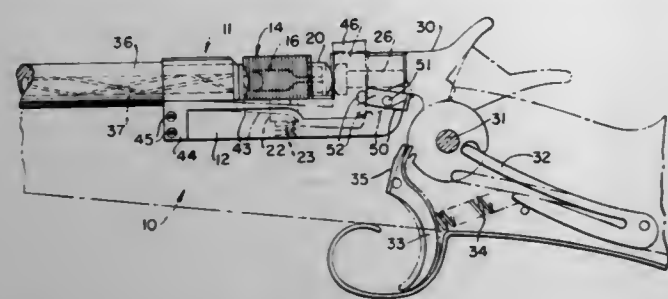
An assembly for displaying pictures, photos, posters and the like which can accommodate flat objects of different



A card registry system comprising a container having a rhomboid outer shape and upwardly diverging side walls, a plurality of dividers pivotally arranged within the container for pivoting at an angle to the side walls, and support means extending across the container between the side walls for supporting the dividers. The dividers have end rails at the opposite ends with offset sections on opposite sides of the divider aligned with the offset sections of the next adjacent divider.



through a flash hole in the breech block. The gun barrel contains a forcing cone to shape the ball projectile and increase its



density. A hammer lock or safety is provided in conjunction with a locking device for the faucet breech block.

3,751,841

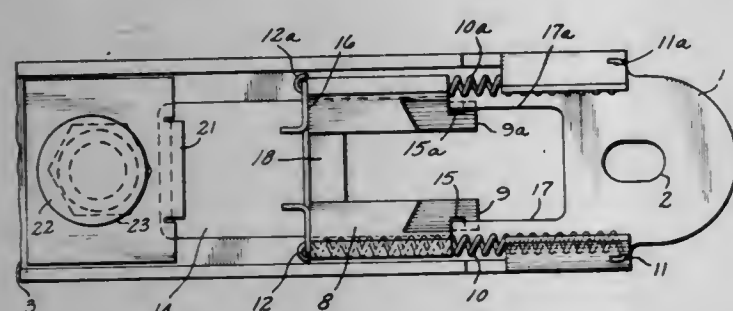
**FORESTOCK LATCHING MECHANISM FOR FIREARMS**  
Paul Nasypany, Herkimer, N.Y., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Aug. 24, 1971, Ser. No. 174,421

Int. Cl. F41c 23/00

U.S. Cl. 42—75 A

8 Claims



A latching mechanism for engaging and disengaging a fore-end stock to and from a barrel assembly of a firearm. The mechanism features a unique sliding finger-operated integral latch and lever assembly which releases the fore-end stock from the barrel. The locking latch slides into snap-action engagement with a rail extending from the barrel assembly. The rail comprises a novel inclined plane which enhances the lock-up of the latch. This latching arrangement provides continuous fit even after extensive firing of the gun. The slidable latch provides for quick take-down. A unique adjustment plate, featuring an eccentric lock nut, is provided to insure proper fit to the barrel assembly.

3,751,842

**FISHING LURE**

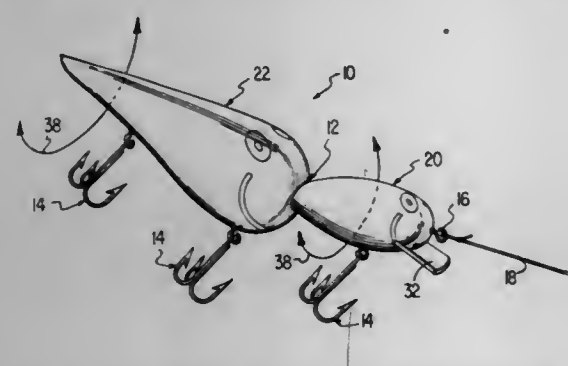
Donald K. Smith, 727 W. Outer Dr., Oak Ridge, Tenn.

Filed July 7, 1971, Ser. No. 160,373

Int. Cl. A01k 85/00

U.S. Cl. 43—42.11

6 Claims



There is disclosed a fishing lure having means for oscillating the lure about the longitudinal axis thereof when the lure is pulled through the water. The means for oscillating the lure comprises angularly offset reaction surfaces on different sections of the lure. The lure also comprises means for oscillating

the lure transversely of the longitudinal axis thereof when the lure is pulled through the water. The oscillating means operate simultaneously to produce a realistic swimming motion. The two, vertically canted sections of the lure simulate a small minnow in the grasp of a larger minnow.

3,751,843

**UNDERWATER WEAPON**

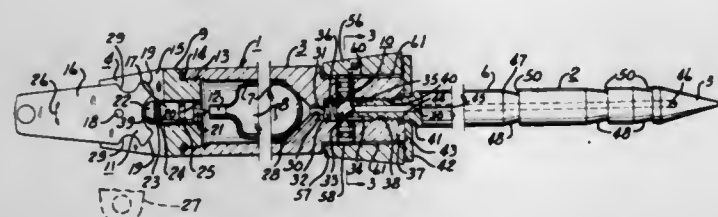
Thomas Shelnick, Pittsburgh, Pa., assignor to The Shelnick Corporation, Pittsburgh, Pa.

Filed Feb. 4, 1972, Ser. No. 223,458

Int. Cl. A01k 81/04

U.S. Cl. 43—6

16 Claims



An underwater weapon principally for hand use for insertion into a fish after which upon operation of multidirectional release means in the form of a valve, fluid in the form of a liquid or gas is expelled into the interior of the fish causing the fish to become bloated and incapacitated for underwater mobility. The underwater weapon is provided with a hermetically sealed chamber to receive a removable flask containing fluid under pressure. A stiletto is provided on the forward end of the body and is provided with passage means in communication with the chamber so that upon puncture of the flask, the release of the fluid through the passage means in the stiletto may be controlled by the hand operated release means.

3,751,844

**FISHING HOOK**

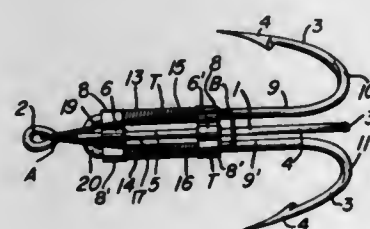
Michael Rossnan, 11724 Lovejoy St., Silver Spring, Md.

Filed Apr. 13, 1971, Ser. No. 133,563

Int. Cl. A01k 83/02

U.S. Cl. 43—36

2 Claims



A fish hook comprising a main hook and at least one oscillatable hook mounted in journals secured to the main hook for rotative movement relative to the main hook. A tensioned coil spring is secured to the shank of the oscillatable hook to bias it away from the main hook. A trigger member secured to the main hook has a looped end engaging the hook bight portions and is released therefrom by the bite of a fish to cause the oscillatable hook to spring outwardly.

3,751,845

**FISHING BUCKET**

Marion van Leeuwen, 531 High St., Apt. 5, New London, Wis.

Filed Apr. 23, 1971, Ser. No. 136,718

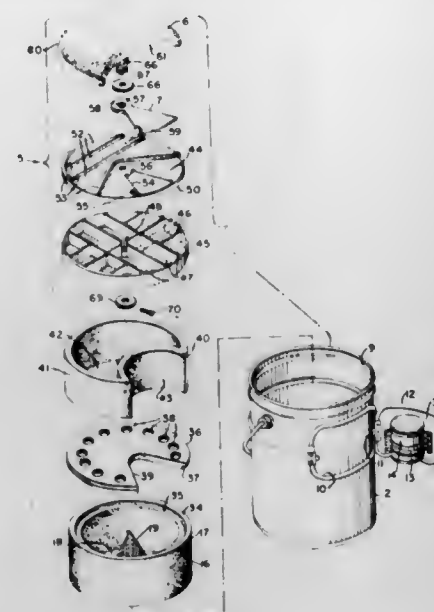
Int. Cl. A01k 97/04, 97/06

U.S. Cl. 43—56

24 Claims

A compact and easily transportable fishing bucket or the like with a combined closure and rotatable seat means thereon centrally mounted, and means for containing and making readily accessible, food and beverages or the like, live and ar-

tificial baits, tackle, and auxiliary devices. The fishing bucket includes rotatably mounted closure means providing access to its contents while the person is seated on the seat means. Anti-



friction means are operatively associated with the seat and engage between the seat and the closure to enable the seat to be readily rotated relative to the closure and the bucket.

3,751,846

**CHEMILUMINESCENT TOY**

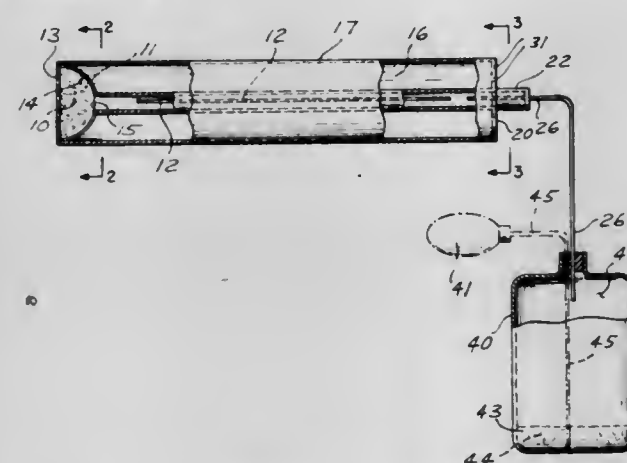
Louis E. Benjamin, Sr., Livingston, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed May 8, 1972, Ser. No. 251,350

Int. Cl. A63h 33/00

U.S. Cl. 46—1 R

7 Claims



A toy which emits chemiluminescent light at a specific location in response to the squeezing of a flexible bulb, or the temporary local creation of pressure. The light in the toy may be produced behind the eyes of a toy animal, or at any decorative spot on the toy. The light produced may be used for signal purposes or for the purpose of simulating rays or beams of radiation.

The chemiluminescent light is produced by combining a gas formed in a squeeze bottle with a wick or pad which is soaked in a fluorescent chemical.

3,751,847

**COMPONENTS FOR TOY VEHICLE TRACKS**

Herman Neuhierl, Waldstr. 36, 8510 Furth/Bayern, Germany

Filed Feb. 16, 1971, Ser. No. 115,430

Claims priority, application Germany, July 7, 1970, P 20 33 598.5; Oct. 21, 1970, P 20 51 625.0; Dec. 22, 1970, P 20 63 300.5

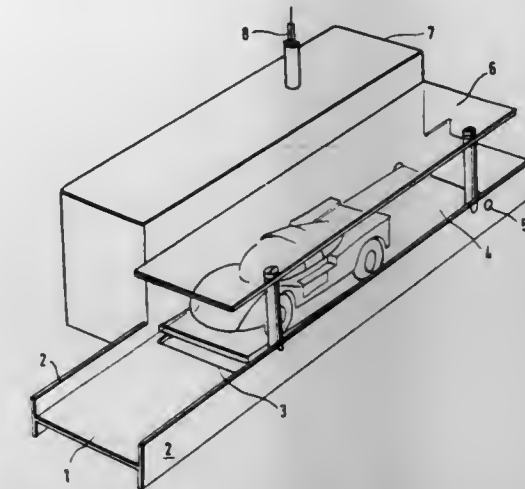
Int. Cl. A63h 33/00

U.S. Cl. 46—1 K

21 Claims

A braking device component for a toy racing track comprises a track section having a structural element adapted to

be pivoted into the "path of travel" of a vehicle in the section. A flat covering is on the track section and the structural element may be a flap which in a recess formed in the track and which, on actuation of a manual control, is adapted to be raised upwardly towards the flat covering above the flap, or al-



ternatively the covering is pivotally mounted and is adapted to be lowered obliquely downwardly towards a solid track surface which is not formed with a recess. A brake control mechanism is accommodated in a housing attached to the side of the track selection.

3,751,848

**MODEL HOUSE**

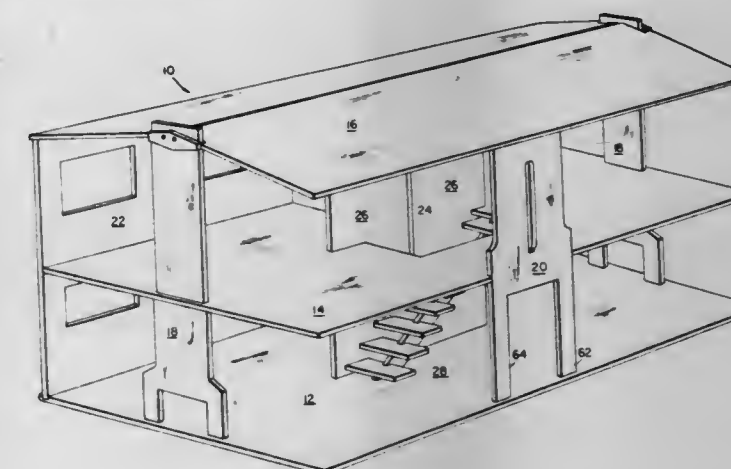
Richard G. Ahlstrand, 1281 Hearst Ave., Berkeley, Calif.

Filed Mar. 13, 1972, Ser. No. 233,904

Int. Cl. A63h 33/06

U.S. Cl. 46—19

14 Claims



A model house that can be erected from a combination of parts without tools or fasteners and then easily knocked down for shipment or storage. A base member has a main cutout to receive a central vertical partition and peripheral openings to receive vertical side members that support a second floor and a folding roof. All parts are rigid members that interlock so that they cooperate together to maintain the structural arrangement of the house.

3,751,849

**STACKING TOY**

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif., and Manuel Fernandez, Canoga Park, Calif., assignors to said Goldfarb, by said Fernandez

Filed Feb. 25, 1971, Ser. No. 118,778

Int. Cl. A63h 33/30

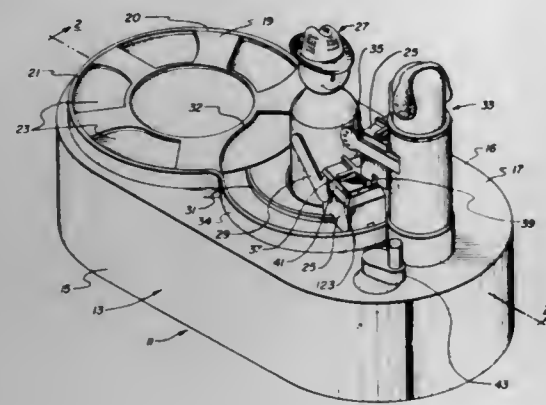
U.S. Cl. 46—40

8 Claims

A toy comprising a rotating turntable having a plurality of individual objects thereon. A first figure disposed adjacent the turntable and a second figure disposed adjacent the first figure



such that the first figure rotates from the turntable to the second figure, removing one object at a time from the turntable and delivering it to the second figure. The second figure



successively lifts the increasing stack of objects placed before it such that the first figure can continually deliver a new object under the lifted stack. A crank means can be provided to manually operate the toy.

### 3,751,850 AERIAL TOY

Peter F. Boulanger, Kincaid, Ill., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest  
Filed June 20, 1972, Ser. No. 264,414  
Int. Cl. A63h 33/20

U.S. Cl. 46-86

4 Claims



An aerial vehicle is mounted on the head end of an arrow adapted to be shot from a bow.

### 3,751,851 TOY VEHICLE

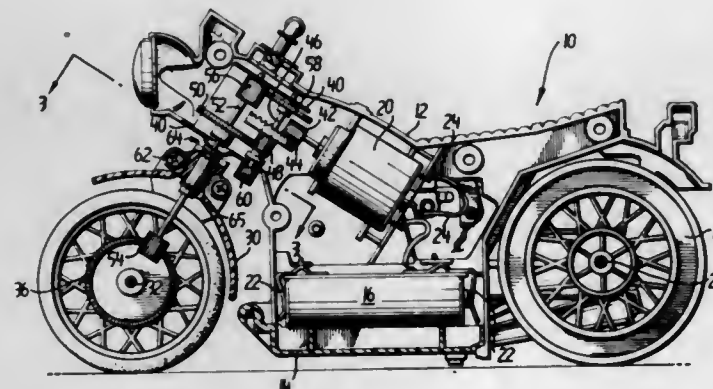
Yoshitoshi Nagai, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan  
Filed Sept. 15, 1972, Ser. No. 289,250  
Claims priority, application Japan, Mar. 16, 1972, 47/32152 (utility Model)  
Int. Cl. A63h 17/00

U.S. Cl. 46-206

3 Claims

A toy vehicle provided with a front driving and steering wheel is provided with a system permitting the front wheel to automatically change direction when hitting an obstacle so as to permit the vehicle to pass around the obstacle and continue its movement. The vehicle includes a body provided with a source of energy and a motor. The front wheel frame is mounted to freely rotate with respect to the body and a wheel is mounted for rotation about the axle of the frame. The motor turns a drive shaft which is positioned along an axis intersecting the surface along which the vehicle moves at an angle less than 90°. The drive shaft terminates in a pinion wheel which meshes with a rack of continuous teeth formed as a part of the front wheel rotating same so as to propel the vehicle along the

surface. Simultaneously, the motor rotates a second resilient pinion wheel positioned adjacent the top of the front wheel frame, which frame is provided with a raised portion including opposed curvilinear surfaces. As the vehicle normally travels in a straight line, the rotating second gear wheel does not contact the curvilinear surfaces. However, as the vehicle strikes



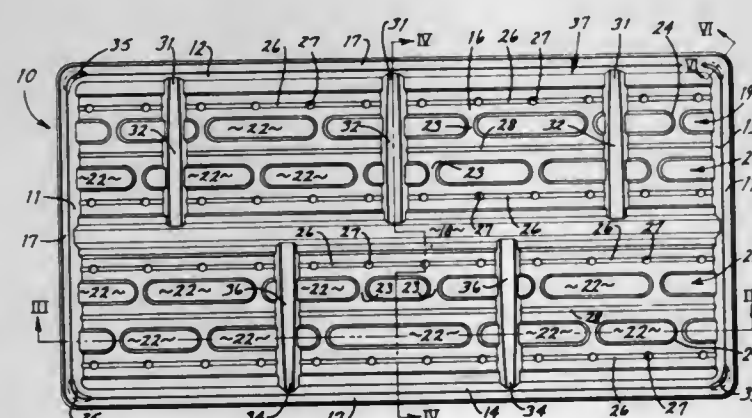
an object in its path, the front wheel frame is caused to rotate in turn causing one of the curvilinear surfaces of the raised portion to engage the rotating second pinion wheel at which time the front wheel is abruptly rotated causing the vehicle to immediately travel in a different direction to avoid further contact with the obstacle to the amusement of the child.

### 3,751,852 PLASTIC PLANTER FLAT

Gerald A. Schreppe, Kalamazoo, Mich., assignor to Fabri-Kal Corporation, Kalamazoo, Mich.  
Filed Feb. 12, 1971, Ser. No. 115,013  
Int. Cl. A01g 9/02

U.S. Cl. 47-34.13

11 Claims



A compartmented tray thermoformed from a sheet of thermoplastic material and having at least two rows of compartments, adjacent compartments in each row being separated by cross ribs. A reinforcing rib extends continuously from one end of the tray to the opposite end thereof joining the pair of adjacent rows. Each of the cross ribs and the reinforcing rib have a substantially inverted U-shaped cross section and the height of the reinforcing rib is greater than the height of the cross ribs to provide a reinforcing structure transverse to each of the cross ribs to strengthen the tray against bending. The cross ribs in one row of compartments are offset with respect to the cross ribs of an adjacent row of compartments but in each row all of said cross ribs are modularly spaced.

### 3,751,853 METHOD AND APPARATUS FOR OPENING AND CLOSING HATCH COVERS

Yuko Ito, 5-18-1 chome Hayamiya-cho, Nerima-ku, Tokyo, Japan

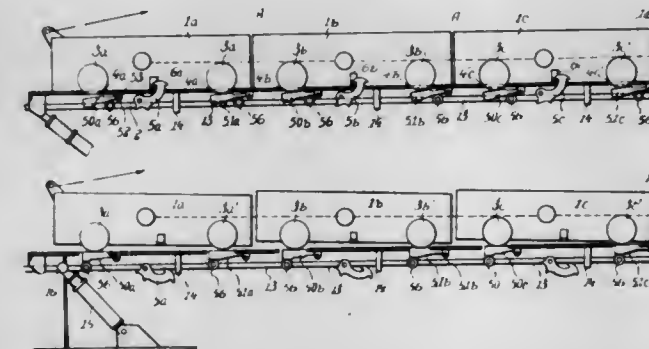
Filed Nov. 29, 1971, Ser. No. 202,880

Claims priority, application Japan, Nov. 30, 1970, 45/105055

Int. Cl. E05d 15/26

U.S. Cl. 49-127

6 Claims



A hatch cover including a plurality of cover panels each of which is aligned with the next panel in closed position by means of male and female members respectively provided on one panel and the other so as to seal accurately a gasket between a pair of adjacent panels. Means are provided for bringing each panel into tilted position when it is separated from the adjacent panel after all the panels are lifted up in one block from the hatch coaming so as to permit each panel to be moved between the position above a hatch coaming and the storing position with its gasket maintained at a level lower than that of a disengaged gasket engaging bar mounted on the adjacent panel.

### 3,751,854 COVER LIFTING-AND SWINGING MECHANISM FOR A TILTABLE FURNACE

Ernst Huwyler, Wettingen, and Heinrich Wenzel, Baden, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

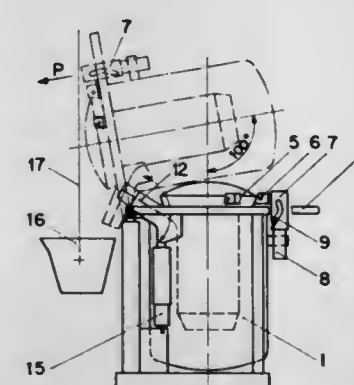
Filed Feb. 1, 1972, Ser. No. 222,562

Claims priority, application Switzerland, Feb. 5, 1971, 1698/71

Int. Cl. F27b 7/12

U.S. Cl. 49-260

2 Claims U.S. Cl. 51-100 R



A cover lifting- and swinging mechanism for a tiltable crucible smelting or oven-type furnace wherein the cover is first caused to lift and then swing to an open position for completely emptying the furnace pot after the furnace charge has been drawn off in the usual manner through a pouring spout. The combined lifting and swinging motions imparted to the cover are effected and controlled by means of a hydraulic cylinder secured at the side of the tiltable furnace structure. The piston component of the cylinder is connected to a cylindrical housing having a swing arm that is secured to the cover and the

housing is provided with a cam groove associated with a stationary guide roll so as to exercise positive control over the cover and piston movement.

### 3,751,855 KNIFE GRINDER

Gaston Pinat, 5384 Jules Fournier St., Montreal-North, Quebec, Canada

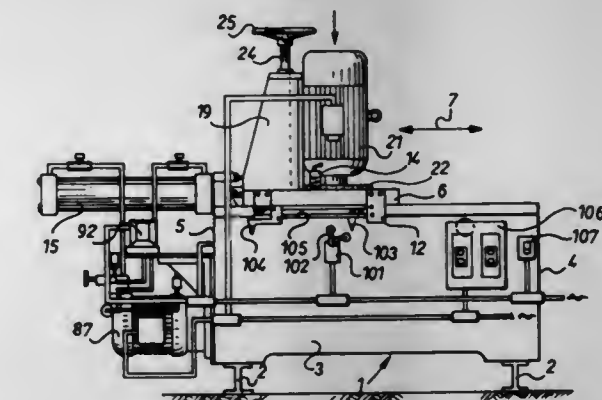
Filed Jan. 24, 1972, Ser. No. 220,104

Claims priority, application Canada, Mar. 3, 1971, 106,830

Int. Cl. B24b 3/36, 3/38

U.S. Cl. 51-5

9 Claims



A grinder for automatically grinding knives used mainly in the production of wood chip. These chipper knives consist of a steel plate having a lateral marginal portion inclined relative to the main portion. The plates have a beveled knife edge along said inclined as well as said main portion. The grinder includes a power-operated grinding wheel mounted for reciprocating movement along a straight path. A swinging support is mounted underneath the grinding wheel and carries adjustable knife holders designed to hold in proper position a plurality of chipper knives. Hydraulic cylinders serve to move the grinding wheel and its electric motor along said path and to swing said support so that the knife edge will be ground and sharpened along its entire length in one continuous operation.

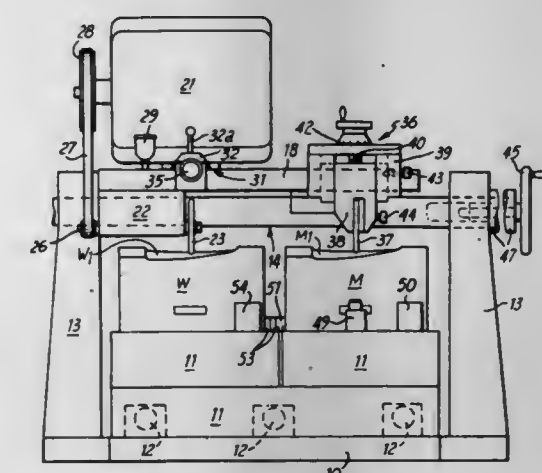
### 3,751,856 PROFILE COPYING MACHINE

Ernest Charles Jorgensen, 148 Birtwistle Ave., Colne, England

Filed Sept. 28, 1971, Ser. No. 184,591

Int. Cl. B24b 17/00

6 Claims



A profile copying machine has a workpiece shaping tool and stylus, for following the profile of a model, mounted on a pivoted platform so that the tool and stylus have the same radius of movement. The stylus is in the form of a wheel with a radiused peripheral edge and the tool, which is in the form of a grinding wheel, has a similar edge so that the equivalent of point contact with the workpiece and model is obtained. The



stylus may be adjusted towards and away from the model. The workpiece and model are mounted on a reciprocating table and the tool and stylus can progressively traverse across the reciprocating workpiece and model. The tool can be driven by an electric motor which acts as a balancing weight for the pivoted platform so that the platform has two stable positions: one position with the tool and workpiece in contact and the other position with the tool raised clear of the workpiece.

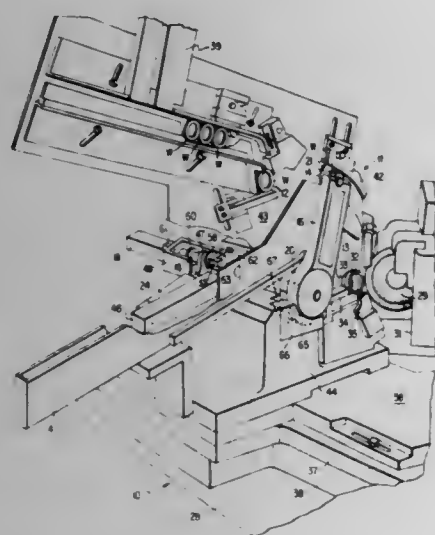
3,751,857

**LOADER MECHANISM FOR A MACHINE TOOL**

Ralph E. Price, and Dudley V. Bickford, both of Waynesboro, Pa., assignors to Landis Tool Company, Waynesboro, Pa.  
Filed June 24, 1971, Ser. No. 156,250  
Int. Cl. B24b 47/02

U.S. Cl. 51—215 H

13 Claims



An automatic loader (11) for a machine tool, such as a concentric grinding machine (10), wherein the arcuate movement of a loader arm (16) carries ring-like workpieces (W) from a loading station (12) to a grinding station (13). The loader arm (16) is axially displaced to strip the ground workpiece (W) from a loader stud (21) at a precise angular position to discharge a workpiece at an unloading station (14), while the loader arm (16) is being raised from the grinding station (13) to the loading station (12) to engage the next workpiece (W). The axial movement occurs when the fluid being discharged from a first hydraulic motor (24), which effects the raising of the loader arm (16), advances a piston (22) within a displacement cylinder (17) so as to expose a port (26). Thereafter, the fluid being discharged from the hydraulic motor (24) is directed to a second hydraulic motor (18) to move the loader arm (16) axially and strip the workpiece (W) therefrom. The loader arm (16) is returned to its original axial position at the loading station (12) to engage an unground workpiece (W) in preparation for the next cycle of operation.

3,751,858

**AUTOMATIC WORK REST BLADE CHANGER FOR CENTERLESS GRINDER**

Robert L. Schaller, Syracuse, and Michael W. Lamb, Minoa, both of N.Y., assignors to Sundstrand-Engelberg, Inc., Liverpool, N.Y.

Filed Jan. 7, 1972, Ser. No. 216,016

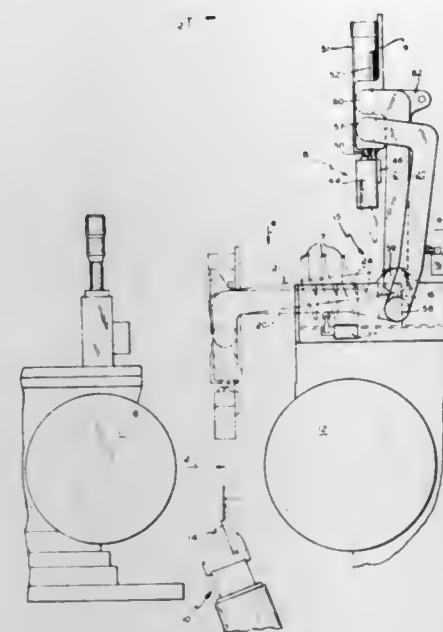
Int. Cl. B24b 41/06

U.S. Cl. 51—238 GG

7 Claims

An automatic blade changer for the work rest structure of a centerless grinder. The different sized blades are stored in a rack that moves on signal to present the blade that is called for to a pick up mechanism on a swingable blade carrier. The pick up mechanism withdraws the blade from the rack after which the carrier moves through an arc to position the blade above the work rest structure. The pick up mechanism then deposits

the blade in the work rest structure, the latter having releasable clamping means to secure the blade therein. To return the



blade to the storage rack the sequence of operations is reversed.

3,751,859

**FORAGE HARVESTER KNIFE SHARPENER WITH A ROTARY ABRASIVE WHEEL**

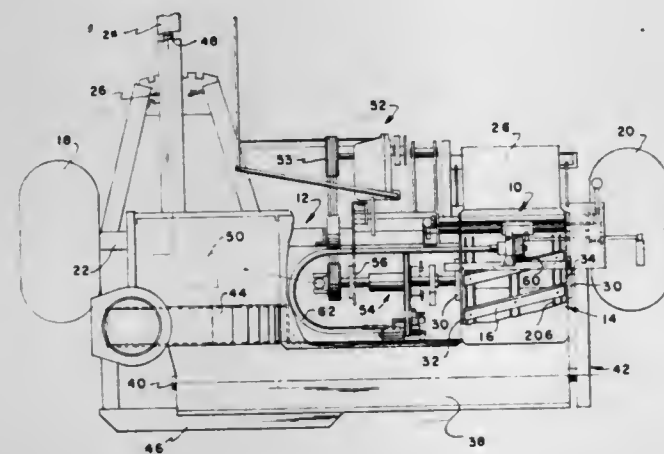
Poul K. Pedersen, Blue Ball; Robert A. Wagstaff, and Thomas W. Waldrop, both of New Holland, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Sept. 24, 1971, Ser. No. 183,391

Int. Cl. B24b 19/00

U.S. Cl. 51—249

13 Claims



A forage harvester knife sharpener having two shafts parallel to the cutterhead for slideably supporting a carrier with an abrasive wheel rotatably mounted therein and driven from the forage harvester drive. One shaft being fixed, and the carrier being pivotally and laterally slideable thereon while the other shaft, being on the other side of the abrasive wheel from the fixed shaft, being adjustably mounted in a rigid frame for moving the abrasive wheel to and from the cutter-head to grind cutting bevels and relief bevels on the knives.

3,751,860

**METHOD OF GRINDING ROLLS**

John Noel Tittle, Knutsford, England, assignor to The Churchill Machine Tool Company Limited, Broadheath, Altrincham, Cheshire, England

Division of Ser. No. 10,136, Feb. 10, 1970, Pat. No. 3,651,605.

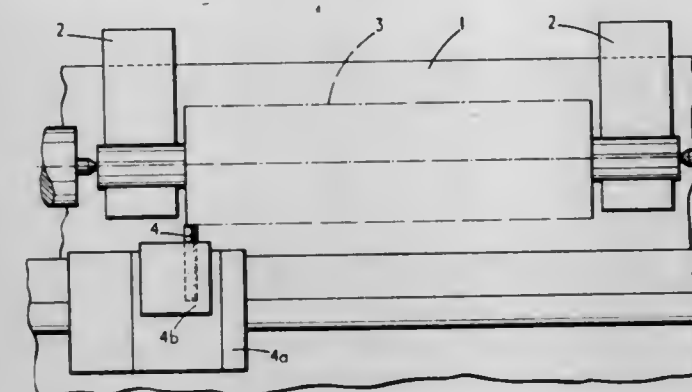
This application Oct. 6, 1971, Ser. No. 187,028

Claims priority, application Great Britain, Feb. 11, 1969, 7,276/69

Int. Cl. B24b 1/00, 5/04

U.S. Cl. 51—289 R

1 Claim,



A method in which the diameters of two rolls are matched by grinding one roll, measuring the position of the surface of the ground roll relative to a datum position using a probe, and grinding the second roll until the surface thereof is in the same position relative to the datum position as was the surface of the first roll.

3,751,861

**METHOD FOR FINISHING ANTI-FRICTION BEARINGS**

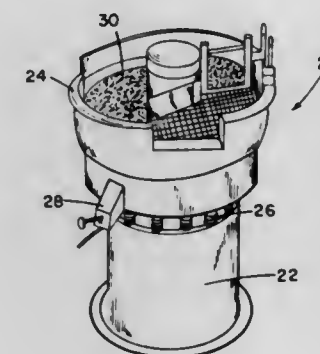
Charles C. Frost, Kentwood; Thomas E. Shaw, Grandville, and Siegfried K. Weiss, Grand Rapids, all of Mich., assignors to Forst Engineered Products, Inc., Grand Rapids, Mich.

Filed June 30, 1971, Ser. No. 158,311

Int. Cl. B24b 1/00, 11/02, 31/06

U.S. Cl. 51—316

10 Claims



A method for refurbishing used assembled anti-friction bearings in which the bearings are first given a preliminary washing with a solvent and the seals and shields on the bearing are removed. The bearing is then placed in a vibratory finishing mill having a quantity of finishing material therein which acts upon and finishes the bearing for a predetermined period of time. The finishing media is then washed from the bearing, the bearing is lubricated and new shields are replaced. The final finishing of new bearings may also be accomplished in accordance with the method disclosed herein.

3,751,862

**PNEUMATICALLY SUPPORTED STRUCTURE**

Josef Linecker, A 5230 Mattighofen, Austria

Filed Apr. 2, 1971, Ser. No. 130,758

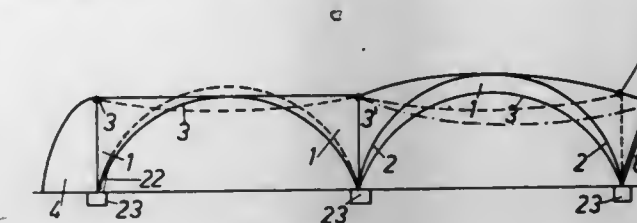
Int. Cl. E04b 1/34

U.S. Cl. 52—2

17 Claims

A pneumatically supported structure of polyhedral configuration has a plurality of diagonal anchors running between

foundation members at the corners of the structure and lying along diagonals thereof. In addition, rigid arches span the foundation members along at least some of the sides and act as supporting members for the flexible skin which is used in sec-



tions between the anchors. A double-wall structure may be provided in which the air enters the space between the inner and outer skin and passes out of the space at the base of the structure.

3,751,863

**EXTENSIBLE STRUCTURAL MEMBERS**

John Alexander Lyons, London, England, assignor to Creative Engineering Limited, London, England

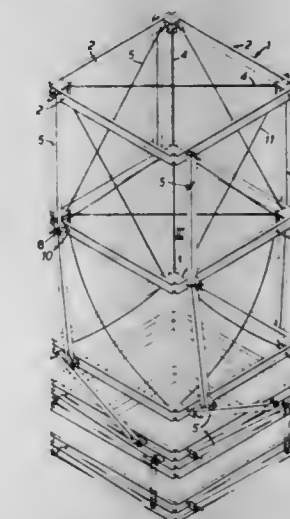
Filed Nov. 19, 1971, Ser. No. 200,471

Claims priority, application Great Britain, Nov. 20, 1970, 55427/70

Int. Cl. E04h 12/34

U.S. Cl. 52—111

11 Claims



A self-erecting tower structure, for example, for overhead inspection and for supporting lights, aerials, antennas, and cameras. The structure includes an extensible member comprising a number of superimposed frames and self-erecting legs interconnecting the frames and erecting means, such as endless chains or a screw-threaded column, arranged to raise each of the frames in succession through a distance at least equal to the length of the legs.

3,751,864

**INTERSTITIAL SPACE FRAME SYSTEM**

Horst Berger, 18 Chestnut Dr., Hastings on Hudson, N.Y., and Harry Weese, 1235 N. Aston, Chicago, Ill.

Filed Apr. 11, 1972, Ser. No. 242,950

Int. Cl. E04h 1/02

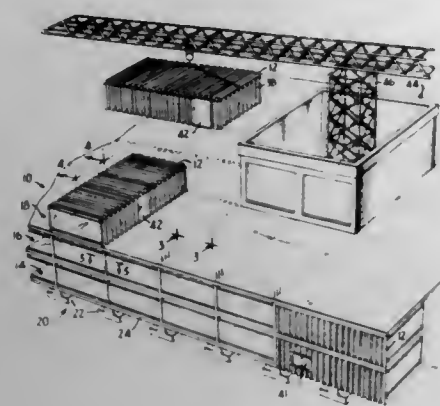
U.S. Cl. 52—79

31 Claims

A building and a method for constructing the building are disclosed in which prefabricated building modules, formed of corrugated metal and having finished interior surfaces defining occupiable spaces therein, are supported on a foundation in a plurality of layers, each of which provides one story of the building. The modules are placed in spaced relation to each other in the layers in order to provide open through passages between adjacent module side walls, with the corrugations on adjacent side walls being spaced from each other. The corrugations on adjacent side walls cooperate with spacers or forms placed therebetween to define forms in which concrete, in a flowable condition, is poured to form the vertical structural



members or columns of the building. In one embodiment a concrete slab is poured over the ceiling panels of each of the

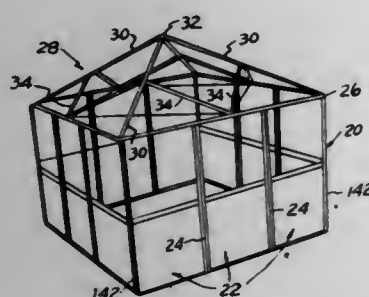


modules in a layer to form an integral horizontal structural member between the vertical structural members and to provide support for the next layer of modules in the building.

**3,751,865**  
**MODULAR BUILDING CONSTRUCTION**  
George B. Brigham, 517 Oxford Rd., Ann Arbor, Mich.  
Filed Feb. 3, 1971, Ser. No. 112,251  
Int. Cl. E04b 7/04, 2/62

U.S. Cl. 52—92

7 Claims



A modular building construction fabricated of a plurality of individual panel section modules selectively interconnected to each other by means of slide-in connecting members and the roof construction is made up of a plurality of roof ribs interconnected together at a common apex and which can be folded together in umbrella fashion and which when assembled to the panel building is adapted to support a canvass or similar roof covering. The individual panel section modules consist of frames of extruded metal such as aluminum, which by means of snap-in moldings support panels such as decorative plywood panels or plastic panels, window glass, screen or the like in selectively interchangeable fashion; the circumferential edges of the frames of the panel members are channeled and the individual panels are connected by connecting members of plastic or the like which are slid in place longitudinally to fit over protruding flanges provided in the opposite channels, or adjoining panel members.

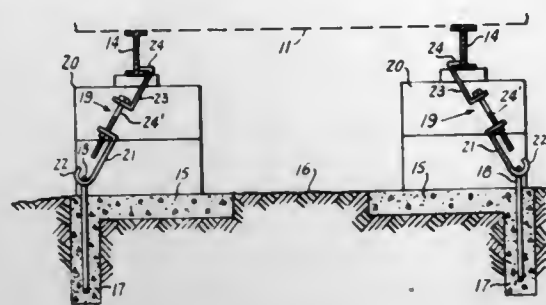
**3,751,866**  
**MOBILE HOME ANCHOR**  
Frank Renchen, R.R. 1, Manteno, Ill.  
Filed Mar. 3, 1972, Ser. No. 231,538  
Int. Cl. E02d 5/80; E04h 12/20

U.S. Cl. 52—149

1 Claim

A mobile home anchor which includes a concrete slab poured in the surface of the ground and having a foundation extending downwardly therefrom. The slab has a metallic eye anchored therein and extending above the top surface thereof. The mobile home is positioned on the concrete slab and a plurality of extensible and contractible brackets are hooked to the frame of the mobile home and to the eyes extending up-

wardly from the concrete. The frame is blocked up by fixed blocks resting on the slab and the brackets are tightened to

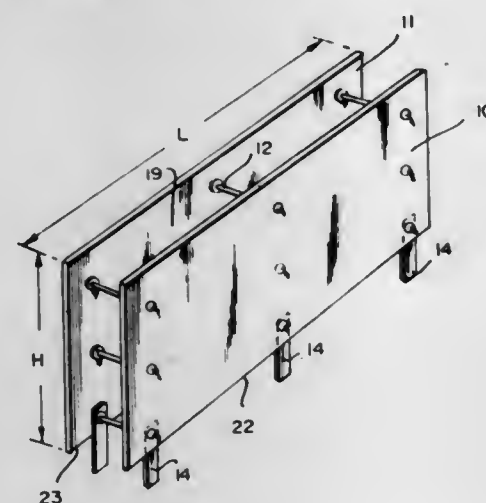


draw the frame down to the blocks to rigidly anchor the mobile home in its position on the slab.

**3,751,867**  
**PANEL TO FORM COMPOSITE CONCRETE-REINFORCED WALL**  
Melvin E. Layne, Reseda, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y.  
Filed Dec. 3, 1971, Ser. No. 204,425  
Int. Cl. E04b 2/26

U.S. Cl. 52—426

3 Claims



A panel for use in the construction of composite concrete-reinforced walls, consisting of two parallel sheets of pressed composition material rigidly separated by metal rod members, with metal tabs projecting from the panel sheets to bear against similar adjoining panels, together with additional steel reinforcement members between the panel sheets. The interior spaces of the panel are filled with concrete which sets to form an interlocking composite wall structure of metal rod members, additional steel reinforcements, the external panel sheet and the concrete.

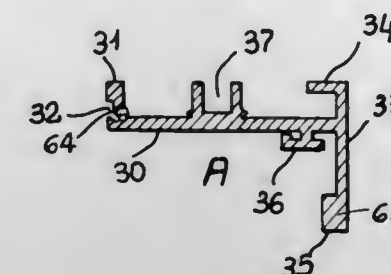
**3,751,868**  
**STRUCTURE FOR THE ASSEMBLY OF FIXTURES FOR DOORS, WINDOWS AND THE LIKE**  
Ascanio Mascioletti, Via S. Nicola di Santanza 263, L'Aquila, Italy  
Filed July 27, 1970, Ser. No. 58,428  
Int. Cl. E04c 3/04; E06b 1/14

U.S. Cl. 52—731

1 Claim

An improved metal structure for fixtures for doors, windows and the like, comprises a basic unit which consists of a rectilinear section having 1) at one end an extension in the perpendicular direction provided with a seat, preferably of trapezoidal configuration, which has a lateral hole adapted to receive a packing, 2) at the other end a cross-member the ends of which are constituted of a short section folded inwardly and provided with a block designed to provide the support for the glass, 3) a short angulate tooth and 4) on the opposite side of the tooth a U-shaped seat designed to serve as

support for other structural elements. This unit may be associated with a C-shaped section provided with a clamp, forming an element, adapted to serve as support for the glass or two units may be associated, forming a T-shaped element, or a Z-

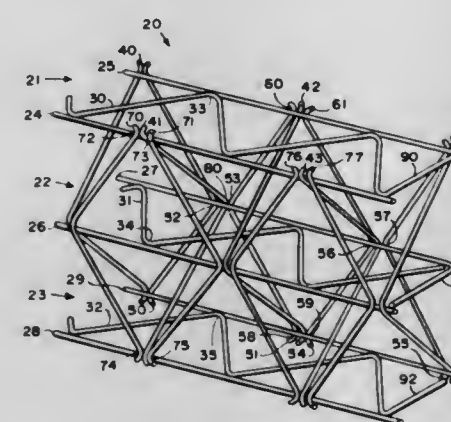


shaped element. In combination with complementary elements, a variety of configurations is obtained which may be utilized as single and double glass fasteners and glass holding means, basement windows, shutters.

**3,751,869**  
**WIRE SUPPORT STRUCTURE**  
Johnnie F. McDonald, 1113 W. Mesa Rd., and Frederick J. Sparber, R.D. 1, Box 192A, both of Belen, N. Mex.  
Filed Oct. 4, 1971, Ser. No. 186,335  
Int. Cl. E04h 12/10; E04c 5/06

U.S. Cl. 52—650

12 Claims



A wire support structure, one of the continuous repeating patterns of which includes, spot welded together, three parallel sets of two wires, the two wires in each such set being interconnected by a wire configured into a continuous series of V shapes, the V patterns on successive sets being alternately disposed in opposite directions. Opposite wires of successive parallel sets are interconnected at the open ends of the V shapes by wires also configured into a continuous series of V shapes. Finally, another set of V configured wires are fastened onto the faces of the structure adjacent the points at which the wire interconnecting opposite wires of adjacent sets of two wires are attached.

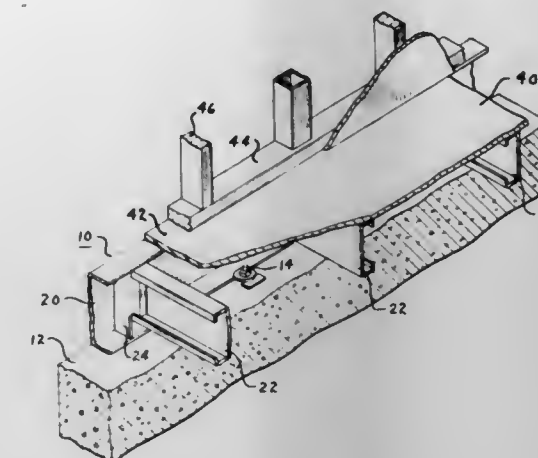
**3,751,870**  
**FRAME STRUCTURE SYSTEM**  
Laszlo M. Vesei, Niles, Mich., assignor to Elkhart Widing & Boiler Works, Inc., Elkhart, Ind.  
Filed Feb. 5, 1971, Ser. No. 112,944  
Int. Cl. E04c 2/42; E04b 1/34

U.S. Cl. 52—656

3 Claims

A frame structure system having a plurality of spaced parallel perimeter beams of U-channel configuration and including cross members extending into the perimeter beams between the upper and lower flanges and being rigidly secured to the beams to form a rigid structure. The cross members may be of a C-channel configuration and may be of substantially the same height as the perimeter beams, or be of a lesser height,

and secured to said beams with the upper surface thereof on substantially the same plane as the upper surface of the beams.

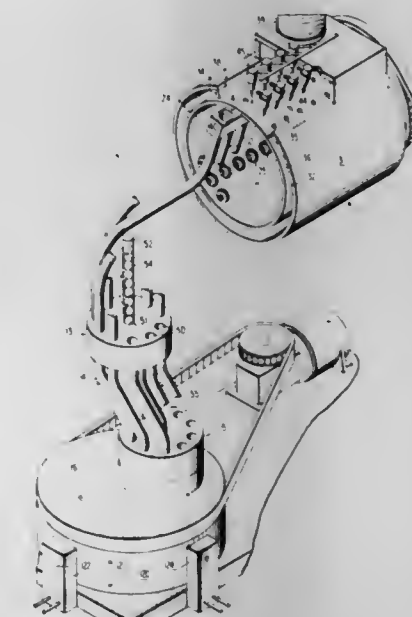


Fixtures are secured to said ends of said cross members and are preferably secured to the beams by riveting.

**3,751,871**  
**COIN PROCESSING METHOD**  
Gerry G. Hull, and Eugene B. Morris, Jr., both of Atlanta, Ga., assignors to ATL Machine Corporation, Atlanta, Ga.  
Continuation of Ser. No. 48,077, June 22, 1970. This application June 15, 1972, Ser. No. 263,312  
Int. Cl. B65b 35/50

U.S. Cl. 53—26

4 Claims



A coin processing method and apparatus in which coins of predetermined physical characteristics are lifted from a mass of coins, dropped into a plurality of coin hoppers and moved through individual conduits down to a coin shelf. A predetermined number of coins from the hoppers are allowed to accumulate and form stacks on the coin shelf and the stacks of coins are passed in sequence over a discharge opening in the coin shelf. Balls of a diameter approximately equal to the diameter of the coins are inserted between the coin stacks at the coin shelf discharge opening, and a transparent plastic material is applied to the line of coin stacks and balls to form a continuous tubular wrapper about the coins and balls. The continuous wrapper is opened at the balls and the balls are separated from the coin stacks, leaving separate packages of coins.



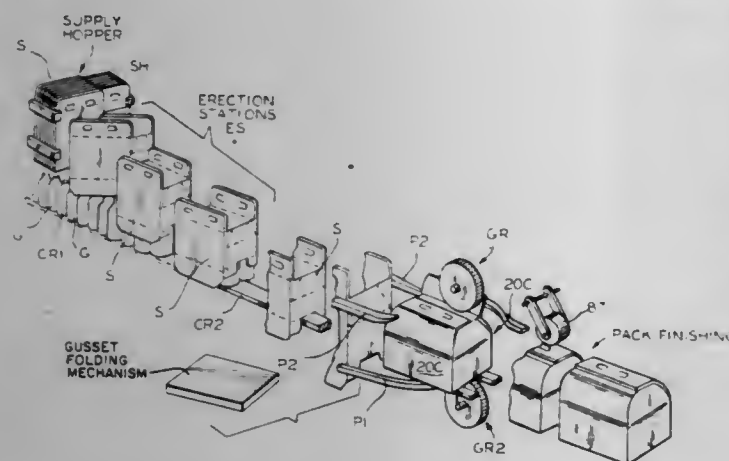
3,751,872

## APPARATUS AND METHOD FOR ENCLOSING OF CONTAINER GROUPS

Charles Robert Helms, Barto, Pa., assignor to Container Corporation of America, Chicago, Ill.  
Continuation-in-part of Ser. No. 863,049, Oct. 2, 1969, which is a continuation of Ser. No. 30,916, April 22, 1970, abandoned. This application Sept. 27, 1971, Ser. No. 184,265  
Int. Cl. B65b 11/12

U.S. Cl. 53—32

11 Claims



Apparatus and method for enclosing a discrete group of articles, such as cans or bottles arranged in a double row carton sleeve, the groups moving along a first conveyor reach having a width substantially equal to the width of the double row, and then along a second conveyor reach substantially less in width than the first reach, a tubular carton being adapted to move into position around the group as it moves from the first reach to the second reach. The tubular carton has lower closure elements adapted to embrace the second reach, and structure is provided for moving the closure elements into position against the bottom of the group as the group moves from the second reach to the third reach.

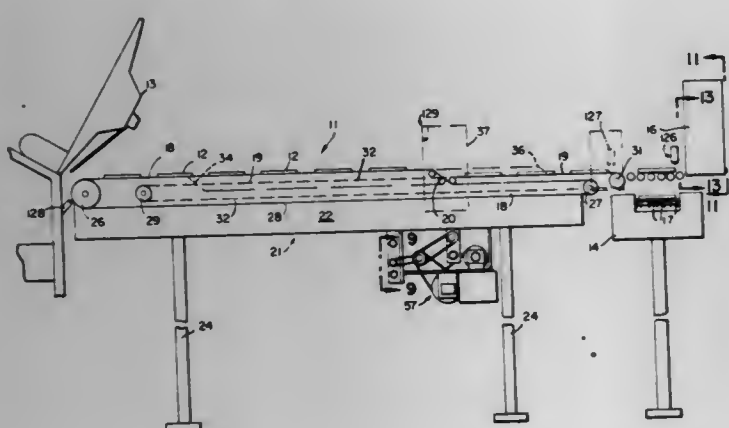
3,751,873

## ACCUMULATING AND DISTRIBUTING CONVEYOR FOR FOOD PRODUCTS

Edward P. Toby, South San Francisco, Calif., assignor to Toby Enterprises, South San Francisco, Calif.  
Filed Apr. 10, 1972, Ser. No. 242,299  
Int. Cl. B65b 57/10

U.S. Cl. 53—59 R

10 Claims



An accumulating and distributing mechanism is described for delivering stacks of sliced meat from a meat slicing machine to a packaging machine at a controlled rate irrespective of random fluctuations in the rate at which the stacks are furnished from the slicing machine. The mechanism includes a pair of conveyors which are coextensive with one another over a portion of their lengths and which mesh at a point of intersection for transference of the stacks from one to the other. A first one of the conveyors receives the stacks sequentially from

the slicing machine and delivers the same to the second conveyor which, in turn, delivers such stacks to the packaging machine. A carriage establishes the intermeshing intersection of the two conveyors and is movable longitudinally along their coextensive lengths to longitudinally vary the position of such intersection. The carriage is moved under the control of a product detection system which senses gaps in produce flow along the first conveyor. When such a gap is sensed, the carriage moves the point of intersection in the direction of flow of the product to a location relative to the second conveyor so that the next stack which is transferred from the first conveyor to the second is placed thereon at the proper location. The speed of the first conveyor is substantially increased during such time to hasten the transfer of such next stack to the second conveyor. When the next stack is transferred, carriage movement is reversed and if continuous product flow is sustained the carriage continues to move in the reverse direction to a normal home position, and the speed of the first conveyor is restored to normal. In this manner gaps in the supply product flow along the first conveyor do not appear in the demand product flow along the second conveyor.

3,751,874

## APPARATUS FOR STORING PHOTOGRAPHIC FILMS AND PRINTS

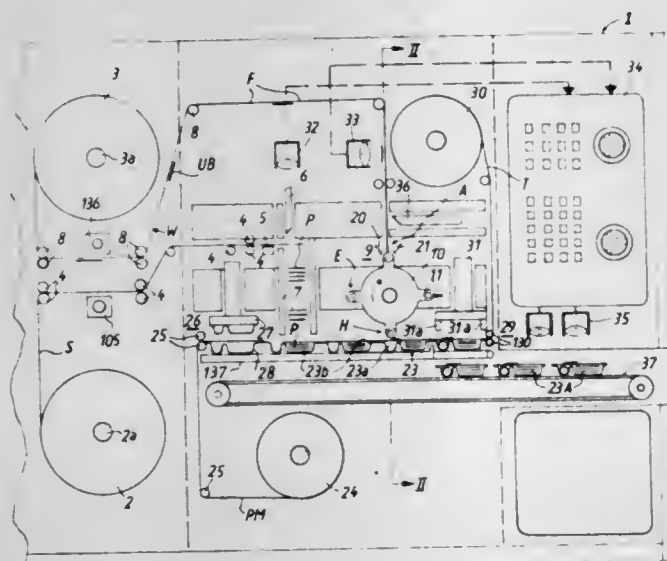
Herbert Schultes, and Norbert Schlagheck, both of Furstentfeldbruck, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany  
Filed Sept. 23, 1971, Ser. No. 182,985

Claims priority, application Germany, Sept. 25, 1970, P 20 47 234.8

Int. Cl. B65b 57/14

U.S. Cl. 53—59 R

19 Claims



Apparatus for introducing exposed and developed customer films and prints which are reproduced from such films into discrete customer containers employs two transporting devices which advance a web of interconnected films and a strip of prints along separate paths, a first severing device which severs the web to separate therefrom successive films or sections of successive films, a second severing device which subdivides the strip into discrete prints, a container forming device which furnishes containers having first and second compartments to respectively receive films and corresponding prints, a computer which prepares customer invoices on the basis of information furnished by detectors positioned adjacent to the first and second paths and to the path for filled containers and applies shipping labels to filled containers, and a sealing device which covers the open sides of filled containers with foils of transparent synthetic plastic material.

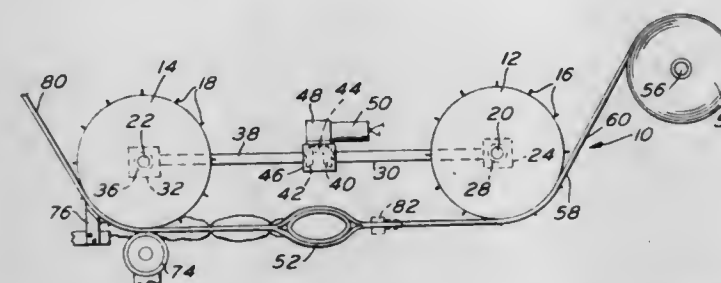
3,751,875

## APPARATUS FOR FILLING, SEALING AND DISPENSING BAGS

Hercules Membrino, 1934 Arch St., Philadelphia, Pa.  
Filed Sept. 9, 1971, Ser. No. 178,908  
Int. Cl. B65b 9/08, 43/12

U.S. Cl. 53—180

8 Claims



A process and apparatus for filling, sealing and dispensing bags from a strip of interconnected bags which comprises moving the strip of bags from a supply roll along a path to at least one, but, preferably, two sprocket wheels. The strip of bags is provided with spaced sprocket apertures in a selvage portion along the edge corresponding to the open mouths of the bags, and these apertures are engaged by the sprockets on the sprocket wheels to move the strip of bags linearly at predetermined intervals. As the individual bags are brought into conjunction with a feed means, such as a chute or the like, they are filled, and are then moved through sealing and severing stations where the open mouths are sealed and the sealed bags are either totally severed from the selvage portion or are provided with scored or perforated lines to permit them to be thereafter severed from the selvage portion.

3,751,876

## CARTON FLAP SEALING

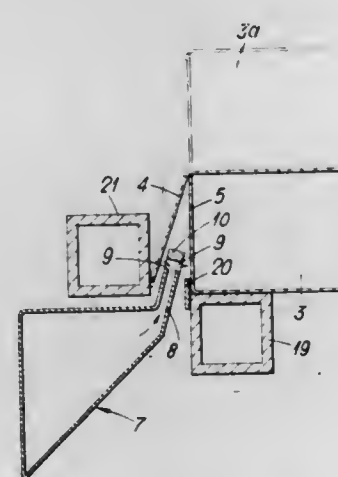
John Richard Oakley, 87 Churchward Ave., and Shaun Kearns, 7 Duchess Way, both of Swindon, England  
Filed Feb. 9, 1972, Ser. No. 224,888

Claims priority, application Great Britain, Feb. 12, 1971, 4,579/71

Int. Cl. B65b 7/20

U.S. Cl. 53—375

10 Claims



A hollow member arranged to apply heated air to heat-sealable surfaces of a pair of carton flaps folded to form an acute angle comprises an elongate chamber, preferably of generally triangular cross-section, which is connectable through a valve with a source of heated air. A nozzle extends from one corner of the chamber to extend between the pair of flaps and the nozzle has the end thereof remote from the chamber closed by a closure member which forms one side of opposed slots which extend lengthwise of the nozzle to direct heated air on to mating areas of the carton flaps. The closure member causes air to be deflected through the slots at substantially equal flow rates.

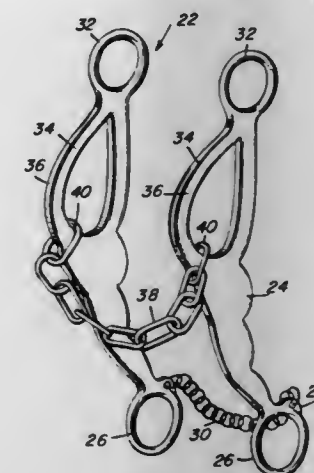
3,751,877

## BRIDLE CONTROL BIT

Veldon Morgan, Ellsworth, Nebr.  
Filed July 21, 1971, Ser. No. 164,699  
Int. Cl. B68b 1/04

U.S. Cl. 54—6

7 Claims



A bridle bit including opposite side elongated plate-like up-standing shanks for disposition at the sides of the mouth of a horse and including rein eyes at their lower ends and support eyes at their upper ends through which adjacent ends of the nose band and lower ends of the cheek straps of the associated bridle are secured. A chain chin strap is secured between the lower eyes of the shanks or cheek pieces and approximately the upper third of each of the shanks disposed below the upper end eyes define vertically elongated eye portions between which a bit or mouthpiece chain is secured, the opposite end links of the bit or mouthpiece chain being slidably disposed on the front portions of the vertically elongated eye portions of the shanks or cheek pieces whereby the elevation of the ends of the bit or mouthpiece chain may be increased along the eye portions of the cheek pieces or shanks as the associated reins are pulled rearwardly so as to swing the lower ends of the cheek pieces or shanks rearwardly and upwardly.

3,751,878

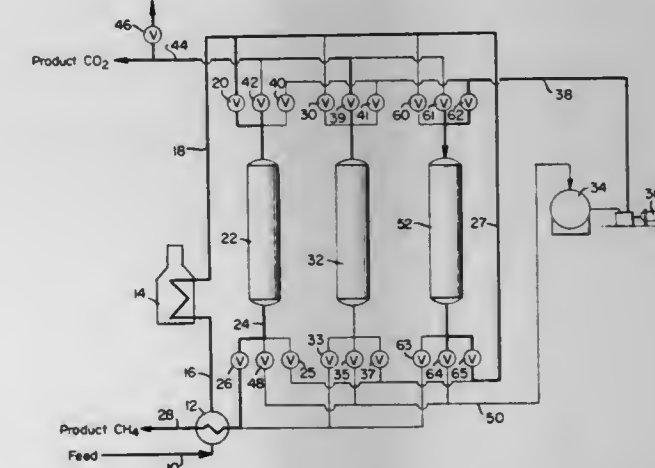
## BULK SEPARATION OF CARBON DIOXIDE FROM NATURAL GAS

John Joseph Collins, Katonah, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 187,162, Oct. 6, 1971. This application Oct. 20, 1972, Ser. No. 299,461  
Int. Cl. B01d 53/04

U.S. Cl. 55—58

3 Claims



In the bulk separation of carbon dioxide from feedstocks containing same in admixture with relatively non-sorbable gases using a zeolitic molecular sieve to adsorb selectively the carbon dioxide, higher product purity is attained by terminating the adsorption stroke using the feedstock while the bed



still has capacity to adsorb more carbon dioxide at the same conditions, then purging the void space hydrocarbons from the bed using product carbon dioxide at a high partial pressure, and finally desorbing the bed by pressure reduction.

3,751,879

# **APPARATUS FOR REDUCING THE DISSOLVED GAS CONCENTRATION IN A LIQUID**

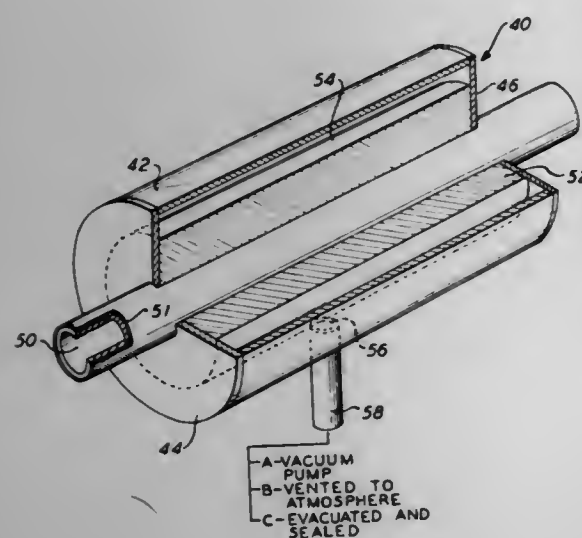
Robert W. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.

Filed Apr. 26, 1971, Ser. No. 137,381

Int. Cl. B01d 13/00

U.S. Cl. 55—158

30 Claims



Apparatus for reducing the dissolved gas concentration in a liquid, for example, a liquid flowing in chromatographic system, utilizing the ability of the gas dissolved in the liquid to pass through a gas permeable membrane. The liquid is exposed to one surface of the membrane and the opposite surface of the membrane is provided with a coating of gas-soluble substance for increasing the permeability of the membrane and thereby enhancing the permeation of the gas through the membrane. Further, in various embodiments of the invention, a chamber is provided opposite or surrounding the coated membrane and, in accordance with the teachings of the present invention, the chamber may be vented to the atmosphere, evacuated and sealed or communicated to a means for establishing a pressure in the chamber sufficiently lower than the pressure of the liquid exposed to the membrane such that the permeation of the gas through the membrane is enhanced. Additionally, the chamber may be provided with absorbent or adsorbent material for accommodating gas permeated through the membrane.

3,751,880

# **CARRIER GAS SEPARATING UNIT**

Michael W. Holm, Monrovia, Calif., assignor to Universal Monitor Corporation, Pasadena, Calif.

Filed Feb. 22, 1972, Ser. No. 227,879

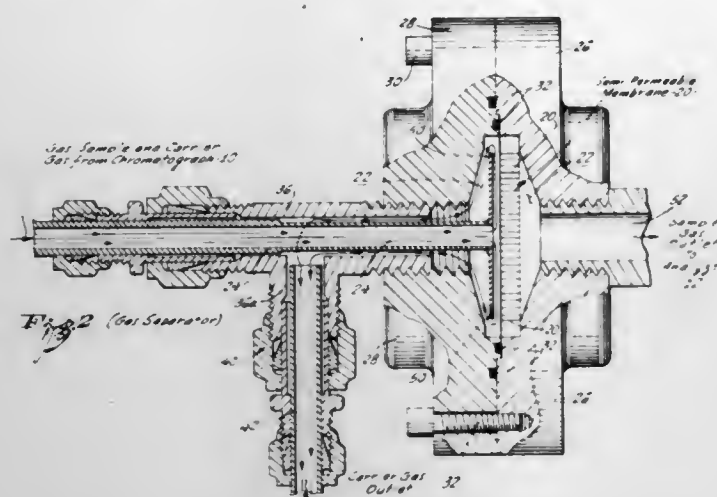
Int. Cl. B01d 53/22

U.S. Cl. 55—158

4 Claims

A gas separating unit is provided for enriching a gas sample emerging from a gas chromatograph, or other source, such as the ambient atmosphere, liquid inlet device, etc., before the sample is introduced to a mass spectrometer gas analyzer. This separation is achieved by removing the carrier gas of the sample from the sample constituents which are to be subjected to mass spectrometric analysis in the analyzer. The separating unit of the invention makes use of a semipermeable membrane which is mounted in a unique housing. The housing is constructed, as will be described, so that the sample and carrier

gases are directed across the membrane in a manner so as to make full use of the surface of the membrane, and to assure



that all the gas mixture passing into the separating unit contacts the membrane.

3,751,881

# **DUST RECEPTACLE FOR A VACUUM CLEANER**

George Leslie Hughes, Bedford, England, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

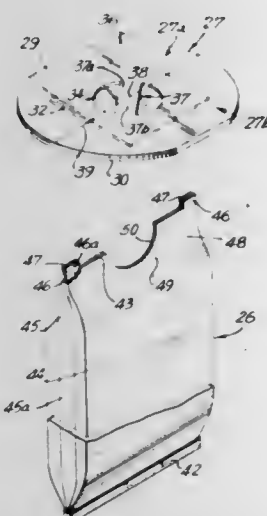
Filed June 8, 1971, Ser. No. 150,993

Claims priority, application Great Britain, June 18, 1970, 29655/70

Int. Cl. B01d 46/02

U.S. Cl. 55—367

14 Claims



An open-ended paper bag of a self-sealing dust receptacle for a vacuum cleaner is closed by an end plate having an elastic membrane extending across an opening therein. An elongated tongue fixed to the end plate overlies a central portion of the membrane and covers an aperture therein which is smaller than the opening in the end plate. The tongue has a diagonally extending cut which is at an acute angle to its longitudinal axis and defines two fingers having overlapping outer pointed ends operable to move through the aperture and swing inward from the plane of the plate by force applied thereto. With cessation of such force the fingers are biased toward the plane of the plate by the elastic membrane and close the aperture in the membrane.

Two portions of the end plate are movable about a fold line between two positions in one of which they are in the same plane and in another of which they are in abutting relation at right angles to such plane. The diagonally extending cut in the tongue is at such fold line. The plate has two spaced apart slots at such fold line to receive lugs at the open end of a paper bag formed by tabs in the pleated end walls when the pleats are compressed and held together. The bag side walls have notched zones at the open end of the bag which extend between the lugs and are fixed to the inner faces of the two

portions of the end plate by adhesive material when such portions are moved into abutting relation with the notched zones therebetween.

3,751,882

# **GAS SCRUBBER WITH MOISTURE ELIMINATOR**

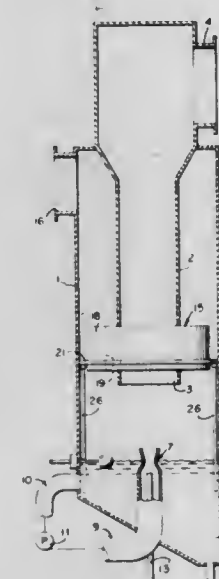
Norman D. Phillips, Bethlehem, Pa., assignor to Fuller Company, Catasauqua, Pa.

Filed June 4, 1971, Ser. No. 150,072

Int. Cl. B01f 3/04

U.S. Cl. 55—236

4 Claims



A gas scrubber which is improved by the addition of a moisture eliminator arrangement between the scrubbing zone and the clean gas outlet. The moisture eliminator is particularly designed for use in a countercurrent flow, high energy scrubber in which scrubbing liquid is atomized by means of compressed air and injected into the dirty gas countercurrent to the flow of dirty gas. The moisture eliminator includes a toroidal shaped cylinder having a plurality of spin vanes. The spin vanes and scrubber are dimensioned to maintain gas flow velocities within specified limits.

3,751,883

# **APPARATUS FOR SCRUBBING OF GASEOUS FLUIDS**

Helmut Mergenthaler, Jesingen/Teck, Germany, assignor to Otto Keller, Jesingen/Teck, Germany

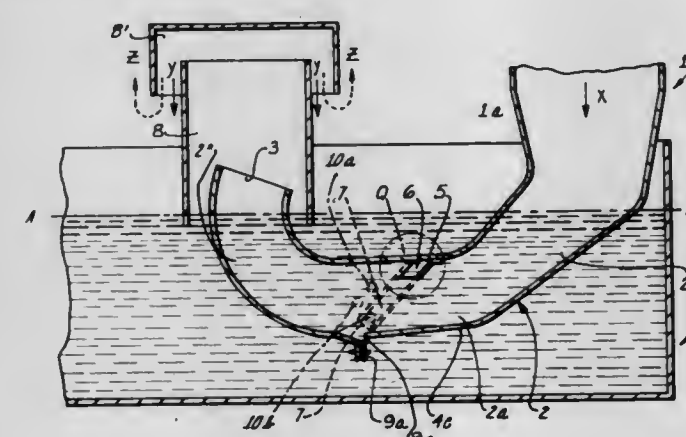
Filed Jan. 19, 1970, Ser. No. 4,015

Claims priority, application Germany, Jan. 28, 1969, P 19 03 985.1

Int. Cl. B01f 3/04

U.S. Cl. 55—248

14 Claims



Apparatus for scrubbing of gases wherein the duct through which a gas stream to be treated is conveyed includes a section located below the level of liquid in a tank. The narrowest part

of the duct section accommodates at least one transversely extending barrier which produces turbulence in a portion of the interior of the duct located immediately downstream of the barrier, and such portion of the interior of the duct communicates with one or more relatively large openings which admit liquid from the tank into the turbulent gas stream whereby the liquid is atomized and dust or other particles in the gas stream react with or are surrounded by globules of atomized liquid. Such globules are segregated from the thus cleaned gas stream in a cyclone diffuser or other separating device.

3,751,884

# **STEAM REMOVAL APPARATUS FOR DISCHARGE STACK**

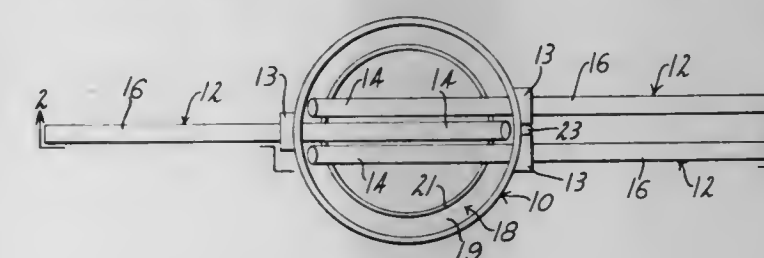
Roy C. Hathorn, P.O. Box 1806, Anniston, Ala.

Filed Sept. 23, 1971, Ser. No. 183,088

Int. Cl. B01d 5/00

U.S. Cl. 55—267

4 Claims



Portions of metal members having high thermal conductivity extend inwardly of a stack with other portions thereof extending outwardly of stack and out of contact with steam and other gaseous products conveyed by the stack reducing temperature of the inwardly extending portions by conduction of heat to other portions. Collector means receives water condensed onto the inwardly extending portions and discharge means removes water from the collector means.

3,751,885

# **AIR SCRUBBER**

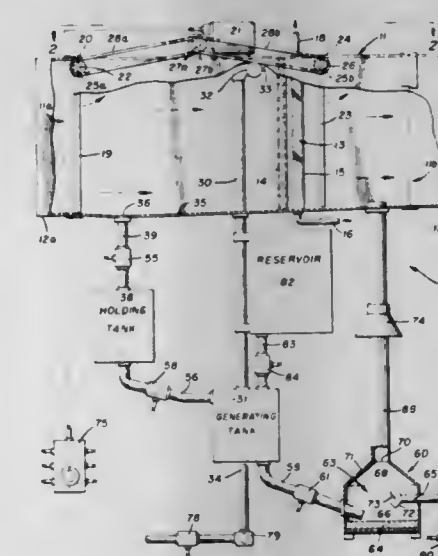
Charles D. McNeely, 3060 Killian Rd., Unlontown, Ohio

Filed July 8, 1971, Ser. No. 160,736

Int. Cl. B01d 46/00

U.S. Cl. 55—267

4 Claims



An air scrubber for removing and selectively incinerating the condensable contaminants from the exhaust stream of a ventilating system. A generally localized surface area is provided within a collection chamber such that the exhaust stream can flow turbulently therearound and contaminants can condense thereupon. Cooling means may be provided to maintain a temperature differential between the surface area



and the exhaust stream stream in order to facilitate condensation. Gate means are periodically closed to maintain the collection chamber discrete from the remainder of the ventilating system, and while the gate means are closed a communicating means directs a cleansing medium across the surface area to remove the accumulated contaminants. The mixture of the cleansing medium and the contaminants is collected and separated so that the cleansing medium may be recycled. The contaminants may then either be collected for removal or conducted into an incinerator where they are received for incineration in a first combustion area. The products of the aforesaid combustion preferably pass through a second combustion area which serves as an after-burner to eliminate substantially all unburned hydrocarbons or other pollutants from the flue gas leaving the incinerator.

3,751,886

## VERTICAL STEAM DRUM

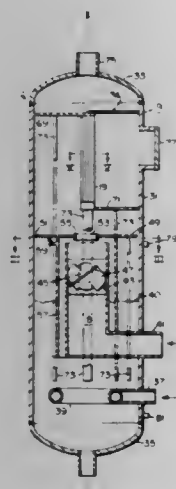
Peter F. Sokolowski, Media, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 31, 1971, Ser. No. 176,597

Int. Cl. B01d 59/50

U.S. Cl. 55—318

2 Claims



A vertical steam drum having two moisture separation stages, which cooperate to remove the majority of the water from moisture laden steam, is utilized in a heat recovery system, in which heat from the exhaust of a gas turbine produces superheated steam to operate a steam turbine. The first separation stage comprises a plurality of swirl vanes, which direct the moisture laden steam upwardly to form a swirling vortex of steam adjacent an orifice plate, a sleeve extending downwardly from the orifice plate, and tangential ducts disposed adjacent the upper end of the sleeve for discharging water from the swirling vortex of moisture laden steam. A chevron type separator disposed above the first separator forms the second separation stage to provide essentially moisture free steam to a superheater disposed in an exhaust duct of the gas turbine.

3,751,887

## DEVICES FOR MECHANICALLY CLEARING WATERWAYS, PARTICULARLY DITCHES

Johannes den Herder, and Pieter Willem den Herder, both of Serooskerke, Netherlands, assignors to Firma Gebroeder den Herder, Serooskerke, Netherlands

Continuation of Ser. No. 821,204, May 2, 1969, abandoned.

This application May 19, 1971, Ser. No. 145,056

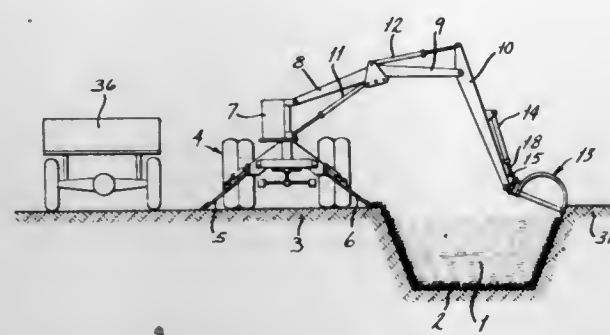
Int. Cl. A01d 45/18

U.S. Cl. 56—8

12 Claims

In a device for clearing waterways of plant life or other growth, a king post assembly mounts upon a vehicle, with said

post being swingable with respect to its mounting, and includes a multi-sectioned boom having a hydraulically con-



trolled mowing receptacle including a cutter bar positioned at its extremity.

3,751,888

## MATERIALS HANDLING DEVICES

William Edward James, 24098 Country Squire Boulevard, Apt. 230, Mt. Clements, Mich.

Filed Dec. 18, 1970, Ser. No. 99,580

Int. Cl. A01d 45/22

U.S. Cl. 56—130

3 Claims



An "oblique reel" materials handling device wherein link bars or tine bars are carried between end members rotating on parallel offset axes and the tine bars orbit in oblique circular paths as in the parallel bar hay rake, but also rotate, each on its own axis, as in the cylindrical reel of the typical pickup of a hay baler, combining advantages of the parallel bar reel with the freedom of tine orientation control of the cylindrical reel in one device for use in a wide variety of harvesting machines and the like.

3,751,889

## MOWING MACHINE

Albert Overesch, Spelle, Germany, assignor to Maschinenfabrik Bernard Krone GmbH, Spelle, Germany

Filed Oct. 22, 1971, Ser. No. 191,641

Claims priority, application Germany, Oct. 29, 1970, P 20 53 073.8

Int. Cl. A01d 35/26

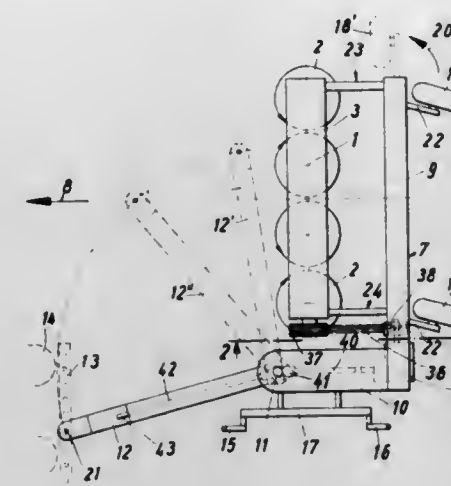
U.S. Cl. 56—13.6

11 Claims

Mowing machine with at least one mowing device driven so as to rotate around a generally vertical axis, the mowing device being mounted upon a supporting beam, and the mowing machine being designed as a trailer-type machine with a pull bar and ground-engaging supporting wheels. Each of the mowing devices is also supported on the ground by a supporting part. The supporting beam is braced by a system of guide

bars connected to a separate machine frame so as to be able to swing freely parallel to itself up and down; the ground-engag-

the ground when the hitch tongue is in the transverse position whereby the crop harvester may be towed in an endwise



ing supporting wheels and the pull bar are connected to the frame.

3,751,890

## GROUND ENGAGING HAY BALE ROLLING APPARATUS

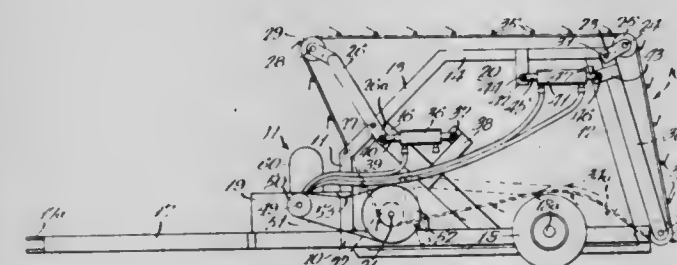
James E. Gay, and John W. Bliss, both of Vinton, Iowa, assignors to Starline, Inc., Harvard, Ill.

Filed June 17, 1971, Ser. No. 152,623

Int. Cl. A01d 75/00

U.S. Cl. 56—16.4

21 Claims



A hay bale rolling apparatus adapted to be drawn along a swath or a windrow of hay behind a tractor to roll the windrow into a series of separate bales in contact with the ground. The apparatus is entirely hydraulically operated from a tractor hydraulic system and has a single two-position mechanical control valve to control a cycle of baling, bale release and return to baling. The valve may be actuated to release a bale manually by an operator on a tractor or automatically by a sensing means which directly senses the diameter of a bale; and is automatically returned from release position to baling position after a bale is released.

3,751,891

## IMPLEMENT TRANSPORT STRUCTURE

Herbert W. Molzahn; Donald K. Tashiro, and Harold D. Ralph, all of Hamilton, Ontario, Canada, assignors to International Harvester Company, Chicago, Ill.

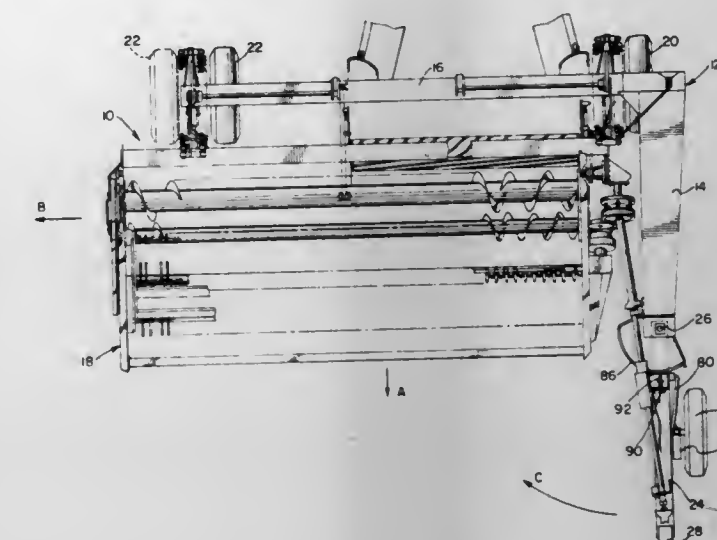
Filed Aug. 1, 1972, Ser. No. 277,011

Int. Cl. A01d 75/22

U.S. Cl. 56—228

15 Claims

A pull-type crop harvester having a crop harvesting platform mounted on a wheeled frame. The platform is elongated transversely to the normal forward direction of travel during a crop harvesting operation. The frame includes a hitch tongue connectible to the towing tractor. The hitch tongue is pivotable to a position transverse to the forward direction of travel. A transport wheel is carried on the hitch tongue for engaging



direction. An auxiliary hitch pole is connectible between an end of the harvester and the tractor for the endwise transport.

3,751,892

## HAYSTACK MAKING MACHINE

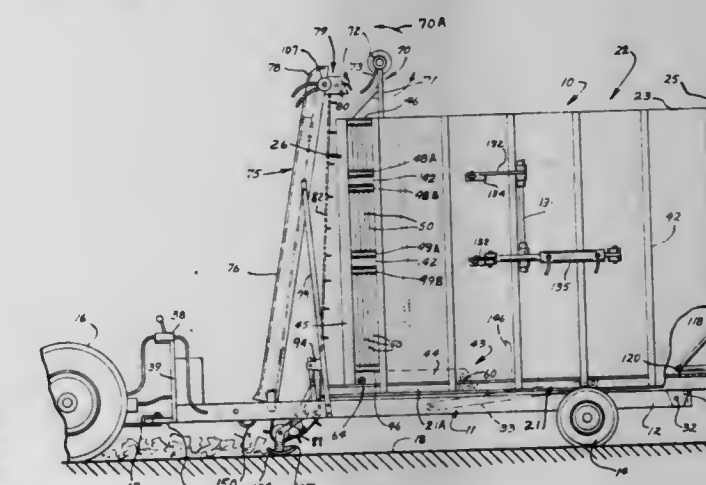
Sherman H. Quanbeck, Aneta, N. Dak., and Harold T. Gleason, Tolna, N. Dak.

Filed May 14, 1971, Ser. No. 143,359

Int. Cl. A01d 89/00

U.S. Cl. 56—344

17 Claims



A haystack making machine utilizing a hay pickup and an elevating conveyor, a haystack forming compartment, and linear movable compression packing means for packing the hay; all mounted on a frame. After a haystack has been formed means are provided for removing the haystack from the hay forming compartment.

3,751,893

## STRAND DETECTION

William V. Goodhue, North Kingstown, and Thomas E. Pitts, Cranston, both of R.I., assignors to Leesona Corporation, Warwick, R.I.

Filed Oct. 29, 1971, Ser. No. 193,683

Int. Cl. D01h 13/16

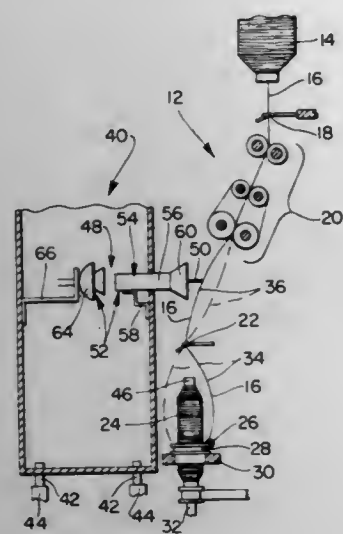
U.S. Cl. 57—34 R

8 Claims

A tender patrols the spinning stations of a spinning frame and stops to service any station requiring attention. One reason for stopping the tender is because a strand normally spun into yarn has broken at a spinning station. In order to determine whether or not the strands are advancing normally at the spinning stations, the tender carries a transducer responsive to vibration of a feeler upon engaging the normally



advancing strands to actuate an electronic switch which provides a signal permitting the tender to continue its patrolling



operation. If a strand is not advancing normally the signal is not provided and the tender stops to service the station.

3,751,894

## FALSE TWISTING OF YARNS

James Nelson Ruddell, Portadown, Northern Ireland, assignor to Lambeg Industrial Research Association

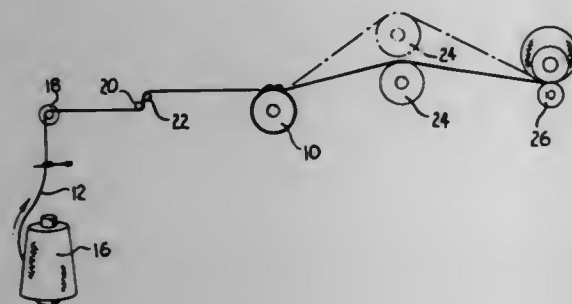
Filed Mar. 5, 1970, Ser. No. 16,915

Claims priority, application Great Britain, Mar. 17, 1969, 13,848/69; Mar. 8, 1969, 12,344/69; Mar. 17, 1969, 13,847/69

Int. Cl. D02g 1/02, 1/04

U.S. Cl. 57—34 HS

15 Claims



This invention concerns the false twisting of strands as for example, yarns, tapes and films. The false twisting is effected as the strand is continuously travelled around a freely rotatable roller in the form of a loop, the beginning and end of which constitutes a close simple knot in contact with the roller periphery. The frictional contact of the strand with itself at the knot causes false twist to run back in the strand. The stand leaves the roller in a non-tangential direction. This method of false twisting may be used as a substitute for known methods in the production of modified continuous filament yarns, or to produce preliminary or additive false twist in such cases; in the treatment of wet-spun linen yarns to improve their characteristics; and in the treatment of film either to separate pre-formed filaments therein or to fibrillate it.

3,751,895

## METHOD AND APPARATUS FOR DONNING BOBBINS

Gordon C. Anderson, and William H. Drake, both of Clemson, S.C., assignors to Maremont Corporation, Chicago, Ill.

Filed Jan. 12, 1972, Ser. No. 217,316

Claims priority, application Great Britain, Nov. 18, 1971, 53,700/71

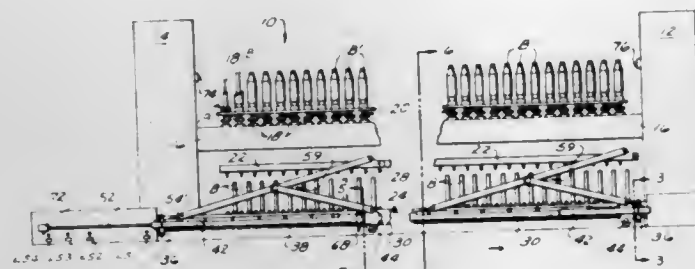
Int. Cl. D01h 9/00, 9/04

U.S. Cl. 57—52

7 Claims

Automatic donning apparatus in a textile processing machine having a plurality of spindles for receiving bobbins,

the apparatus comprising a plurality of bobbin graspers movable to a donning position axially aligned with the spindles and spaced above the spindles by a distance greater than the length of the bobbins to be donned, first control means for moving the graspers to their donning position, second control



means for sequentially actuating the graspers to grasp the bobbins and deactuating the graspers to release the bobbins, and means correlating the first and second control means to deactivate the graspers while they are in their donning position whereby the bobbins are donned on the spindles in self-aligning free fall.

3,751,896

## YARN HANDLING

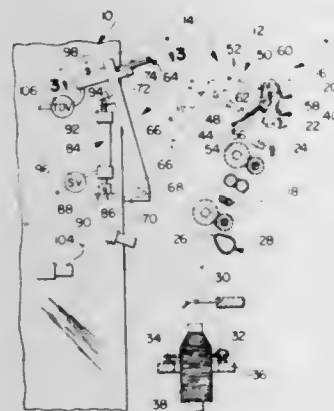
Michael D. Ford, Warwick, R.I., assignor to Leeson Corporation, Warwick, R.I.

Filed June 21, 1971, Ser. No. 155,105

Int. Cl. D01h 13/18

U.S. Cl. 57—87

7 Claims



Automatic servicing apparatus for spinning stations of one or more spinning frames includes provision for severing and clamping roving to stop feeding of the roving and to present a cleanly severed supply end of the roving in convenient position for subsequent thread-up. A carriage patrols the spinning stations and stops at any station requiring servicing, whereupon mechanism on the carriage doffs the bobbin being wound at the station, dons an empty bobbin core and normally starts the yarn spun from the roving winding onto the empty bobbin. If a station cannot be adequately serviced by the carriage mechanism a signal initiates operation of a scissor on the carriage and as the scissor is moved to an operative position for cutting the roving upstream of the drafting roll stand a roving clamp clamps the severed end of the roving extending from the roving supply. The scissor is then retracted and the station is rendered inoperative by the prior movement of a target on the clamp to a position in which a photo responsive sensor is not actuated so that the carriage subsequently by-passes the station.

3,751,897

## ASBESTOS YARN REINFORCED WITH CONTINUOUS STRAND OF A POLYVINYL ALCOHOL

Gerald Dwight Bailey, Sea Bright, N.J., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Mar. 29, 1971, Ser. No. 129,195

Int. Cl. D02g 3/20

U.S. Cl. 57—144

5 Claims

A high tensile strength and chemical resistant asbestos yarn product comprising a composite of a core strand composed of a spun yarn of staple polyvinyl alcohol fiber and with overlying staple asbestos fiber twisted thereabout.

3,751,898

## PROCESS FOR WINDING YARN PACKAGE

Sanro Inaba, and Masakazu Fujita, both of Ehime-ken, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 8,339, Feb. 3, 1970,

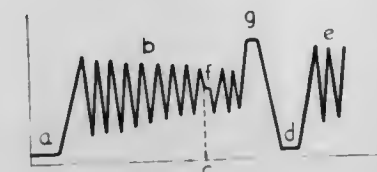
abandoned. This application Sept. 15, 1971, Ser. No. 180,615

Claims priority, application Japan, Feb. 10, 1969, 44/9883

Int. Cl. B65h 54/34, 54/00

U.S. Cl. 57—156

5 Claims



After a desired amount of yarn is wound on a package and the driving motor of a winding machine is switched off, waste yarn of a non-uniform quality which is produced after the driving motor stops, is wound on the surface of the package by inertia. Immediately before, or the moment, the driving motor is switched off, the yarn traversing motion is temporarily stopped to form a bulge of wound yarn on the package. Only the waste yarn is removed from the package using the bulge as a guide for the removal of the waste yarn.

3,751,899

## TUNING FORK CONSTRUCTION FOR ELECTRONIC WRIST WATCHES

Yuki Tsuruishi, Suwa, Nagano-ken, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

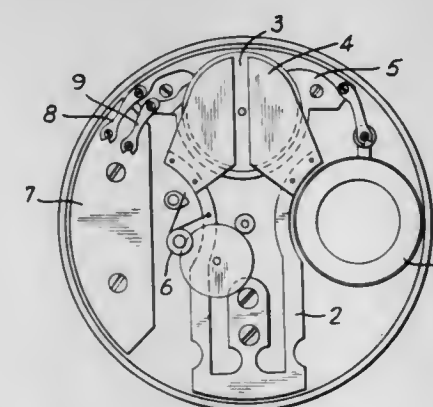
Filed Sept. 7, 1971, Ser. No. 178,229

Claims priority, application Japan, Sept. 7, 1970, 45/77732; Sept. 30, 1970, 45/84974; Oct. 15, 1970, 45/01790 (utility model); Oct. 19, 1970, 45/91508; Oct. 20, 1970, 45/91819; Oct. 27, 1970, 45/06113 (utility model)

Int. Cl. G04c 3/02; H02k 33/00; H03b 5/36

U.S. Cl. 58—23 TF

23 Claims



A tuning fork construction for electronic wrist watches including a substantially U-shaped tuning fork oscillator and a U-shaped magnetic circuit mounted at the end of each tine of said tuning fork, each of said magnetic circuits including a pair

of mounting plates secured to the respective tine and carrying at least one substantially semicircular permanent magnet. A coil is positioned intermediate the mounting plates of both of said magnetic circuits in the path of the flux thereof.

3,751,900

## REMOTE TIME TRANSFER SYSTEM WITH EPOCH PULSE

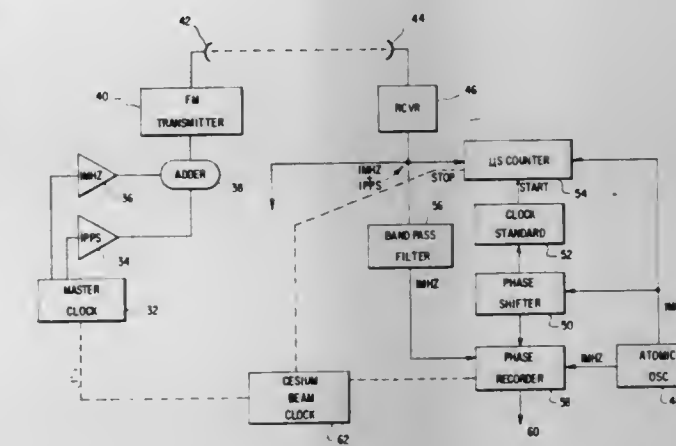
David H. Phillips, and Ruth E. Phillips, both of Accokeek, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 23, 1971, Ser. No. 136,779

Int. Cl. G04c 13/02; H04b 7/00

U.S. Cl. 58—24 R

5 Claims



A passive method and equipment for synchronizing time systems, atomic or precision clocks, by transferring both time and frequency information. The time and frequency information are transmitted by a master station to remote stations which record the phase difference between the remote station's clock and that of the master thereby giving a very accurate measure of the time deviation between the station when the transmission delays are removed.

3,751,901

## TIMEPIECE CALENDAR INFORMATION CHANGING APPARATUS

Heinz Meitinger, Mutlangen, and Joachim Lietze, Eschach, both of Germany, assignors to Bifora-Uhren J. Bidingmaier GmbH, Schwabisch Gmund, Germany

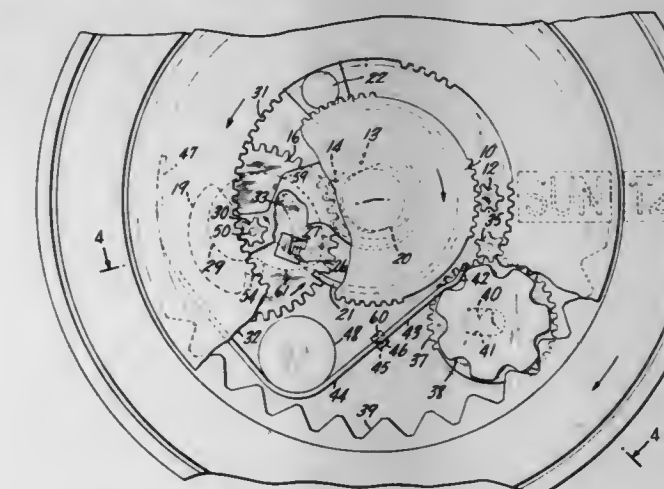
Filed Nov. 21, 1972, Ser. No. 308,508

Claims priority, application Germany, Nov. 26, 1971, P 21 58 728.0

Int. Cl. G04b 19/24

U.S. Cl. 58—58

24 Claims



Apparatus for periodically changing calendar information displayed in a timepiece while holding the information-carrying elements motionless between successive changes to insure that the current day and date are properly displayed. A cam



mechanism connects the element or elements to the time measuring components of the timepiece so as to allow relative movement therebetween during the interval between successive day and date changes but to impart a quick advancing motion to the elements at the end of the interval to display the next succeeding day and date. A positive drive connection is thus always maintained with the information-carrying elements, notwithstanding that they are moved only intermittently. The cam mechanism also permits turning back of the day element for resetting purposes and provision is made for adjustment of the date element independently of the day element.

3,751,902

# APPARATUS FOR INSTALLING INSULATION ON A STAPLE

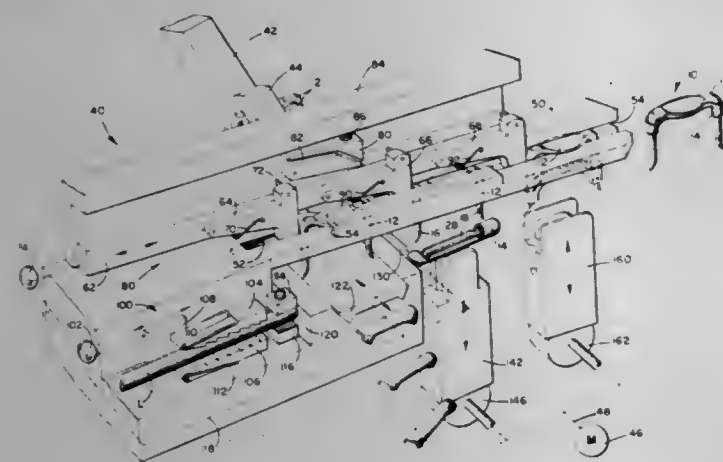
Charles M. Kingsbury, Manchester, and Harold S. Colby, Bloomfield, both of Conn., assignors to Emhart Corporation, Bloomfield, Conn.

Filed Feb. 22, 1972, Ser. No. 227,861

Int. Cl. B21d 53/46

U.S. Cl. 59-71

21 Claims



An apparatus for installing insulation on a U-shaped metallic body member to form an insulated staple. The apparatus receives both the U-shaped body member and a section of tubing, and assembles the tubing on the body member so that the staple can be driven into a supporting object and attach a conduit captured by the staple to the object without having direct physical contact between the metallic body member and the conduit. The apparatus assembles insulating tubing on the U-shaped body member so that the portion of the member which receives the blows of a hammer during a stapling operation is openly exposed and the inner periphery of the U-shaped member adjacent the captured conduit is entirely covered by the walls of the tubing which provides the insulating characteristics. The apparatus is adapted to install a standard plastic tubing on a conventional staple body member and, thereby, produces inexpensive, insulated staples efficiently.

3,751,903

# HYDROSTATIC TRANSMISSION CONTROL DEVICES

Pierre Bauchet, and Jean-Claude Carre, both of Billancourt, France, assignors to Regie National Des Usines Renault, Billancourt (Hauts de Seine), France

Filed Dec. 2, 1971, Ser. No. 204,214

Claims priority, application France, Dec. 4, 1970, 7043696; June 2, 1971, 7119897

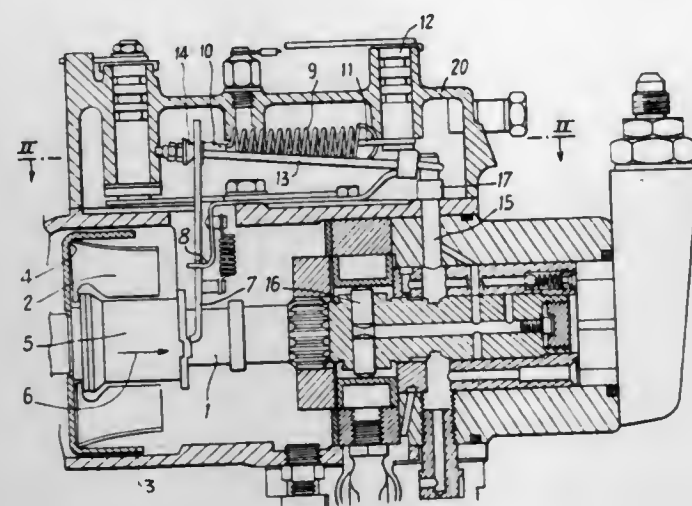
Int. Cl. F02b 41/00

U.S. Cl. 60-19

10 Claims

A control device which comprises a rotary power generator such as a thermal engine of which the momentary torque is subordinate to the position of an adjustment member, and a variable-ratio hydraulic transmission, the position of said adjustment member being measured in a manner known per se by a proximity detector of which the output signal is fed to a

governor assembly controlling the increment or the reduction in the transmission ratio if the engine torque is higher or lower with respect to a reference value.



The control device is applicable notably to farming machines and earthmoving and public work machines, and affords an optimum use of the engine power output by controlling the transmission ratio accordingly.

3,751,904

# HEAT ENGINES

Sigge Rydberg, Konstgutarvagen 24, Johanneshov, Sweden

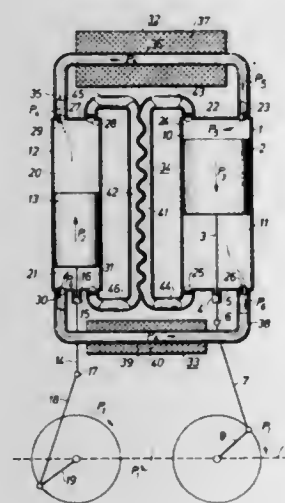
Filed Sept. 23, 1971, Ser. No. 183,210

Claims priority, application Sweden, Sept. 25, 1970, 13082/70

Int. Cl. F02g 1/04

U.S. Cl. 60-24

14 Claims



A gas operated heat engine or heat pump having a master cylinder and an auxiliary cylinder and respectively a master piston and an auxiliary piston. Connecting lines are arranged between the cylinders such that the gas circulates in a system having a gas heater and a gas cooler. The master cylinder has a larger stroke volume than the associated auxiliary cylinder. During a working phase, the upper auxiliary cylinder chamber communicates, via the gas heater, with the upper master cylinder chamber. At the same time, the lower master cylinder chamber communicates, via the gas cooler, with the lower auxiliary cylinder chamber. During a heat-exchange phase of the master cylinder, immediately after the working phase, the upper chamber in the master cylinder communicates, via a first side of a heat exchanger, with the lower chamber in the master cylinder, while at the same time the lower chamber in the master cylinder communicates, via a second side of said heat exchanger, with the upper auxiliary cylinder chamber.

3,751,905

# GAS-STEAM GENERATING APPARATUS

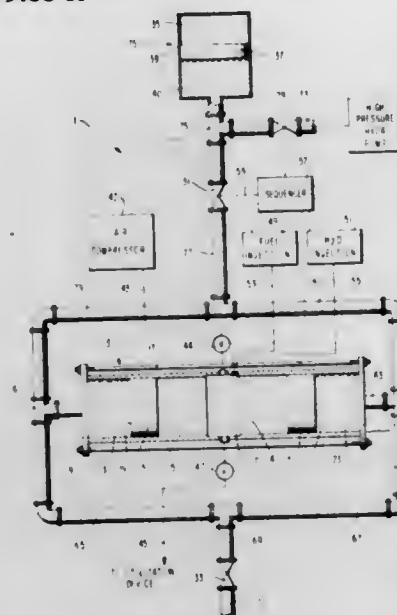
Roe L. McKinley, and Jack M. McKinley, both of P.O. Box 1342, Longview, Tex.

Filed Aug. 26, 1971, Ser. No. 175,304

Int. Cl. F02g 3/02

U.S. Cl. 60-39.05 R

9 Claims



Apparatus for generating a high pressure mixture of steam and combustion gases for utilization at a steam engine or the like. The apparatus includes a cylinder and a pair of opposed pistons movable toward and away from each other in the cylinder. The space between pistons comprises a combustion chamber, and an hydraulic fluid is present behind each cylinder, together with an hydraulic sub-system for regulating the pressure therein. An hydraulic accumulator in the sub-system is pressurized from a high pressure fluid source, the pressurized fluid from the accumulator then being used to drive the pistons together to heat and compress an air charge therebetween. Fuel is injected and ignites, and thereupon water is injected and spontaneously vaporizes to steam. The steam-gas mixture drives the pistons outwardly, displacing the hydraulic fluid to the accumulator. An exhaust valve at the combustion chamber now opens, and the pistons, driven by accumulator pressure, force the gas-steam mixture from the apparatus toward a utilization point.

3,751,906

# POLLUTION CONTROLLER

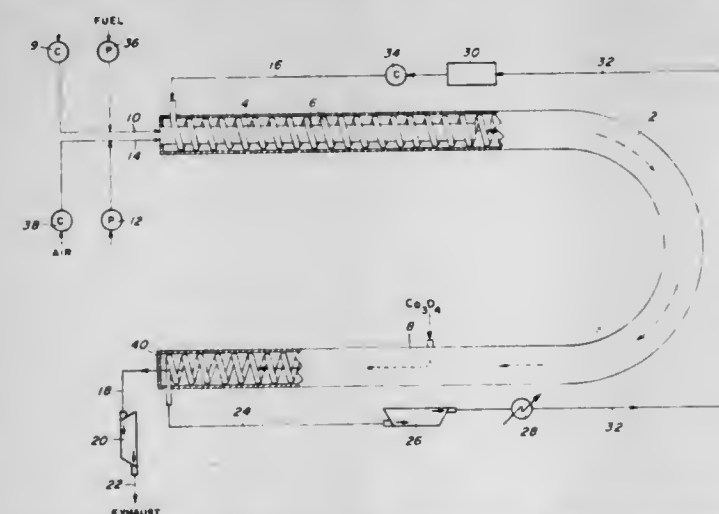
Lawrence E. Leas, Simi, Calif.; Robert L. Leas, and Cecil J. Johnson, both of Columbia City, Ind., assignors to Leas Brothers Development Corporation, Columbia City, Ind.

Continuation-in-part of Ser. No. 2,450, Feb. 11, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 227,768

Int. Cl. F02c 7/30; F23c 9/02

U.S. Cl. 60-39.02

5 Claims



A method for decreasing or eliminating exhaust emissions of nitrogen oxides, unburned hydrocarbons, carbon monox-

ides, or the like. The combustion temperature is maintained at a sufficiently low level to prevent the formation of nitrogen oxides. The exhaust gases are reacted with a metal oxide for the removal of contaminants, unburned hydrocarbons and carbon monoxide.

3,751,907

# INERTIAL AIR CLEANER FOR GAS TURBINE

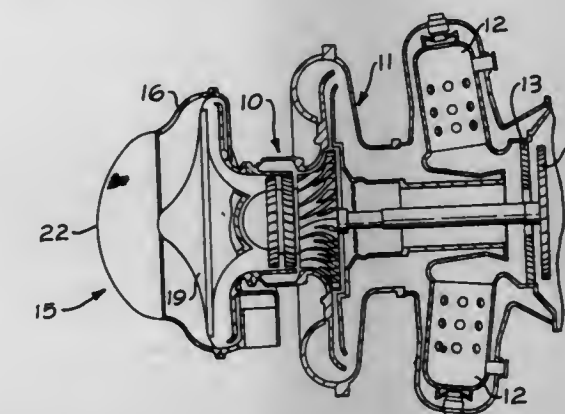
Howard R. Anderson, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 8, 1971, Ser. No. 205,978

Int. Cl. F02g 3/00; B01d 45/12

U.S. Cl. 60-39.09 P

12 Claims



The air intake to a gas turbine comprises a plurality of stationary, spiralled blades mounted therein for centrifugally discharging dirt laden air radially outwardly to a restricted passageway which communicates with a collector. Clean air enters a larger, circumferentially disposed passageway positioned inwardly of the restricted passageway to communicate substantially clean air to the compressor stage of the turbine.

3,751,908

# TURBINE-COMPRESSOR

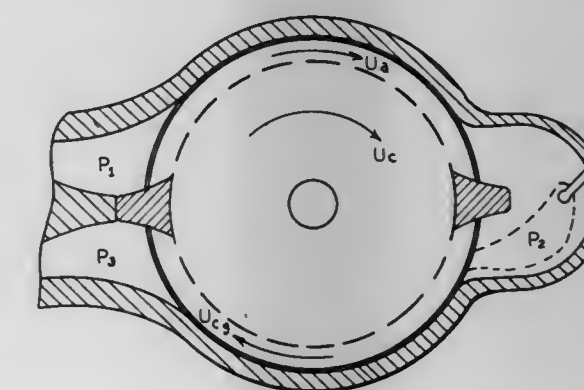
Gene T. Colwell, Tucker, Ga., and Thomas W. Jackson, Arlington, Va., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed June 23, 1971, Ser. No. 155,865

Int. Cl. F02c 3/04; F01d 1/36; F03b 5/00

U.S. Cl. 60-39.43

10 Claims



A turbine-compressor for feeding a gas to a combustion chamber. Within a housing having an inner cylindrical wall, is a rotor having circumferentially grooved passages. One portion of the housing inner cylindrical wall contains the inlet and exhaust sections and somewhat opposite the inlet and exhaust section is the combustion section. At the one, and at the other of these sections is an inner and outer, somewhat radial wall, having an adjustable orientation. These radial walls have teeth which enter the circumferentially grooved passages making a substantially sealed contact with the rotor. These walls and teeth form gas flow guides. The rotor is rotated at over about 1100 feet per second, forcing the gas into the combustion



chamber where burning occurs. The fluid then reenters the casing through a nozzle and expands through the turbine side of the casing.

3,751,909

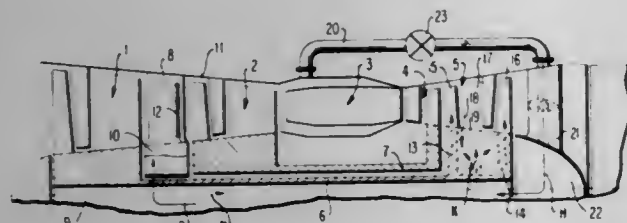
# **TURBOJET AERO ENGINES HAVING MEANS FOR ENGINE COMPONENT COOLING AND COMPRESSOR CONTROL**

Gottfried Kohler, Friedrichshafen, Germany, assignor to MTU Munich GmbH, Munich, Germany  
Filed Aug. 26, 1971, Ser. No. 175,210  
Claims priority, application Germany, Aug. 27, 1970, P 20 42 478.6

Int. Cl. F04d 27/00; F02c 7/12

U.S. Cl. 60—39.17

19 Claims



This invention relates to gas turbine engines, and, more particularly, to multishaft turbojet aero engines having a plurality of compressors and turbines, in which air is bled from one or several compressors in the engine for cooling engine components and for providing a seal between the rotary and stationary assemblies of the several rotor systems, and in which means are additionally provided for compressor control.

3,751,910

# **COMBUSTION LINER**

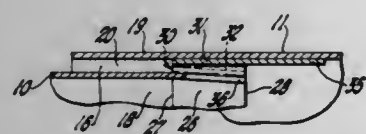
Ralph B. Sweeney, John M. Vaught, and Albert J. Verdouw, all of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 25, 1972, Ser. No. 229,411

Int. Cl. F02c 7/18

U.S. Cl. 60—39.65

3 Claims



A gas turbine combustion liner has successive wall sections which define between them entrances for film cooling air which flows rearwardly along the inside of the liner in the same direction as the combustion products. The forward liner section is telescoped within the rearward one, and the rear portion of the forward liner section is tapered inwardly so that the gap between the two diverges radially in the direction of flow to diffuse the air flowing through the film cooling entrance. The overlapping portions of the liners are joined by a zigzag strip which is tapered to conform to the divergence of the passage walls, alternate lands of the strip being fixed by spot welding and brazing to the inner section and the lands between these having tabs extending from them which are spot welded and brazed to the outer liner section.

# **3,751,911 AIR INLET ARRANGEMENT FOR GAS TURBINE ENGINE COMBUSTION CHAMBER**

Peter De Tartaglia, Munich-Karlsfeld, Germany, assignor to Motoren-Und Turbinen Union Munich GmbH, Munich, Germany

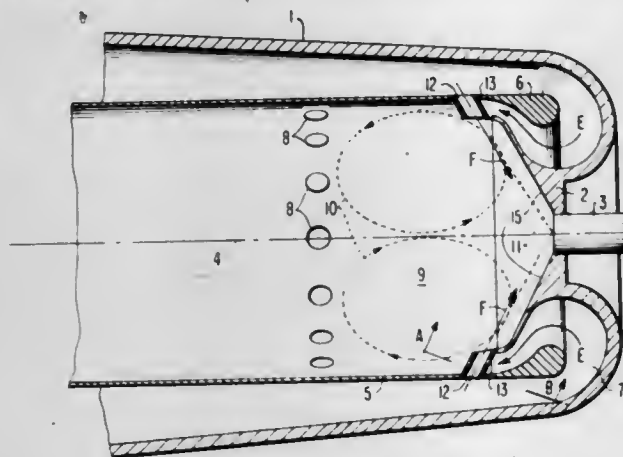
Filed Apr. 13, 1971, Ser. No. 133,492

Claims priority, application Germany, Apr. 18, 1970, P 20 18 641.8

Int. Cl. F02g 3/00

U.S. Cl. 60—39.65

15 Claims



A combustion chamber to gas turbine engines equipped with a flame tube provided with air inlet openings for combustion and mixing air; further air inlet openings are provided in the flame tube at the level of the combustion chamber end wall, through which small quantities of air are adapted to be blown radially inwardly toward the discharge point of the fuel injection nozzle.

3,751,912

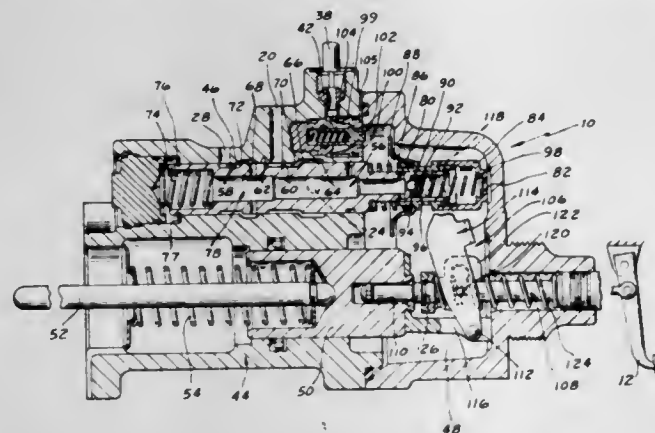
# **HYBRID BRAKE BOOSTER USING CHARGING VALVE** Lloyd G. Bach, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Continuation-in-part of Ser. No. 172,803, Aug. 18, 1971. This application Feb. 10, 1972, Ser. No. 225,166

Int. Cl. F15b 7/00, 13/10; F03c

U.S. Cl. 60—54.5 P

5 Claims



A hydraulic brake booster is disclosed which provides a power assist to the vehicle operator when the operator applies the vehicle's brakes. The brake booster includes a first valve which restricts flow of fluid through the vehicle's hydraulic system to develop back pressure in the latter, thereby providing a source of fluid pressure which is used to operate the booster. A back-up fluid supply is provided which is stored in a conventional fluid pressure accumulator. A second valve within the booster housing is actuated when a malfunction prevents normal development of fluid pressure in the booster. When this occurs, the second valve is opened to communicate the high-pressure fluid stored in the accumulator into the booster to provide the power assist. A charging valve is also provided in the vehicle's hydraulic system which is adapted to

develop back pressure in the latter to communicate at least a portion of the fluid flowing through the system into the accumulator to charge the latter when the hydraulic system functions normally.

3,751,913

# **BARIUM RELEASE SYSTEM**

Thomas O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Beverley W. Lewis, Hampton; Charles S. Stokes, Willow Grove, both of Va.; Edward W. Smith, Exton, and William J. Murphy, King of Prussia, both of Pa.

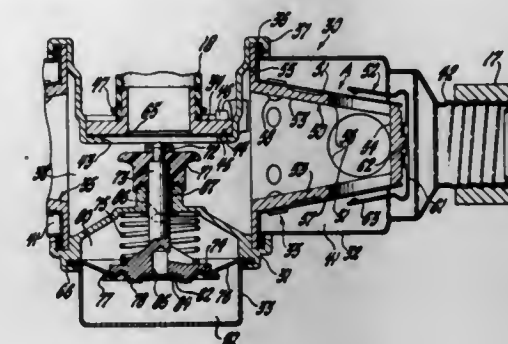
Filed July 31, 1970, Ser. No. 59,892

Int. Cl. C06d 5/06

U.S. Cl. 60—215

2 Claims

A chemical system for releasing a good yield of free barium ( $Ba^0$ ) atoms and barium ions ( $Ba^+$ ) to create ion clouds in the upper atmosphere and interplanetary space for the study of the geophysical properties of the medium.



injection unit while preventing egress of exhaust gases therefrom and a diaphragm actuated control valve to prevent air injection during engine deceleration.

3,751,914

# **PROCESS AND APPARATUS FOR IMPROVING THE REMOVAL OF HARMFUL COMPONENTS FROM ENGINE EXHAUST GASES**

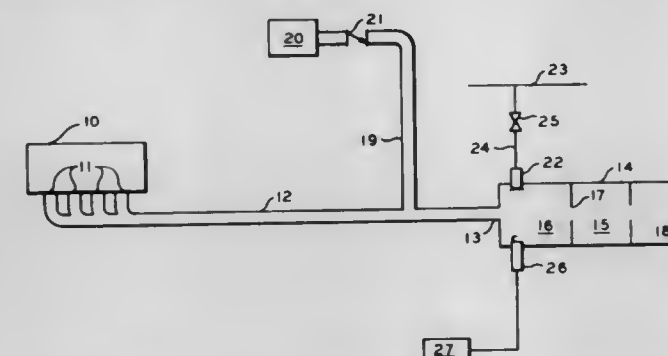
Lyle W. Pollock, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 27, 1971, Ser. No. 183,886

Int. Cl. F02b 75/10

U.S. Cl. 60—284

5 Claims



In the operation of an internal combustion engine, the catalyst bed of a catalytic muffler can be brought more rapidly to its effective operating temperature during the warmup period by combining, just after the engine start-up, the exhaust gases with air and unburned fuel, igniting the mixture and passing the hot combustion products in direct heat exchange with the cold catalyst bed. The process is interrupted when a period of time has elapsed so that a portion of the catalyst bed has been elevated to a temperature sufficiently high so as to be effective.

A catalytic muffler equipped with an interconnected combustion chamber and catalyst-containing chamber may be used for the above purpose. The combustion chamber is provided with an inlet for a mixture of air, supplied by a blower, and exhaust gases, means for injecting unburned fuel as a spray, and means for igniting the combination of air, exhaust gases and unburned fuel. Suitable timing means are provided for initiating and terminating the operation of the blower, injection means and ignition means.

3,751,915

# **AIR INDUCTION VALVE FOR EXHAUST EMISSION CONTROL SYSTEM**

Ernst L. Ranft, Webster, N.Y., and Kenneth R. Pfrengle, Atlanta, Ga., assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 1, 1971, Ser. No. 119,508

Int. Cl. F02b 75/10

U.S. Cl. 60—290

8 Claims

An air induction valve for use in the air injection unit of an exhaust emission control system for an internal combustion

engine in which exhaust pressure pulsations are used to induce air flow through the air injection unit, the air induction valve including check valves to permit the ingress of air into the air

3,751,916

# **EXHAUST GAS PURIFYING SYSTEM FOR USE IN INTERNAL COMBUSTION ENGINE**

Motoyuki Hayashida, Hironobu Inoue, and Kuniyuki Toyama, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan

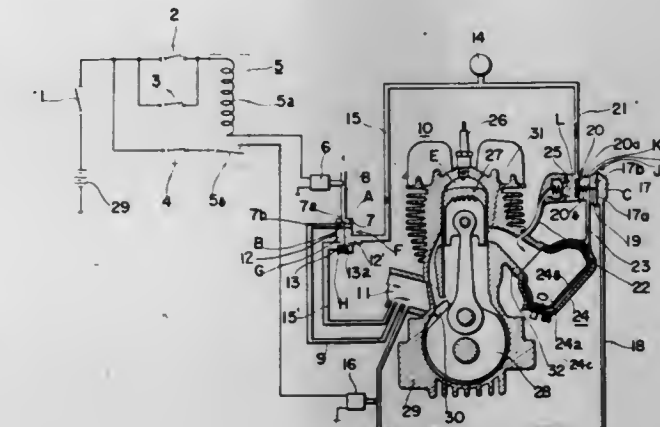
Filed Dec. 29, 1971, Ser. No. 213,565

Claims priority, application Japan, Dec. 29, 1970, 45/135555

Int. Cl. F02b 75/10

U.S. Cl. 60—289

7 Claims



An exhaust gas purifying system for use in an automobile internal combustion engine which comprises a primary air supply device, a secondary air supply device and a switching device for switching the operation of either or both of said primary and secondary air supply devices in response to the operating conditions of the internal combustion engine, whereby the substantial elimination of abnormal combustion occurring in the exhaust system and the emission of the noxious unburned compounds present in the exhaust gas can be advantageously ensured.

3,751,917

# **EXHAUST CHAMBER FOR A MOTOR VEHICLE PROVIDED WITH AN INTERNAL COMBUSTION ENGINE** Giampaolo Garcea, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed Oct. 13, 1971, Ser. No. 188,777

Claims priority, application Italy, Oct. 24, 1970, 7343 A/70

Int. Cl. F01n 3/14

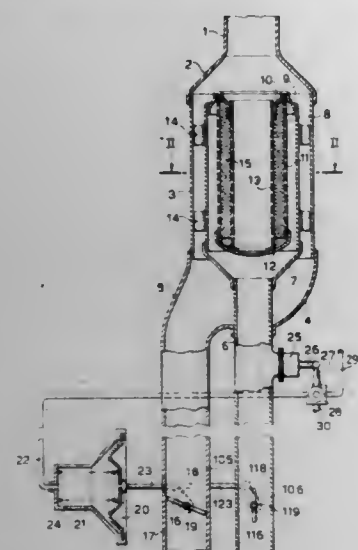
U.S. Cl. 60—288

5 Claims

An exhaust chamber for internal combustion engines of motor vehicles, in which the exhaust gases, before being discharged to the atmosphere, are passed through one of two coaxial chambers, with the inner chamber being filled with a



suitable catalyst for the combustion of unburnt substances, depending on the load condition of the engine, so that the



catalyst is contacted by these exhaust gases only at low working power.

3,751,918

# SECURING ARRANGEMENT OF STATOR SHAFT AT TORQUE CONVERTER HOUSING OF A HYDRODYNAMIC TORQUE CONVERTER

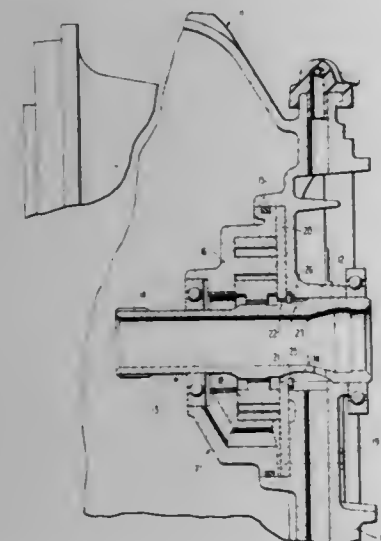
Josef Helmer, Aich, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Nov. 30, 1971, Ser. No. 203,338

Claims priority, application Germany, Dec. 1, 1970, P 20 58 994.0

Int. Cl. F16h 41/24

U.S. Cl. 60—330



Attachment of the stator shaft at a torque converter housing in a hydrodynamic torque converter in which, with the use of a pressure oil pump housing secured at a radial wall of the torque converter housing, the stator shaft is non-rotatably secured at a pump housing side wall which is rigidly clamped between the pump housing and the radial wall.

3,751,919

# HYDRAULIC POWER BRAKE BOOSTER MOTOR

Benjamin Ron, Tel-Aviv, Israel, assignor to Samuel Shiber, Chicago, Ill.

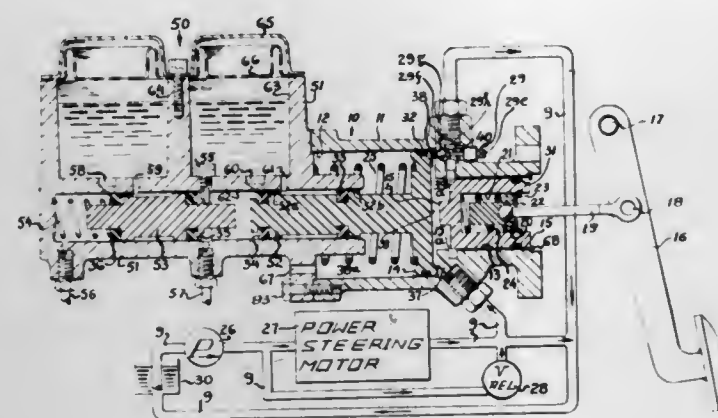
Continuation-in-part of Ser. No. 34,143, May 4, 1970, abandoned. This application Oct. 15, 1970, Ser. No. 80,899

Int. Cl. F15b 7/00, 13/10

U.S. Cl. 60—54.5 P

A hydraulic booster motor adapted to be connected to and to activate a vehicle's master cylinder which is connected to a hydraulic braking system, the booster's valve body defines two

coaxial bores, the large bore carries a power piston which is slidable in it and powertransmittingly connected to the primary piston of the master cylinder, and the small bore carries a reaction piston which is slidable in it and powertransmittingly connected through a linkage to the brake pedal of the vehicle,



the booster valve body, together with the two pistons it carries, define a variable volume into which fluid flow is forced through an inlet port and which leaves the variable volume through an exhaust passage which is restricted when driver pushes the brake pedal with his foot.

3,751,920

# EXHAUST GAS REACTOR

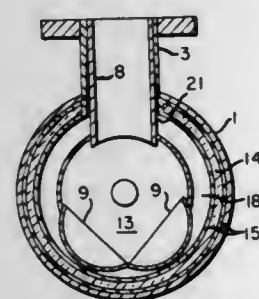
Iver T. Rosenlund, Kennett Square, Pa., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 9, 1971, Ser. No. 206,351

Int. Cl. F01n 3/10

U.S. Cl. 60—282

11 Claims



Hydrocarbon, carbon monoxide, and nitrogen oxide pollutants emitted by post oxidation type exhaust gas reactors can be substantially reduced by redirecting the exhaust gases as they enter the reactor through the use of deflectors of special design and the optional use of improved means for directing the gases onto said deflectors.

3,751,921

# EXHAUST SILENCER FOR INTERNAL COMBUSTION ENGINES

Folke Ivar Blomberg, 18140 Lidings, 4 Duvstigen, and Per Gunnar Brynge, 561 00 Huskvarna, Varpehus, both of Sweden

Filed May 10, 1971, Ser. No. 141,752

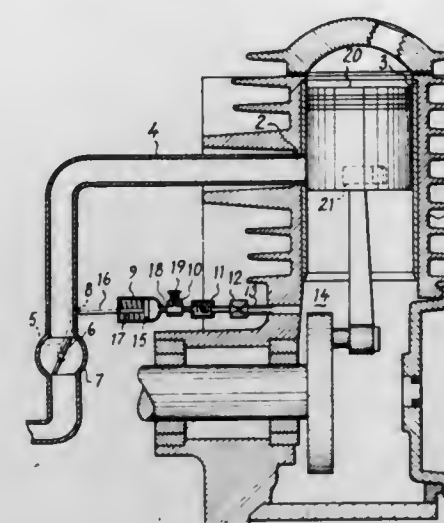
Int. Cl. F01n 1/18

U.S. Cl. 60—324

4 Claims

A system for reducing the sound level of engine exhaust gases and arranged to be actuated in dependence of one of the physical magnitudes produced by the engine, such as gas pressure, engine temperature and like magnitudes. The system is provided with a baffle means located on the exhaust side of

the engine and baffle actuating means disposed between the baffle means and the engine and adapted to adjust the setting



of the baffle means in response to variations in said physical magnitude.

3,751,922

# HYDRAULIC TRANSMISSION

Harold L. Cottrell, 4345 Brookline Ct., Columbus, Ohio

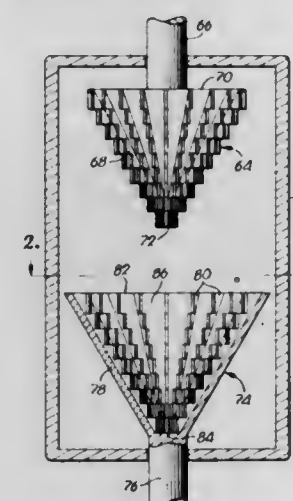
Division of Ser. No. 839,158, July 7, 1969, Pat. No. 3,613,366.

This application Sept. 13, 1971, Ser. No. 179,842

Int. Cl. F16h 41/04

U.S. Cl. 60—349

1 Claim



A hydraulic transmission unit including, within a sealed, fluid filled container, a pair of shafts rotatably mounted in the container and extending therefrom, a conical male impeller on one of the shafts and a conical female turbine on the other shaft, the shafts being relatively shiftable axially away from an initial, substantially spaced apart position into a position wherein the impeller and the turbine are in closer proximity than in the initial position.

3,751,923

# VALVE CONTROLLED HYDRAULIC COUPLING

John E. Becker, Bowmanville, Ontario, Canada, assignor to Eclipse Consultants Limited, Oshawa, Ontario, Canada

Filed Feb. 11, 1972, Ser. No. 225,514

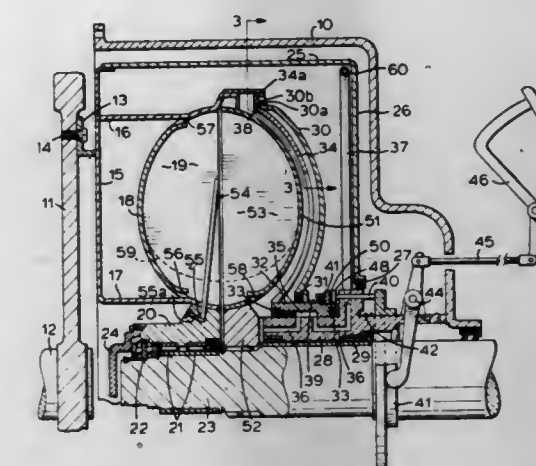
Int. Cl. F16h 41/20

U.S. Cl. 60—359

15 Claims

A hydraulic coupling is provided with a reservoir compartment connected to the working compartment via a valve controlled by the operator in order to control the torque transmission capacity of the coupling. This valve comprises a spoked dish member which is mounted for movement along the coupling axis and is movable by the operator's control to open valve orifices disposed at the end of the spokes and thereby permit the working liquid to flow by centrifugal action from

the working compartment into the reservoir compartment. Working liquid in the reservoir compartment is returned to the working compartment by a scoop tube including a valve device that is closed as the first mentioned valve is opened. The coupling may also include another reservoir chamber into



which working fluid empties automatically upon existence of a stall condition. A vent may be provided from the exterior of the coupling to a portion of working circuit where there is no circulation of fluid, thereby avoiding any pressure build up under stall conditions in the interior of the coupling, and permitting lighter construction for the coupling.

3,751,924

# HYDROSTATIC TRANSMISSIONS

Peter Henry Brown, and Derek Ivor Webb, both of Cheltenham, England, assignors to Hydro-Mite Limited, Lansdown Industrial Estate, Cheltenham, Gloucestershire, England

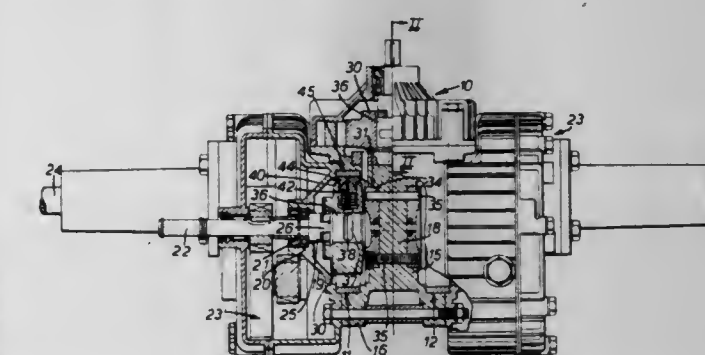
Filed Oct. 5, 1971, Ser. No. 186,753

Claims priority, application Great Britain, Oct. 8, 1970, 47,882/70

Int. Cl. F15b 39/16

U.S. Cl. 60—485

3 Claims



A hydrostatic transmission comprising a rotary radial piston pump combined with a rotary radial piston motor, each rotary unit comprising a rotary cylinder member mounted on a non-rotating pintle having fluid ports formed therein, the pintles of the two rotary units being separately formed and attached to a common housing or support.

3,751,925

# FLOATING OIL CONTAINMENT BOOM

Robert K. Thurman, Linwood, Wash., assignor to Merritt Division of Murphy Pacific Marine Salvage Company, New York, N.Y.

Filed Oct. 7, 1970, Ser. No. 78,801

Int. Cl. E02b 15/04

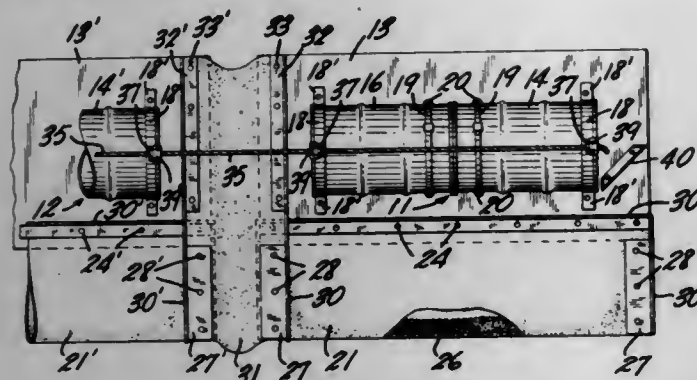
U.S. Cl. 61—1 F

9 Claims

A floating boom for containing oil and the like spilled on a body of water comprises a plurality of interconnected, floating units each supporting a rigid vertical barrier with a part above water and a part submerged. The barriers are interconnected



by panels of flexible waterproof material of substantially the same vertical extent as the barriers and both the barriers and the interconnecting panels have flexible, waterproof skirt por-



tions depending below the barriers. Each of the units is secured to a tow line by means of which the boom may be towed to a desired location and there anchored in place.

3,751,926

# METHOD OF ERECTING WALL STRUCTURES IN MINE WORKINGS

Rudolf Muller, Friedrichthal, and Herbert Zenner, Siersburg, both of Germany, assignors to Gebr. Knauf Wesdeutsche Gipswerke Saarbergwuerke Aktiengesellschaft, Iphofen, Germany

Filed Nov. 12, 1970, Ser. No. 89,112

Claims priority, application Germany, Nov. 14, 1969, P 19 57 263.5

Int. Cl. E02d 3/12

U.S. Cl. 61—36 R

28 Claims

A gypsum cement mixture which can be pumped underground for forming wall structures in mine workings comprising a material improving the flow properties of the gypsum cement-water mixture, an additive endowing hydrophobic properties, a colloid which is at the most weakly ionogenic, and a latently hydraulic material.

3,751,927

# APPARATUS FOR ENTRENCHING SUBMERGED ELONGATE STRUCTURES

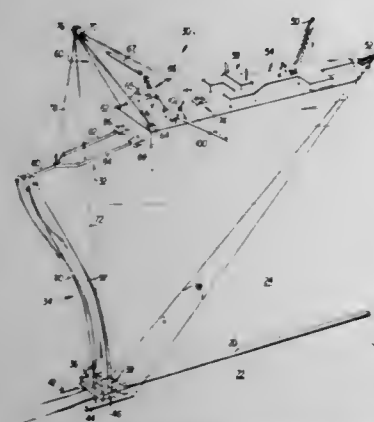
Joseph Charles Perot, Jr., Natchitoches, La., assignor to Brown & Root, Inc., Houston, Tex.

Filed Feb. 22, 1972, Ser. No. 227,844

Int. Cl. E02f 5/02; F16l 1/00

U.S. Cl. 61—72.4

19 Claims



An apparatus for entrenching submerged elongated structures such as pipelines and the like, including a skid frame having port and starboard pontoon runners with a box frame operable to bridge the pontoon runners over a pipeline to be entrenched. The box frame includes a first and second set of upper and lower pontoon spanning supports. Each of the supports includes inwardly facing port and starboard guide rails. Vertically and horizontally adjustable port and starboard cutter and eductor heads are rigidly supported from the box frame guide rails and extend in close proximity to the surfaces of a pipeline to be entrenched. The port and starboard cutter

and eductor heads both have a generally vertical-slant-vertical configuration so that the cutter and eductor heads extend along the lateral surfaces of the pipeline, slope beneath the pipeline and extend vertically beneath the pipeline. The head configuration enables the apparatus to rapidly and efficiently cut a trench having generally vertical side walls within the bed of the body of water and educt the loosened soil or detritus material to permit the pipeline to descend within a narrow walled trench within the bed of the body of water.

3,751,928

# VIBRATORY PLOW

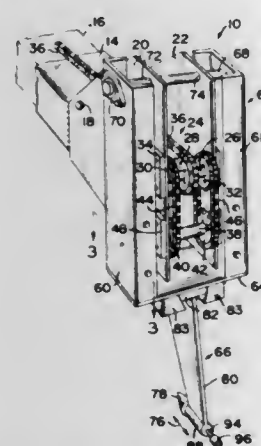
Robert E. Hughes, 5609 Northfield Rd., Bethesda, and Emmert K. Walker, 335 Scott Dr., Silver Springs, both of Md.

Filed Apr. 26, 1971, Ser. No. 137,141

Int. Cl. F16l 1/00; E02f 5/02; A01b 3/64

U.S. Cl. 61—72.5

13 Claims



A vibratory plow adapted to be removably mounted to a prime mover in the form of a conventional digger or trencher such that the plow is driven off of the main drive sprocket or power takeoff of the prime mover thereby eliminating any necessity for an auxiliary power takeoff. The plow comprises a hollow mounting shaft adapted to be telescopically arranged relative to the tail stock of the prime mover and further including a driving assembly which in turn is movably connected to a yoke assembly. Driving of the drive assembly by a drive chain causes reciprocal or oscillating movement of the yoke assembly and the tunnel forming assembly attached thereto, in a substantially horizontal direction. A tunnel is thereby formed by a bullet and interconnecting blade member positioned in operative relation below the surface of the ground. Means to connect a cable or pipe being pulled by the plow is movably connected to the tunnel forming assembly.

3,751,929

# METHOD OF SUPPORTING EXPOSED GROUND OR ROCK

Jean P. Bernold, Walenstadt, Switzerland, assignor to Hans Walter Pfeiffer, a part interest

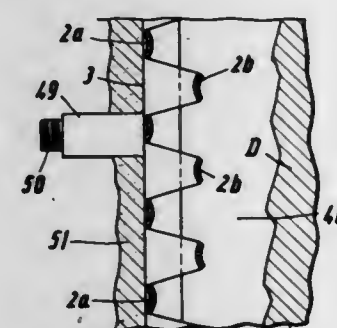
Division of Ser. No. 798,747, Feb. 12, 1969, Pat. No.

3,601,945. This application Aug. 11, 1971, Ser. No. 170,770

Int. Cl. E04c 2/42; E21d 5/00

U.S. Cl. 61—42

1 Claim



A method of supporting exposed ground or rock including the steps of establishing a formwork of special corrugated

panel units in a spaced relationship with the exposed ground or rock and back-filling the space between the ground or rock and the formwork with sprayed concrete is disclosed herein.

3,751,930

# ARTICULATED MARINE STRUCTURE WITH PREPOSITIONED ANCHORING PILES

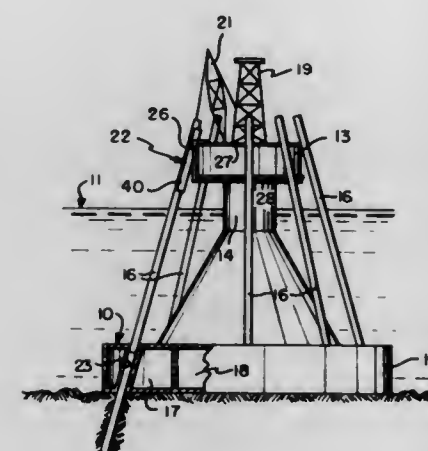
George E. Mott, and James P. Wilbourn, New Orleans, La., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,074

Int. Cl. E02b 17/00; E02d 11/00

U.S. Cl. 61—46.5

2 Claims



The invention relates to a marine structure for use in an offshore body of water where piling is required to hold the structure in place. It relates in particular to a floatable marine structure which is sufficiently buoyant to be floated to an offshore working site carrying a plurality of positioning piles thereon. At the site at least a part of the structure is ballasted to sink to the ocean floor, the prepositioned piles are thereafter sequentially driven into the substratum.

3,751,931

# PILING

Stanley Merjan, 16 Beacon Dr., Port Washington, N.Y.

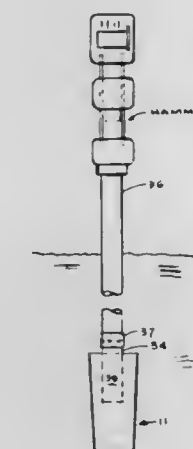
Continuation-in-part of Ser. No. 97,997, Dec. 14, 1970. This

application Mar. 17, 1972, Ser. No. 235,790

Int. Cl. E02d 5/30, 5/48; E08d 5/50

U.S. Cl. 61—53

20 Claims



A concrete pile fitted with a special slightly tapered concrete tip of larger area. The tip has a central stub with an open socket for receiving concrete poured in after the pile is in place.

3,751,932

# RECOVERY AND REPAIR OF OFFSHORE PIPELINES

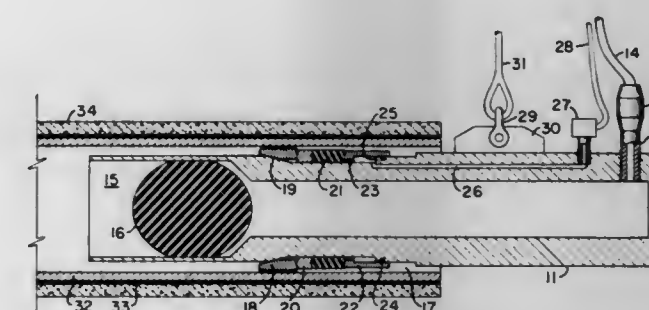
Jamie F. Matthews, Jr., Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.

Filed Feb. 16, 1972, Ser. No. 226,778

Int. Cl. F16l 1/00, 55/12

U.S. Cl. 61—72.1

20 Claims



The end of an underwater pipeline is recovered from the bottom of a body of water by inserting a pigging element into the end of the pipeline, injecting a gas into the end of the line behind the pigging element until a section of the line sufficiently long to reach to the surface of the body of water has been voided of liquids, and thereafter lifting the end of the line to the water's surface. Apparatus which is particularly useful in such recovery operations includes a housing closed at one end and open at the other, a gas inlet in the housing near the closed end, means near the open end for engaging the end of a pipe and forming a seal therewith, a pigging element in the housing between the gas inlet and open end, and means for attaching a cable to the end of the pipeline for lifting the pipeline to water's surface.

3,751,933

# METHOD OF AIR SEPARATION INTO OXYGEN AND ARGON

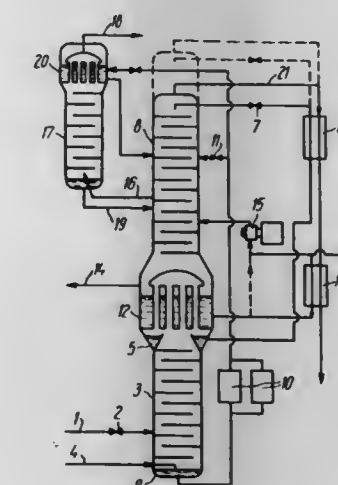
Georgy Matveevich Balabaev, ulitsa Shevchenko, 64-A, kv. 56; Viktor Sergeevich Boiko, 20106 I Slobodskaya ulitsa, 9-A, kv. 13; Viktor Matveevich Malchenko, 20109 ulitsa Spassky Spusk 20, korpus 7, kv. 11; Stepan Nikolaevich Misarenko, ulitsa Novo-Sportivnaya, 65, kv. 81; Luvish Avrum-Abovich Tsitrin, ulitsa Krylova, 12, 4, kv. 25, all of Nikolaev; Evgeny Ivanovich Borzenko, ulitsa Bukharestskaya, 31, korpus 3, kv. 114, and Georgy Anatolevich Golovko, Pushkin, Bulvar A. Tolstogo, 16, kv. 129, both of Leningrad, all of U.S.S.R.

Filed July 15, 1971, Ser. No. 162,792

Int. Cl. F25j 3/02, 3/03, 3/08

U.S. Cl. 62—29

1 Claim



A method of air separation into oxygen and argon in double rectification columns with the drawing off of liquid or gaseous oxygen and simultaneous obtaining of argon by withdrawing a fraction of raw argon from one of the plates of the upper recti-



lying column, with a portion of the liquid oxygen flow being returned to said rectifying column onto a plate thereof that is located below the raw argon fraction withdrawal zone whereby a forced circulation flow of liquid oxygen is created.

3,751,934

# CONCENTRATING KRYPTON AND XENON IN AIR SEPARATION BY LIQUID OXYGEN WASH

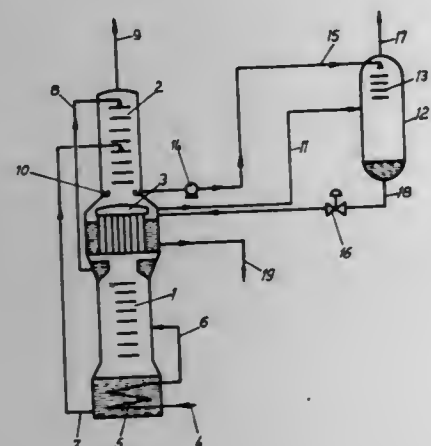
Klaus Frischbier, Mainstrasse 14, Hanau, Germany  
Filed Nov. 8, 1971, Ser. No. 196,447

Claims priority, application Germany, Nov. 10, 1970, P 20 55 099.6

Int. Cl. F25j 3/02, 3/03

U.S. Cl. 62-41

8 Claims



In air separation, oxygen containing krypton, xenon and hydrocarbons is passed from the rectifying column to a separator where as a rising gas it is washed with a controlled downflow of liquid oxygen drawn from above the sump liquid in the column. The controlled washing permits gaseous oxygen and some methane to leave the separator top while krypton and xenon are trapped in the wash liquid which returns from the separator bottom to the column sump. Thus enriched sump liquid is withdrawn for further processing to recover krypton and xenon.

3,751,935

# METHOD AND SYSTEM FOR CREATING AND MAINTAINING AN ICE SLAB

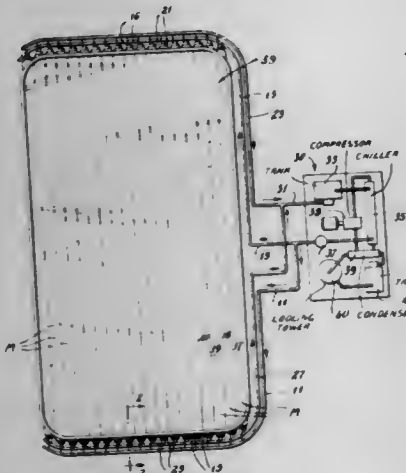
Calvin D. MacCracken, Fort Lee, and Helmut J. Schmidt, Oakland, both of N.J., assignors to Calmac Manufacturing Corporation, Englewood, N.J.

Filed Dec. 2, 1971, Ser. No. 204,112

Int. Cl. A63c 19/10

U.S. Cl. 62-75

16 Claims



Method and system for creating and maintaining an ice slab for skating purposes, or an ice chute for a toboggan slide, or for maintaining a layer of snow for skiing. The system includes pluralities of small diameter flexible plastic tubes arranged in

grids in portable mats with the tubes placed close to one another and arranged with each input or supply tube portion closely adjacent to an outlet or return tube portion providing an advantageous uniform temperature effect at a small distance above the tubes. A low temperature anti-freeze liquid is pumped through the tubes to provide the desired uniform cooling effect, and the portable mats each include a pair of sub-headers which can conveniently be coupled together with main headers to form a large grid the size of an ice skating rink, or a ski slope. For a rink these small flexible tubes may thereafter be covered with a thin layer of sand, or other protective material, and water is then introduced into the rink and is frozen by the low temperature refrigerant passing through the various tubes. By virtue of the small diameter of the tubes, ethylene glycol or other similar low temperature anti-freeze liquid (which would be very expensive with conventional systems) can economically be used to practice the invention disclosed herein. In the case of a ski slope, the small flexible tubes are covered with a thin layer of sand or dirt, and the circulation of the low temperature refrigerant serves to maintain, i.e. to "hold", a skiable layer of snow (either natural or man-made snow or a mixture of them) on the ski slope during thawing periods when the snow normally would melt away.

3,751,936

# OIL SEPARATOR APPARATUS AND METHOD FOR LOW MISCIBILITY REFRIGERANT SYSTEMS

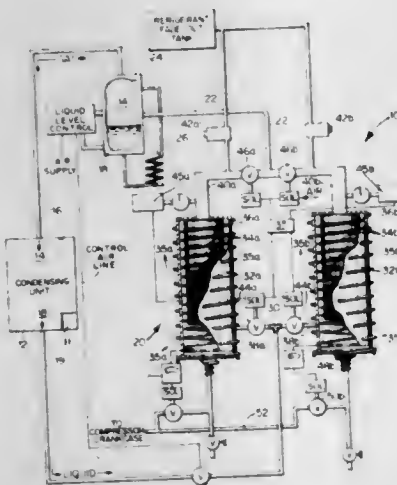
Joseph R. Simard, 327 Wharf Rd., Pelham, N.H.

Filed Jan. 18, 1972, Ser. No. 218,695

Int. Cl. F25b 43/02

U.S. Cl. 62-84

7 Claims



A process for removing oil contamination from refrigerant in a refrigeration system utilizing an oil lubricated, reciprocating piston type condenser unit. The system is characterized by use of heat-cleanable filter tanks mounted in parallel and forming alternating means for scavenging oil from liquid refrigerant, and heating the oil to cause its flow from the filter tank. A cycle timer initiates the defrost cycle at predetermined intervals, such as weekly.

3,751,937

# WARP KNITTING MACHINE HAVING EXHAUSTED SPOOL DETECTOR AND SPOOL THEREFOR

Rudolph G. Bassist, Lancaster, Pa., assignor to Travis Mills Corp., New York, N.Y., a part interest

Filed Dec. 13, 1971, Ser. No. 207,494

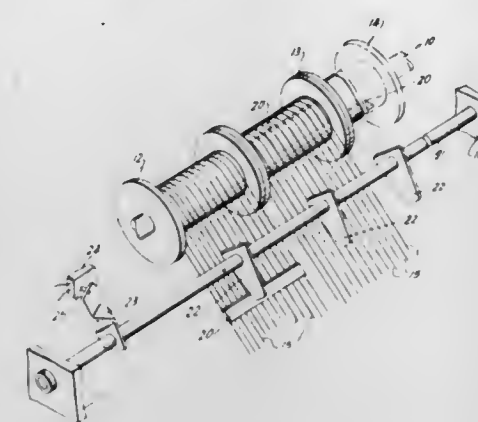
Int. Cl. D04b 23/00, 27/00

U.S. Cl. 66-86 A

9 Claims

The warp beam of a knitting machine carries a spool of yarn from which a plurality of threads extend to the knitting instrumentalities of the machine. A means, such as a strip of tape adhesively secured to the threads, extends transversely across at least two adjacent threads at a point close to the ends of the threads which are first wound on the spool. Sensing means, such as an element arranged between the two threads in the

path of movement of the tape, detects the tape and in response thereto a switch is operated to terminate operation of the



machine. Each spool on the warp beam is furnished with a tape, and a separate sensing means is arranged to detect the tape of each spool.

3,751,938

# APPARATUS FOR CONTROLLING LOW-TEMPERATURE INSTALLATIONS

Otto Breitenbach, Mainz-Kostheim, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

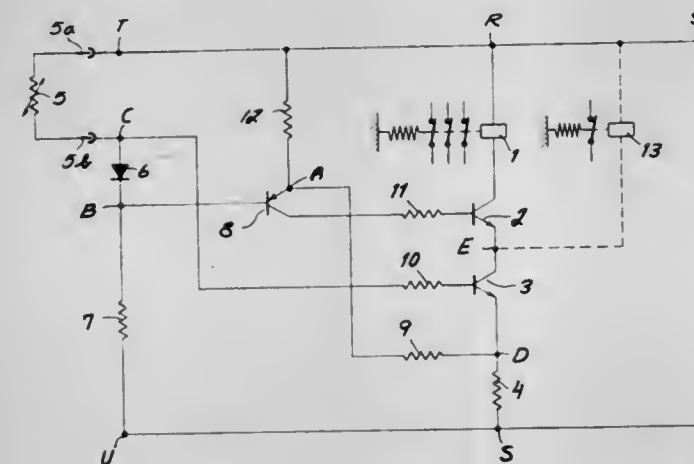
Filed Feb. 28, 1972, Ser. No. 229,863

Claims priority, application Germany, Feb. 26, 1971, P 21 09 309.4-13

Int. Cl. F25b 49/00

U.S. Cl. 62-126

9 Claims



A system for controlling low-temperature installations, such as refrigeration units for maintaining foods and other perishable items at low temperatures, wherein the cooling system is regulated by a thermostat having a transistor and relay arrangement for preventing cut-off of the cooling unit upon failure of the thermostat circuitry.

3,751,939

# WEIGH BAR SWITCH ARRANGEMENT FOR AUTOMATIC ICE MAKER

James A. Bright, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 1, 1972, Ser. No. 302,743

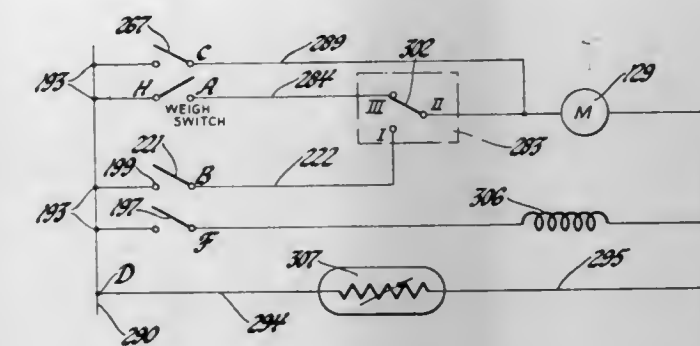
Int. Cl. F25c 5/18

U.S. Cl. 62-137

4 Claims

A weigh switch to stop production of an automatic ice maker whenever the ice collecting bin is either filled with ice pieces or removed from its carrier means. An electrically conductive bin weigh bar is pivoted on a terminal post to provide a first lever arm loaded by the carrier means and a second counterbalancing lever arm which pivots the bin weigh bar from a first open circuit position to a second ice maker energizing position electrically contacting an overlying conductive

pivoted ice weigh bar when the bin is inserted in the carrier means and the combined weight of the bin and its contents is below a predetermined amount. In response to the weight of a



machine. Each spool on the warp beam is furnished with a tape, and a separate sensing means is arranged to detect the tape of each spool.

filled bin, the bin and ice weigh bars are pivoted in unison to a third open circuit position thereby terminating the production of ice pieces.

3,751,940

# REFRIGERATION SYSTEM PRV MOTOR CONTROL SYSTEM

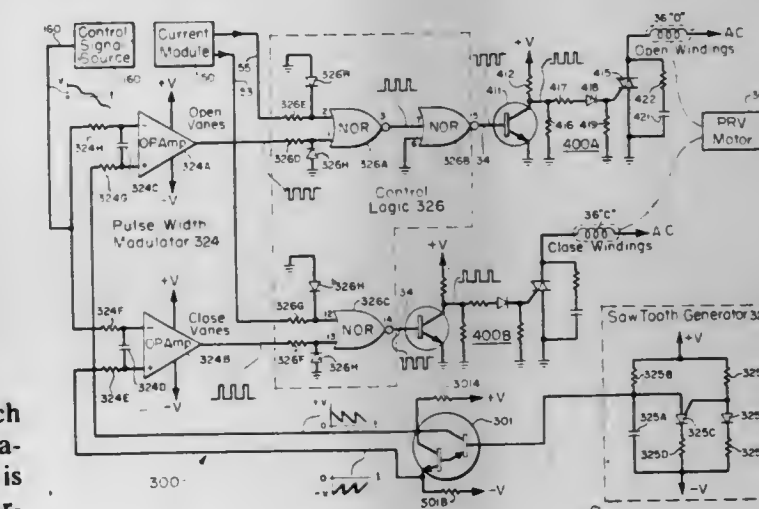
Dean K. Norbeck, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sept. 17, 1971, Ser. No. 181,407

Int. Cl. F25b 1/00

U.S. Cl. 62-217

4 Claims



An improved system for automatically energizing from a.c. mains the PRV motor of a refrigeration system over an extensive range of average (long time constant) rates in response to a control signal is disclosed employing a sawtooth wave generator of a frequency two orders of magnitude below the a.c. mains frequency, a d.c. control signal source, a comparator to compare the control signal and the sawtooth signals and produce a d.c. output pulse at the sawtooth frequency of greater or lesser width (0° to 360°) depending on their relationship. A transistor switch is driven from the comparator to operate a Triac for the pulse period and energize from the a.c. mains the windings of the motor. Two comparators are arranged to alternatively produce pulses depending on whether the control signal is above (e.g. +1 to 13v) or below (e.g. -1 to -13v) a desired "deadband" (+1 to -1). One comparator's output energizes "open" motor winding while the others output energizes "close" winding.



3,751,941

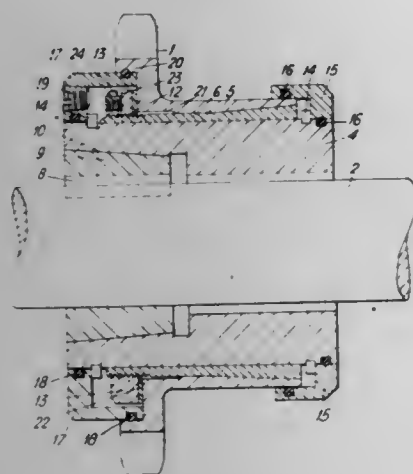
**TORQUE-LIMITING CLUTCH**

Rodney Allen Stiff, Bundaberg, Australia, assignor to Massey-Ferguson (Australia) Limited, Victoria, Australia  
 Filed Sept. 20, 1971, Ser. No. 181,683  
 Claims priority, application Great Britain, Sept. 25, 1970, 45,717/70

Int. Cl. F16d 7/02

U.S. Cl. 64—30 E

3 Claims



A torque limiting clutch formed of concentric friction members, upon overload, one member slips relative to the other, generating heat causing the elements to expand. The outer clutch member expands more rapidly than the inner resulting in a reduction of the frictional forces between the members and a corresponding reduction in torque.

3,751,942

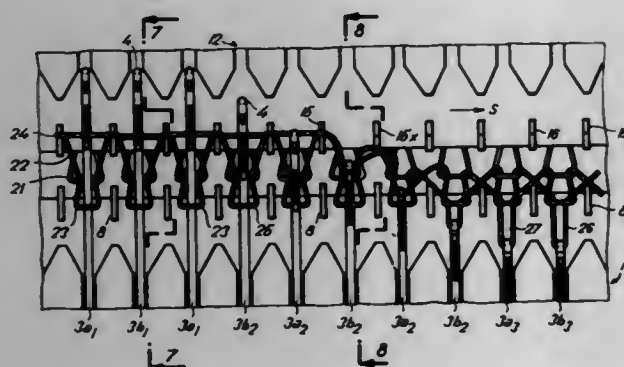
**METHOD OF KNITTING RUN-PROOF FABRIC**

Pavel Uhlir, Trebic, Czechoslovakia, assignor to Elitex, Zavody textilního strojírenství generalni, Liberec, Czechoslovakia  
 Filed Aug. 21, 1970, Ser. No. 65,978  
 Claims priority, application Czechoslovakia, Sept. 3, 1969, 6013/68

Int. Cl. D04b 9/10, 15/06

U.S. Cl. 66—14

1 Claim



Run-proof courses are formed by providing alternate needles of a circular knitting machine with loops formed of independent yarns and thereafter pulling one of said yarns from said alternate loop and interlooping the pulled yarn through an adjacent loop.

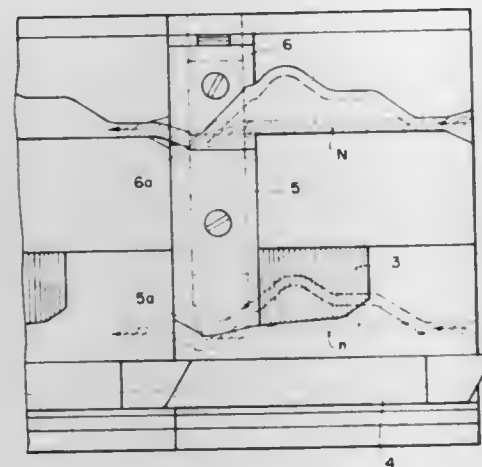
3,751,943

**APPARATUS FOR CONTROLLING THE JACKS AND NEEDLES OF CIRCULAR KNITTING MACHINES**

Alfred Schindele, Harthausen, Germany, assignor to C. Terrot Sohne, Maschinenfabrik, Stuttgart-Bad Cannstatt, Germany  
 Filed Sept. 9, 1970, Ser. No. 70,866  
 Int. Cl. D04b 15/68, 15/32

U.S. Cl. 66—42

3 Claims



Apparatus for the control of jacks and needles of a circular knitting machine with a needle track. The machine has gradually sloping cam means disposed around the cylinder of the circular knitting machine which position the non-knitting needles, such cam means being so arranged that the needle butt or cam follower is indirectly moved by a gently sloping portion of the cam means, without having the needle butt of the non-knitting needles engage the steepest portion of the curve of the stitch cam mechanism; every needle is provided with a swinging jack having a jack butt or cam follower, and the retracting of the non-knitting needles is accomplished by the interaction of the gently sloping portion and the jack butt or cam follower. The apparatus results in a greatly longer life of the needles by avoiding impacts between the needle butts and the steepest portion of the stitch cam mechanism.

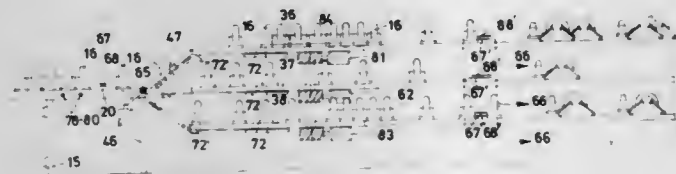
3,751,944

**FLAT KNITTING MACHINE WITH MULTIPLE CARRIAGES**

Erich Krause, Bopfinger, Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber KG, Westhausen, Germany  
 No Drawing. Filed June 8, 1971, Ser. No. 151,088  
 Int. Cl. D04b 7/04

U.S. Cl. 66—64

10 Claims



Several flat needle beds of a knitting machine are arranged along a loop-shaped path in which many knitting carriages travel in a continuous row in the same direction. Individual carriages are switched automatically from the path to a holding area and returned from the holding area to the loop-shaped path as may be required for producing a desired pattern and for replenishing yarn on the carriage.

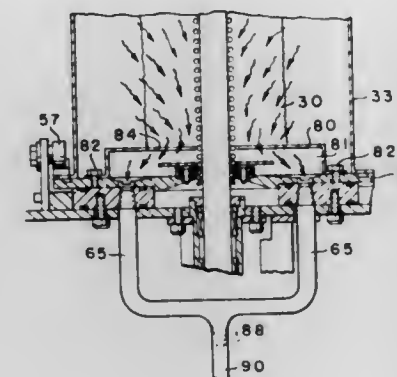
3,751,945

**APPARATUS FOR BULKING YARN IN PACKAGE FORM**

Paul W. Eschenbach, 613 Pinehill Dr., Jerry N. King, 424 S. Fairview Ave., and Dennis L. Riddle, 1458 E. Dover Rd., all of Spartanburg, S.C.  
 Division of Ser. No. 181,069, Sept. 16, 1971. This application  
 Sept. 15, 1972, Ser. No. 289,248  
 Int. Cl. D06c 1/00

U.S. Cl. 68—5 C

3 Claims



Apparatus to bulk yarn in package form which employs a dome in which is placed the package of yarn to be bulked by a supply of steam supplied from a nozzle which moves up through a plenum chamber to supply the steam to the interior of the dome.

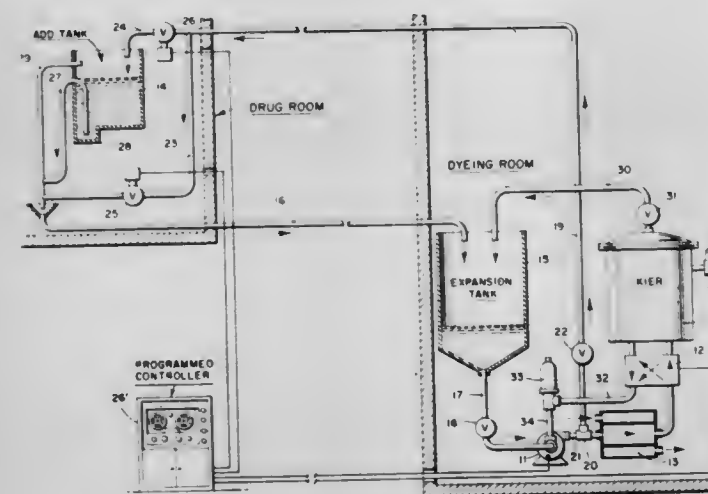
3,751,946

**PRESSURE RELIEF SYSTEM FOR DYEING APPARATUS**

Jefferson L. Claiborne, Chattanooga, Tenn., assignor to Dixie Yarns, Inc., Chattanooga, Tenn.  
 Continuation of Ser. No. 764,169, Oct. 1, 1968, abandoned.  
 This application Feb. 1, 1971, Ser. No. 111,614  
 Int. Cl. B05c 8/02

U.S. Cl. 68—12 R

3 Claims



An improved package yarn dyeing system adapted for operation above the boiling point including a dye chemical add tank receiving a predetermined amount of diluting bath liquid before it is siphoned into an expansion tank and fed from there to the pump inlet feeding a kier through a heat exchanger. Further bath dilution and line washing as well as are achieved by an add tank bypass line through which bath liquid is circulated. The add tank fill line emanates from the pump outlet and the kier dome is tapped by an additional expansion tank feed line to enhance and speed up dilution uniformity. The part of the equipment for circulating the dye back and forth through the packages may be isolated from the rest of the system and is protected against pressure damage by an expansion chamber containing a small volume of entrapped air.

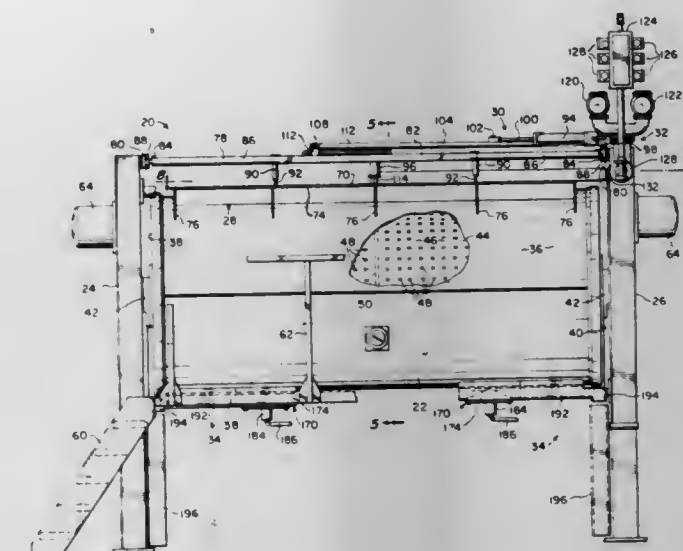
3,751,947

**COMMERCIAL LAUNDRY MACHINE**

Alex Toth, Lincolnwood, Ill., assignor to Ellis Corporation, Chicago, Ill.  
 Filed Aug. 5, 1971, Ser. No. 169,376  
 Int. Cl. D06f 39/14

U.S. Cl. 68—210

9 Claims



A commercial laundry machine includes two spaced end frames supporting a generally cylindrical washer casing for rotation around its central axis. A casing door supported by the frame is movable to a closed position against the casing during washing operations and to a remote position spaced from the casing for loading and unloading of laundry. Fluid is introduced into the casing through a conduit in the casing door. Fluid from the casing is discharged from discharge valves into discharge conduits on the casing extending laterally to empty into fixed chutes supported by the end frames.

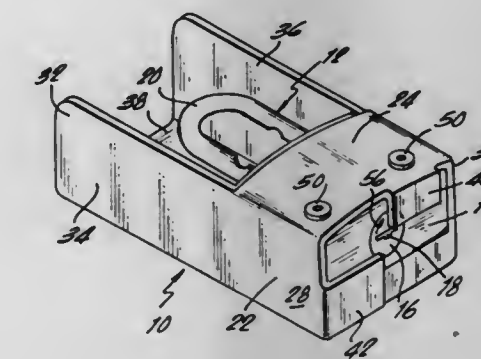
3,751,948

**PROTECTIVE LOCK CASING**

Sheldon Klein, 333 E. 55th St., New York, N.Y.  
 Filed Oct. 6, 1971, Ser. No. 187,092  
 Int. Cl. E05b 67/04

U.S. Cl. 70—55

2 Claims



A protective casing for a lock having a body provided with a barrel and a shackle. The casing includes a sheath for surrounding the lock and for surrounding the shackle on three sides, so as to prevent access of cutters, snippers, and the like for breaking the shackle. Suitable flanges are provided on the sheath for protecting against unauthorized removal of the barrel. The lock is fixed to the sheath.

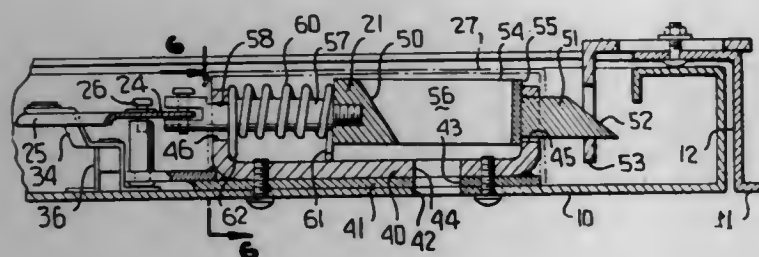


### 3,751,949 LOCKING DEVICE

Alfred B. Castle, 4104 Maryland Ave., Washington, D.C.  
Filed Oct. 1, 1971, Ser. No. 185,575  
Int. Cl. E05c 1/12

U.S. Cl. 70-144

9 Claims



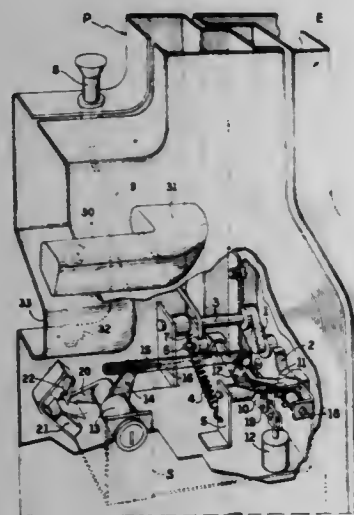
The lock includes a spring projected, tool retracted, closure carried, sliding bolt which is improved by providing a cross-channel in the sliding bolt and opening the ends of the helical compression spring surrounding the bolt. The open spring ends form feet which urge the bolt away from its support bracket and force the channel into engagement with the lock housing to prevent longitudinal movement of the bolt. The lock is also arranged to actuate a pivot arm which controls the sliding movement of two secondary bolts to provide a three-point locking device.

**3,751,950**  
**DEVICE SIMULTANEOUSLY CONTROLLING THE LOCKING AND RELEASE OF A PLURALITY OF DOORS**  
Andre Leger, Sartrouville, and Gerard Mauron, Versailles, both of France, assignors to Automobiles Peugeot, Paris, and Regie Nationale Des Usines Renault, Billancourt, both of France

Filed Nov. 8, 1971, Ser. No. 196,410  
Claims priority, application France, Nov. 30, 1970, 7043001  
Int. Cl. E05b 65/36

U.S. Cl. 70-264

2 Claims



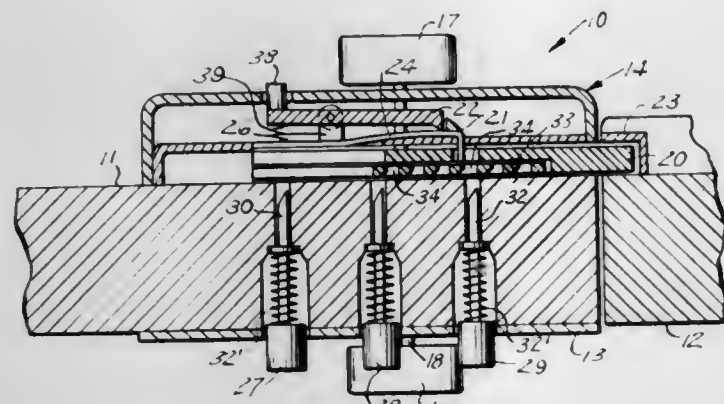
Device for simultaneously locking or releasing a plurality of doors of a vehicle. Each door has an electrical latch and each electromagnet for withdrawing the bolt of the latch is connected to a source of voltage through a common switch. The latter is connected in series with the electromagnets and actuable by a first coil which is connected to the source through at least one switch in series for locking the doors. The common switch is also actuable by a second coil connected to the source through at least one switch in series for releasing the doors.

**3,751,951**  
**PUSH-BUTTON DOOR LOCK**  
James Robert Gridley, St. Andrews Rd. R.D. No. 1, Walden, N.Y.

Filed Mar. 10, 1972, Ser. No. 188,665  
Int. Cl. E05b 37/16

U.S. Cl. 70-313

6 Claims

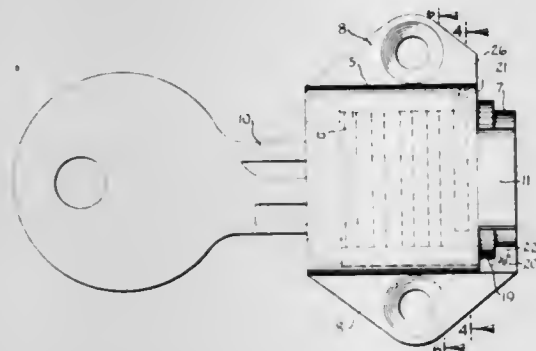


A lock device consisting primarily of three push-buttons with a projection for resetting the lock, and another button on the inside of the door that serves to release the lock with one punch.

**3,751,952**  
**COMPACT CYLINDER LOCK**  
Hugo G. Rubner, Milwaukee, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.  
Filed Dec. 27, 1971, Ser. No. 212,559  
Int. Cl. F05b 9/04

U.S. Cl. 70-368

10 Claims

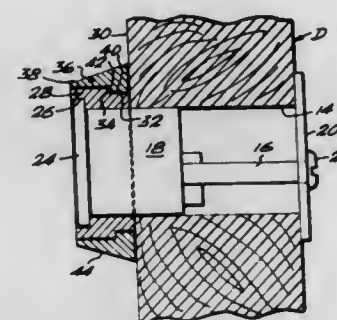


A lock cylinder is confined against forward displacement out of a body in which it rotates by a circumferential land near its rear end, overlying the rear face of the body. Overlying the rear face of the land, a hook-shaped lug on the body prevents rearward cylinder displacement. In an assembling position of rotation the cylinder is insertable forwardly into the body because a discontinuity in the land allows it to pass the lug. The cylinder is normally confined against rotation to said assembling position by stop means comprising a stop member similar to a plate tumbler, but not key actuated, engageable with an abutment inside the body defined by a tumbler groove.

**3,751,953**  
**PROTECTIVE LOCK RING ASSEMBLY**  
George Newman, 2010 N.E. 120 Rd., North Miami, Fla.  
Filed Feb. 22, 1972, Ser. No. 227,890  
Int. Cl. E05b 15/02

U.S. Cl. 70-381

4 Claims



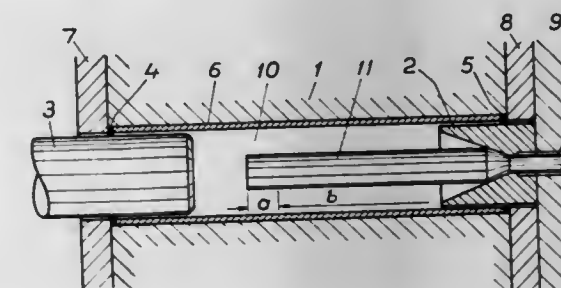
A two-part lock ring assembly for protectively encircling the outwardly projecting portion of a cylinder type of door lock. The ring assembly is comprised of an inner ring which is clamped tightly between an outer flange of the lock cylinder and the door, and an outer ring which is loosely, rotatively, held about the inner ring. The outer annular ring is of a truncated conical configuration.

**3,751,955**  
**METHOD OF PREVENTING COMPLETE EXTRUSION OF A BILLET DURING HYDROSTATIC EXTRUSION**  
Ingemar Stromblad, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden  
Filed Feb. 16, 1972, Ser. No. 226,719  
Claims priority, application Sweden, Mar. 30, 1971, 4087/71

Int. Cl. B21c 31/00

U.S. Cl. 72-60

3 Claims

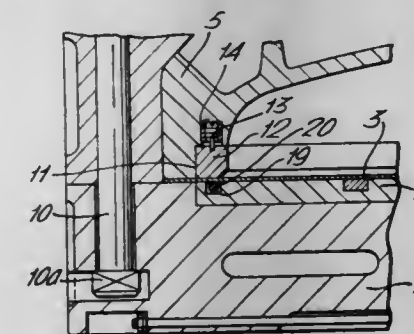


In order to prevent the complete extrusion of a billet during hydrostatic extrusion, the rear end of the billet is treated so that it is harder than the rest of the billet. As a result, when the rear end reaches a die, the resistance to extrusion increases and can be detected so that extrusion can be stopped.

**3,751,956**  
**FLUID-DYNAMIC PRESS FOR THE COLD FORMING OF SHEET METAL**  
Turreno Bianchi, Terni, Italy, assignor to S.A.I.P. (S.p.A.), Terni, Italy  
Filed Sept. 27, 1971, Ser. No. 184,062  
Int. Cl. B21d 26/02

U.S. Cl. 72-57

5 Claims

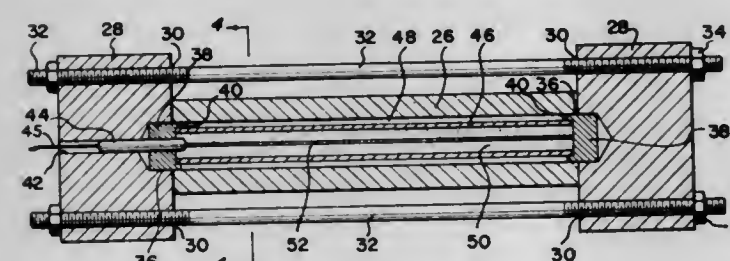


A fluid-dynamic press, in particular a hydraulic press, for the cold forming of sheet metal of thin thickness wherein the pressure application means acts directly upon the work piece, comprising a means for providing a packing on the pressure side of the work piece positioned to cooperate with an annular holding plate associated with a plurality of hydraulic clamping pistons on the opposite side of the workpiece, said holding plate and hydraulic clamping pistons being mounted in a removable die body mounted in the press and an integral part of the die. Consequently, the workpiece holding means and sealing means are specifically designed to fit each die body employed.

**3,751,954**  
**METHOD AND APPARATUS FOR EXPLOSIVE AUTOFRETTAGE**  
Arthur A. Ezra, Littleton; William G. Howell; Herbert S. Glick, both of Denver, and Michael A. Kaplan, Littleton, all of Colo., assignors to Denver Research Institute, Denver, Colo.  
Filed June 1, 1971, Ser. No. 148,487  
Int. Cl. B21d 26/08

U.S. Cl. 72-56

12 Claims



A method and apparatus for producing residual compressive hoop stress at the inner bore of thick-walled tubes by the use of explosive charges positioned along the axis of said tubes. The explosive charge may be placed by itself along the axis of the thick-walled tube or may be enclosed in a second inner tube placed inside the thick-walled tube with an energy transmitting medium filling the space between the two tubes. The explosive charge is detonated producing pressure which plastically expands the thick-walled tube and causes residual compressive hoop stress to be developed at the inner bore upon dissipation of the pressure and elastic contraction of the thick-walled tube.

**3,751,957**  
**PRESS FOR HYDROSTATIC EXTRUSION OF TUBES**  
Jan Nilsson, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden  
Filed Feb. 10, 1972, Ser. No. 225,073  
Claims priority, application Sweden, Mar. 15, 1971, 3277/71

Int. Cl. B21c 25/04

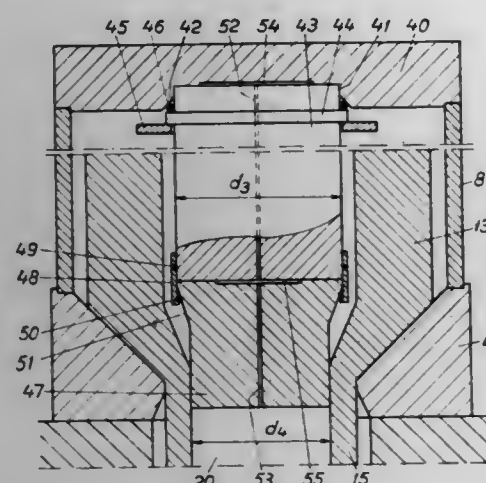
U.S. Cl. 72-60

11 Claims

A press for hydrostatic extrusion of tubes has a pressure chamber containing a pressure generating fluid and a spacer



element arranged in the cylinder with a mandrel axially fixed at its inner end by the spacer tube. The mandrel has a point part cooperating with the die in the cylinder. This point part of the die has a smaller cross-section than the rear part of the die, which rear part is secured to a support from which it is



separate. The joint between the support and the inner end of the die is sealed. The pressure exerted by the pressure fluid on the larger part of the mandrel in a direction away from the die is greater than the frictional force between the billet being extruded and the point of the mandrel.

3,751,958

**PRESS FOR HYDROSTATIC EXTRUSION OF TUBES**

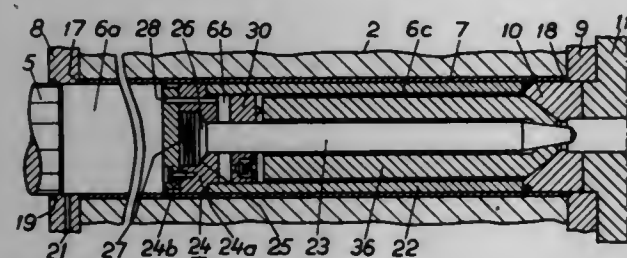
Jan Nilsson, and Hans Larker, both of Robertfors, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed May 20, 1971, Ser. No. 145,184

Int. Cl. B21c 25/04

U.S. Cl. 72-60

10 Claims



A press for hydrostatic extrusion of tubes includes a press stand with a pressure cylinder movable therein to engage over a die supported by the press stand, and a pressure-generating punch movable in the other end of the cylinder. A sleeve slidable in the cylinder supports a mandrel which can engage through an annular billet into the die opening. A billet holder is slidable in the sleeve, the mandrel passing through it. The billet holder is so constructed that pressure fluid can pass from one side of it to the other.

3,751,959

**FORGING MACHINE**

Gaston C. Ory, 7, rue des Jardies, Meudon, Hauts-de-Seine, France

Filed July 19, 1971, Ser. No. 163,747

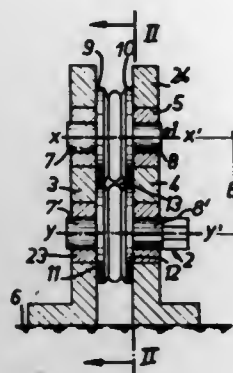
Claims priority, application France, July 24, 1970, 7027515  
Int. Cl. B21b 31/20

U.S. Cl. 72-237

2 Claims

Machine for forging a bar between two rolls, each roll having a single constraint groove located between two flanges destined to turn between said corresponding bearings, each

flange on one side of the groove turning while being in contact with the corresponding flange of the other roll situated on the



same side of the groove, said housings being oriented so that the entry axes of the roll journals are perpendicular with each other.

3,751,960

**WIRE PIERCING METHOD AND APPARATUS**

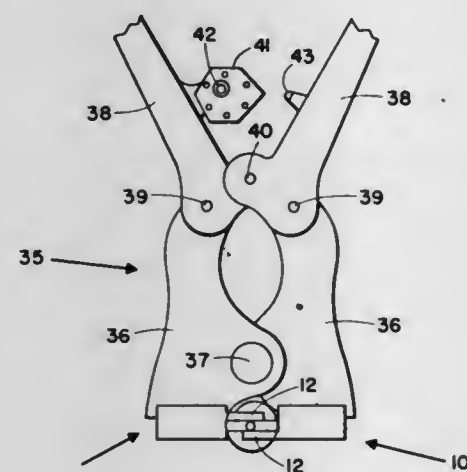
Arthur Francis Morton, St. Hubert, Quebec; Francols Belanger, and William Anhang, both of Montreal, Quebec, all of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Oct. 7, 1971, Ser. No. 187,293

Int. Cl. B21d 31/02

U.S. Cl. 72-326

5 Claims



Holes are formed in wires by shearing a wire along its diameter and deforming the two halves in opposite directions. A tool for forming such holes has two opposed cutting edges and an abutment surface associated with each cutting edge. Relative movement of the cutting edges, in a shearing action, slits the wire and the abutment surfaces push the wire halves in opposite directions to form a hole which can be larger in diameter than the diameter of the wire.

3,751,961

**STAPLING MACHINE FOR MAKING ELECTRICAL CONNECTIONS AND OTHER FASTENINGS**

Arthur Graf, 323 W. 43rd St., New York, N.Y.

Filed Dec. 24, 1970, Ser. No. 101,246

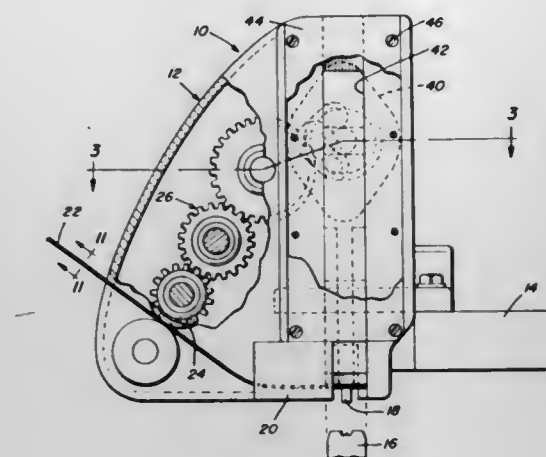
Int. Cl. B21d 28/00

U.S. Cl. 72-339

7 Claims

Metal stock sequentially cut, folded and clinched about a pair of electrical leads in a stapling machine into which the

stock is fed. A pair of relatively movable, metal deforming elements are advanced along a track by link connections to a



common crank pin rotated by a drive shaft during each cycle to perform the metal deforming operations with sufficient impact.

3,751,962

**METHOD AND APPARATUS FOR MAKING A DRAWN ARTICLE**

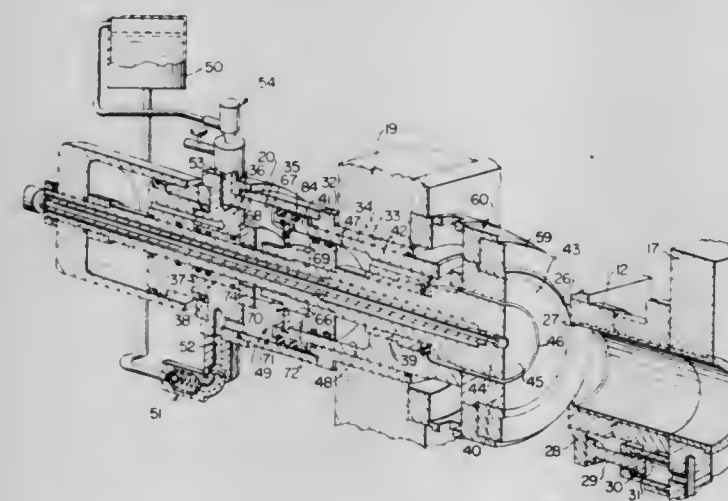
Daniel S. Cvacho, and Joseph W. Wallace, both of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Nov. 6, 1970, Ser. No. 87,460

Int. Cl. B21d 26/14

U.S. Cl. 72-347

30 Claims



An apparatus for drawing an article from a blank of material disposed between cooperating draw members and being drawn therefrom by a movable ram moving relative to the draw members and having a fluid chamber receiving piston portions of one of the draw members and the ram whereby relative movement between the apparatus and the one draw member in one direction causes the blank drawing movement of the ram by the fluid action between the piston portions in the chamber. Restriction means are provided in the chamber for restricting fluid flow between the piston portions at least during the initial part of the drawing operation of said ram on said blank so that a back pressure is created on the one draw member to maintain sufficient holding force on the blank being drawn therefrom to prevent adverse wrinkles on the article being drawn.

3,751,963

**CONTACT CRIMPING TOOL EMPLOYING INDIVIDUAL INSULATION AND WIRE CRIMP ADJUSTMENTS PLUS LIGHTWEIGHT HOUSING HAVING SIDE ARMS AND OPPOSED PLATES**

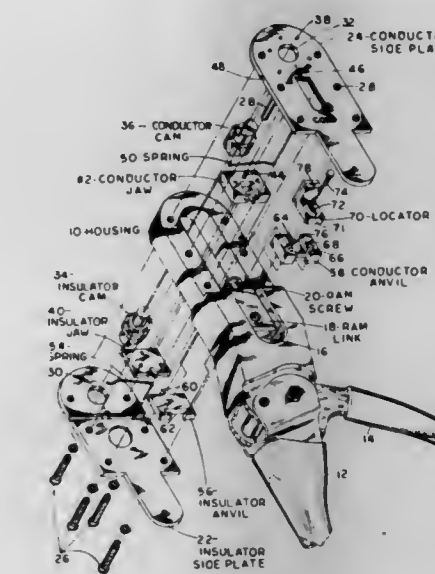
Kenneth Munshower, Norristown, and James R. Smoyer, Elkins Park, both of Pa., assignors to Elco Corporation, Willow Grove, Pa.

Filed June 3, 1971, Ser. No. 149,598

Int. Cl. B21d 9/08

U.S. Cl. 72-410

10 Claims



A manual tool for attaching an electrical contact having two pairs of tabs on the tail thereof to a wire having a stripped end; the tool simultaneously crimps one pair of tabs around the conductor of said wire and the other pair around the insulation sleeve of said wire. The tool comprises a pair of handles and an attached housing containing two pairs of crimp dies (each pair comprising an anvil and a mating crimp jaw) and a linkage mechanism for converting rotary motion of said handles into linear motion of a ram in said housing. A contact is inserted into a locator or nest, also in the housing, and the stripped end of a wire is held between the contact tabs. As the handles are closed, the ram pushes the anvils toward the crimp jaws; the jaws crimp the two pairs of tabs of the contact around the conductor and insulation sleeve, respectively, of the wire. Since one anvil is coupled loosely to the locator, the locator brings the contact up with the anvils. When the tool is opened, the locator returns with the anvils, but is prevented from complete travel—and thus is stopped in a "ready" position—by a pin boss on the locator which engages a ledge on one of the side plates attached to the housing. The "insulator" and "conductor" jaws are spring-urged against respective multi-sided cams which can adjust each jaw's position to provide optimum crimping in accordance with the respective sizes of the conductor and insulator. The cams are rotatably mounted together and to the side plates such that the crimp force is transmitted to the side plates and then, by means of link pins, to the housing. The ram comprises an adjustable bolt having a polygonal head which is locked against rotation by the side plates.

3,751,964

**DEVICE FOR FORMING A FLOW RESTRICTION IN A FLOW CONDUCTOR**

Kermit G. Rowley, Houston, Tex., assignor to Tenneco Oil Company, Houston, Tex.

Filed Sept. 21, 1970, Ser. No. 73,849

Int. Cl. B21d 17/00

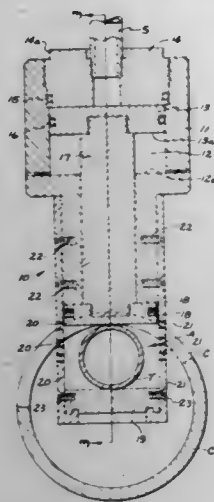
U.S. Cl. 72-470

4 Claims

An hydraulically powered piston moves two curved dies toward each other to crimp a flow conductor positioned between the dies. Travel of the piston is limited to prevent complete crimping of the conductor and the structure holding



the two dies for relative movement with respect to each other may be disassembled and reassembled for positioning about an axially extending flow conductor. The external curvature of the die surfaces is not substantially greater than the external



curvature of the flow conductor to minimize cracking in the conductor as it is crimped. Locking means may be included in the crimping device to prevent the dies from separating from each other after the flow conductor has been crimped.

3,751,965

**RESISTANCE HEATER GRAPHITE TEST CAPSULE**

Thaddaus Kraus, Furstentum, Liechtenstein, assignor to Balzers Patent und Beteiligungs Aktiengesellschaft, Balzers, Furstentum, Liechtenstein

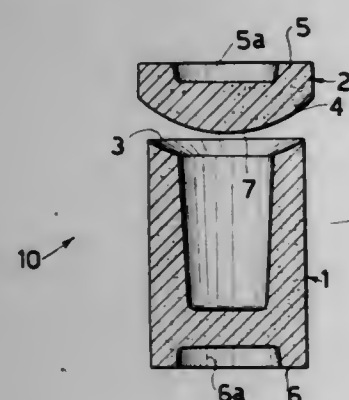
Filed July 6, 1971, Ser. No. 159,837

Claims priority, application Switzerland, July 15, 1970, 10790/70

Int. Cl. G01n 7/00

U.S. Cl. 73-19

2 Claims



A test capsule of a graphite material which includes a cylindrical bottom part and a cover which is engageable over the bottom part and which includes either a spherical engagement surface which is engageable with a partially spherical engagement surface of the bottom part or a conical surface of the bottom part. The cover and the bottom part are provided with ring-shaped ends which are engageable by electrodes for supplying current therethrough for resistance heating thereof in order to heat the sample within the cylindrical bottom part container.

3,751,966

**PROCESS CONTROL**

James M. Ryan, Weston, and Carl Richardson, Bedford, both of Mass., assignors to Abcor, Inc., Cambridge, Mass.

Continuation of Ser. No. 711,063, March 6, 1968, abandoned.

This application Nov. 8, 1971, Ser. No. 196,845

Int. Cl. G01n 31/08; B01d 15/08; G06f 15/20

U.S. Cl. 73-23.1

8 Claims

A gas chromatographic system includes a chromatographic column, injection control and six fraction collectors. A ther-

mal conductivity detector monitors the outlet conduit of the column and controls a strip chart recorder which includes a retransmitting potentiometer. Connected to the potentiometer are a peak-valley-slope signal generator and six set point signal generators. The system also includes a clock, six time



3,751,967

**SAMPLING DEVICE**

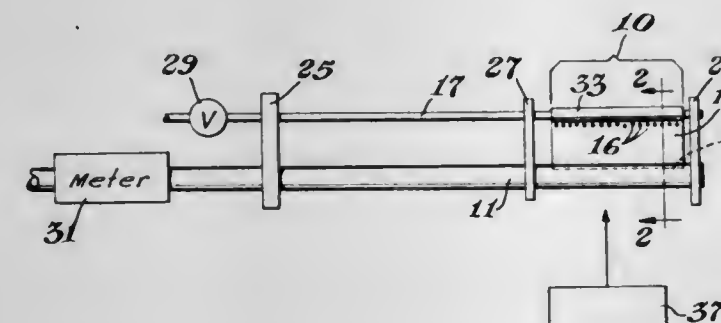
Robert L. Fick, and Allen H. Markey, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 14, 1970, Ser. No. 97,848

Int. Cl. G01n 31/00

U.S. Cl. 73-23

11 Claims



A device and method for determining the presence of a contaminant in a gaseous atmosphere. The device comprises a flow regulatable source of a liquid, a spaced apart liquid receiver, and a surface means on which a liquid film is formed and guided from the liquid source to the receiver. A means to measure the presence of contaminant in the liquid is a part of the device. The device is especially useful for determining the presence of a chemically active pollutant in a gaseous phase.

3,751,968

**SOLID STATE SENSOR**

Jack C. Loh, Liverpool, and Chih-shun Lu, Jamesville, both of N.Y., assignors to Inficon Inc., East Syracuse, N.Y.

Filed Jan. 22, 1971, Ser. No. 108,796

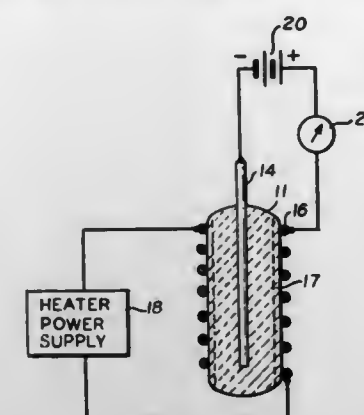
Int. Cl. G01n 31/04, 31/06

U.S. Cl. 73-23

19 Claims

A sensor for detecting given constituents of an atmosphere employing a solid state device formed by a glass-ceramic element having a depletion layer exposed to the atmosphere in which a given gas or vapor is to be sensed. The glass-ceramic sensor is formed with two terminals on opposite sides of the depletion layer and the terminals are connected into a circuit establishing a potential difference between the terminals

across the depletion layer. By forming the glass-ceramic element of a material in which leakage currents between the ter-



minals through the glass-ceramic sensing element will be produced by the presence of a given material in the atmosphere, sensing results.

3,751,969

**DETECTION SYSTEM**

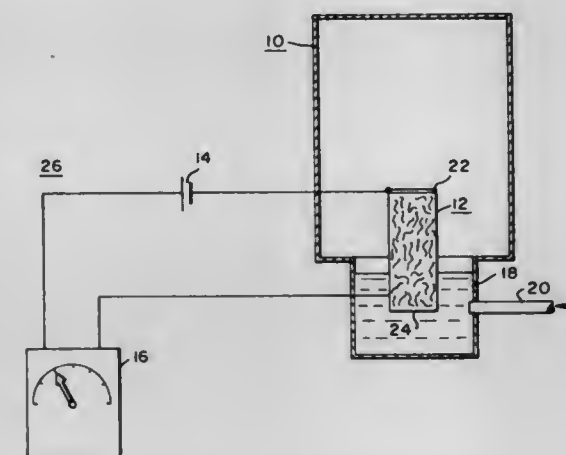
Steven L. Schrock, Madison, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 17, 1970, Ser. No. 64,360

Int. Cl. G01n 27/00

U.S. Cl. 73-23

7 Claims



A detector is disclosed for detecting the presence of substances that form ions in liquids, comprising a porous, non-conducting wicking material which is electrically connected to a power supply and a current or resistance detecting device.

3,751,970

**INSPECTION PENETRANT PROCESS AND COMPOSITION FOR AIDING REMOVAL OF EXCESS PENETRANT FROM TEST PART SURFACES**

James R. Alburger, 5007 Hillard Ave., La Canada, Calif.

Continuation-in-part of Ser. No. 804,200, March 4, 1969, which is a continuation-in-part of Ser. No. 787,381, Dec. 27, 1968, and a continuation-in-part of Ser. No. 675,896, Oct. 17, 1967, Pat. No. 3,429,826, which is a continuation-in-part of Ser. No. 497,058, Oct. 18, 1965, Pat. No. 3,349,041. This application Feb. 9, 1972, Ser. No. 224,656

Int. Cl. G01m 3/20; G01n 21/16, 21/38

U.S. Cl. 73-36

6 Claims

Oil and/or water compatible gel or emulsion forming compositions are disclosed for use in treating test parts in an inspection penetrant process. Following treatment of test parts such as, for example, jet engine turbine buckets, with a fluorescent penetrant, it is desired to remove excess penetrant from the surface of said test parts without leaving smears and spots of blotchy fluorescent residues thereon. Such removal may be accomplished effectively using a composition comprising, for example, dimethyl formamide, methylene chloride, mineral thinner and ethylene glycol monobutyl ether.

3,751,971

**AIR GAGING DEVICE**

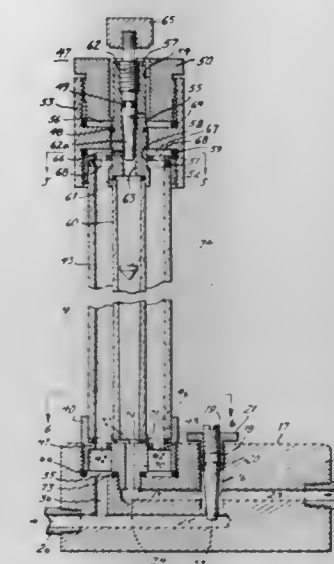
John C. Wilcox, c/o P. A. Patterson Co., Inc., 2201 Ardmore Ave., Drexel Hill, Pa.

Filed Oct. 20, 1971, Ser. No. 190,798

Int. Cl. G01m 3/02

U.S. Cl. 73-37.9

5 Claims



An air gaging device is provided wherein a regulated flow of air is provided to and through a visual gaging device, which includes a transparent hollow tube supporting a rotometer tube and providing a pathway for air flow to a workpiece whose dimensions are to be measured.

3,751,972

**LEAK DETECTOR FOR SEALED CONTAINERS**

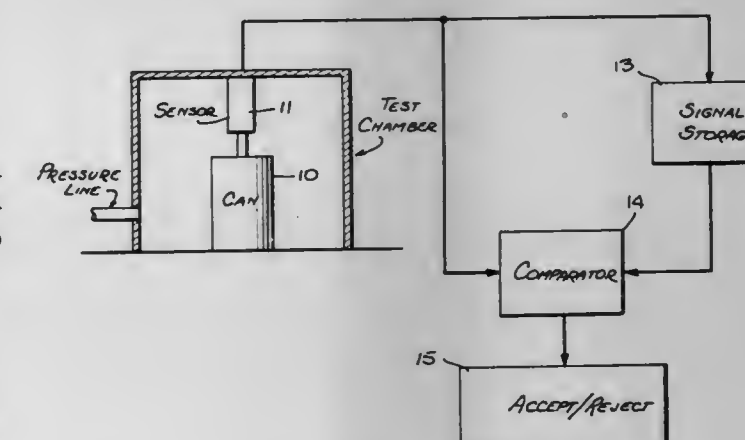
Hyman Hass, Stamford, Conn., assignor to Applied Fluidics Inc., Westbury, N.Y.

Filed Aug. 2, 1972, Ser. No. 277,481

Int. Cl. G01m 3/04

U.S. Cl. 73-45.4

9 Claims



A leak detector for testing sealed containers formed of semi-rigid or flexible material. The container to be tested is placed in a chamber which is thereafter pressurized at a pressure distinctly different from the internal container pressure, whereby the container is caused to physically distort. A container dimension is first sensed before the chamber is pressurized to produce a first signal representing the dimension resulting from the difference between internal pressure and atmospheric pressure, this first signal being held. When the container is under pressure in the chamber and a predetermined time interval has elapsed, the container dimension is again sensed to produce a second signal representing the dimension as a result of the difference between internal pressure and chamber pressure. The held first signal and the second signal are compared and if the disparity therebetween indicates a significant change in dimension, the container is accepted, whereas if there is little disparity between signals, the container is rejected.

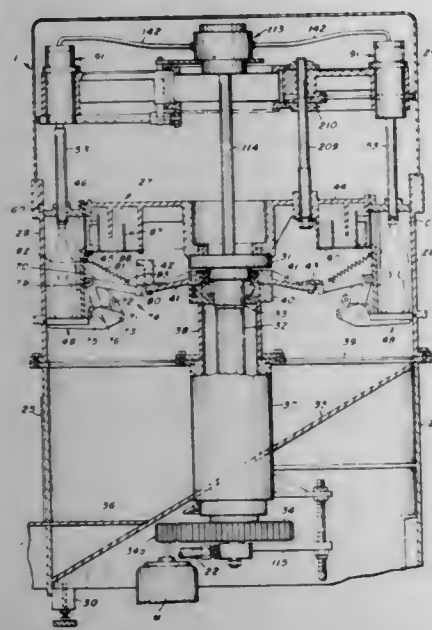


### 3,751,973 APPARATUS AND METHOD FOR PRESSURE TESTING CONTAINERS

Leo Strauss, East Rockaway, N.Y., and Gerard J. Voytek, Bridgeport, Conn., assignors to Glass Containers Corporation, Fullerton, Calif.

Filed Feb. 8, 1971, Ser. No. 113,425  
Int. Cl. G01m 3/02

U.S. Cl. 73-45



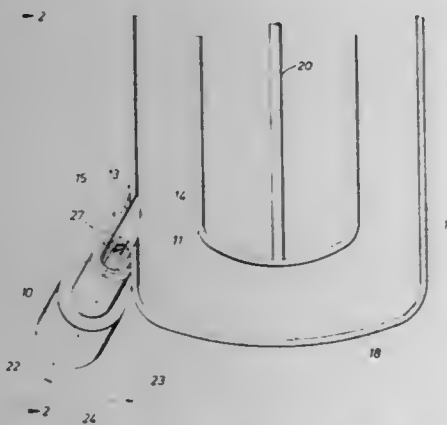
An apparatus and method for pressure testing of bottles wherein each bottle is subjected to a charge of pressurized fluid while being enclosed within individual peripheral cells of a rotating turret. Each cell is constructed such that the cell interior is sealed during testing while failure of a bottle to withstand a predetermined internal pressure, resulting in breakage of the bottle, effects immediate discharge of the broken bottle from the cell. The pressurized fluid, such as air, which is charged to the bottles during testing, is controlled by a central fluid distribution system with individual filling heads provided for each cell. Upon breakage of a bottle, the fluid flow to that cell is shut off. In order to increase efficiency of operation, fluid from bottles which have been charged for the predetermined test period is transferred to other bottles which are about to undergo testing. Means are also provided for testing each bottle for leakage.

**3,751,974  
TURBULENT FLOW HIGH-MOLECULAR LIQUID  
VISCOSIMETER**  
Wolfgang Dietrich Urbas, Krefeld, Germany, assignor to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany  
Filed Oct. 7, 1971, Ser. No. 187,343  
Claims priority, application Germany, Oct. 9, 1970, P 20 49 672.4

U.S. Cl. 73-54

Int. Cl. G01n 11/10

21 Claims



A device for continuously measuring the viscosity of high-molecular liquids in turbulent flow comprises a vibrating reed

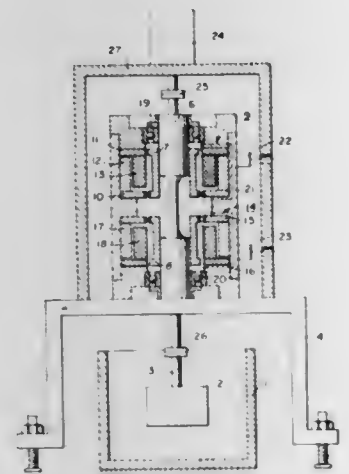
31 Claims

on a viscosimeter mounted in a tube opening into an agitating cylindrical vessel with the free end of the vibrating reed pointing upstream and positioned a distance from the flowing liquid equal to three times the diameter of the tube. The face of the reed is substantially parallel to a plane including a typical arcuate line of flow at the opening, and the tube containing the reed is mounted with its longitudinal axis at an angle between 5° and 15° below a plane of a typical arcuate line of flow at the tube opening. The tube longitudinal axis of one embodiment is mounted at an angle of between 25° and 35° outwardly from a plane tangent to the lines of flow at the tube opening and a modification has the vibrating reed mounted in two tubes and spaced from the opening a distance of three tube diameters. Both embodiments prevent gas cushion build up around the vibrating reed and the attendant inaccurate measurement in a reaction producing higher molecular materials under azeotrope-forming conditions.

**3,751,975  
TORSION DIGITAL VISCOMETER**  
Takeshi Katsura, Tokyo, Japan, assignor to Ono Sokki Co., Ltd., Tokyo, Japan  
Filed Aug. 12, 1971, Ser. No. 171,139  
Claims priority, application Japan, Sept. 1, 1970, 45/76902  
Int. Cl. G01n 11/10

U.S. Cl. 73-59

6 Claims



A rotary type viscometer having a torsion bar mounted in driving relationship with the rotor and a digital detector is mounted to the rotor. The torsion bar includes spaced coaxially supported magnetic cylinders each having a toothed external surface cooperatively arranged in spaced relationship with a pair of toothed magnetic ring members of a pair of magnetic pickups. The torsion bar and magnetic ring members are each supported for at least limited rotation. The change in phase difference of a reference phase difference is detected in the outputs of the magnetic pickup in response to the turning torque on the torsion bar.

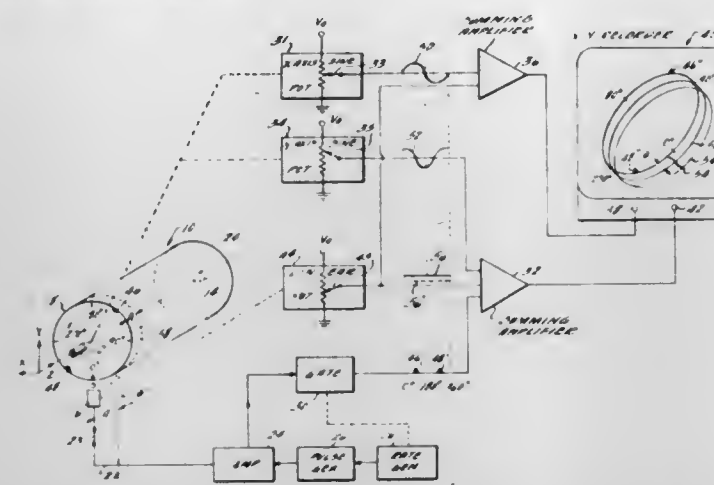
**3,751,976  
ULTRASONIC INSPECTION SYSTEM WITH PSEUDO-ISOMETRIC DISPLAY**  
Victor Eugene Pike, Cincinnati, Ohio, assignor to General Electric Company, Lynn, Mass.  
Filed July 24, 1972, Ser. No. 274,174  
Int. Cl. G01n 29/04

U.S. Cl. 73-67.9

6 Claims

In an ultrasonic inspection system for bodies of circular cross-section, an ultrasonic beam makes a plurality of circumferential scans around the body at spaced apart locations along the length thereof, such that each consecutive circumferential scan is individually displayed as a Lissajous figure off-set from a Lissajous figure of a preceding scan. The overall display effect is therefore pseudo-isometric, and defects

within the body are displayed as local pulse distortions along the Lissajous figures.

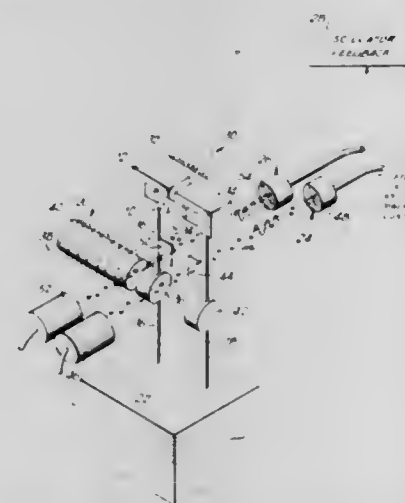


The invention herein described was made in the course of or under a contract or subcontract thereunder (or grant) with the Department of the Air Force.

**3,751,977  
MATERIAL ANALYZING APPARATUS**  
Robert G. Schilling, Jr., Flushing, N.Y., assignor to Chemical Instruments Corporation, Bayside, N.Y.  
Filed Apr. 19, 1972, Ser. No. 245,574  
Int. Cl. G01n 3/32

U.S. Cl. 73-101

11 Claims



An analyzing structure for determining properties such as elastic shear modulus and mechanical hysteresis of a material. A pair of mutually spaced holders hold the sample in such a way that the holders are interconnected by the sample, and these holders are in turn carried by driver and driven supports. A drive sets the driver support into vibratory motion so that the latter is transmitted through the sample to the driven support. By detecting the manner in which the driver and driven supports vibrate it is possible to determine properties of the sample. The sample is tested by cyclically generating substantially pure shear forces in the sample, with the power required to sustain the vibrations of the sample at a constant level being measured to determine the damping of the sample and the frequency of vibration being measured to determine the modulus of the sample.

**3,751,978  
VEHICLE MOTOR BLOCK TESTER AND METHOD OF  
USING THE SAME**  
Charles Kenneth Crawford, 503 E. Eight St., Tyler, Tex.  
Filed Sept. 30, 1971, Ser. No. 185,310  
Int. Cl. G01m 3/06

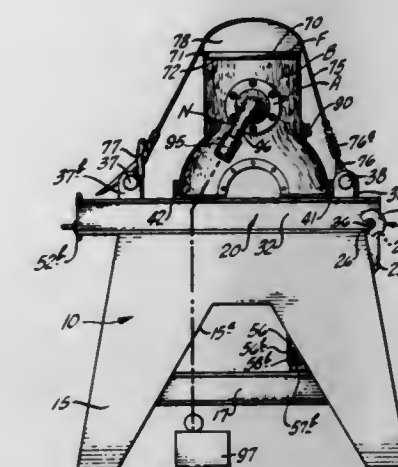
U.S. Cl. 73-49.7

16 Claims

Apparatus for supporting a motor block in a position for applying fluid pressure thereto for testing the block for leaks in the water courses defined by the block, by supplying fluid under pressure through an adaptor connected to the water

pump opening of the block. The block is mounted on a frame which permits tilting for inspection of the underside of the block. Hydraulic or electric lifts may be utilized for moving the frame. The frame has means for securely clamping the block being tested in place thereon.

A method of testing a motor block for leaks, including the steps of supplying a fluid under pressure into the water course

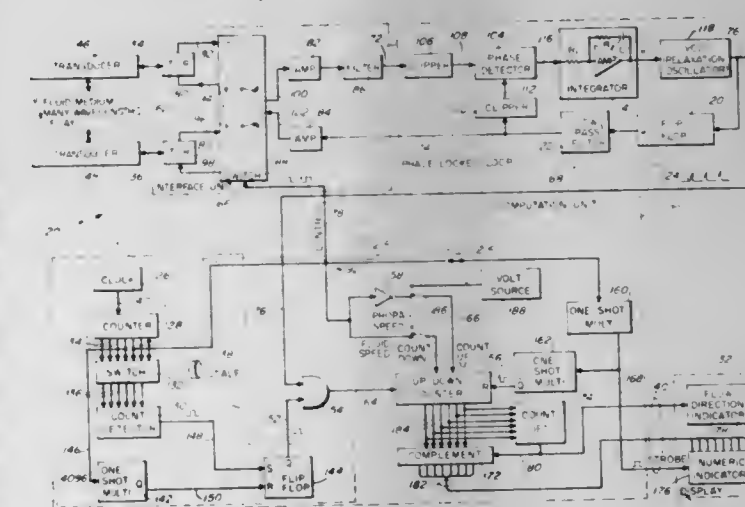


passages of the block. A low viscosity fluid having a coloring material may be used, such as naphtha, or ethylene glycol or the like. The fluid is supplied under pressure through the water pump opening of the block and leaks are disclosed by the escape of the fluid through cracks, openings, pin holes, or the like in the block communicating with the water courses therein.

**3,751,979  
SPEED MEASUREMENT SYSTEM**  
John Robert Ims, Portsmouth, R.I., assignor to Raytheon Company, Lexington, Mass.  
Filed Nov. 17, 1971, Ser. No. 199,486  
Int. Cl. G01p 5/00; G01c 21/10

U.S. Cl. 73-194 A

12 Claims



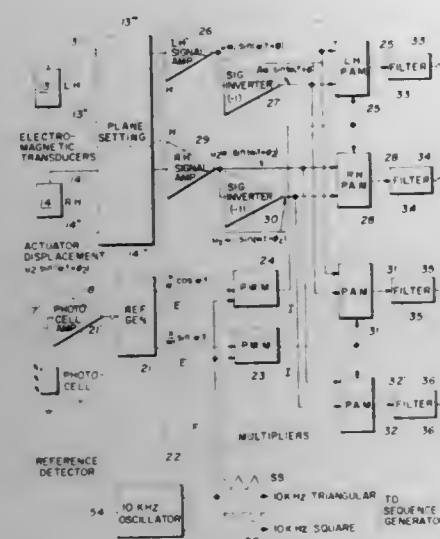
A speed measurement system utilizing a plurality of radiators coupled to a medium for transmitting radiant energy signals within the medium between the radiators in a manner wherein the frequency of the radiant energy is adjusted to retain a predetermined number of wavelengths between a transmitting radiator and a receiving radiator independently of the speed of the medium relative to the radiators. In one embodiment of the invention sonic signals are transmitted through a fluid medium which is moving relative to the radiators. A phase locked loop is interconnected between a pair of radiators by means of a switching arrangement which permits alternative transmissions of sonic energy in the direction of fluid movement (downstream) and in the direction opposite to the fluid movement (upstream). Phase lock is obtained when the frequency of the phase locked loop is such that the







preferably in the manner of a plan position indicator. The displayed signal is produced from a balance information signal and a reference information signal supplied to the inputs of a



multiplier circuit the outputs of which are connected to a display circuit which in turn is connected to control a cathode ray tube.

3,751,988

## DIFFERENTIAL PRESSURE RESPONSIVE DEVICE

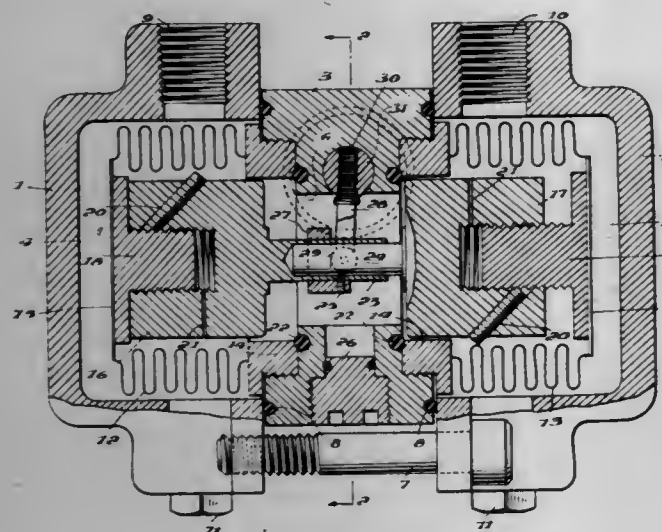
William M. Reese, Sr., Dallas, Tex., assignor to Mary Catholeene Reese, Dallas, Tex.

Filed Mar. 30, 1971, Ser. No. 129,364

Int. Cl. F16j 3/00; G01l 7/06

U.S. Cl. 92-37

7 Claims



A differential pressure responsive device which uses two opposed bellows mounted on a center plate and exposed externally to differential pressures. Flow between the interiors of the bellows is provided through a center plate opening or passage controlled by valves that are connected with the free ends of the bellows through adjustable connections. Suitable means is provided for transmitting motion exteriorly of the housing of the meter through a torque shaft operatively connected with the tie connections between the bellows so as to be moved in response to fluctuations of the bellows. A range spring is connected with this shaft to control the range of the meter.

### 3,751,989 FIXTURE AND SYSTEM FOR TREATING TEST PIECES ON A RAPID CYCLE LEAK DETECTION APPARATUS

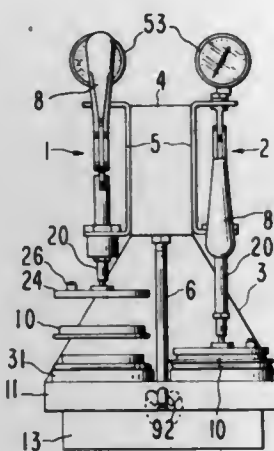
Walton E. Briggs, Lynnfield, and Paul R. Fruzzetti, North Easton, both of Mass., assignors to Varian Associates, Palo Alto, Calif.

Filed July 2, 1971, Ser. No. 159,234

Int. Cl. G01m 3/04

U.S. Cl. 73-40.7

10 Claims



The test piece is clamped to the base of the fixture in such a way that one side of said test piece is exposed to a vacuum created by the leak detection apparatus and the other side of said test piece is exposed to a test-gas receiving chamber. The act of clamping the test piece to the base of the fixture causes the test-gas receiving chamber to be formed and simultaneously causes a test gas such as helium to fill said chamber to a predetermined pressure. After the test piece has been clamped into testing position and the test gas has filled the test-gas chamber, a mechanism is activated which admits air to said chamber at higher pressure than said test gas therein and which simultaneously activates the leak detection apparatus. Before the leak detection apparatus connects said one side of the test piece to vacuum, the high-pressure air is cut off and said test-gas chamber contains only a small quantity of high-pressure air and is not open to the source of high-pressure air. Thus, if a particular test piece has a leak, the quantity of high-pressure air passing through the leak will be insufficient to damage the delicate mechanism of the leak detection apparatus.

3,751,990

## LIQUID SAMPLING

Robert M. Blechman, Honey Brook Twp., Chester County, Pa., assignor to Pro-Tech, Inc., Malvern, Pa.

Filed Aug. 30, 1971, Ser. No. 175,996

Int. Cl. G01n 1/18; B01d 15/08

U.S. Cl. 73-423 R

11 Claims



Sampling of liquids to isolate discrete samples is accomplished by flowing the liquid through an intermittently actuated diverter from which successive samples flow to different collection locations through appropriate distribution means including a distributor arm movable stepwise to discharge into separate collector lines. Timed actuation of the diverter and distributor is provided by electrical relays and related controls.

### 3,751,991 PARTICULATE SOLID MATERIAL INSPECTION SYSTEM

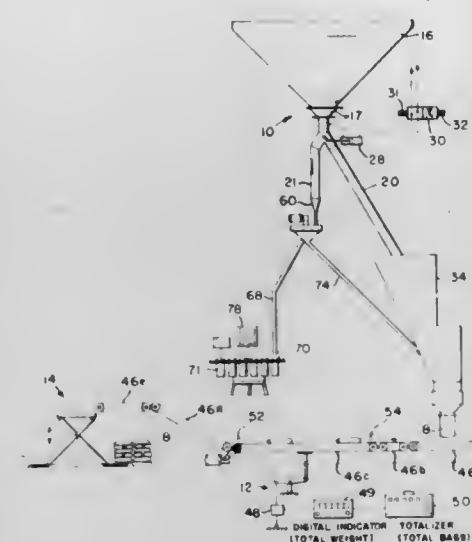
Glen W. Fisher, Bellevue, and Fred A. Franz, Mercer Island, both of Wash., assignors to Technovator, Inc., Seattle, Wash.

Filed May 21, 1971, Ser. No. 145,784

Int. Cl. G01r 1/20

U.S. Cl. 73-421 R

7 Claims



Particulate solid material is automatically sampled while bags are being packed and the bags are automatically weighed and counted. A preferred form of sampler intercepts the entire transverse cross-section of the stream of material momentarily to remove an unbiased sample from the stream.

3,751,992

## CHROMATOGRAPHY VALVE

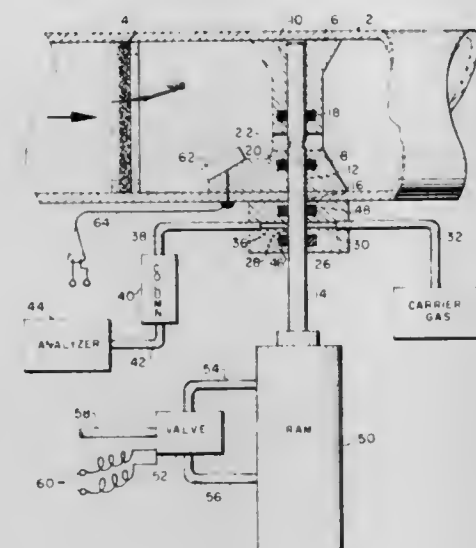
David A. Morgan, North Wales, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 7, 1971, Ser. No. 160,463

Int. Cl. G01n 1/10

U.S. Cl. 73-422 GC

4 Claims



A sampling device for extracting a sample to be analyzed having a volume less than 0.01 microliter from a fluid stream by selectively introducing a slideably supported shaft into the fluid stream to expose a sample retaining capillary hole in the shaft to the fluid stream. An ultrasonic oscillator is positioned in the fluid stream to add vibrational energy thereto to force a liquid sample into the capillary hole. The shaft is, subsequently, withdrawn from the fluid stream to deliver the fluid sample to a fluid analyzing means.

3,751,993

## MAGNETIC BALL HEAD SPEED GOVERNOR

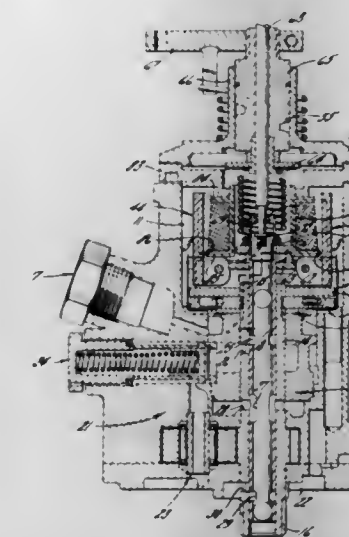
Donald L. Davis, Rockford, Ill., assignor to Woodward Governor Company, Rockford, Ill.

Filed June 14, 1972, Ser. No. 262,705

Int. Cl. G01p 3/16; G05g 13/24

U.S. Cl. 73-518

12 Claims



The magnetic biasing winding of a magnetic ball head speed governor is spaced radially of the flyweights for increased mechanical advantage which permits the speed of an associated prime mover to be adjusted over an appreciable range by adjustment of the magnetic bias level. The flyweights may comprise permanent magnets to provide a "polarized" governor or non-magnetized magnetic material to provide a "non-polarized" governor. The magnetic bias winding may be disposed radially inwardly or outwardly of the flyweights.

3,751,994

## OSCILLATORY SIGNAL SYSTEM WITH TURN ON AND TURN OFF RATE CONTROL

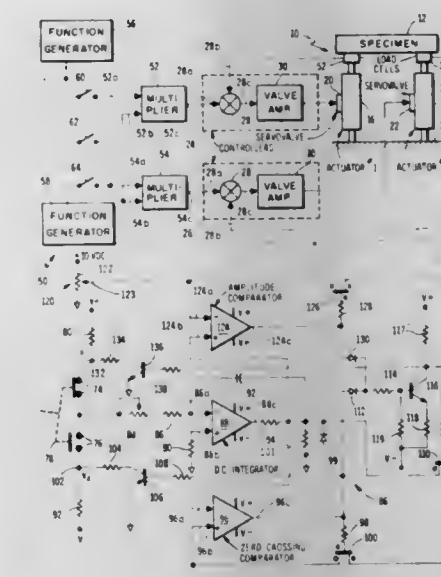
Alan E. Gross, Minnetonka, Minn., assignor to MTS Systems Corporation, Minneapolis, Minn.

Filed Jan. 18, 1971, Ser. No. 107,343

Int. Cl. G01n 3/32

U.S. Cl. 73-67.3

26 Claims



A full scale oscillatory signal is multiplied by a ramp-type amplitude controlled rate signal to provide an output signal increasing linearly from zero volts to a full scale peak-to-peak value and then decreasing linearly back to zero. The rise portion of the ramp signal provides a controlled turn on rate for an oscillatory program command for material testing apparatus to avoid destruction of the specimen being tested, and the fall portion of the ramp signal provides a controlled turn



off rate. Multi-channel test systems can be similarly controlled, only a single potentiometer being required for controlling the amplitude of all channels simultaneously.

3,751,995

# SEQUENTIAL ROTARY AND LINEAR ACTUATING MECHANISM

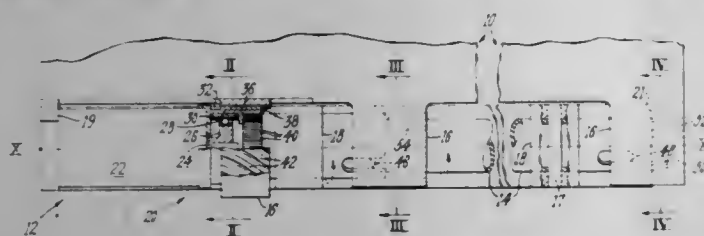
John H. Carlson, Danvers, Mass., assignor to USM Corporation, Flemington, N.J.

Filed June 2, 1972, Ser. No. 259,080

Int. Cl. F16h 21/00

U.S. Cl. 74—20

7 Claims



A compact mechanism for controlling angular and lateral positioning of one member in relation to another. Actuation is effected by a single prime mover through gearing of a type to rotate one of the two members until a rotational stop position is reached whereupon reaction forces on a helical spline cause relative lateral displacement until a predetermined locking relation is attained. The relative movement may sequentially be reversed and unlocked to restore the initial hinged relation.

3,751,996

# DEVICE FOR TRANSMITTING ADJUSTABLE TRANSLATORY MOVEMENTS IN TWO AXIS-DIRECTIONS

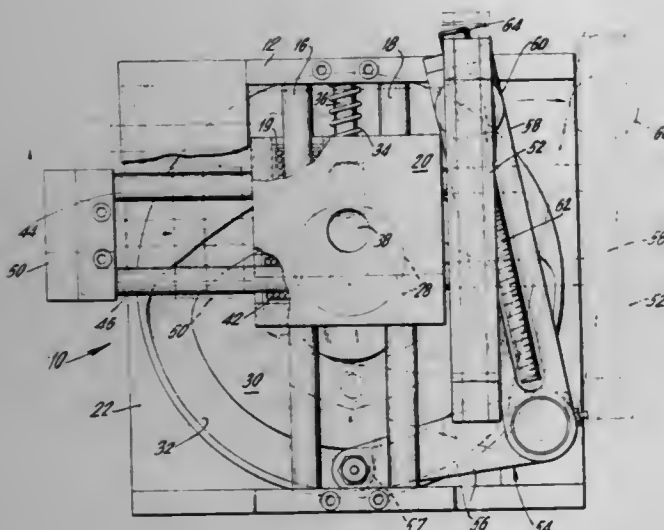
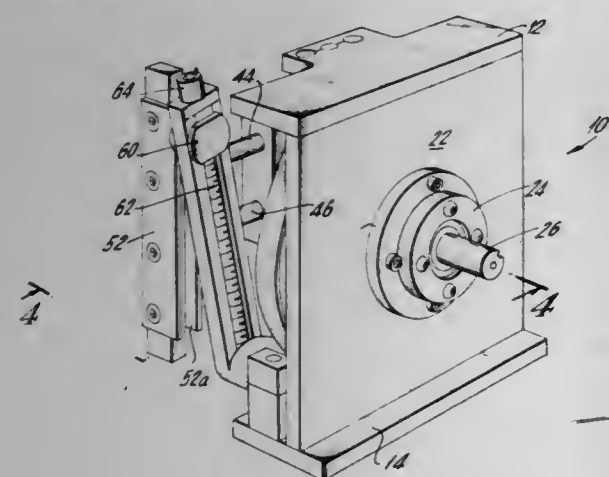
Earl F. Beezer, One Andrea Blvd., Saddle Brook, N.J.

Filed Nov. 3, 1971, Ser. No. 195,271

Int. Cl. F16h 25/12

U.S. Cl. 74—53

11 Claims



A device for transmitting accurate movements from a rotary input shaft to two separate axis-movable members comprises a

first member which is guided for movement along one axis and a second member which is guided on the first member for movement along a second axis. The shaft carries a separate cam for driving each member which is adjustably connected to at least one of the members so that the controlled movement may be adjusted for each shaft rotation. The adjustable connection advantageously includes a lever with a roller follower which is guided by the cam and an arm which carries a shiftable pivot connection to a slideway carried on one of the movable members.

3,751,997

# MULTI-DIRECTIONAL INDEXING APPARATUS

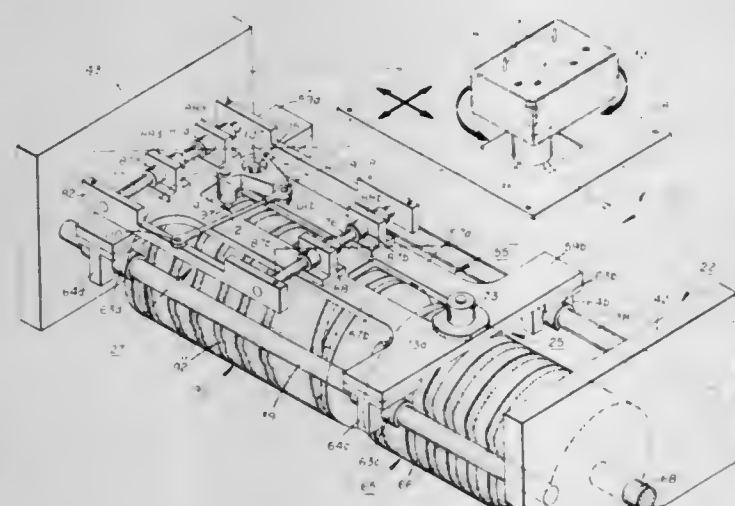
William L. Owen, Jr., and William L. Woods, Jr., both of Shreveport, La., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed July 24, 1972, Ser. No. 274,466

Int. Cl. F16h 25/12

U.S. Cl. 74—89

18 Claims



A multi-directional indexing apparatus utilizes a multi-revolution cam driving mechanism to index X and Y cross-slide assemblies, intercoupled by a unique type of floating pivot, in such a manner that both coordinate and non-coordinate (i.e., random) indexing along a predetermined pattern of index points is possible. In addition, the floating pivot, in response to each incremental displacement of the X cross-slide assembly, effectively presents a new Y indexing cam face to an associated Y cam follower. This advantageously obviates the need for any common, recurring cam groove index points, and/or complex cam groove cross-overs and/or indexable cam axis displacements. The floating pivot is also capable of providing a mechanical leverage in indexing along either coordinate or non-coordinate index points. This, in turn, maximizes the number of cam groove convolutions that may be formed in the periphery of a given sized cam.

3,751,998

# LINEAR ACTUATOR

Anastasios J. Vasilatos, 244 Hibbard Rd., Wilmette, Ill.

Filed May 18, 1971, Ser. No. 144,490

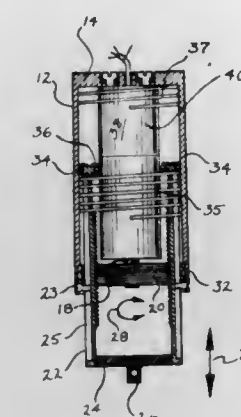
Int. Cl. F16h 27/02

U.S. Cl. 74—89.15

15 Claims

A motor driven linear actuator arranged with the motor interior of the actuator plunger. The motor has affixed to its output shaft a worm gear which is engaged with corresponding

teeth of an internal worm cut into the interior face of the plunger. The plunger is guided and supported during its selec-



tive reciprocation either by the motor housing or the motor housing in combination with an additional tubular housing covering the actuator.

3,751,999

# ARRANGEMENT FOR MOUNTING A PUSH-BUTTON OR THE LIKE ON A CONTROL PANEL

Christian L. Jollivet, 57 rue Louise Michel, Levallois, France

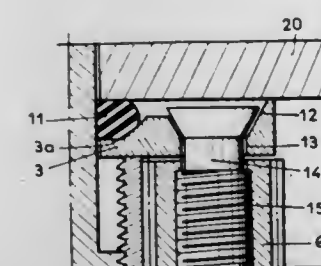
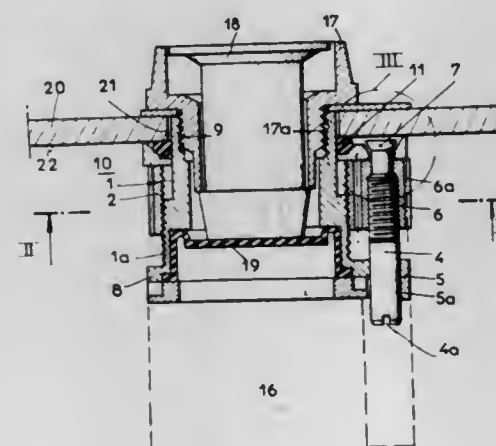
Filed June 2, 1971, Ser. No. 149,269

Claims priority, application France, June 11, 1970, 7021394

Int. Cl. F16h 27/02

U.S. Cl. 74—89.15

5 Claims



An arrangement for fixing a push-button or the like having a cylindrical body in an opening in a panel, the cylindrical body, in use, being connected to a retaining flange intended to cooperate with the front surface of the panel, and a nut threaded onto the cylindrical body for locking the member, via a washer, against the rear surface of the panel, wherein the nut is provided on its periphery with gear teeth which mesh with a pinion fixed to a spindle rotatable in a bearing associated with the washer, means being provided to locate this spindle and rotate it from the rear of the arrangement.

3,752,000

# VARIABLE SPEED FRICTION DRIVE TRANSMISSION

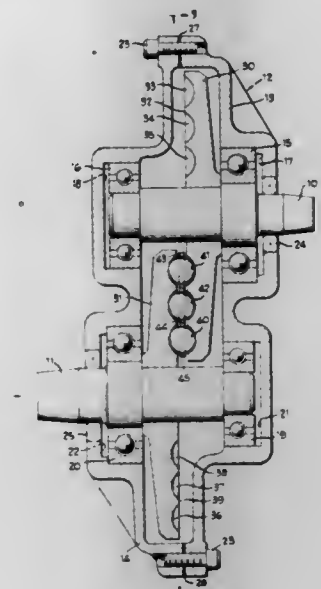
Richard W. Roberts, Lombard, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 17, 1971, Ser. No. 209,087

Int. Cl. F16h 15/04, 15/08

U.S. Cl. 74—190.5

26 Claims



A friction drive transmission featuring a plurality of balls subjected to a compressive force, necessary to the transmission of driving torque from a driving friction member to a driven friction member, produced by an automatic self-energizing wedging action between the balls and the driving and driven members to provide one or more finite speed ratios.

3,752,001

# ELECTRO-HYDRAULIC PULSE MOTOR

Seiuemon Inaba, Kawasaki; Kohei Ito, Fujisawa; Kanryo Shimizu, Kawasaki, and Youichi Amemiya, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki-shi, Kanagawa-ken, Japan

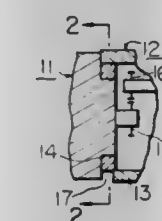
Filed Dec. 13, 1971, Ser. No. 207,164

Claims priority, application Japan, Dec. 26, 1970, 45/131961

Int. Cl. F16h 55/18

U.S. Cl. 74—409

5 Claims



This disclosure relates to an improved electro-hydraulic pulse motor wherein an eccentric ring is provided for a joint of the electric pulse motor part and four way pilot valve part so that adjustment of the backlash in the reduction gear between the electric pulse motor part and the four way pilot valve part can be properly carried out from outside, and therefore the electro-hydraulic pulse motor can be adjusted so as to have excellent performances without the interior thereof being contaminated with dust and other foreign material.

3,752,002

# MECHANICAL MOVEMENT

Charles Block, 1129 Albert Rd., North Bellmore, N.Y.

Filed Jan. 10, 1972, Ser. No. 216,697

Int. Cl. F16h 57/10, 1/16, 29/10

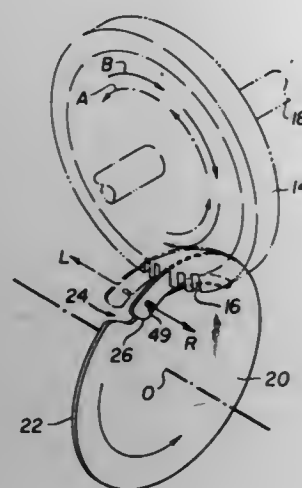
U.S. Cl. 74—404

13 Claims

A mechanical movement having a driven body and a driving body set at angles to each other. The driven body provided



with teeth about its periphery and the driving body with a circular edge adapted to enter between the teeth and means for its rotation about a central axis. The edge being normally cir-



cular but having a separable end adapted to be flexed to either side of the plane of the circle. Means are provided to flex the separable edge during rotation of the driving body.

3,752,003

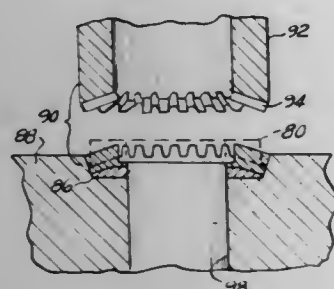
# COMPOSITE HEAVY-DUTY MACHINE ELEMENT AND METHOD OF MAKING THE SAME

William M. Dunn, Farmington, and Myron C. Sarnes, Northville, both of Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Dec. 4, 1970, Ser. No. 95,310  
Int. Cl. F16h 55/04; B21d 53/28

U.S. Cl. 74-434

5 Claims



A composite heavy-duty machine element, such as a face gear (FIG. 7), has its working or load bearing portion composed on sintered powdered high-performance alloy while its supporting portion not subjected to concentrated or intense heavy loads is made of a base metal such as sintered powdered iron. In FIGS. 1 through 8 the powders of the two portions are inserted separately and successively in the die cavity of a briquetting process and simultaneously compacted to form a composite briquette which is then sintered to bond the separate portions together even though they are of different materials with different physical characteristics. The face gear as briquetted and sintered is then subjected to a further deforming operation to further incline its teeth. The resulting composite sintered powdered metal face gear is of lower material cost than such an element formed of high-performance alloy in its entirety, and may then be used as it is of satisfactory density for its intended use, or it may be further densified by means of an additional compressing operation with the article cold, warm or by a hot forging operation, or with subsequent sintering if deemed necessary depending upon its intended use.

3,752,004  
BEARINGS

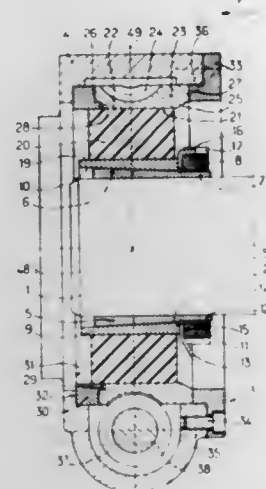
Pierre Joseph Hanssen, Schweighouse s/Moder, France, assignor to Hanssen & Cie S.A., Schweighouse s/Moder, France

Filed Dec. 10, 1971, Ser. No. 206,714

Claims priority, application France, May 7, 1971, 7117690  
Int. Cl. F16h 55/14

U.S. Cl. 74-443

4 Claims



An end bearing for the shaft of a printing or other roller about which web or strip material is passed in a machine. The bearing has a first or inner sleeve which is fitted on the shaft and has a tapered outer face axially sliding in a second sleeve with a tapered inner face for joint assembly. Attached around the second sleeve is an anti-vibration transmission cylinder or sleeve of rubber material mounted in an annulus disposed in a static part of the bearing secured to the machine, which annulus is rotatable by gearing to vary the angular position of a shaft received in the inner sleeve which varies the angle of a roller mounted thereon.

3,752,005  
BRAKE FOR BICYCLES

Tomizo Yoshikawa, Lot 9 of 10 Ban, 2 Chome, Imaike-cho, Sakai-shi, Osaka, Japan

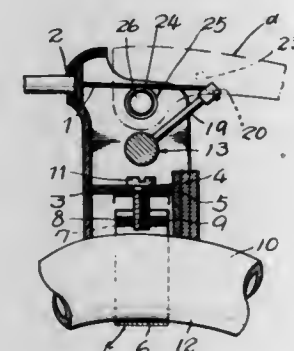
Filed Dec. 8, 1971, Ser. No. 205,840

Claims priority, application Japan, Dec. 10, 1970, 45/123791

Int. Cl. G05g 11/00

U.S. Cl. 74-480 R

7 Claims



A brake for drop handle type bicycles characterized in that a brake lever comprising a main lever and an auxiliary lever mounted to a drop handle portion of a bicycle can be operated with a cyclist's fingers reaching therefor from any optional gripping positions of the drop handle thereby enabling him to apply the brake exactly so as to wheel on with safety.

3,752,006

# THROTTLE ASSIST MECHANISM FOR MOTORCYCLE

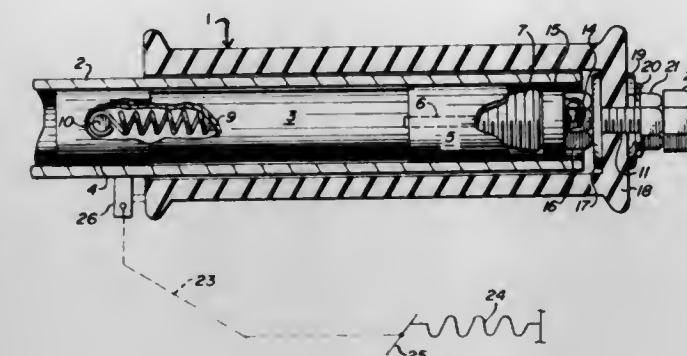
Charles M. Bartlett, 6613 E. Indian School Rd., Scottsdale, Ariz.

Filed July 24, 1972, Ser. No. 274,417

Int. Cl. G05g 11/08, 7/00

U.S. Cl. 74-489

7 Claims U.S. Cl. 74-501 R



In order to alleviate the torsional tension ordinarily required to be maintained constantly to hold a given motorcycle throttle opening, means are provided to apply a partially compensating torque in the opposite direction. The end of the motorcycle twist grip which the operator utilizes to control the throttle. A slightly expansible tubular member, dimensioned to fit within the handlebar, is provided with a tapered expander member for firmly securing the tubular member within the handlebar. A torsion spring within the tubular member is fixed thereto at a first end and is connected to a threaded shaft at its opposite end. The threaded shaft extends through and is fixed to the end of the twist grip, and means are provided for adjustably setting up the torque exerted by the torsion spring, which torque opposes that developed in the twist grip by the usual throttle return spring acting through the conventional cable to which the twist grip is operatively connected in the well known manner.

3,752,007

# SAFETY COUPLINGS FOR AUTOMOTIVE STEERING COLUMNS

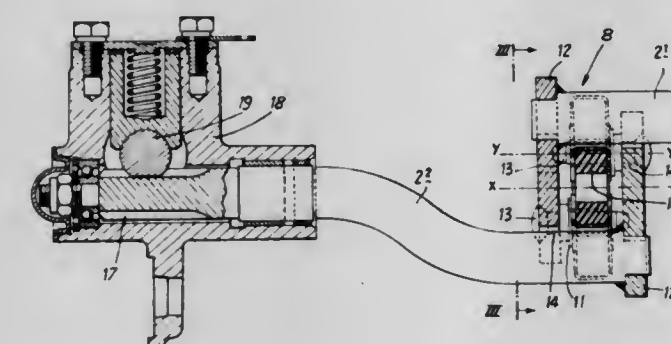
Jacques Blondeleau, and Marcel Misseri, both of Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt (Hauts de Seine) and Automobiles Peugeot, Paris, both of France

Filed Dec. 13, 1971, Ser. No. 207,174

Claims priority, application France, Dec. 16, 1970, 7045326  
Int. Cl. B62d 1/18

U.S. Cl. 74-492

4 Claims



Safety device for steering column of motor vehicle, which comprises a steering column made of a plurality of elements assembled by means of joints of which one consists of a vibration damping coupling, characterized in that the vibration damping member proper surrounds partially at least one of the two elements of the steering column and that each element comprises torque transmission elements rotatably solid with said vibration damping member.

3,752,008

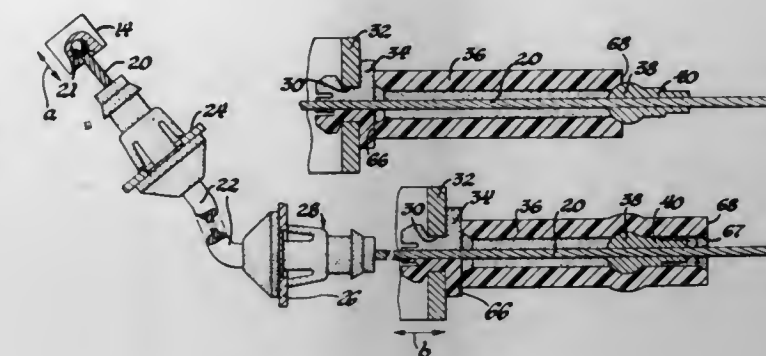
# CABLE LENGTH ADJUSTER

Michael J. Danek, Laingsburg, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1971, Ser. No. 176,477

Int. Cl. F16c 11/10

7 Claims



The cable length self-adjusting arrangement illustrated includes an accelerator pedal and a pivotable lever having a cable extending therefrom to a transmission detent valve. The detent valve cable is freely mounted through a bracket on the accelerator pedal lever. A spherical member is secured to the cable with a polyurethane sleeve member initially loosely mounted around the cable between the bracket and the spherical member. Upon the initial depression of the accelerator pedal after assembly, the bracket abuts against the sleeve member which, in turn, abuts against the spherical member, causing the detent valve to quickly bottom out. Full depression of the pedal thereafter to its wide open throttle position forces the sleeve member over the spherical member to a final position which is thereafter retained to coordinate the bottomed out position with the wide open throttle position of the accelerator pedal.

3,752,009

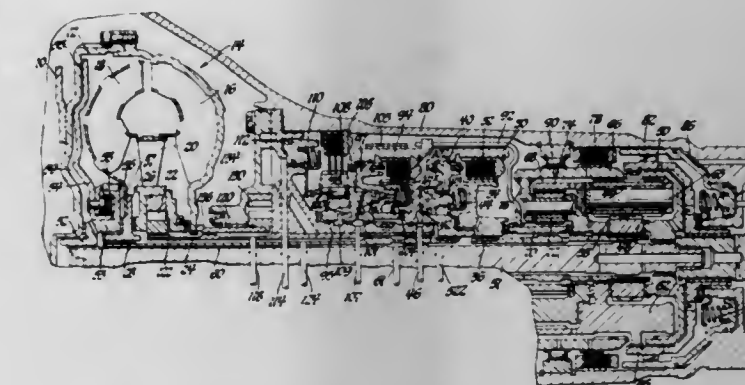
# AUTOMATIC TRANSMISSION AND CONTROLS

Howard E. Chana, 1305 Westwood Dr., Flint, Mich.  
Division of Ser. No. 59,467, July 30, 1970, Pat. No. 3,638,771.  
This application Sept. 3, 1971, Ser. No. 177,771

Int. Cl. F16h 47/00; B60k 21/00

U.S. Cl. 74-645

12 Claims



Power transmission having torque converter drivingly connected to a planetary gear unit conditionable by selective engagement of friction drive establishing devices to provide for four forward drives and one reverse drive. A converter clutch normally held from engagement by the feed of fluid into the converter through a clutch control chamber can be engaged by converter pressure in response to an upshift signal and subsequent exhaust of fluid from the control chamber to permit mechanical drive of the gear unit. A shift valve forming part of hydraulic controls provides a signal pressure to open a converter feed restrictor valve to permit the converter to be fed



with operating oil through a second feed passage. The signal from this valve also activates an accumulator valve system which controls the engagement of the converter clutch so that converter clutch capacity is gradually increased to a maximum. There is a detent valve which provides for 3-2 and 4-3 part throttle downshifts and 4-2, 3-2 and 2-1 full throttle downshifts.

3,752,010

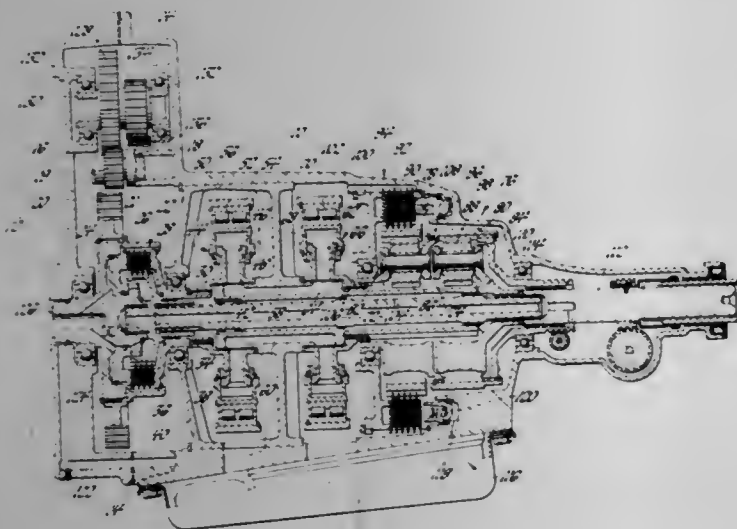
**COAXIAL HYDROMECHANICAL TRANSMISSION**  
Roderick G. Tipping, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 22, 1971, Ser. No. 200,808

Int. Cl. F16h 47/04, 57/10

U.S. Cl. 74-687

4 Claims



A synchronous shifting variable ratio hydromechanical transmission including a variable ratio hydraulic transmission, a multi-ratio planetary gearing arrangement, and a housing with a support member positioned therein. The variable ratio hydraulic transmission has a pump and a motor rotatably mounted and axially aligned on opposite sides of the support member. An input shaft drivingly connected to the pump, is rotatably supported in the housing. An output shaft axially aligned with the input shaft is rotatably journaled in the housing and is drivingly connected with the planetary gearing arrangement. An intermediate shaft axially aligned with the input shaft extends through the support member to cooperate with a selectively operable friction clutch to establish a mechanical drive to the planetary gearing of the transmission from the input shaft thereby providing a high range split hydromechanical drive. A selectively operable friction brake disposed in the housing cooperates with the gearing to provide a low range hydrostatic drive with a mechanical gear reduction. The transmission permits synchronous shifting between the low and high ranges.

3,752,011

**METHOD AND APPARATUS FOR CONTROLLING A POWER TRANSMISSION**

Gary L. Casey, Royal Oak, and James A. Cogswell, II, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 18, 1971, Ser. No. 190,235

Int. Cl. F16h 47/00; B60k 21/00

U.S. Cl. 74-731

9 Claims

In a transmission having a torque converter and a gear set wherein a ratio shift is accomplished by disengaging a brake or clutch and engaging another, a smooth shift is effected by controlling the clutch or brake pressures as a function of continuously computed values of turbine torque, turbine acceleration, and instantaneous gear ratio. These three parameters are com-

puted by electronic analog circuitry from measured values of engine speed, turbine speed and transmission output speed. A logic circuit responsive to shift command, turbine speed and



output speed conditions the analog circuit for operation. The analog output signal is converted to pressure by a solenoid valve.

3,752,012

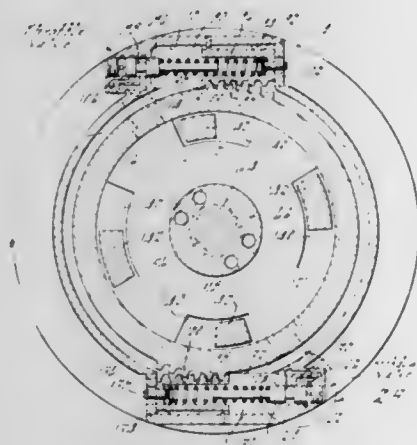
**POWER TRANSMISSION MECHANISM HAVING A TORQUE SENSITIVE PRESSURE REGULATOR VALVE**  
William D. Ross, Plymouth, and Hesham A. Roushdy, Taylor, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 12, 1971, Ser. No. 198,149

Int. Cl. F16h 17/00; B60k 21/00

U.S. Cl. 74-731

3 Claims



A power transmission mechanism having a hydrokinetic torque converter and multiple ratio gearing wherein the turbine is connected to the torque input element of a forward drive clutch that establishes an input torque delivery path for the gearing, the connection between the turbine and the torque input side of the clutch including a torsion shaft and a sleeve shaft surrounding the torsion shaft, a pressure regulator valve connected to the torsion shaft including a valve spring that is calibrated to establish a regulated operating pressure level, and means for connecting mechanically one end of the sleeve shaft to the torsion shaft whereby the spring forces on the latter are varied in proportion to the degree of relative movement of the torsion shaft with respect to the sleeve shaft.

3,752,013

**POWER TRANSMISSION HAVING A HYDROSTATIC DRIVE COMBINED WITH A HYDRODYNAMIC DRIVE**  
Norman A. Cross, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 26, 1972, Ser. No. 247,654

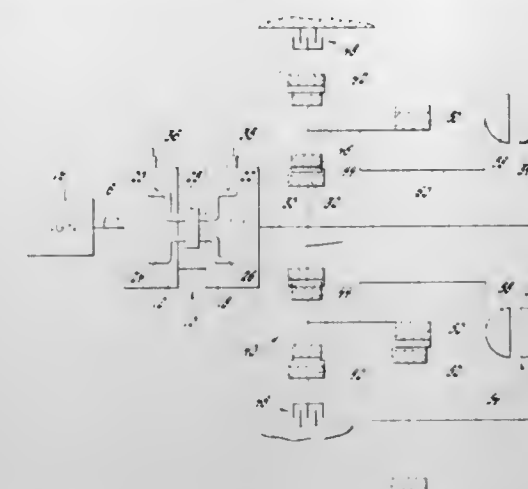
Int. Cl. F16h 47/00

U.S. Cl. 74-732

4 Claims

A power transmission having a hydrostatic portion and a hydrodynamic portion. The hydrostatic portion, operable

through an infinitely variable range, is combined with a planetary gear reduction unit to provide a low speed range. The



hydrostatic and hydrodynamic portions are combined to provide an infinitely variable high speed range.

3,752,014

**CHAIN TRANSFER CASE WITH ACCESSORY TRANSMISSIONS**

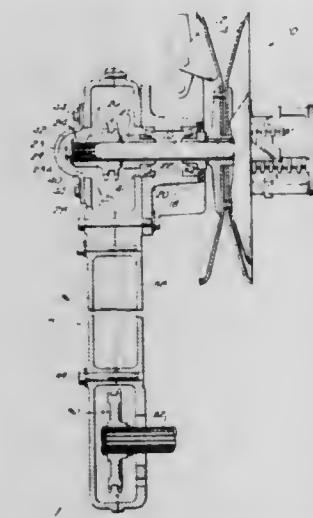
Maurice O. Holtan, 2012 Menomonee River Pky., Wauwatosa, Wis.

Filed Jan. 8, 1971, Ser. No. 104,895

Int. Cl. F16h 3/02

U.S. Cl. 74-745

20 Claims



A chain drive transfer case is adapted for optional use with various accessory transmissions or rate changers which are interchangeably attached to one side of the chain case. The chain case includes an input shaft which has a splined end projecting through an opening in the case for coupling with the input shaft of any of the accessory transmissions or for use with an engagement or neutral lockout attachment. Each of the accessory transmissions has a tubular output shaft which is concentric with the chain case input shaft and which extends through said opening in the chain case to drivingly engage a chain sprocket which is supported on the chain case input shaft.

3,752,015

**HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC SPEED CHANGING DEVICES**

Noboru Murakami, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed July 12, 1971, Ser. No. 161,549

Claims priority, application Japan, July 11, 1970, 45/60758

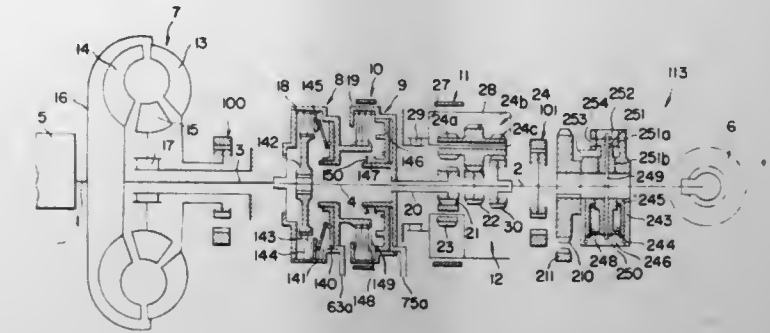
Int. Cl. B60k 21/00

U.S. Cl. 74-869

7 Claims

In an automatic speed changing device such as an automotive power transmission in which there is provided at least first

friction engaging means to complete a low speed ratio power train therethrough and second friction engaging means to complete a high speed ratio power train and, a hydraulic control system therefor is equipped with a closely cooperating



pair of pressure reducing valves. The fluid pressure being delivered as desired to the first and second friction engaging means from manual valve means for a shift from one speed ratio to another is controlled by the pressure reducing valves to prevent shocks due to the transition.

3,752,016

**WRENCH**

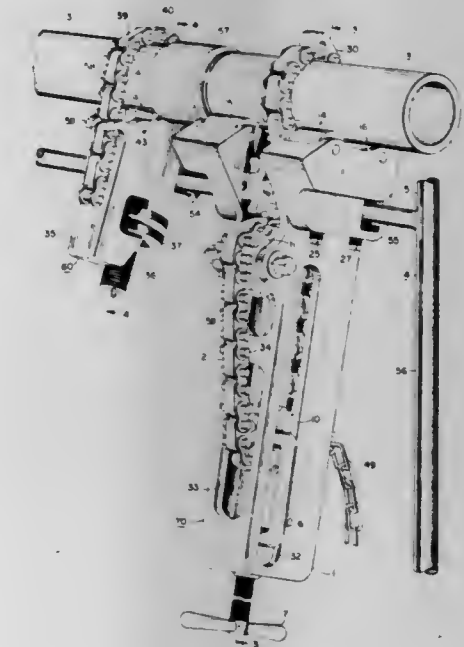
Estus E. Ballard, 1211 E. Gurley, Prescott, Ariz.

Filed Dec. 1, 1971, Ser. No. 203,520

Int. Cl. B25b 13/52

U.S. Cl. 81-64

9 Claims



The invention teaches a combination wrench for working on a pipe. A first wrench of the combination wrench includes a continuous chain mounted within a framework, including a plurality of sprockets, rollers, and tensioning means. Manual or power means is connected to a sprocket of the set of sprockets to drive the continuous chain. A portion of the chain circularly engages a first pipe and tends to cause the first pipe to rotate. A second wrench of the combination wrench is secured to a second pipe by tightening a chain about the second pipe in a non-slipping engagement. A stabilizing member disposed between the first wrench and the second wrench stabilizes their respective movement whereby the pipe secured by the first wrench will be stationary with respect to the pipe secured by the second wrench. In this manner, the first and second pipes may be rotatably secured to each other or rotatably separated from each other.



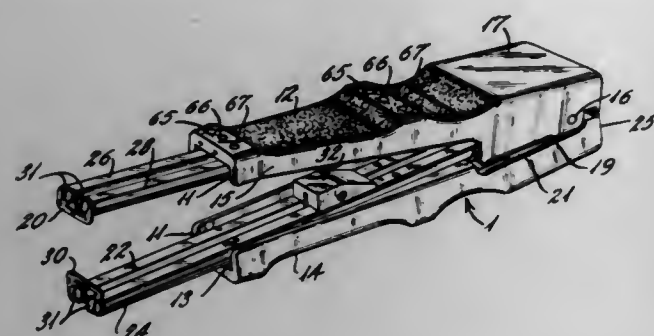
3,752,017

## THERMAL HAND TOOLS

Richard E. Lloyd, Beltsville; Loring E. Young, Frederick, and William J. Siegel, Silver Spring, all of Md., assignors to Pace Incorporated, Silver Spring, Md., by said Lloyd and Young  
Continuation-in-part of Ser. No. 41,325, May 28, 1970, abandoned. This application Apr. 8, 1971, Ser. No. 132,499  
Int. Cl. H02g 1/12

U.S. Cl. 81-9.5 B

4 Claims



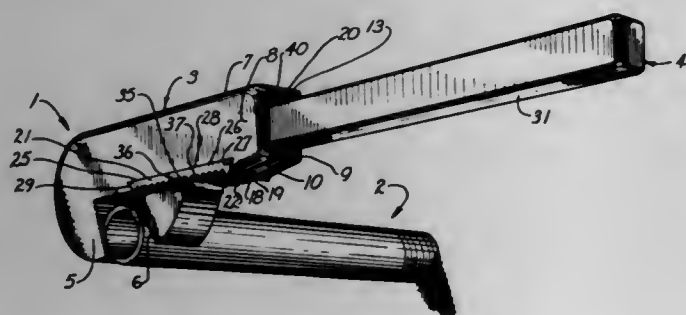
The present invention relates to a group of hand thermal tools of simplified construction wherein each has the same upper and lower hand grip members hinged together adjacent to their rear ends and moreover the upper and lower grip member may be identical. A power lead line, extending in at the rear of the grip members, powers each tool. The three distinct thermal hand tools contemplated are; resistance tweezers, conductive tweezers, and wire stripper. The resistance tweezers has a single conductor rod in each grip member extending the length thereof and a tweezer blade removably mounted at the forward end of each rod whereby an electrically conductive object tweezed between the blades becomes resistance heated. The conductive tweezers and the thermal wire stripper each utilize a pair of conductive rods in each grip member extending the length thereof and a resistance heated blade member mounted across the forward ends of each rod pair. In the conductive tweezer, a gripping blade is removably mounted across the forward ends of each rod pair, the blades being opposed so that an object tweezed therebetween becomes heated by thermal conductivity. In the wire stripper, a cutting blade is mounted across the forward end of each rod pair, the blades being in opposing cutting relationship whereby an insulated wire may have the insulation stripped therefrom by the cutting action of the heated blades.

3,752,018  
WRENCH

Robert J. Henriksen, Rt. 2, Box 75, Jackson, Mo.  
Filed July 29, 1971, Ser. No. 167,121  
Int. Cl. B25d 13/24

U.S. Cl. 81-147

8 Claims



A wrench for gripping pipe and the like includes a housing having a chamber therein and a jaw member depending therefrom. A handle member has one portion within the chamber and an elongated portion extending outwardly through an open end of the housing opposite said jaw member. A jaw portion on said handle member extends outwardly through an elongated slot in the housing in facing relation with

the jaw member and said housing and handle member are relatively movable to selectively adjust the space between the jaw member and jaw portion. Cooperating and inter-engaging fulcrum members on the jaw portion of the handle member and on the housing effect gripping of an object between the jaw member and the jaw portion in response to a movement of the handle member that pivots the jaw portion toward the jaw member.

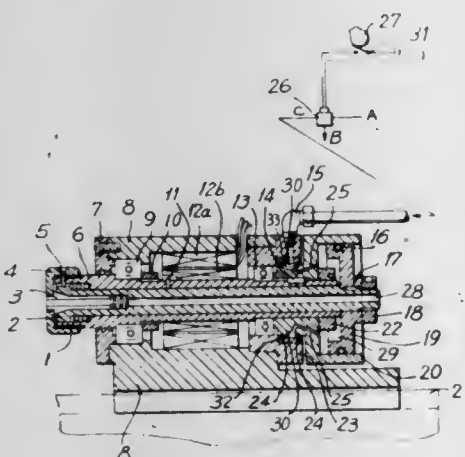
3,752,019

## HIGH SPEED AUTOMATIC LATHE

Yoshitada Kaneko, Okaya, Japan, assignor to Kabushiki Kaisha Suwa Seikasha, Tokyo, Japan  
Filed July 27, 1971, Ser. No. 166,357  
Int. Cl. B23b 19/00

U.S. Cl. 82-28 R

2 Claims



A high speed automatic lathe having a chuck which can rotate at high speeds without vibration such as would cause damage to the quality of work turned out thereby. The chuck is of the collet type and is circumferentially symmetrical so that possible causes of vibration are absent.

3,752,020

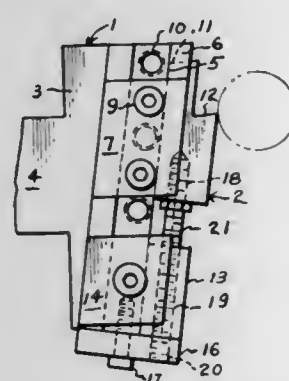
## COMBINED TOOL AND HOLDER

Stuart W. George, 21182 Van K Dr., Grosse Pointe, Mich., and Henry R. Bucciero, 19674 Eastland Village Dr., Harper Woods, Mich.

Filed Apr. 13, 1971, Ser. No. 133,668  
Int. Cl. B23b 29/22

U.S. Cl. 82-36 R

6 Claims



A tool holder having a shank forwardly terminating in a head elongated approximately vertically and formed with a mounting surface to receive a tool adjustable on the surface to be operative relative to a workpiece, a keeper to releasably retain the tool in position, and tool support means also adjustable, mountable upon the surface, the tool having an engageable portion which is engaged by the keeper and a machining portion, and said portions being so disposed relative to each other that sharpening of the machining portion leaves the engageable portion unaffected so that the entire engageable portion is usable throughout the life of the tool.

## ERRATUM

For Class 82-86 see:  
Patent No. 3,752,024

3,752,021

## APPARATUS FOR THE PRODUCTION OF GUIDE CHANNELS OF SKIS

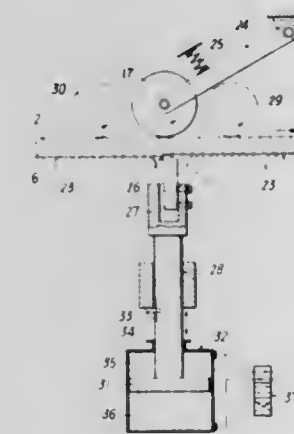
Oswald Klien, Mader; Gert Klien, and Paul Marte, both of Hohenems, all of Austria, assignors to Head Sportgerate GmbH, Kennelbach, Austria

Filed June 14, 1971, Ser. No. 152,950

Int. Cl. B26d 3/06

U.S. Cl. 83-5

11 Claims



Apparatus for forming a guide channel in a plastic sliding surface of a ski. Means are provided to move the ski in its longitudinal direction to bring the plastic sliding surface into contact with a cutter which is fixed with respect to the longitudinal direction of movement of the ski. The cutter is shaped to correspond to the cross-section of the channel to be formed, and means are provided for obtaining relative movement of the cutter and the ski in a direction normal to the longitudinal direction of the ski so as to control the depth of the channel formed in the sliding surface.

3,752,022

## SAWING METHOD AND MACHINE

Jacques L. J. Demurger, Roanne, France, assignor to Etablissements Demurger & Cie, Roanne, France

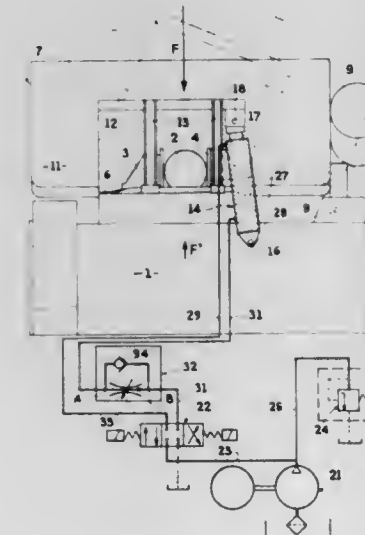
Filed July 19, 1971, Ser. No. 163,876

Claims priority, application France, July 24, 1970, 7027427

Int. Cl. B23d 55/08

U.S. Cl. 83-13

3 Claims



Method and machine for sawing a workpiece by means of a cutting tool, such as a band saw or saw blade, carried by a support. A hydraulic cylinder device controls the travel of the

support and consequently the feed of the cutting tool. The working chamber of the cylinder device has a constant pressure which is a multiple of the maximum force opposing the feed of the tool. The rate of feed of the cutting tool into the workpiece is substantially constant owing to the fact that the liquid in the other chamber of the cylinder device opposed to the working chamber is made to flow out of the other chamber at a constant rate.

3,752,023

## CUTTING APPARATUS AND METHOD

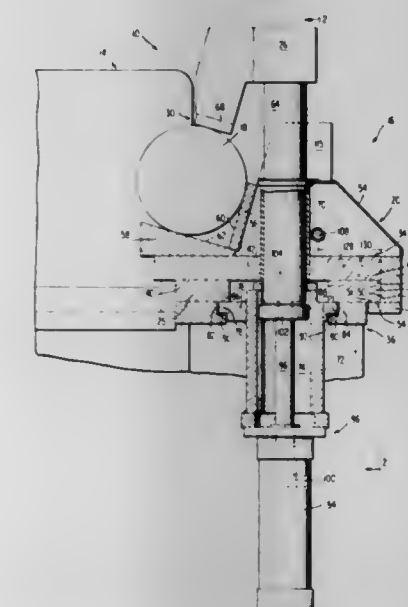
Rudolph L. Allison, and Willy J. Goellner, both of Rockford, Ill., assignors to Paramount Textile Machinery Co., Rockford, Ill.

Continuation-in-part of Ser. No. 838,220, July 1, 1969, Pat. No. 3,572,200. This application Nov. 12, 1970, Ser. No. 88,547. The portion of the term of this patent subsequent to Mar. 23, 1988, has been disclaimed.

Int. Cl. B26d 7/06, 7/02

U.S. Cl. 83-27

28 Claims



A method and apparatus for severing a workpiece with a cutting tool returnable through the kerf or cut made thereby wherein at least one translatable slide is employed to move the uncut major portion of the workpiece in a generally linear direction away from the kerf prior to return of the cutting tool. Provision is made for predetermining the amount of translating movement of the slide in at least one generally linear direction of movement thereof in order to facilitate measuring operations.

The workpiece may be clamped against a support of the slide including a generally laterally extending supporting surface and a generally upwardly extending supporting surface with positive forces acting in two generally opposite directions, one acting generally downwardly of the slide and the other acting generally upwardly against a way on which the slide is supported.

3,752,024

## CUTTING MECHANISM FOR ROTARY KNIFE CUTTING MACHINES

David N. Judelson, 415 W. 23rd St., New York, N.Y., assignor to Oscar I. Judelson Inc., New York, N.Y.

Continuation of Ser. No. 50,917, Aug. 22, 1960, Pat. No. 3,700,402.

Filed Nov. 6, 1962, Ser. No. 237,431

Int. Cl. B23b 3/04, 5/14, 37/00

U.S. Cl. 82-86 R

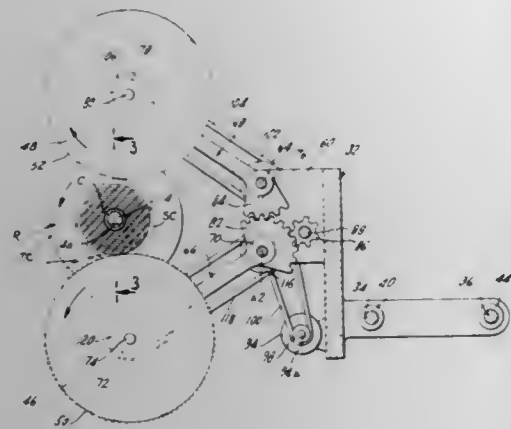
9 Claims

The present invention relates to rotary knife cutting machines which sever a roll of material wound on a core into



plural narrower rolls by utilizing two rotary knives that are opposed to each other on opposite sides of the work-piece axis

velope is removed from the punching dies. The window panes are adhesively secured to the carrier web in longitudinally



and by having knife feeding means that advances one of the knives into the workpiece by a fixed merement ahead of the other knife all during the working cut.

3,752,025

## DEVICE FOR CUTTING A CARPET

Theodorus Michael J. Van Everdingen, Post Box 52, Culemborg, Netherlands

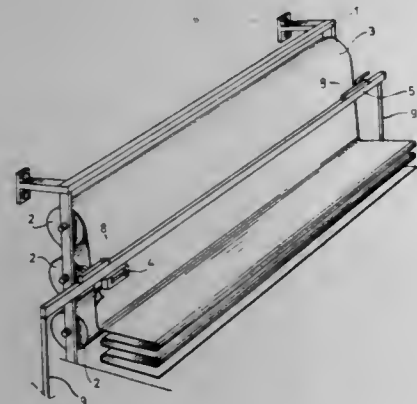
Filed Oct. 22, 1971, Ser. No. 191,682

Claims priority, application Netherlands, Oct. 22, 1971, 7015473

Int. Cl. B23d 19/00

U.S. Cl. 83-485

4 Claims



A device for cutting off any length from a carpet web comprising a section bar with a slidable gripping jaw at both extremities for co-operation with a border of the web, further comprising a cutting member slidable along said bar.

3,752,026

## ENVELOPE WINDOW PUNCH

Feiten Michael O'Neill, 1276 Ramona Ave., Lakewood, Ohio

Division of Ser. No. 864,675, Oct. 8, 1969, Pat. No. 3,682,745.

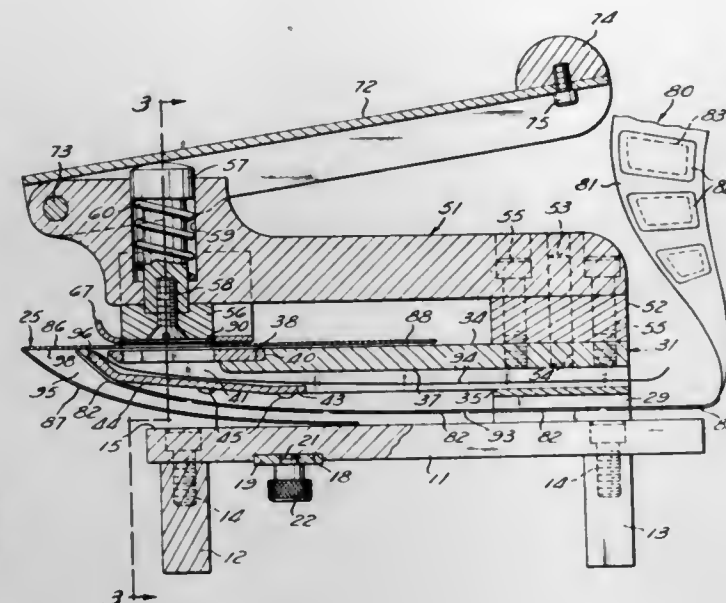
This application Jan. 7, 1972, Ser. No. 216,041

Int. Cl. B26d 5/08

U.S. Cl. 83-589

2 Claims

An apparatus is disclosed for producing window envelopes from preformed windowless envelopes. Front and rear wall portions of a preformed envelope are separated, and a window opening is punched in one of the wall portions. A transparent window pane is located in the interior of the preformed envelope between the separated wall portions by a flexible carrier web and is removed from the carrier web within the interior of the envelope by passing the carrier web over a guide plate which abruptly changes the direction of travel of the carrier web. The window pane is removed from the carrier web and affixed to the interior surface of the one wall portion as the envelope is removed from the punching dies. The window panes are adhesively secured to the carrier web in longitudinally



spaced apart relation, and the carrier web is fed into and out of the envelope in a direction substantially parallel to the wall of the envelope to which the window pane is to be affixed.

3,752,027

## CUTTING TOOL FOR NOTCHING SHEET MATERIAL

Heinz Joseph Gerber, and David Raymond Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.

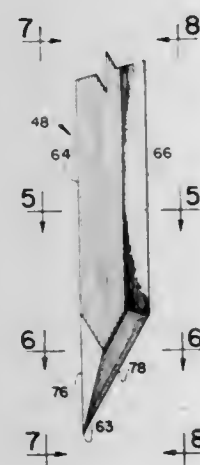
Division of Ser. No. 13,506, Feb. 24, 1970, Pat. No. 3,626,799.

This application June 1, 1971, Ser. No. 148,542

Int. Cl. B26d 3/14

U.S. Cl. 83-613

4 Claims



A notch cutting tool is provided for use with apparatus for cutting and notching layups of sheet material of the type which includes a layup support means and at least one cutting head mounted for movement in two coordinate directions relative to the layup. The notch cutting tool is driven from the cutting head and is adapted to move in a plunging fashion relative to the layup to form a notch or cut therein serving as an index mark on pieces cut from the layup by another cutting tool.

3,752,028

## DIE APPARATUS FOR FINE BLANK STAMPING

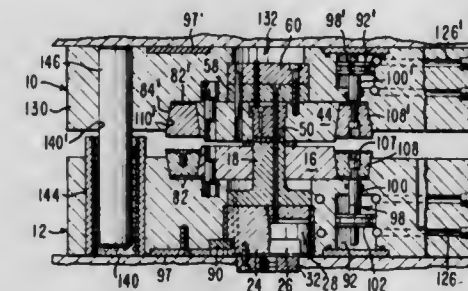
George H. Waizmann, Dayton, and Robert G. Cook, Sr., New Carlisle, both of Ohio, assignors to The Gem City Engineering Co., Dayton, Ohio

Filed Oct. 4, 1971, Ser. No. 186,157

Int. Cl. B26f 1/14; B26d 1/00

U.S. Cl. 83-685

21 Claims



Apparatus including a versatile die set particularly advantageous for fine blank stamping, featuring a quick functioning shroud ring for clamping and locating die components with extreme accuracy and precision guides.

3,752,029

## PICK HOLDER

Charles A. Watrous, 5959 Turbo Dr., Romulus, Mich.

Filed Mar. 19, 1971, Ser. No. 126,027

Int. Cl. G10d 3/00

U.S. Cl. 84-329

6 Claims



This invention and discovery is directed to musical instruments and more particularly to stringed instruments which are manipulated by the fingers or a pick, so that when switching from finger manipulation to the pick, the hand need not be taken from the instrument. This is accomplished by positioning the pick between two coils of a spring which is secured to the instrument by any suitable means.

3,752,030

## SCREW

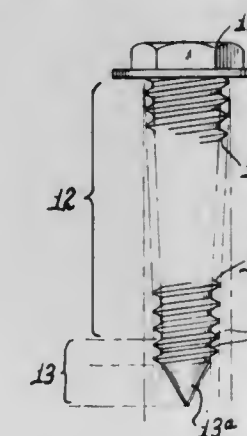
Frank V. Steurer, 12 Interstate Rd., Addison, Ill.

Continuation-in-part of Ser. No. 81,675, Oct. 15, 1970, abandoned. This application July 29, 1971, Ser. No. 167,419

Int. Cl. F16b 25/00

U.S. Cl. 85-46

2 Claims



A threaded fastener for securing sheet materials using self tapping techniques to cause continuous spreading, and compressing of the material surrounding the pilot hole so as to minimize stripping and increase holding power.

3,752,031

## TWELVE-TONE-ROW MODULATOR

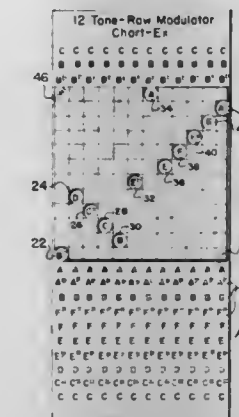
Istvan Mohos, 300 W. 109th St., New York, N.Y.

Filed Aug. 5, 1971, Ser. No. 169,379

Int. Cl. G09b 15/02

U.S. Cl. 84-471

6 Claims



A modulator for visual manipulation of twelve-tone-row sequences of musical notes includes a base plate having letter names of musical notes arranged on its face in 12 vertical columns and at least 24 horizontal rows, and a square template divided into 12 vertical columns and 12 horizontal row of squares. The template is punched in selected squares to provide windows in the order of a selected twelve-tone-row sequence and is applied to the face of the base plate in its original position or in inverted or rotated positions to present visual readings of the twelve-tone-row or its retrogrades, inversions or transpositions.

## ERRATUM

For Class 85-46 see:  
Patent No. 3,752,030

3,752,032

## SELF ATTACHING COUPLING

Theodore E. Fiddler, 1268 Suffield Dr., Birmingham, Mich.

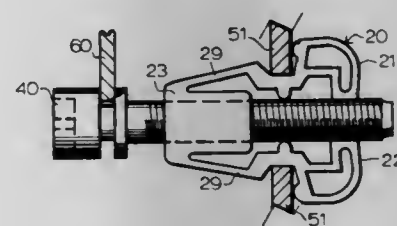
Continuation of Ser. No. 21,025, March 19, 1970, abandoned.

This application July 8, 1971, Ser. No. 160,630

Int. Cl. F16b 37/04

U.S. Cl. 85-80

7 Claims



A coupling for mounting a screw in a hole in a wall with the coupling having paired jaws connected to a nut body by spring arms. The coupling is insertable in a hole with the nut body leading and the spring arms next following and engaging the edge of the wall at the hole to torsionally load the spring arms. Upon the spring arms by-passing the hole, the jaws enter the hole. Upon the jaws occupying the hole, the spring arms urge the jaws outwardly to engage both faces of the wall and the edges of the wall at the hole. The jaws have cam bosses at one face of the wall and shoulders at the other face of the wall. The cam bosses and the shoulders oppose one another to grip the wall therebetween. A web extends outwardly from the shoulders and connects to screw engaging pads spaced from the wall. A spring strip triangulates between the shoulders and the pads. Thus the pads and the nut body are spaced from the wall



on opposite sides. A screw lies between the nut body and the pads and is free of contact in the hole so that the screw and the coupling are bridge-spanned on each other through the hole. The screw may be assembled fully or partially with the coupling prior to insertion in the hole and the assembly inserted in the hole. Also, the coupling may be put in the hole first and the screw then turned into the coupling.

# ERRATUM

For Class 86—485 see:  
Patent No. 3,752,025

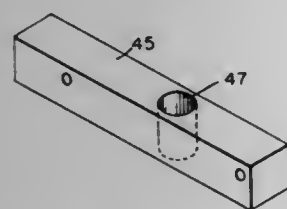
3,752,033

## POWDER MEASUREMENT AND DISPENSING APPARATUS

John R. Ross, 5542 Hadfield St., Philadelphia, Pa.  
Filed Nov. 16, 1971, Ser. No. 199,101  
Int. Cl. F42b 33/02

U.S. Cl. 86—31

5 Claims



Apparatus for dispensing powder from a container to a cartridge shell includes a slidable member for receiving metering elements having different size openings extending therethrough for receiving predetermined amounts of powder. A valve adapted to be opened or closed is connected between the container and the slidable member. The slidable member may be reciprocated manually to receive powder in a metering element to dispense it to an empty shell. The apparatus may be associated with other apparatus to permit reconditioning the shell and inserting bullets therein.

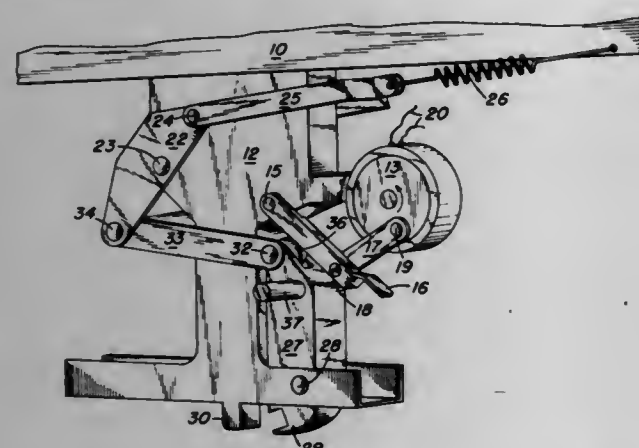
3,752,034

## PRACTICE MULTIPLE BOMB RACK

John H. Waters, 6240 Holly Bay Dr., Jacksonville, Fla.  
Filed July 23, 1971, Ser. No. 165,555  
Int. Cl. B64d 1/04

U.S. Cl. 89—1.5 G

3 Claims



A bomb rack release mechanism having a sear and a rotating solenoid. The sear is pivotally mounted so as to block the movement of the bomb hook when in one position. A linkage couples the sear and solenoid such that actuation of the solenoid acts directly to remove the blocking action of the sear. The release mechanism of the present invention reduces the likelihood of inadvertent bomb release while reducing the time from solenoid actuation to bomb release.

3,752,035

## AUTO-SYNCHRONIZING GEAR SYSTEM

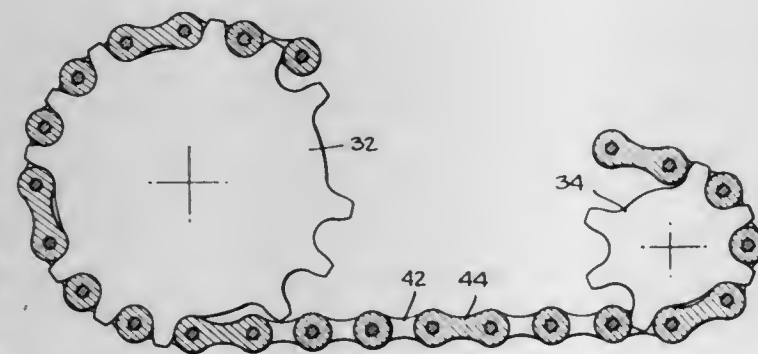
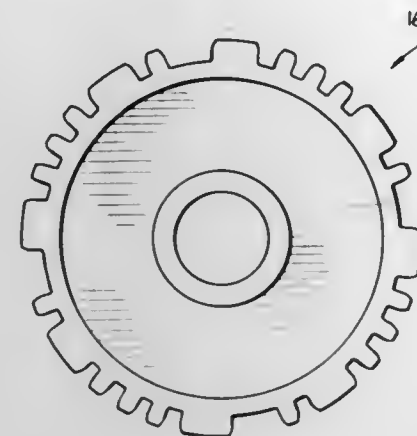
Thomas William Cozy, Burlington, and Robert Pettinga, Shelburne, both of Vt., assignors to General Electric Company, Burlington, Vt.

Filed Apr. 5, 1971, Ser. No. 130,994

Int. Cl. F16h 55/08, 55/30; F41d 9/06

U.S. Cl. 89—13 R

12 Claims



A transmission system is shown having shafts meshing cyclical members with respective teeth and tooth-spaces respectively arranged in combinational code groups which will only mesh when said members are in predetermined relative orientation.

3,752,036

## PROGRAMMABLE FLUIDIC LOGIC CONTROLLED MACHINE TOOL

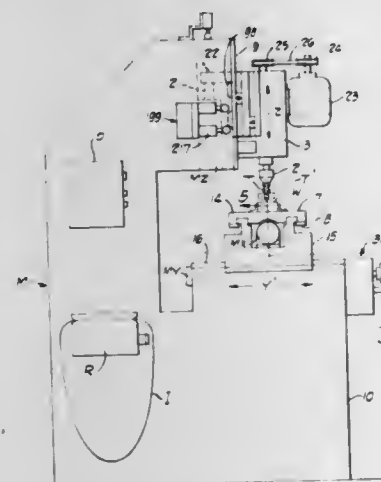
Morris R. Hicks, Brook Park, and Joseph C. Le Veque, Cleveland, both of Ohio, assignors to Bardons & Oliver, Inc., Cleveland, Ohio

Filed June 23, 1970, Ser. No. 49,098

Int. Cl. B23c 1/00

U.S. Cl. 90—13 C

25 Claims



A program controlled automatic machine tool having three carriages respectively movable parallel to X, Y and Z axes that

are perpendicular to each other. The X and Y carriages are horizontally movable along their respective axes to position a workpiece with respect to a cutting tool carried by the vertically movable Z carriage. A program on a suitable input record, such as punched paper tape, comprises a sequence of multi-digit X-position instructions and Y-position instructions as well as a Z-carriage motion instruction and suitable ancillary instructions. Each X and Y position instruction is entered into a fluid logic circuit that controls movement of the corresponding X or Y carriage. The carriages are commanded by the fluid logic circuits to move to the instructed positions. Position transducers associated with the respective X and Y carriages provide information to the fluid logic circuits as to the carriage positions. The carriage positions are compared to the position instructions and when correspondence is obtained for both X and Y carriages the Z carriage is enabled to cause a cut to be made in the workpiece. The procedure is repeated until all instructions in the sequence have been carried out.

3,752,037

## CAM CONTROLLED CUTTING APPARATUS

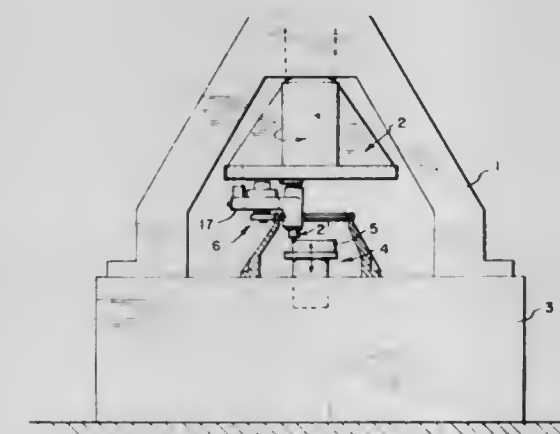
Nils O. Hoglund, Short Hills, N.J., assignor to Tri-Ordinate Corporation, Berkeley Heights, N.J.

Filed Nov. 24, 1971, Ser. No. 201,776

Int. Cl. B23d 1/30, 5/04

U.S. Cl. 90—24.3

25 Claims



A cutting apparatus for cutting the surface of a workpiece along intersecting paths and including a cam-cam follower mechanism, cutting means mounted on the follower part of the mechanism, driving means for moving the cam and follower relative to each other to move the cutting means successively along said paths, and control means associated with the cam-cam follower mechanism for turning the follower on the cam to move the cutting means from one path to the other while holding the cutting means at the intersection of the two paths.

3,752,038

## ELECTRO-HYDRAULIC PULSE MOTOR

Seiuemon Inaba, Kawasaki; Kohei Ito, Fujisawa; Kanryo Shimizu, Kawasaki, and Youichi Amemiya, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki-shi Kanagawa-ken, Japan

Filed Dec. 13, 1971, Ser. No. 207,105

Claims priority, application Japan, Dec. 26, 1970, 45/131958 (utility model)

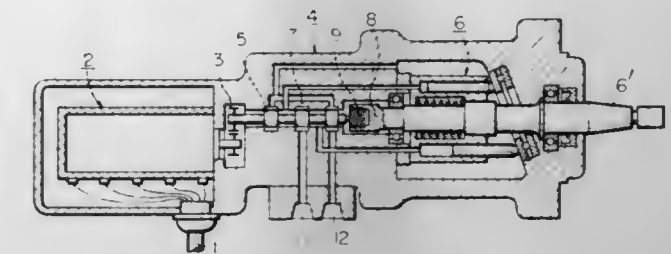
Int. Cl. F15b 21/00

U.S. Cl. 91—39

1 Claim

This disclosure relates to an improved electro-hydraulic pulse motor having an arrangement wherein novel stop means are provided for screw-nut coupling which couples the four-way pilot valve part to the hydraulic motor part while provid-

ing a feedback loop in the operation of the electro-hydraulic pulse motor so that the axial motion of a valve spool of the four-way pilot valve part which motion is driven by the elec-



tric pulse motor part, is properly restricted so as not to fail in delivering control action to the hydraulic line formed in the electro-hydraulic pulse motor.

3,752,039

## MASTER-SLAVE HYDRAULIC CONTROL SYSTEM

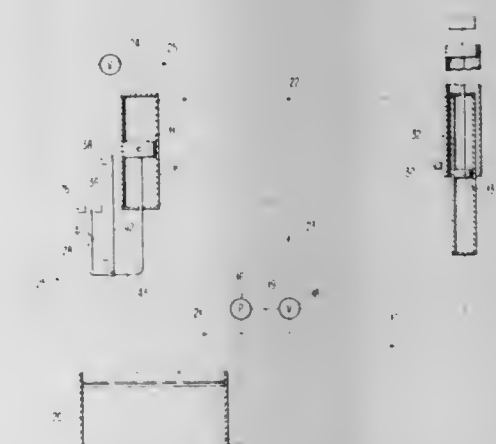
Thomas Fenton Hewins, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,873

Int. Cl. F01b 25/04; F15b 11/22

U.S. Cl. 91—171

7 Claims



A master-slave hydraulic control system is disclosed which provides an improved synchronization control together with the ability to rapidly change the stroking characteristics of the cylinders by removing and inserting a second control member into a mounting apparatus moved with the master control piston. Further, the two pistons are continuously maintained in close synchronization and are not allowed to get out of synchronization by the accumulation of more than a slight quantity of captive hydraulic fluid or oil.

3,752,040

## MULTI PISTON POWER PACK UNIT FOR FLUID ACTUATED TOOL

James A. Pawloski, Rt. 97, P.O. Box 13, North Woodstock, Conn., and Grahame F. Williams, 801 South St., Southbridge, Mass.

Filed Oct. 26, 1971, Ser. No. 192,220

Int. Cl. F15b 11/16, 13/06

U.S. Cl. 91—411 A

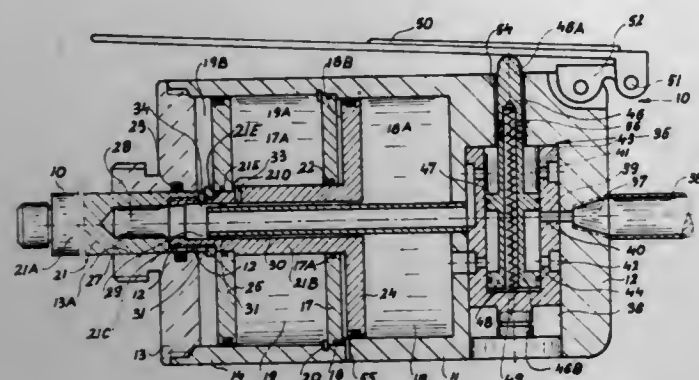
1 Claim

This disclosure is directed to a multi piston, double acting, fluid actuated power pack to power various tools between an operative and inoperative position to attain maximum power with limited displacement of the operating piston. This is attained by a power pack comprising of a housing partitioned to define a plurality of piston chambers and having a piston head reciprocally disposed in each of the chambers. The piston heads are connected to a piston rod which is activated between extended and retracted position as fluid pressure is



exerted on the piston heads. Control means in the form of a valve and associated passages are operatively connected to the respective piston chambers for directing the flow of fluid pres-

sure to and from the respective chambers in a manner wherein fluid pressure is applied to each of the piston heads on the power stroke, and on only at least one of the piston heads on the return stroke.



sure to and from the respective chambers in a manner wherein fluid pressure is applied to each of the piston heads on the power stroke, and on only at least one of the piston heads on the return stroke.

3,752,041

## FAIL-SAFE ACTUATOR

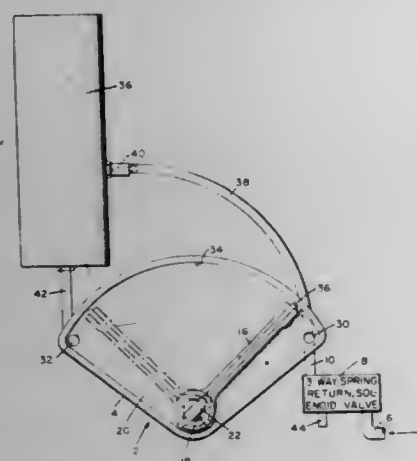
Russell G. Smith, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio

Filed Dec. 6, 1971, Ser. No. 204,990

Int. Cl. F15b 15/12; F16k 31/12

U.S. Cl. 91-416

2 Claims



A fail safe actuator includes a fluid-operated vane motor, a control valve means connected between a fluid source and one side of the motor, a bypass conduit connected between opposite sides of the motor including a restrictive orifice, and a storage tank cooperating to return the motor to its starting position upon failure.

## ERRATUM

For Class 91-485 see:  
Patent No. 3,752,053

## ERRATUM

For Class 92-37 see:  
Patent No. 3,751,988

3,752,042

## ADJUSTABLE DIE PLATE

Gerald J. Castille, Houston, Tex., assignor to Castille Cutting Dies, Inc., Houston, Tex.

Filed Oct. 6, 1971, Ser. No. 186,957

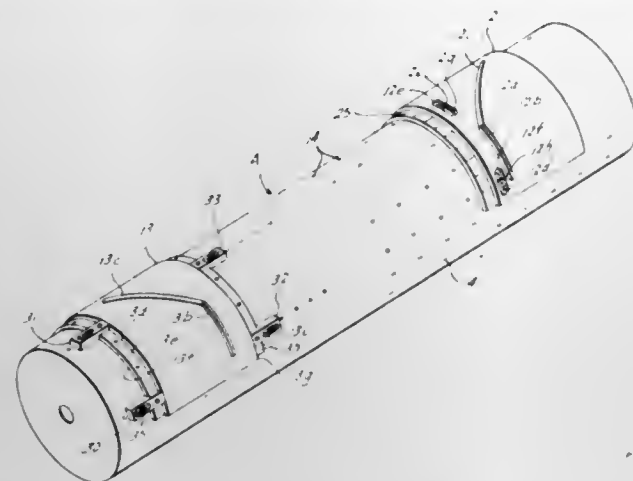
Int. Cl. B31b 1/16; B26d 1/12

U.S. Cl. 93-58.2 R

14 Claims

A system of four arcuate dies are adapted to be mounted in evenly spaced threaded holes in a rotary cylinder for a cardboard box fabricating machine. The positions of three of the

dies are adjustable either longitudinally or circumferentially, or both, on the rotary cylinder whereby the dimensions of the cardboard boxes manufactured may be varied infinitely.



Further, the position of a single die plate on the rotary cylinder may be adjusted both longitudinally and circumferentially of the rotary cylinder to an infinite number of positions.

3,752,043

## STACK FORMING APPARATUS

Hans Rappaport, Konstanz, and Gisbert Burkardt, Reichenau, both of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

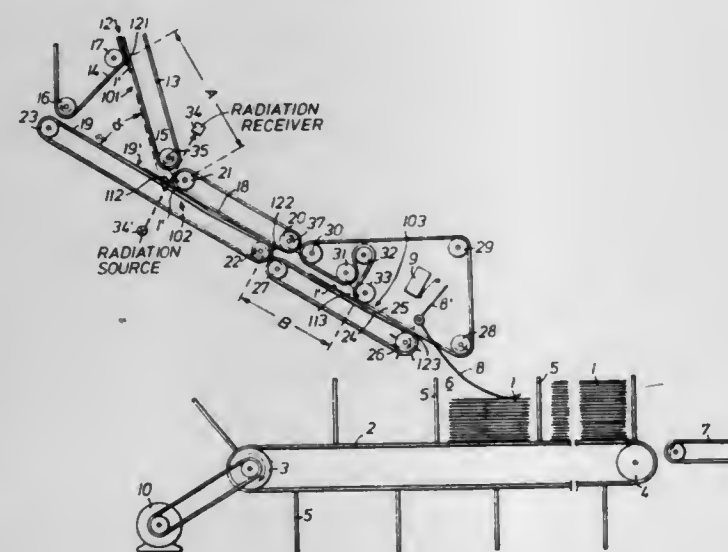
Filed June 1, 1971, Ser. No. 148,335

Claims priority, application Germany, May 29, 1970, P 20 26 297.9; May 29, 1970, HGM 70 20 026.9

Int. Cl. B65h 33/12

U.S. Cl. 93-93 DP

12 Claims



Apparatus for forming stacks of individual articles from a continuous stream of such articles has a first conveying means for positively conveying flat articles at a predetermined constant speed along a first conveying path. A second conveying means is arranged for positively conveying articles received from the first conveying means along a second conveying path. The inlet of the second conveying means is spaced from the outlet of the first conveying means a distance greater than the length of an individual article. An abutment surface is arranged to extend in the direction of the second conveying path, the first and second conveying paths being arranged at an angle  $\alpha$  with respect to one another. The vertex of angle  $\alpha$  is on the abutment surface and is arranged adjacent to the input of the second conveying means. Means are provided for selectively moving the articles along the second conveying means at a first predetermined speed and a second predetermined speed less than the first speed. Means are provided for monitoring the stream of articles and sensing the thickness of

a stack for rapidly switching the means for selectively moving from the first speed to the second speed when a predetermined stack thickness has been reached. This results in articles at the input of the second conveying means overlapping one another and producing a gap in the stream of articles. Means are provided for receiving articles from the second conveying means for forming a stack and for rapidly moving a stack of articles when a predetermined thickness has been reached for the stack.

3,752,044

## DAYLIGHT LOADER FOR X-RAY PROCESSOR AND THE LIKE

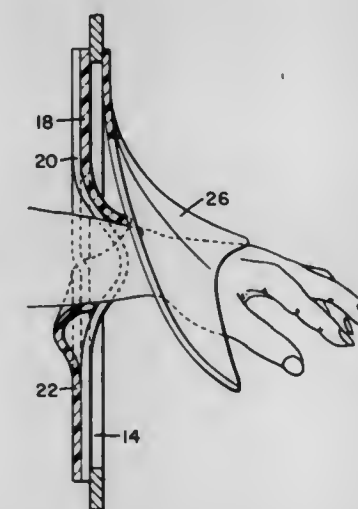
Ronald Paul Layne, 233 Greystone Ln., Rochester, N.Y.

Filed May 26, 1972, Ser. No. 257,225

Int. Cl. G03d 17/00

U.S. Cl. 95-1

4 Claims



Disclosed is a daylight loader having an opening in adjacent front and side walls. Each opening is covered by four interwoven pieces of one-way stretch fabric, the stretch being oriented in the direction of weave, and a fabric flap hinged to the top of the dark side of each opening covering the entire opening.

3,752,045

## ELECTRONIC TIMER CONTROL FOR A SHUTTER

Shigeo Ono, Yokohama-shi, Kanagawa-ken, and Ichiro Hamaguchi, Shinagawa-ku, Tokyo, both of Japan, assignors to Nippon Kogaku K. K., Tokyo, Japan

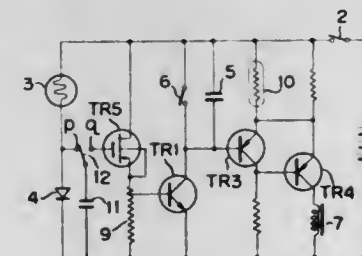
Continuation of Ser. No. 695,199, Jan. 2, 1968, abandoned.

This application Sept. 2, 1970, Ser. No. 69,164

Int. Cl. G03b 7/08

U.S. Cl. 95-10 CT

16 Claims



An exposure control arrangement for a camera having an objective lens and a shutter moveable between closed and open positions is disclosed. A light intensity to voltage conversion means is positioned behind the objective lens for converting essentially each value of the intensity of the light passing therethrough during use of the camera to a first voltage having a value essentially linearly proportional to a logarithm of the value of this intensity. The first voltage is selectively stored in

a capacitor memory means and switching means are provided for coupling the capacitor memory means to the conversion means during intervals when light passing through the objective lens is incident on the conversion means and for disconnecting the capacitor memory means from the conversion means when light passing through the objective lens is not incident on the conversion means. A timing circuit is coupled to the capacitor memory means. The timing circuit includes a voltage to current conversion means which converts the value of the voltage stored in the capacitor memory means to a current having a value proportional to an antilogarithm of the stored voltage, and also includes a timing capacitor charged by said current. A shutter actuating circuit is operatively coupled to the timing circuit and returns the shutter to said closed position when the timing capacitor is charged to a predetermined voltage.

3,752,046

## PHOTOGRAPHIC CAMERA HAVING A FLASH SYNCHRONIZING DEVICE

Masanobu Sato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

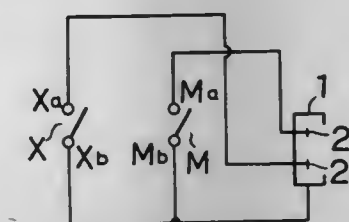
Filed Sept. 1, 1971, Ser. No. 176,910

Claims priority, application Japan, Sept. 7, 1970, 45/89030; Sept. 8, 1970, 45/89255; Nov. 24, 1970, 45/116564

Int. Cl. G03b 15/03, 9/70

U.S. Cl. 95-11.5 R

4 Claims



Photographic camera having a flash synchronizing device operable in X-contact and M-contact synchronization photography. The camera has a pair of electric terminals each connected to the X-contacts and the M-contacts of the flash synchronizing device. The pair of electric terminals are embedded in the accessory shoe of the camera spaced apart from each other in such positions that, when an electronic flash device having an electric contact thereof in its mounting foot is attached to the accessory shoe, the terminal for the X-contacts of the camera contacts with the electric contact of the flash device so as to be operable in X-contact synchronization photography, while, when a flash bulb device is attached with its mounting foot to the accessory shoe, the electric contact provided in the foot contacts with the electric terminal for the M-contacts of the camera so as to be operable in M-contact synchronization photography. Alternatively, the flash bulb device is provided with a movable member adapted to be moved each time a flash bulb is loaded in the flash device so that the movable member cooperates with actuating means in the camera, when the flash device is attached to the camera, for switching a switch of the flash synchronizing device normally connecting X-contacts in the circuit so as to connect the M-contacts in the circuit each time a flash bulb is loaded in the flash bulb device. Two sets of guide number setting resistors are selectively connected across the galvanometer of an automatic exposure control device of the camera having a programming shutter and a flash synchronizing device operable in X-contact and M-contact synchronization photography. One set of the resistors is for the X-contact synchronization while another set is for the M-contact synchronization, and the resistance each of the resistors for the M-contact synchronization is selected to be different from that of the respective resistor for the X-contact synchronization so that the exposure light is compensated for to achieve the proper exposure in the M-contact synchronization in which otherwise underexposure takes place.



3,752,047

## SURVEILLANCE CAMERA

Larry Gordon, 76 Albany Blvd., Atlantic Beach, N.Y., and Larry J. Paskow, 79th St. Causeway, Harbor Island Spa, Miami Beach, Fla.

Continuation-in-part of Ser. No. 72,996, Sept. 17, 1970, abandoned. This application Dec. 13, 1971, Ser. No. 207,225 Int. Cl. G03b 17/46

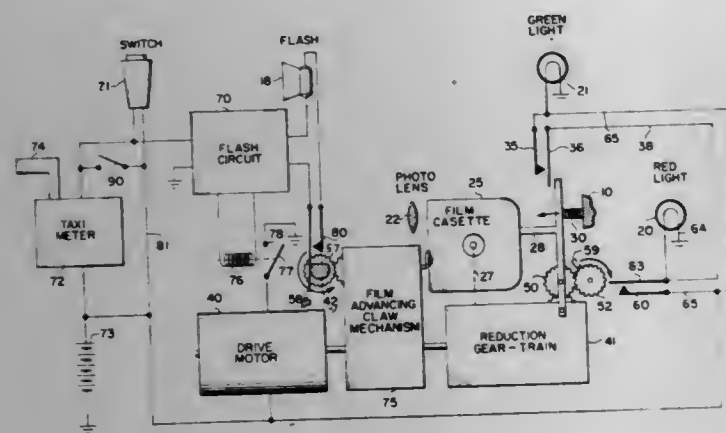
U.S. Cl. 95-11

3 Claims

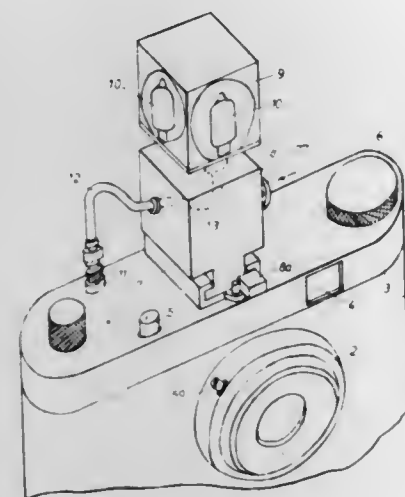
34 298.7

Int. Cl. G03b 15/04, 9/70

12 Claims



A surveillance camera particularly for use in a moving vehicle such as a taxicab, having a single frame motion picture camera for photographing images onto a film strip in a film cartridge. The camera includes an illumination means, such as a flash, for illuminating the subject when the picture is being taken. The camera automatically advances the film to the next image when the picture is taken and can be remotely actuated by the driver of the vehicle. The camera is housed in a tamper-proof container which is bolted to the vehicle and has indicating lights to signal the readiness of the camera and the remaining film left in its cartridge.



The invention is directed to a camera having flashbulb attachment connected therewith. The bulbs are ignited by a mechanical trigger associated therewith and tensioning means are secured to the base so that upon release the impact produces ignition of the flashbulb. With the camera there is a shutter arrangement provided with a point of attachment from which the mechanical force necessary for release of the impact member may be obtained.

3,752,048

## ERROR PREVENTING MEANS FOR FLASH SYNCHRONIZED PHOTOGRAPHY

Seiji Tokutomi, Kanagawa-ken, Fujisawa, Japan, assignor to Asaki Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan Filed June 29, 1972, Ser. No. 267,636

Claims priority, application Japan, July 20, 1971, 46/63470 (utility model)

Int. Cl. G03b 15/02

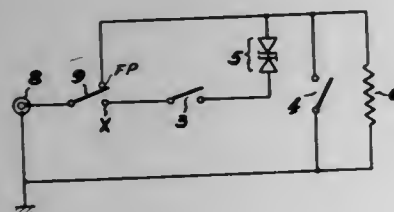
U.S. Cl. 95-11.5 R

6 Claims

19,305/71

Int. Cl. G03b 1/61

7 Claims



Error preventing means for focal-plane synchronized camera shutters to inhibit the operation of an electronic flash unit when inadvertently connected to a focal-plane flashbulb outlet, and alternatively for inhibiting the operation of flash bulbs inadvertently connected to an electronic flash outlet, includes a voltage limited short circuiting resistance element which is connected in parallel with a synchronizing switch in the trigger circuit for a flash bulb, and in series with a synchronizing switch of the trigger circuit for an electronic flash unit.

3,752,050

## STILL CAMERA WITH A FILM TRANSPORT SYSTEM

Maynard Frank Wolfe, P.O. Box 20339, Sai Ying Pun, Hong Kong

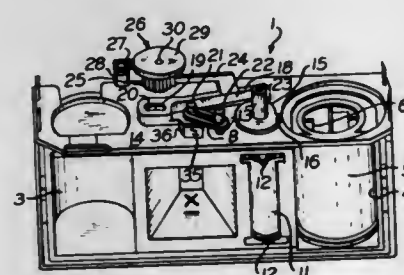
Filed June 6, 1972, Ser. No. 260,182

Claims priority, application Great Britain, June 7, 1971, 19,305/71

U.S. Cl. 95-31 FL

Int. Cl. G03b 1/61

7 Claims



A still camera with a film transport system equipped with a film winding lock that is releaseable independently of the shutter mechanism to present the film for exposure one frame at a time in counted succession.

3,752,051

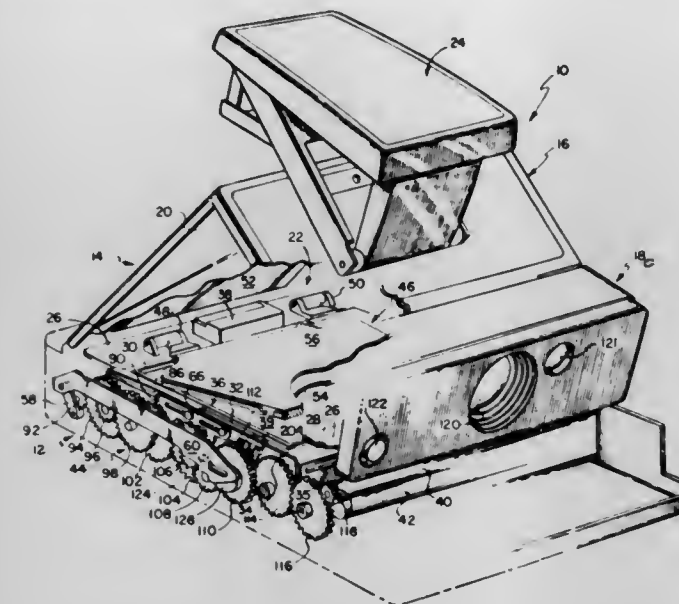
## FILM ADVANCE ACTUATED LATCH FOR REFLECTING MEMBER

Igor Bilnow, Mills, and Robert D. Leduc, Marlboro, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass. Filed Apr. 24, 1972, Ser. No. 247,047

Int. Cl. G03b 19/12

U.S. Cl. 95-42

8 Claims



Photographic apparatus of the reflex type having a reflecting member pivotally mounted for movement between viewing and exposure positions and a latch mounted in the path of travel of the reflecting member for releasably retaining the reflecting member in the viewing position. The apparatus is provided with a film-advancing system for (1) moving an exposed photosensitive element out of its exposure position and (2) maintaining the latch in an inoperative position during movement of the reflecting member into the viewing position.

3,752,052

## FLUID REPLENISH CONTROL DEVICE

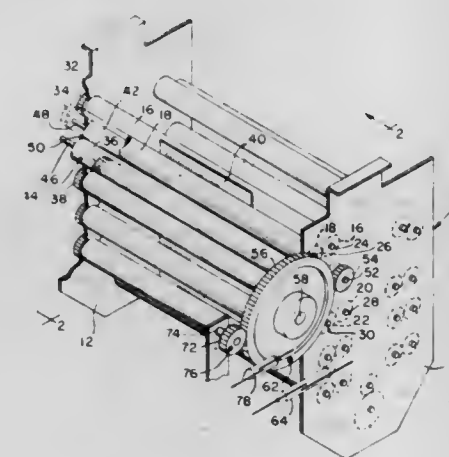
Henry F. Hope, 195 Welsh Rd., Huntingdon Valley, Pa., and Stephen F. Hope, 2421 Wyandotte Rd., Willow Grove, Pa.

Filed Jan. 3, 1972, Ser. No. 214,814

Int. Cl. G03d 3/02

U.S. Cl. 95-89 R

9 Claims



The control valve plate for a hydrostatic axial piston pump has in its front control face kidney-shaped left and right control ports on opposite sides of an axial plane, and also hydrostatic bearings radially outwards of a circular groove which is located outward of the control ports and communicates with atmospheric pressure. Left and right pressure cylinders and pistons in the rear control face of the valve control plate are located radially outwards of the ends of the left and right control ports, but respectively connected by ducts with the right and members control ports, respectively.

3,752,054

## AUTOMATIC PROCESSOR FOR EMULSION COATED METAL TEMPLATES

Raymond J. Scanlan, 3029 Gainsborough Dr., Pasadena, Calif. Filed Mar. 23, 1972, Ser. No. 237,459

Int. Cl. G03d 3/12

U.S. Cl. 95-94 R

6 Claims

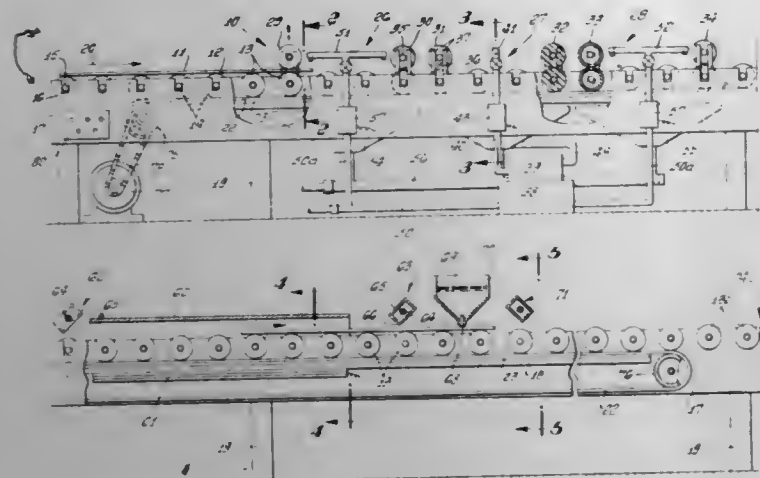
Apparatus to develop sensitized emulsion coating on a metallic base sheet comprises:

- a sequence of sheet conveying rollers rotating to convey the sheet generally horizontally in a forward direction and with the coating exposed vertically,

A device for replenisher control suitable for use in automatic web transporting equipment including X-ray and other film developing apparatus. The device includes a pair of rollers which are driven by the web as it passes through the apparatus. One roller is provided with a shaft extension upon which a driving gear is mounted. A large gear which incorporates a switch attracting magnet is responsive to the driving gear and rotates when the web rotates the rollers. The switch attracting magnet functions a timer which precisely controls



b. treating means to deliver and direct different liquids into contact with said coating at different stations during sheet forward conveyance,



c. and multiple squeegees which are spaced in said direction to engage said coating during said conveyance and to confine said different liquids at said different stations during liquid contact with said coating.

3,752,055

## GRILLE ARRANGEMENT FOR CLEAN ROOMS

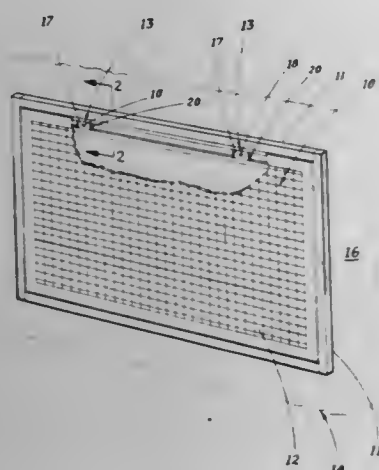
Bernard R. Shuler, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed Jan. 7, 1972, Ser. No. 216,036

Int. Cl. F24f 13/00

U.S. Cl. 98—114

6 Claims



The invention relates generally to clean rooms and relates specifically to a grille and grille securing means construction, particularly adapted for use in clean rooms, wherein the grille securing means comprises at least one magnetic fastener which secures a grille over a duct opening into a clean room.

3,752,056

## LABORATORY EXHAUST HOOD

Richard I. Chamberlin, Hanover; Joseph E. Leahy, West Quincy, and Frederick J. Viles, Norwood, all of Mass., assignors to E. H. Sheldon and Company, Muskegon, Mich.

Filed Nov. 4, 1970, Ser. No. 86,833

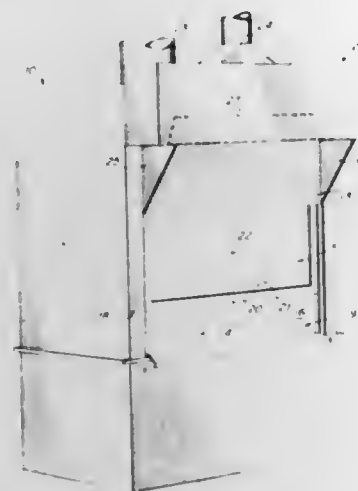
Int. Cl. F23j 11/00

U.S. Cl. 98—115 LH

22 Claims

A laboratory exhaust hood is described including in combination a hood superstructure and a novel auxiliary air supply plenum. The auxiliary air supply plenum is of modular design suitable for use wherever an efficient conversion of a relatively high energy air stream of a given cross sectional area to a much lower energy laminar air stream of larger cross sectional area is desired. In particular, the auxiliary air supply is adapted

for incorporation with a conventional laboratory exhaust hood, and has exterior vertical front, rear and end walls and a cover and interior baffles which define an air entry chamber, an air slot at the top of said chamber, an expansion chamber extending downward from the slot, an air balance chamber and an air supply outlet. Within the plenum, an air vector controller is positioned between the expansion chamber and the air balance chamber, and the final air balance means, includ-



ing a back pressure plate, an air jet entrainment eliminator, and a shallow chamber therebetween, is positioned between the air balance chamber and the air outlet.

The combination of the hood superstructure and the auxiliary air supply plenum includes a movable vertical closure sash and immediately above it, when the sash is closed, a sight-tight bypass. Beneath the closed sash is a horizontal air foil for the provision of a flow of air across the work surface of the hood, by the entrainment of room air in auxiliary air jets.

3,752,057

## PORTABLE SCRAPER-TYPE MIXER

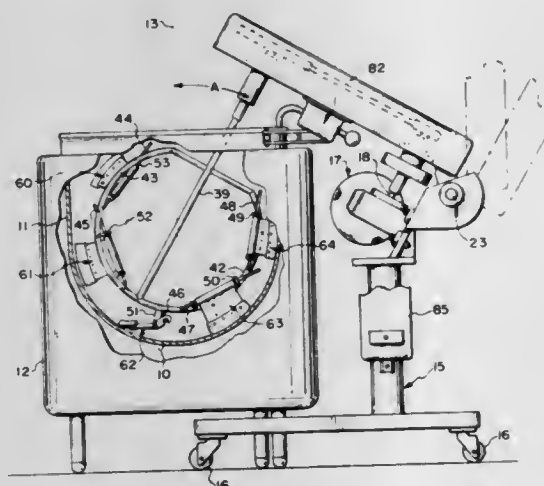
Frederick H. Groen, Jr., River Forest, Ill., assignor to Dover Corporation, New York, N.Y.

Filed Nov. 2, 1971, Ser. No. 194,868

Int. Cl. A47j 43/07, 43/08; B01f 7/02

U.S. Cl. 99—348

12 Claims



A mixer for a kettle has a shaft extending into the kettle at an angle of 30° with respect to the vertical axis of the kettle. A hoop is attached to the shaft and spaced a uniform distance from the bottom walls of the kettle. Pivotaly mounted on this hoop are a plurality of scrapers. These scrapers are at different positions with respect to the walls of the kettle and at different inclinations with respect to the shaft axis. Each scraper is pivotaly mounted on the hoop with stops to limit the extent of pivotal movement. Interchangeable scrapers are provided for different mixing operations.

3,752,058

## FEED MECHANISM

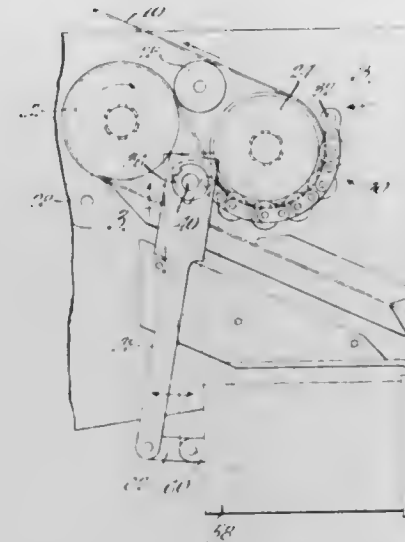
Peter Lems, Wilmette, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed June 11, 1971, Ser. No. 152,266

Int. Cl. B65b 13/22

U.S. Cl. 100—32

11 Claims



A strap-feeding and tensioning mechanism for applying strap material about an article and tensioning the strap prior to interconnection of the strap loop about the article. The tensioning mechanism consists of a driven wheel that has a friction producing member cooperating therewith to produce frictional engagement between the strap and the peripheral surface of the wheel. The friction producing member is in the form of an arcuate segment that encompasses a substantial circumferential portion of the wheel and is movable between first and second positions to (1) allow unrestricted relative movement between the strap and the wheel and (2) frictionally engage the strap with the periphery of the wheel to cause movement of the strap in response to rotation of the wheel.

3,752,059

## METHOD FOR TREATING HOUSEHOLD REFUSE

Jean-Jacques Boyer, 19 Rue Cognacq Jay, Paris, France

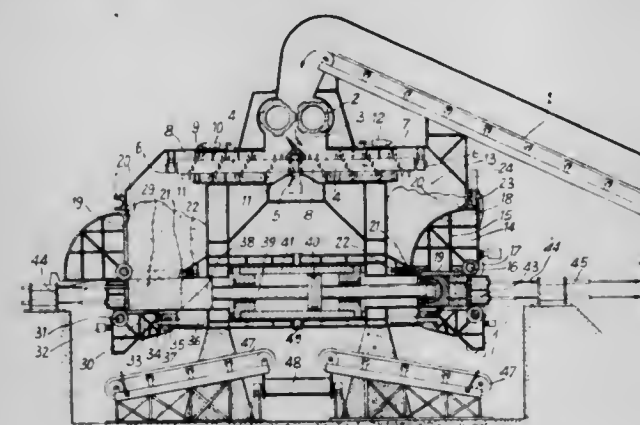
Filed Sept. 29, 1971, Ser. No. 184,830

Claims priority, application France, Oct. 6, 1970, 7036035; Sept. 15, 1971, 7133291

Int. Cl. B30b 9/04

U.S. Cl. 100—37

8 Claims



A method of treating household refuse in which the crushed and homogenized refuse is moistened and subjected to a compression in the order of 300 to 500 bars, the material under compression being traversed by perforated tubes for evacuating the liquids to form on the one hand liquid sludges extracted by the bores and on the other hand dry compressed substances. The installation for the treatment of household

refuse comprises a storage tank, a device for mixing and homogenizing the refuse, and immersion tank, a device for crushing and a press comprising perforated tubes for evacuating the liquids from the compression chamber.

3,752,060

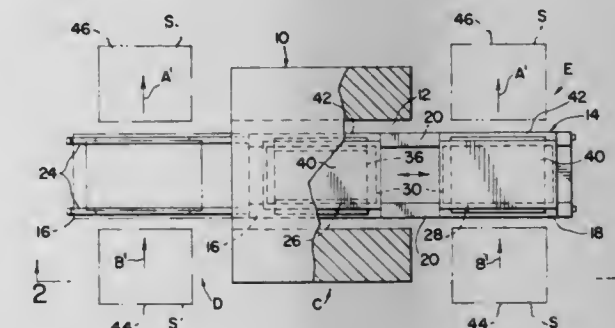
PROCESS FOR DOUBLE PLATEN DENSIFYING PRESS  
Joseph B. Hubert, and Bernard K. Hook, both of Hastings, Mich., assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed Jan. 28, 1972, Ser. No. 221,636

Int. Cl. B30b 1/32, 13/00

U.S. Cl. 100—38

8 Claims



A method is disclosed for compressing thin, thermoplastic resin-coated sheets of fibrous material employing a pair of platen assemblies each comprised of a plurality of platen members between which a plurality of sheets to be compressed are disposed and which are relatively displaceable toward one another to compress the sheet material therebetween. Relative displacement of the platen members to compress the sheet material therebetween is achieved in a press having opposed pressing members between which the platen sets are alternately disposed. The method includes loading sheet material into one of the sets of platen members while the latter set is disposed outside the press and the other set is disposed between the pressing members of the press, simultaneously moving the one set of platen members into the press and between the pressing members thereof and the other set of platen members out of the opposite side of the press, closing the pressing members relative to one another whereby the sheet material in the one platen assembly is compressed into the other platen assembly outside the press, simultaneously transferring the one platen assembly back to its initial position outside the press and moving the other platen assembly which is now loaded into the press, closing the pressing members whereby the sheet material in the other platen assembly is compressed, unloading the compressed sheet material from the one platen assembly, and then loading sheets of material to be compressed into the one platen assembly and repeating the alternate loading, pressing and unloading operations of the two platen assemblies. The method further includes heating the platen members of each of the assemblies during loading thereof to melt the resin with which the fiber material is coated, and cooling the platen members of each assembly during the pressing operation to cure the resin.

3,752,061

## REFUSE COMPACTOR

Stanley Hirsch, Westbury, N.Y., assignor to TCI Inc., Benson, Minn.

Filed June 10, 1971, Ser. No. 151,814

Int. Cl. B30b 15/14

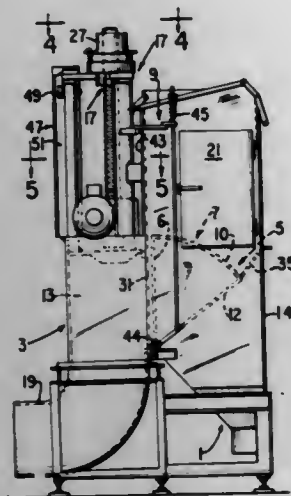
U.S. Cl. 100—49

9 Claims

A refuse compactor suitable for handling a large volume of refuse, such as from an apartment house, in which: a ram is



driven mechanically to apply vertical, high load compaction closed and open positions to form an openable, cylindrical by means of a jack screw assembly and the refuse is fed to the container for receiving and compressing shredded paper and



ram by means of a pivoting pushbar platform. Electrical circuitry actuates the machine automatically when a full load of refuse has been accumulated.

3,752,062

## APPARATUS FOR BONDING BRAKE LININGS

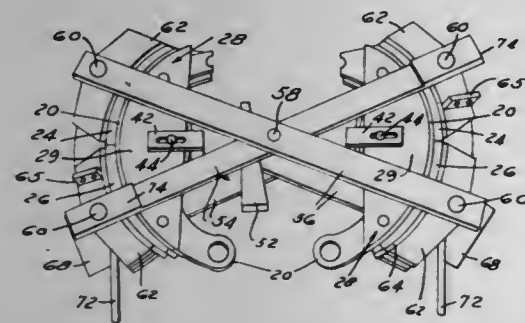
Thomas E. Morgan, Sr., and Thomas E. Morgan, Jr., both of Detroit, Mich., assignors to Leonard Friedman, Beverly Hills, Calif.

Filed Apr. 30, 1971, Ser. No. 139,005

Int. Cl. B30b 15/04, 15/34

U.S. Cl. 100—93 PB

21 Claims



Apparatus for bonding brake blocks to brake shoes, particularly of the type used for large commercial vehicles or military vehicles. A pressure cage utilizes opposed pressure blocks with an apparatus for applying initial pressure in the spreader assembly and opening and closing the pressure assembly to facilitate the insertion of the relatively heavy parts. The apparatus includes automatic equipment for opening and closing the pressure cage as well as applying the pressure for the assembly and subsequent releasing.

3,752,063

## DOCUMENT DESTRUCTION AND BALING MACHINE

Michael Golde, Four Channel Dr., Great Neck, N.Y.

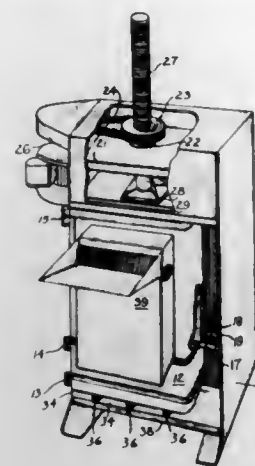
Filed July 13, 1971, Ser. No. 162,223

Int. Cl. B30b 15/08

U.S. Cl. 100—97

1 Claim

A baling machine having a hinged side with a paper shredding mechanism supported thereon to be movable into



permitting wires to be wrapped around a compressed bale of such paper and the bale to be removed.

3,752,064

## MACHINE FOR SHEARING AND COMPRESSING SCRAP METALS

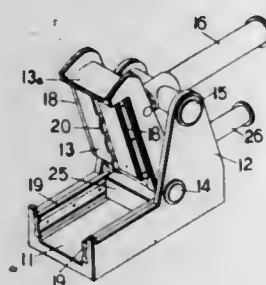
Masao Suzuki, 880 Sezaki-cho, Soka, Japan

Filed June 7, 1971, Ser. No. 150,594

Int. Cl. B30b 15/08

U.S. Cl. 100—98 R

6 Claims



A machine for processing scrap metal having a shear arm rotatably mounted on a machine body and having a drive motor operatively connected thereto for driving the arm relative to the machine body to effect a shearing action on the scrap metal. Cooperatively associated with the shear arm is a driving ram member, to compress the sheared scrap metal into a compact form upon operation of the shear arm. In operation the scrap metal is first caused to be sheared by the operation of the shear arm and then compressed into a compact block by the action of the ram.

3,752,065

## AMALGAM TRITURATION DEVICE

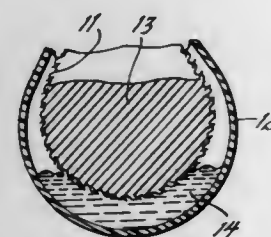
Gabriel Reiter, 8204 Ventnor Ave., Margate, N.J.

Filed Nov. 3, 1971, Ser. No. 195,134

Int. Cl. B30b 9/02; B65d 79/00; B01f 3/12

U.S. Cl. 100—123

7 Claims



A flexible porous layer to be wrapped tightly about an amalgam to express mercury through the layer, and an impervious layer about the porous layer for containing the expressed mercury.

3,752,066

## SOLID WASTE COMPACTOR OPERABLE ON LOW PRESSURE FLUID

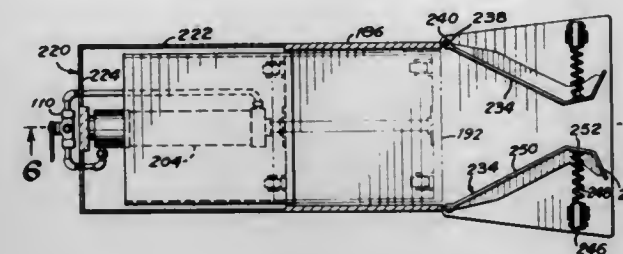
Ray E. Charles, 605 W. Mercer Pl., Seattle, Wash.

Filed Apr. 5, 1971, Ser. No. 131,284

Int. Cl. B30b 1/32

U.S. Cl. 100—192

7 Claims



Many food handling establishments such as restaurants, cafes, eating establishments, retail stores, wholesalers and the like have a large volume of disposable solids. In many instances, it is a problem to dispose of these solids. These solids, like corrugated boxes and plastic containers, occupy a large volume.

3,752,067

## ARTICLE CONTROLLED ROTARY MARKING APPARATUS

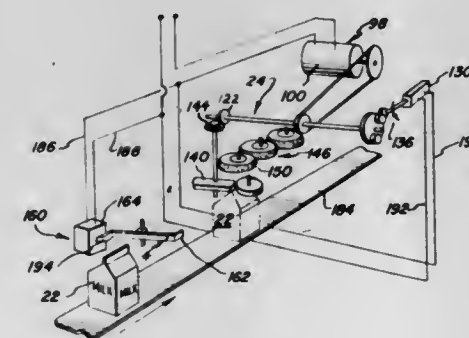
Bernard Gill, Des Plaines, Ill., assignor to Kiwi Coders Corp., Chicago, Ill.

Filed May 10, 1971, Ser. No. 141,600

Int. Cl. B41f 17/26

U.S. Cl. 101—37

14 Claims



Article marking apparatus associated with a moving conveyor on which the articles are positioned and travel spaced apart to a marking station for the impression of printed indicia thereupon. The apparatus comprises a self contained, motor driven unit arranged on a platform which is mounted for selective raising and lowering to suit the height of the articles. As the article moves along the conveyor, it engages a spring biased swinging arm closing a switch whereupon the motor is energized. The motor is coupled to drive a shaft which carries a timer wheel and is coupled, via a bevel gear arrangement, to drive a marking device. The timer wheel has rollers which engage and disengage a switch arm as the timer wheel rotates. Initial rotation of the timer wheel causes the switch arm to drop one of the rollers and close a circuit to the motor whereby the motor continues to drive the marking device notwithstanding the disengagement of the article from the swinging arm opening the first switch. After a half-revolution, the other roller of the timer wheel engages the switch arm to lift same, opening the associated switch and stopping the motor. In the elapsed time, the marking device is in position to receive the article and the article has arrived at the marking station to receive the impression therefrom.

3,752,068

## PRINTING APPARATUS

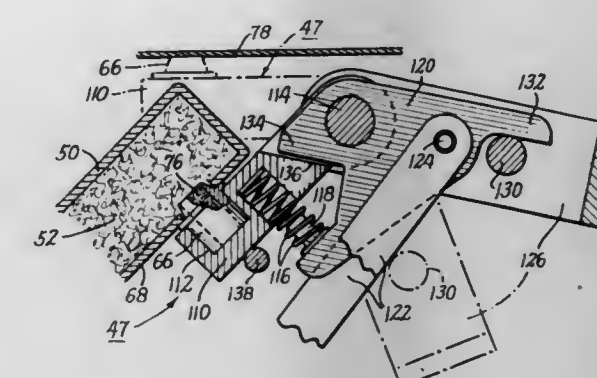
Herbert Tramosch, Riverside, Conn., and Daniel M. Kabak, Yonkers, N.Y., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Mar. 19, 1971, Ser. No. 125,934

Int. Cl. B41j 27/02, 9/20

U.S. Cl. 101—93

5 Claims



A plurality of linearly aligned, independently selectable, pivotally mounted printing heads are provided, each having a wettable transfer element for transferring a fluorescent material in solution from a reservoir to a card being printed. A means for selecting and rotating one or more of the printing heads into contact with a record medium comprises a plurality of pivotally supported elongated lever arms one of which is associated with each head, a linking means for coupling each of said lever arms to said heads for causing rotation of said heads upon movement of an associated lever arm, a means coupled to another segment of each of said lever arms for selectively inhibiting motion of said lever arm about a pivot point thereby inhibiting the rotation of the printing head and a biasing means for applying a force to each of the lever arms for forcing selected printing heads into contact with a card being printed.

3,752,069

## BACK PRINTER PRINT LINE VISIBILITY CONTROL

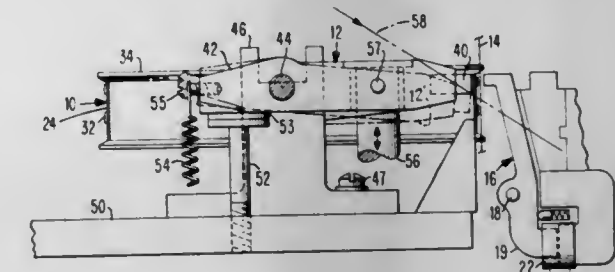
Donald J. Stiles, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 1, 1971, Ser. No. 158,839

Int. Cl. B41j 1/20, 9/02

U.S. Cl. 101—93 C

10 Claims



In a back printer print hammers impact the document against type characters formed on upwardly projecting fingers of a steel band. The fingers are backed by a platen which is removable from the print position to permit inspection of the printed information through spaces between the fingers as the band moves along the print line.



3,752,070

# METHOD AND APPARATUS FOR SCREEN PRINTING CONTIGUOUS DESIGNS ON ELONGATED STRIPS OF MATERIAL

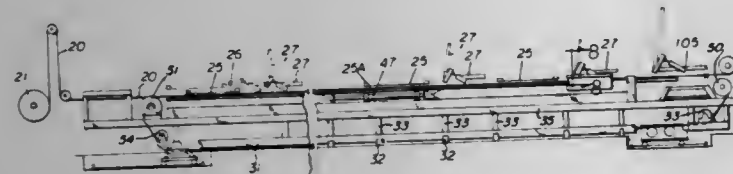
David Jaffa, Fairlawn, N.J., assignor to Precision Screen Machines Inc., Hawthorne, N.J.

Filed July 20, 1971, Ser. No. 164,296

Int. Cl. B41 13/14; B65h 29/24

U.S. Cl. 101—123

32 Claims



This disclosure is directed to a method and apparatus for screen printing contiguous or abutting designs on a continuous strip of web material. This is attained by cooperatively associating a dryer with the printing screen, whereby the screen and associated dryer are shifted relative to the printed portion of the material as the latter is indexed one repeat in the opposite direction so that the dryer is disposed in heat transfer relationship with the trailing marginal portion of the indexed print to dry the same prior to the repositioning of the printing screen onto the indexed material to effect the next adjacent printed portion; and in which position, the dryer is disposed in heat transfer relationship with the remaining portion of the preceding printed portion to complete the drying of the preceding printed portion.

This invention further contemplates effecting the indexing of the material in the direction of repeat by advancing an endless printing blanket by relative movement of a sectionalized table or by a positive drive of an end roller over which the printing blanket is threaded.

3,752,071

# HANDPRINTER CONSTRUCTION

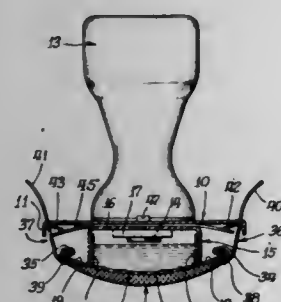
Roderick McKay, Rolling Meadows, Ill., assignor to Weber Marking Systems, Inc., Arlington Heights, Ill.

Filed May 15, 1972, Ser. No. 253,528

Int. Cl. B41 127/26; B41f 15/00

U.S. Cl. 101—125

2 Claims



An ink reservoir for a stencil printing rockable hand stamp having a rectangularly shaped shallow container with a flanged perimeter outlining an opening in the container and formed in a single smooth arcuate curve, and a generally rectangularly shaped arcuately curved perforated member arranged for removable snug engagement with the opening of the container.

3,752,072

# PROCESS FOR REPRODUCING A FULL-COLOR PICTURE IN ONE IMPRESSION

Leslie H. Lorber, 103 Marlborough St., Boston, Mass.

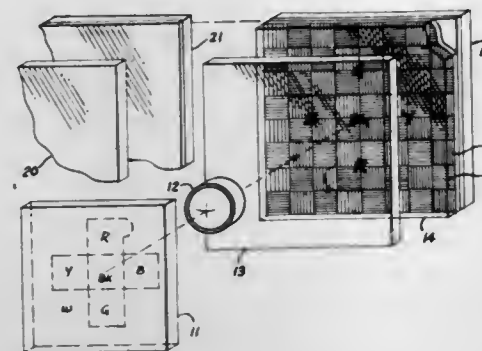
Continuation-in-part of Ser. No. 754,168, Aug. 20, 1968. This

application Apr. 23, 1971, Ser. No. 136,979

Int. Cl. B41m 1/20, 3/00

U.S. Cl. 101—211

11 Claims



Process of producing an apparent full color print of a multicolored picture, comprising the steps of: (a) with a composite separation screen having interspersed first and second areas which transmit substantially red and substantially green information, respectively, of the multicolor picture, photomechanically forming upon a printing surface a corresponding composite plate image, the composite plate image being receptive to a substantially neutral tone dark ink; (b) photomechanically forming upon the printing plate, only in the plate portions corresponding to the first areas of the composite separation screen, a substantially cyan plate image of the multicolor picture, the cyan plate image being receptive to a substantially red ink; (c) inking the composite plate image with the dark ink and the cyan plate image with the red ink; and (d) making a single impression of the printing surface upon a receiving substrate having a selected pale color.

3,752,073

# PROCESS FOR SINGLE-IMPRESSION MULTICOLOR PRINTING

Leslie H. Lorber, Boston, Mass., assignor to Bernard Olcott, Atlantic Highlands, N.J.

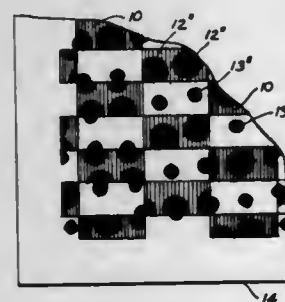
Division of Ser. No. 754,168, Aug. 20, 1968. This application

Apr. 26, 1971, Ser. No. 137,688

Int. Cl. B41m 1/20, 3/00

U.S. Cl. 101—211

5 Claims



Process of producing an apparent full color print of a multicolored picture, comprising the steps of:

a. by use of a composite separation screen having interspersed 1st and 2nd filter areas which transmit substantially red and substantially green information, respectively, of the multicolored picture, photomechanically forming upon a printing surface halftone printing elements of a composite image having correspondingly interspersed 1st and 2nd information areas respectively for the red and the green information, all of the halftone printing elements being receptive to a dark ink of substantially neutral tone;

3,752,075

# FLEXIBLE PRINTING PLATE CLAMPING DEVICE

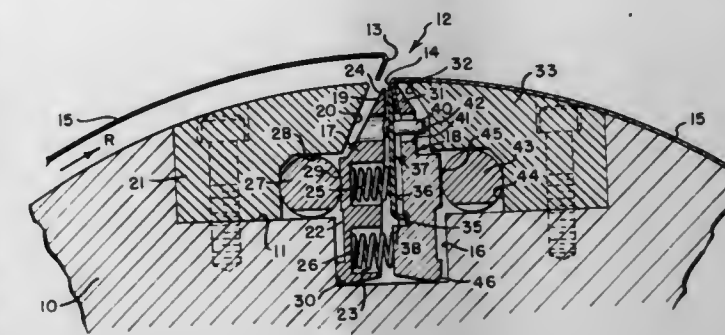
Ralph L. Fusco, Commack, N.Y., assignor to Wood Industries, Inc., Plainfield, N.J.

Filed Apr. 26, 1971, Ser. No. 137,200

Int. Cl. B41f 27/12

U.S. Cl. 101—415.1

2 Claims



b. photomechanically forming field printing elements upon the printing surface only in portions of the surface corresponding to the 1st information areas, the field printing elements providing background to the halftone printing elements occurring within the 1st information areas, the field printing elements being receptive to a substantially red ink;

c. inking the halftone printing elements with the dark ink and the field printing elements with the red ink; and

d. simultaneously transferring the inks upon the printing elements to a receiving substrate of a selected pale color.

3,752,074

# CREDIT CARD TERMINAL

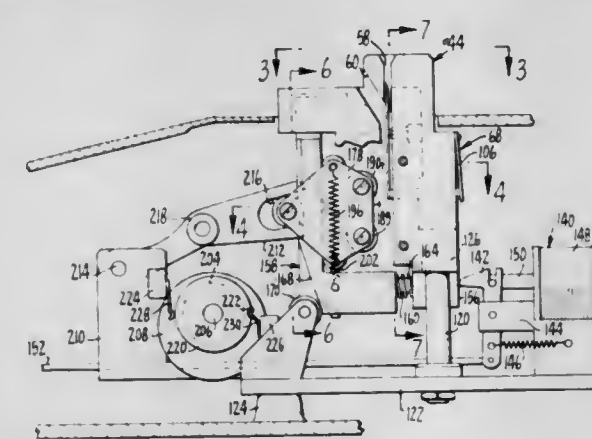
James E. White, San Mateo; Quentin E. Correll, Belmont; Allan L. Swain, Palo Alto; Leo Robert Talbot, Santa Clara; Ernest E. Collado, San Carlos, and Tommy A. Oudijk, Palo Alto, all of Calif., assignors to Albert J. Day

Filed Nov. 12, 1970, Ser. No. 88,861

Int. Cl. B41f 3/04; G06k 7/04

U.S. Cl. 101—269

8 Claims



A credit card terminal for reading relatively standard credit cards. Reading is achieved through the employment of sensing pins arranged to read the account number or other special embossments embossed on the card. The pins are independently mounted in close groupings in a block and biased by individual vanes of a common leaf spring. Pin condition is sensed either through means of electrical contacts activated by the pins or electromagnetic sensors which change in condition responsive to the movement of the pins. In the preferred embodiment for the direct reading of embossed account numbers, the pins are grouped in groups of five on generally rectangular coordinates so as to achieve a discrete pin condition for each of the numbers zero to nine, inclusive.

The terminal also includes a verifying mechanism to sense the presence or absence of a light responsive verification area on the credit card and a voucher imprinting mechanism to imprint indicia embossed on the card onto a voucher. The principal element of the imprinting mechanism comprises a carriage to receive a card and voucher and maintain the embossments of the card in juxtaposition with the area of the voucher to be imprinted. The basic structure of the imprinting mechanism is completed by a roller positioned to be normally spaced from a voucher and card received within the carriage and a motion imparting mechanism adapted to selectively impart relative motion to the carriage and roller to force the roller into engagement with the voucher and roll the roller relative to the voucher in the area of the voucher to be imprinted. The verifying mechanism comprises a locking device associated with the motion imparting mechanism to normally maintain the mechanism in an inoperative condition and a photoelectric device to sense the presence or absence of a light responsive verification area on a card received in the carriage. Upon the sensing of a valid verification area, the photoelectric device operates in cooperation with the locking device to condition the motion imparting mechanism for operation.

3,752,076

# METHOD FOR DUPLICATING A PRELIMINARY COPY

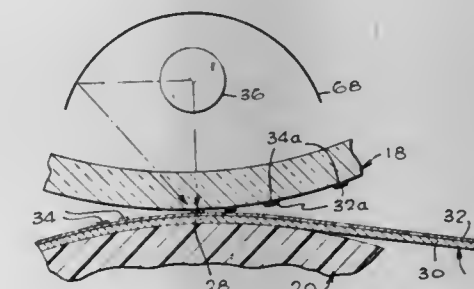
Bernard Kaminstein, Paramus, N.J., assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Mar. 12, 1971, Ser. No. 123,632

Int. Cl. B41m 1/06, 5/08

U.S. Cl. 101—450

3 Claims



A simple machine for making multiple printed copies from a zinc oxide preliminary copy, including a glass cylinder and a transport drum which presses against the cylinder. The machine has a stack holder which is initially filled with a stack of paper sheets and a zinc oxide preliminary copy on top of the paper sheets. Sheet feeding apparatus first moves the preliminary copy onto the transport drum so it moves between the drum and glass cylinder to heat the dark areas on the preliminary copy which represent the image, so that these image regions are transferred to the glass cylinder. Inking rollers then apply ink to the image areas on the cylinder while successive sheets of paper to be printed upon are fed between the roller and glass cylinder.



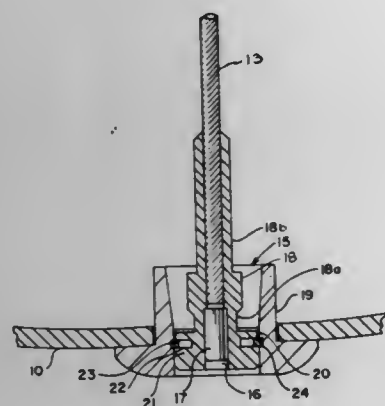
### 3,752,077 RELEASE CONNECTOR FOR A RISER OF A PARACHUTE FLARE

Henry J. Roberts, Ogden, and Willard F. Davis, Brigham City, both of Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed June 4, 1970, Ser. No. 43,331  
Int. Cl. F42b 13/38

U.S. Cl. 102-35

2 Claims



In association with parachuted illuminating flares, an improved riser to flare connector is provided which automatically releases one or more of the parachute risers to spill air out of the parachute when the flare is spent and thus causes the empty container to drop. The connector separates automatically at a predetermined temperature and is explosively operated. Also, the connector is easily and quickly assembled to the flare since it includes a plug and a socket into which the plug fits with a "snap-in" action.

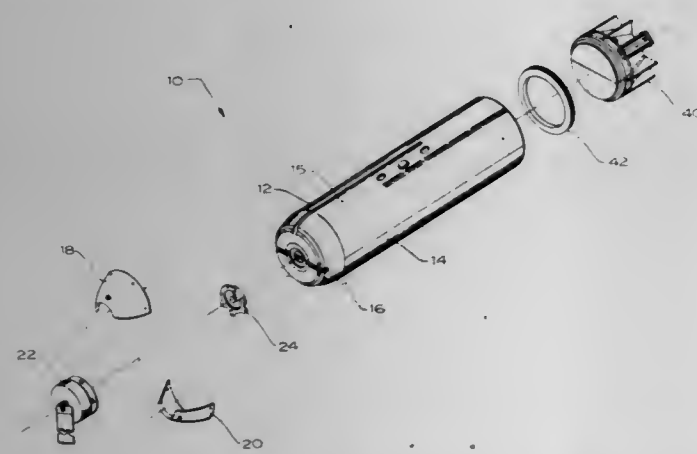
### 3,752,078 DISPENSER CARGO SECTION

Craig L. Stump, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 21, 1972, Ser. No. 219,774  
Int. Cl. F42b 25/16

U.S. Cl. 102-7.2

4 Claims



An aerial delivery carbo dispenser is provided for attachment to aircraft stores stations. Top and bottom half sections are welded together and fastened to a forward bulkhead and an after fairing. The top and bottom half sections are extruded with an integral longitudinal holder portion along one side designed to contain a linear shaped charge, for example. The top half also has an integral strong back portion for attachment strength and stability. The forward bulkhead is fitted with a linear shaped charge shield comparable to the housing along the two half portions and connects thereto so that a linear shaped charge may be used to cut along both side sections and through the forward bulkhead.

### 3,752,079 METHOD FOR FIGHTING DUST AND NOXIOUS GASES AFTER BLASTS IN MINES

Hans Lewer, Witten-Annen, Germany, assignor to Chemische Fabrik Kalk Gmb H.

Filed July 1, 1970, Ser. No. 51,735

Claims priority, application Germany, July 3, 1969, P 19 33 729.2

Int. Cl. F42d 1/08

U.S. Cl. 102-30

6 Claims

Finely-divided calcium chloride and/or magnesium chloride are employed to suppress and remove dust and noxious gases generated during blasting by sealing the blast-holes with these salts.

### 3,752,080 CARTRIDGE CASE

Rolf Friederich Weyhmüller, Greifensee, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zurich, Switzerland

Filed June 9, 1970, Ser. No. 44,896

Int. Cl. F42b 5/26

U.S. Cl. 102-43 R

2 Claims

A cartridge casing is formed from a high strength aluminum alloy of the Al-Zn-Mg-Cu type having additionally added thereto up to 0.50 percent by weight silver. On the interior of the casing is a coating, at least 30  $\mu$ m thick, of an elastic synthetic plastic material having a polyethylene or polvurethane precursor.

### 3,752,081 BLASTING MACHINE

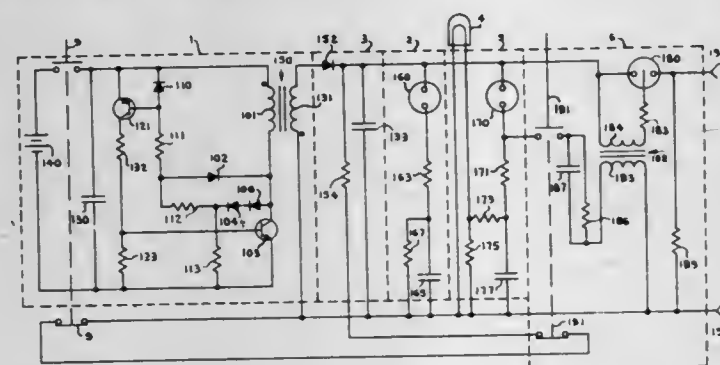
James E. McKeown, and Earl M. Phinney, both of Oneonta, N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 23, 1971, Ser. No. 201,526

Int. Cl. F42b 3/18, 3/12, 3/10

U.S. Cl. 102-70.2 R

14 Claims



A blasting machine for firing an explosive bridge wire device or the like. The firing circuit of the apparatus includes a trigger pulse generating circuit that does not generate trigger pulses until the energy being stored in a capacitor to be discharged through explosive devices has reached a predetermined energy level, thereby preventing firing of the explosive devices before there is sufficient energy stored in the capacitor to assure that all the devices in circuit relationship with the capacitor are detonated. The charging circuit includes a battery powered blocking oscillator and a step up transformer for transforming the energy from a 12 volt battery to a 2,500 volt storage capacitor.

### 3,752,082 FLARE DISPERSING AND IGNITING APPARATUS

George L. Kernan, 2567 Fraser Ct., Pinole, Calif.

Division of Ser. No. 866,534, Oct. 15, 1969, Pat. No.

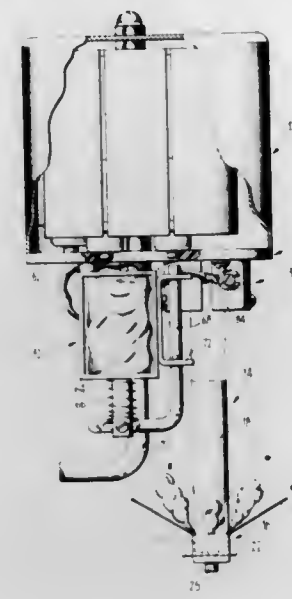
3,628,416. This application June 1, 1971, Ser. No. 148,936  
Int. Cl. C06d 1/04, 1/10

U.S. Cl. 102-37.8

7 Claims

An apparatus adapted to be supported on a vehicle for storing an ignitable safety flare, dispensing the flare to deposit the

same on the road, and in the process of dispensing the flare causing the same to be ignited. In one embodiment of the invention a plurality of flares are stored in a rotatable turret or magazine. The latter is rotatable to position sequential flare at a discharge station with a metal conductor pin extending



through the flare serving as the sole support for the flare. Sending an electrical current through such a pin causes the pin to heat up, ignite the powder in the flare, and simultaneously, due to the melting of the pin, results in the dropping of the ignited flare from the storage magazine.

### 3,752,083 LOCOMOTIVE BOGIE HAVING LIFTING DOGS

Friedhelm Bitterberg, Fulda, Germany, assignor to Rhein-stahl Henschel Aktiengesellschaft, Kassel, Germany

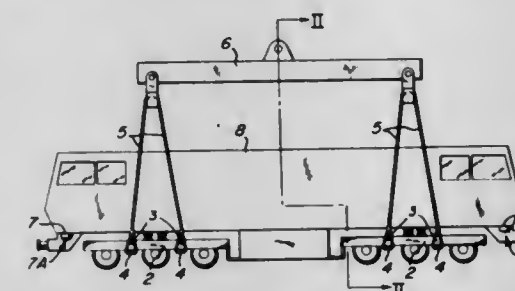
Filed Jan. 29, 1971, Ser. No. 110,890

Claims priority, application Germany, Jan. 31, 1970, P 20 04 416.0

Int. Cl. B61d 49/00; B61f 5/50; B66c 1/20

U.S. Cl. 105-1 A

1 Claim



A bogie equipped locomotive in which the vehicle box normally rests on the pertaining bogies, and in which said bogies only are provided with lifting dogs for lifting said bogies and said vehicle box as a unit.

### 3,752,084 AUTOMATIC OPERATION CONTROL DEVICE OF AN AUTOMOTIVE VEHICLE

Pierre Riodel, Geneva, Switzerland, assignor to Societe Anonyme des Ateliers de Secheron, Geneva, Switzerland

Continuation-in-part of Ser. No. 21,385, March 20, 1970,

abandoned. This application May 18, 1972, Ser. No. 254,539

Claims priority, application Switzerland, Apr. 23, 1969, 6187/69

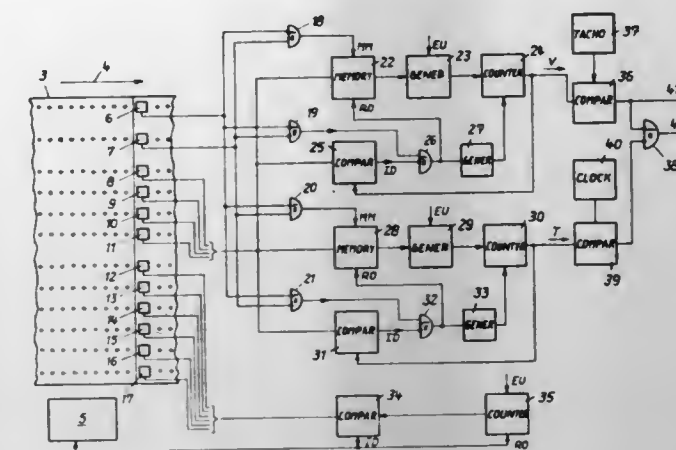
Int. Cl. B601 15/22

U.S. Cl. 105-61

1 Claim

An automatic operation control device for an automotive vehicle rolling along a given trail. A data registering member stores parameters relating to the maximum permissible speed as a function of the distance travelled, and parameters relating to the required time interval as a function of the distance

travelled. Means are provided for reading these two sets of data. Comparator means compare the real speed with the



required speed and the real time with the required time, for controlling the traction and braking means of the vehicle.

### 3,752,085 VEHICLE TRANSPORTER

Anthony Venditty, Fraser, Mich., assignor to General Motors Corporation, Detroit, Mich.

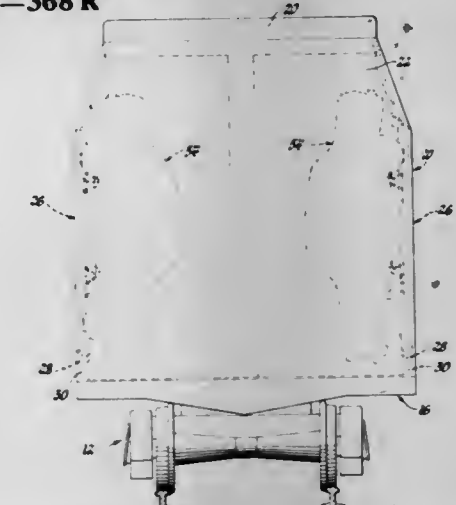
Continuation of Ser. No. 879,659, Nov. 25, 1969, abandoned.

This application July 8, 1971, Ser. No. 160,946

Int. Cl. B60p 7/08; B61d 45/00

U.S. Cl. 105-368 R

2 Claims



A wheeled transporter supporting a plurality of vehicles in a vertical position during transit. The transporter has a base frame connected with a roof portion so as to form an enclosure having at least one opening provided in one side of the transporter. A door has one end thereof hingedly connected to the frame in the opening for movement about a horizontal axis parallel to the longitudinal axis of the transporter. The door includes a pair of tracks formed on one side thereof for guiding the wheels of a vehicle onto the door when the latter is in the lowered position. Cooperating means are attached to the underside of the vehicle and to each door between the tracks for automatically locking the vehicle on the door when the vehicle is driven on the door with its wheels in the tracks.

### 3,752,086 STOWABLE FREIGHT RESTRAINING APPARATUS

Chester A. M. Smith, R.R. No. 1, Cumberland, Ontario, Canada

Filed Jan. 26, 1972, Ser. No. 220,793

Claims priority, application Canada, Feb. 16, 1971, 105,495

Int. Cl. B60p 7/12; B61d 45/00

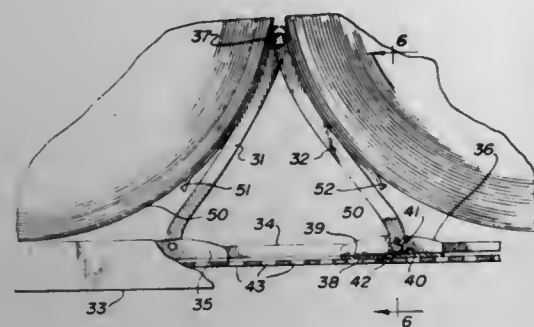
U.S. Cl. 105-369 B

7 Claims

A freight restraining apparatus for a freight transporting vehicle which can be stowed within the wall of the vehicle when not in use. In the preferred embodiment a number of the restraining apparatuses are positioned within a railway freight car to restrain the movement of newsprint rolls or other cylin-



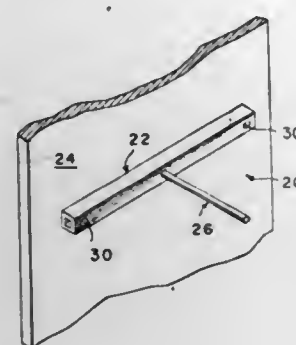
drically shaped lading to prevent inertial forces from causing a large number of rolls to gang up and crush those near an end wall. The restraining apparatus comprises a pair of restraining arms having freight contacting pads. Each arm of a pair is



pivotally attached to a carrier member adjustably mounted in a guideway secured to the vehicle wall. The other ends of each pair of arms are connected together by means of a removable pin.

U.S. Cl. 108—152

2 Claims



A shelf assembly comprising a vertical wall and a supporting bar secured to the wall. A rod is secured in the supporting bar, and the rod serves to support a shelf on the wall. The rod is received in a channel in the shelf.

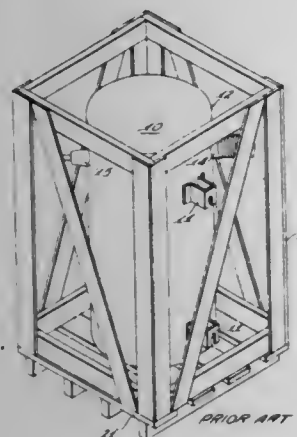
### 3,752,087 PALLET CONSTRUCTION FOR INCREASED DENSITY OF LOADING

Albert J. Finke, Ingomar, Pa., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 9, 1971, Ser. No. 197,054  
Int. Cl. A47b 57/00

U.S. Cl. 108—59

27 Claims



A pallet structure for the simultaneous fork truck loading of a plurality of devices having projecting components on a truck trailer bed. Each device is secured to a skid sized so that a whole number of skids occupy the width of the trailer bed. A plurality of skids are nested on a master pallet with the projecting components of adjacent devices in interfitted relation. The plurality of skids are nested within skid receiving pockets on the master pallet so that adjacent skids abut, and cooperating surface means on the master pallet and on each skid prevent horizontal and vertical displacement of the skid relative to the master pallet, thereby permitting fork truck handling of the master pallet carrying a plurality of skids without danger of dropping one of the devices, reducing the number of trips required to load the trailer bed, and minimizing empty cargo space on the trailer bed.

### 3,752,089 LOAD BEARING STRUCTURE

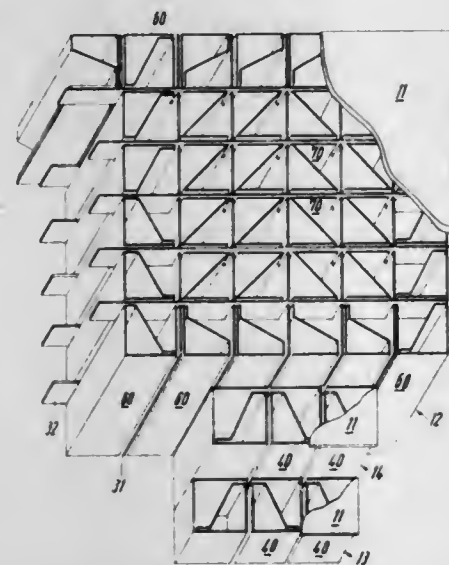
Friedrich Bartels, Via Baraggia 3, Ascona, Switzerland

Filed Sept. 20, 1971, Ser. No. 181,814  
Claims priority, application Germany, Sept. 28, 1970, P 20 47 611.3

U.S. Cl. 108—161

Int. Cl. A47b 13/00

17 Claims



A load bearing assembly comprising a horizontal platform mounted on a sub-structure, said sub-structure comprising a plurality of vertical hollow units, each unit comprising a rectangular sheet of substantially rigid material scored along longitudinal lines into rectangular sections and folded and joined to form a box tube unit.

### 3,752,090 DRY SANITARY TOILET

Donald P. Frankel, Lake Geneva, and Charles K. Peterson, Fontana, both of Wis., assignors to La Mere Industries, Inc., Walworth, Wis.

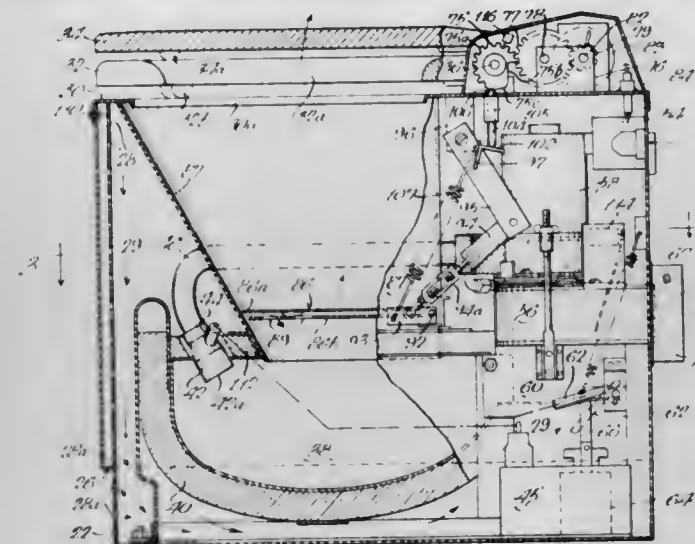
Filed Jan. 20, 1971, Ser. No. 108,050  
Int. Cl. A47k 11/02

U.S. Cl. 110—9 R

51 Claims

An incinerating waste disposal plant is provided in the form of a dry sanitary toilet with a cooling air passage or jacket

between the combustion zone and the outer wall of the cabinet for cooling the device during a cooling cycle. The exhaust blower has an inlet chamber at its intake and a variable vent valve which controls draft of air through the cooling air passage. A hopper in the toilet has side walls supporting a trap door between the toilet seat and a receiving and combustion chamber and the walls are secured to and supported by a removable top deck for ready access to all operating elements



within the device for repair purposes. A gas burner having a spark gap igniter is used to supply flame to the receiving and combustion chamber. The exhaust blower can be replaced or supplemented by a venturi exhaust system which is especially useful in adapting the device for use on a diesel locomotive for using the available fuel and air supplies. In one form, all electrical components except the igniter are mounted in a separate top cabinet which also provides a back rest for the seat.

### 3,752,091 SECTIONALIZED STACK

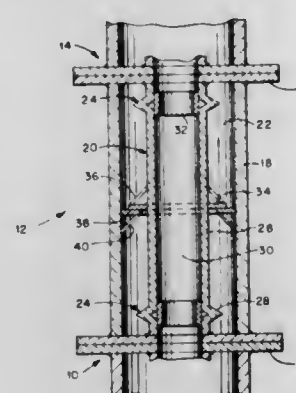
Eillen M. Lawrence, 22 Glenwood Rd., Roslyn, N.Y.

Continuation-in-part of Ser. No. 27,355, April 10, 1970, Pat. No. 3,669,042. This application May 10, 1972, Ser. No. 252,083

U.S. Cl. 110—184

Int. Cl. F23j 11/00

5 Claims



A sectionalized stack in which each vertical section has outer and inner upright walls and annular, horizontal flanges connecting the upper and lower ends of the walls to bound an air-filled, insulating chamber is provided with two accordion-like circumferential folds in the inner wall adjacent the respective flanges. The inner wall has a main portion of uniform cross section connecting the folds. The folds being somewhat resilient, the connecting portion can expand vertically and horizontally at a rate different from the rate of expansion of the outer wall when very hot gases rise in the conduit bounded by the inner wall. Distortion of the folds by the weight of the connecting portion is prevented by transferring most of the weight of the connecting portion to the outer wall by means of slidably engaged abutments on the two walls in the insulating chamber.

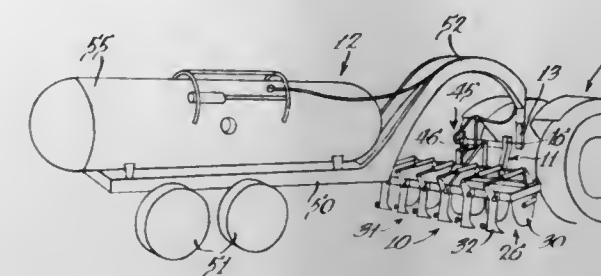
### 3,752,092 SOIL WORKING APPARATUS

H. Owen Vinyard, Rt. 2, Box 75A, Hammond, La.

Filed Oct. 1, 1971, Ser. No. 185,731  
Int. Cl. A01c 23/02

U.S. Cl. 111—7

2 Claims



Soil working apparatus including a frame equipped with soil working means which is mounted on the lifting arms of a tractor so that the arms may lower the soil working means to engage the soil or may lift the soil working means clear of the soil, and a trailer carrying auxiliary means that cooperates with the soil working means, the trailer having a gooseneck hitch that connects pivotally to the tractor forward of the lifting arms and that is of sufficient length and height to span the frame from front to rear and clear the frame in all positions of the lifting arms, and to clear the ends of the frame when the tractor is turned at a right angle to the trailer. Particularly, the soil working apparatus is an ammonia applicator and the auxiliary means is a tank of liquid ammonia.

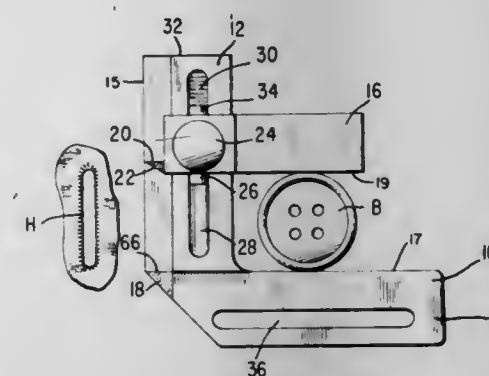
### 3,752,093 BUTTONHOLE GAUGING GUIDE ATTACHMENT ESPECIALLY FOR USE WITH DOMESTIC SEWING MACHINES

Karl Loeffler, 323 Clearfield Ave., Trenton, N.J.

Filed July 14, 1971, Ser. No. 162,589  
Int. Cl. D05b 3/06

U.S. Cl. 112—75

2 Claims



A buttonhole gauging guide device is herein provided which is particularly adapted for use with domestic sewing machines. An L-shaped base member presents two legs extending mutually perpendicular with respect to each other. A first leg is provided with a slidable gauging arm which is movable toward the second leg and is supported to maintain parallel relationship therewith. The gauging arm is formed with a clamping portion extending in the plane of the second leg. The arm is further provided with an indicator projection which cooperates with an indicator marking on the base member to display, to a sewing machine operator, the necessary buttonhole length for a button disposed between the arm and the L-shaped base. The slidable gauging member may be spring biased toward the second leg of the base. The first leg may be formed with a raised track-like portion which may be of a hollow configuration to slidably support a guiding member. A



threaded fasteneing means may be inserted through an aperture formed in the gauging arm to connect the gauging arm with the aforementioned guiding member supported within the raised track-like portion of the base.

The second leg of the base may be formed with an elongated slot for adjustably mounting the overall device to virtually any existing, conventional, domestic sewing machine.

3,752,094

## STRAND DELIVERY MEANS

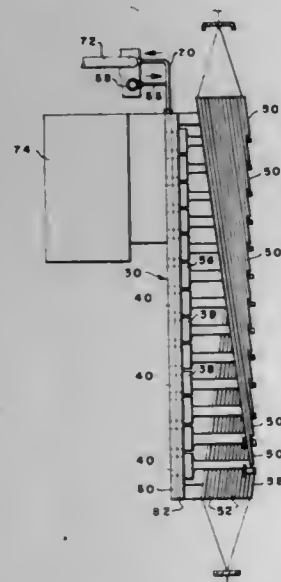
Joe T. Short, West Point, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed July 6, 1971, Ser. No. 159,632

Int. Cl. D05c 15/32

U.S. Cl. 112—79 A

9 Claims



Apparatus for feeding strands of material to a plurality of closely positioned strand take-up means comprising separate strand-engaging advancing means for each take-up means positioned in closely adjacent rows, with guide means extending between adjacent rows for guiding a strand to and from each advancing means to its corresponding take-up means.

3,752,095

## CYCLIC BEAM TUFTING MACHINE

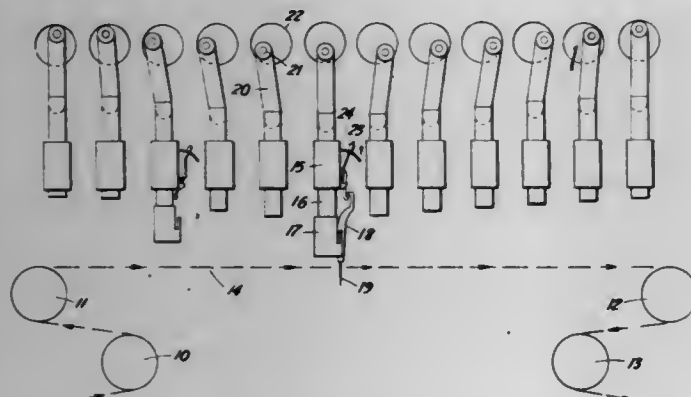
Philip Brown, Wembley, and Peter Hawkins, Kingston Hill, both of England, assignors to Keystone Limited, New Providence, Bahamas

Filed July 29, 1971, Ser. No. 167,093

Int. Cl. D05c 15/12

U.S. Cl. 112—79 A

11 Claims



A tufting machine has a number of rows of needles, one row for each yarn colour to be tufted, and individual reciprocating beams for each row for driving the needles into a backing to tuft. Each needle can be individually latched to its associated beam in accordance with a programmer so that a predetermined pattern can be formed from the yarn tufts on the backing. The beams are reciprocated in a cycle so that at any one time the needles of at least one beam are engaged in the backing.

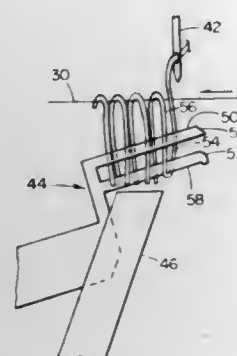
### 3,752,096 LOOPER AND METHOD FOR PRODUCING CUT PILE TUFTS

Helmut C. Mueller, Springfield, Mass., assignor to Bigelow-Sanford, Inc., Thompsonville, Conn.

Continuation-in-part of Ser. No. 72,004, Sept. 14, 1970, abandoned. This application Apr. 28, 1971, Ser. No. 138,156  
Int. Cl. D05c 15/22

U.S. Cl. 112—79 R

9 Claims



A tufting machine arranged to produce cut pile carpets and having work feeding and tuft forming devices including a reciprocable eye-pointed needle movable through a backing for the carpet between retracted and extended positions, has a double looper with a lower bill and an upper bill off-set from the lower bill. When the looper advances, the upper bill passes entirely outside the loop formed by the projecting needle so that a single long loop is formed around the lower bill only in each succeeding loop-forming cycle. In a tufting machine arranged to produce relatively dense "U"-cut pile tufts, the single long loop around the lower bill is deformed, and a yarn severing knife severs the yarn adjacent the lower edge of the lower bill to produce cut pile of a substantially uniform length. In a tufting machine arranged to produce high shag carpets, a yarn severing knife cooperates with the upper bill to cut one leg of the needle loop adjacent the bottom edge of the upper bill, thereby forming a short pile length and a much longer pile length to produce a pronounced "J" cut pile tuft.

3,752,097

## FABRIC EDGE FINISHING MACHINES

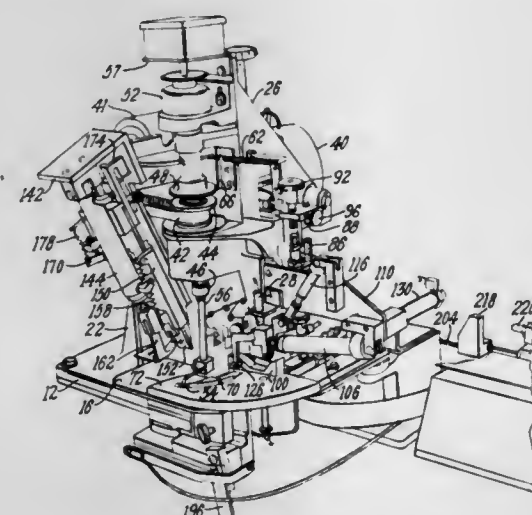
George A. Fuller, Jr., Wenham; Wilfred Louis Langevin, Beverly; Geoffrey C. Nelley, Jr., North Reading, and Ole B. R. Pearson, Magnolia, all of Mass., assignors to USM Corporation, Boston, Mass.

Filed Apr. 14, 1972, Ser. No. 244,217

Int. Cl. D05b 27/14

U.S. Cl. 112—121.12

14 Claims



Mechanism is provided for enabling an overedging or other edge-treating machines automatically to operate progressively about the periphery of successive flexible work pieces, especially those of fabric having margin configuration including portions of constant convex curvature. Several improvements and refinements relating, for instance and without limitation, to automatic corner turning, to marginal label securement in the course of each operating cycle, so called sewing-off near the end of the cycle, "kickout" of the work piece from the operating zone, and associated thread cutoff, all contribute towards increasing productivity and relieving burden on an operator to the extent that the operator may simultaneously attend more than one machine.

3,752,099

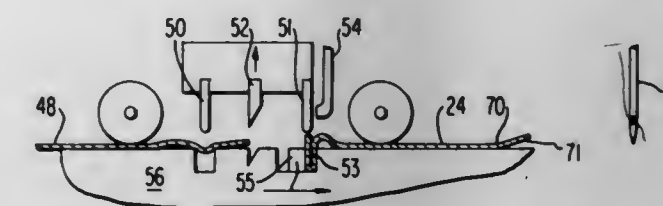
## SYSTEM OF MAKING WAISTBANDS WITH CRIMPED BELT LOOPS, LABELS AND TICKETS

John P. Hunter, Jr., Dunwoody, and Eric George Huddleston, Monroe, both of Ga., assignors to Oxford Industries Inc., Atlanta, Ga.

Division of Ser. No. 097,489, Dec. 14, 1970, Pat. No. 3,710,398, which is a continuation-in-part of Ser. No. 851,986, Aug. 21, 1969, Pat. No. 3,562,817. This application Oct. 13, 1972, Ser. No. 297,476  
Int. Cl. D05b 23/00

U.S. Cl. 112—121.27

6 Claims



### 3,752,098 METHOD AND APPARATUS FOR TRANSLATING AN ARTICLE AND A TOOL RELATIVE TO ONE ANOTHER

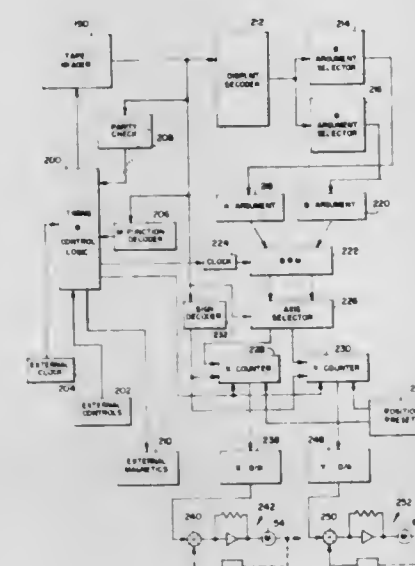
David J. Logan, Glastonbury, and Heinz Joseph Gerber, West Hartford, both of Conn., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Apr. 5, 1971, Ser. No. 131,285

Int. Cl. D05b 21/00

U.S. Cl. 112—121.12

25 Claims



A method and apparatus are disclosed for moving relative to one another an article or workpiece and a tool which performs a cyclic operation on the workpiece so that the cyclic operation can be repeatedly carried out at different points on the workpiece. The apparatus and the method which comprehends the operation of the apparatus are particularly addressed to a numerically controlled sewing machine in which an article to be sewn and a reciprocating sewing needle are translated relative to one another according to a plurality of vector commands which individually define the direction and length of each sewing stitch and together define a desired path or seam along which the sewing stitches are formed. The article is supported on a translatable carriage and the movements of the carriage relative to the sewing needle are controlled by a pre-programmed memory tape. The memory tape is programmed with coded digital information defining the vector commands and other machine function commands and has the information defining the vector command for each stitch contained entirely within a single tape frame. The movements of the article and translatable carriage are executed in response to and in synchronism with the cyclic operation of the sewing needle and may occur during the phase of the cyclic operation in which the needle is withdrawn from the article being sewn.

A method of making waistbands for pants and other garments wherein a series of waistband panels are joined together in end-to-end relationship to form a continuous series of waistband panels, a continuous band of facing material is fed into abutting relationship with one edge of the series of panels and is continuously ropaced to the series of panels. The panels are marked and belt loop material is fed in a continuous strip toward the panels, cut to proper length, the lengths are crimped and folded at their ends and sewn to the panels in positions corresponding to the markings. Labels are sewn to the facing material at positions corresponding to the ends of the panels, sales tickets are basted to waistband panels, the panels are separated and the facing material is cut at positions adjacent the ends of the waistband panels alternately with a straight cut extending across the facing material and with a Y-shaped cut to remove a portion of the facing material.

3,752,100

## HEM FOLDING ATTACHMENT

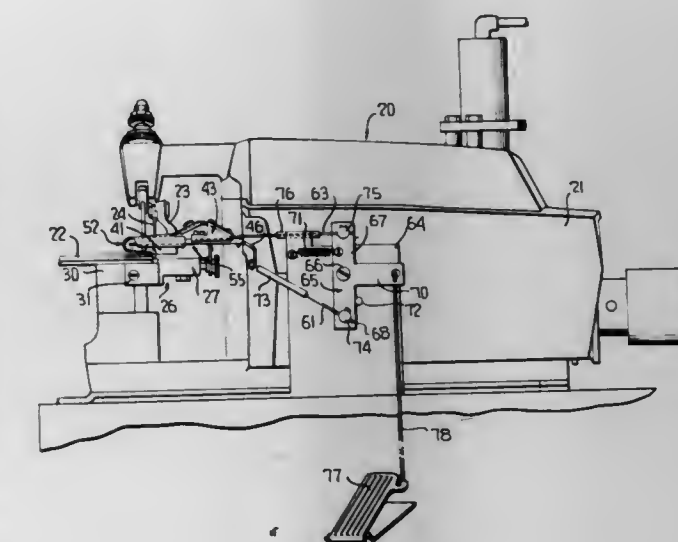
James E. Sharp, Chicago, Ill., assignor to Union Special Machine Company, Chicago, Ill.

Filed Oct. 20, 1971, Ser. No. 190,802

Int. Cl. D05b 35/02

U.S. Cl. 112—143

14 Claims



This disclosure relates to a hem folding attachment for the sewing machine which includes first and second folder sections individually movable between operative and open positions and cooperative with a fixed edge guide, the attachment being readily adaptable to existing sewing machines and being selectively manually and power actuated.



3,752,101

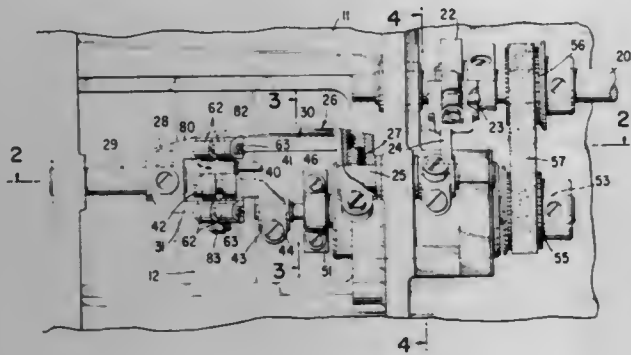
**LOOPER CARRIER BEARING FOR CHAINSTITCH SEWING MACHINES**

Heinrich Ciecior, Ettlingen, Germany, assignor to The Singer Company, New York, N.Y.

Filed Aug. 9, 1972, Ser. No. 278,907  
Int. Cl. D05b 1/10; F16c 9/06

U.S. Cl. 112-200

3 Claims



A bearing construction is disclosed for a four-motion thread-carrying looper mechanism of a chainstitch sewing machine which requires only simple machining of the major parts of the looper mechanism to moderate dimensional tolerances and which utilizes a pair of bearing assemblies which are inserted and clamped into the mechanism and adjusted selectively for optimum axial and radial clearance.

3,752,102

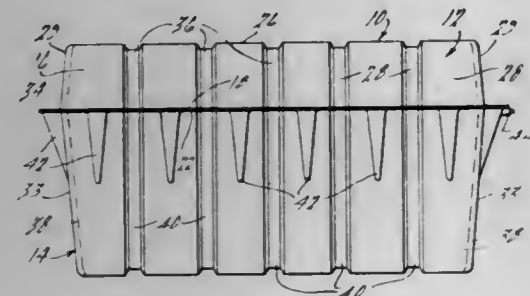
**FLOATING DOCK OR THE LIKE AND FLOATATION UNIT FOR USE THEREWITH**

Robert A. Shuman, Plymouth, Mich., assignor to Woodall Industries Inc., East Detroit, Mich.

Filed Sept. 22, 1971, Ser. No. 182,744  
Int. Cl. B63b 35/00

U.S. Cl. 114-5 F

14 Claims



A floating dock, raft or the like is made with special plastic floatation units. The floatation units consist of a pair of vacuum formed polyethylene sheets heat sealed together at peripheral flanges thereof. This flange is nailed to the bottom of joists which support the deck material of the dock.

3,752,103

**CONTROL SYSTEM FOR SUBMERSIBLES TO MINIMIZE BOTTOM SEDIMENT DISTURBANCES**

William A. Middleton, Bremerton, Wash., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

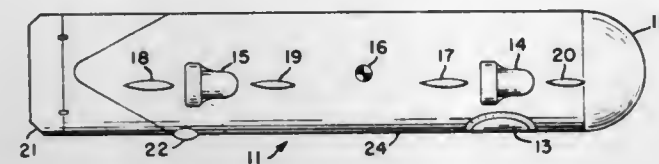
Filed Jan. 24, 1972, Ser. No. 220,025  
Int. Cl. B63g 8/16

U.S. Cl. 114-16 R

5 Claims

A steerable propulsion system for maneuvering a submarine vehicle in close proximity to the bottom of a body of water with minimal disturbance of the bottom material includes a se-

ries of four thrust producers spaced about the center of buoyancy of the submarine vehicle. Controls limit the



direction of thrust application to prevent the water flow produced by the thrust producers from impinging upon the bottom.

3,752,104

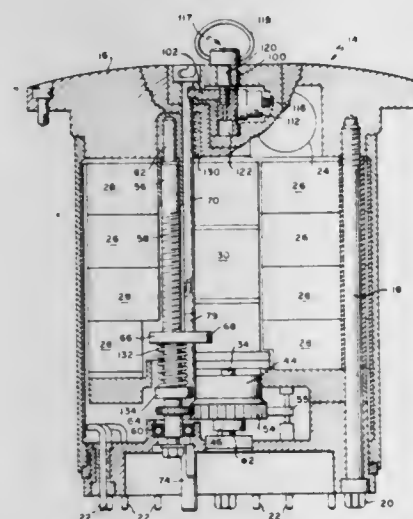
**TORPEDO SAFE SEPARATION AND ARMING MECHANISM**

Roger W. Haushalter, Santa Barbara, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 6, 1971, Ser. No. 187,133  
Int. Cl. F42b 19/01; F42c 15/00

U.S. Cl. 114-20 R

9 Claims



A mechanism for arming a torpedo only after the torpedo achieves a safe separation from the launching tube including an elongate rod which is electrically driven from within the torpedo and caused to extend beyond the surface of the torpedo body by an upwardly moving threaded member mounted on a rotating threaded shaft. Should the torpedo inadvertently become lodged within the launching tube the rod jams the mechanism thereby preventing the torpedo from becoming armed. If the torpedo has successfully exited from the launching tube, after the tube sensing operation is completed, another elongate rod is withdrawn from the arming device by the same upwardly moving threaded member thereby unlocking the same. After a predetermined delay, the arming device is electrically connected to the firing circuit.

3,752,105

**RUDDER CONSTRUCTION FOR SAILBOATS**

Richard L. Hackett, Lincoln Pl., Petoskey, Mich.

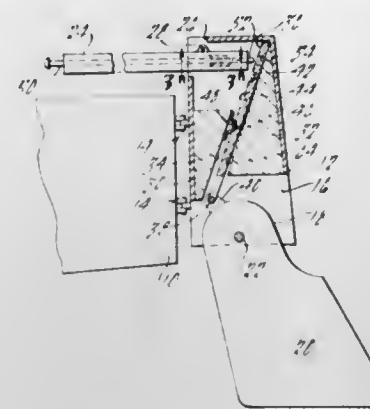
Filed July 6, 1971, Ser. No. 159,802  
Int. Cl. B63h 25/06

U.S. Cl. 114-162

5 Claims

A rudder construction for small boats, particularly sailboats, in which the rudder is mounted on its rotatable support frame for pivotal movement on a horizontal axis to prevent

damage to the rudder in the event that it strikes an obstruction in the water. A detent means yieldably retains the rudder in its



normal vertical position or a horizontal or intermediate position. The tiller may be manipulated to move the rudder to any of said positions.

3,752,106

**MOORING SYSTEM**

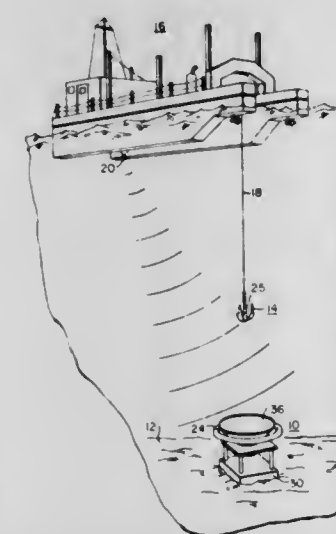
Philip M. Chen, Washington, D.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 1, 1971, Ser. No. 203,671

Int. Cl. B63b 21/52

U.S. Cl. 114-206 R

11 Claims



A light-weight anchoring device is lowered through the water to an anchor station on the bottom. The anchoring device includes a plurality of fluke members which are movable against the action of a spring, and include latching surfaces. The anchoring device is lowered through an aperture in the anchor station which causes the flukes to compress against the action of the spring and thereafter expand once the latching surfaces are past the aperture, to thereby latch on to the bottom station. A mooring line extends from the anchoring device to a surface buoy and retrieval is accomplished by sending a weighted messenger down the mooring line to compress the flukes together so that withdrawal from the aperture may be effected.

3,752,107

**MOUNT FOR A TWIN-FLUKE TYPE ANCHOR**

David H. Van Tuyl, 580 Araseradero, Palo Alto, Calif.

Filed Oct. 20, 1971, Ser. No. 190,924

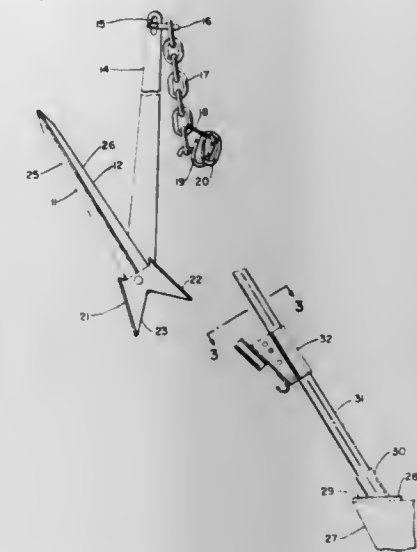
Int. Cl. B63b 21/22

U.S. Cl. 114-210

4 Claims

A mount for an anchor of the twin-fluke type disclosed wherein the anchor includes an elongated stock integrally connected to the flukes and an elongated shank pivotally connected to the stock between the flukes. The anchor further in-

cludes a pair of flat crown plates, each plate connected to the stock between the flukes and spaced outwardly on opposite sides of the plane of the flukes and sloping inwardly toward the plane of the flukes so as to permit bottom to flow freely between the flukes and the underside of the respective crown plates when the anchor is resting on the bottom of a body of water. The mount is mounted on an upstanding portion of a



3,752,108

**ADJUSTABLE LANTERN BRACKET FOR BOATS**

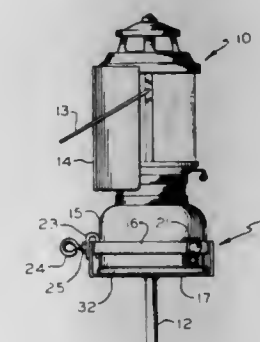
Joseph L. Bovenzi, 209 Douglas St., Syracuse, N.Y.

Filed Jan. 7, 1972, Ser. No. 216,196

Int. Cl. B63b 45/02

U.S. Cl. 114-221

2 Claims



A bracket for supporting a gasoline lantern in an oarlock socket of a boat has a circular band for embracing the bottom of the lantern and a U-shaped strap pendantly secured at its ends to the band to provide a floor for the lantern. Two loops of compressible material are slideably secured on the band and an inverted U-shaped clip has a thumbscrew therethrough and threaded through one leg of the strap for forcing the lantern base toward the loops. A bent washer is welded to the bottom center of the strap and a pendant rod adapted to be contained in the oarlock socket is secured to the washer by a thumbscrew through the upper end of the rod and threaded through the pendant portion of the washer so that the angular disposition of the bracket can be adjusted.



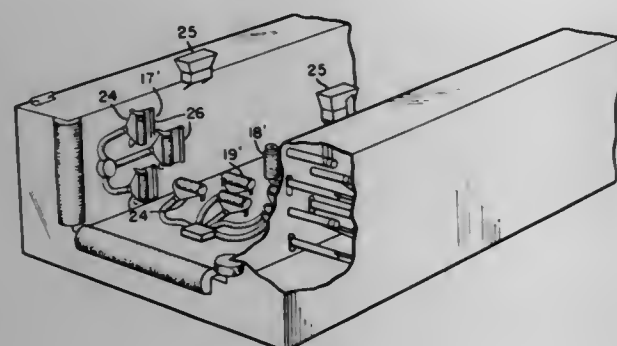
3,752,109

**ECOLOGICALLY CONTROLLED SHIP'S HULL RECONDITIONER**

Ronald L. Seiple, 1060 Kooehoo Pl., Lanikai, Hawaii  
 Filed Oct. 22, 1971, Ser. No. 191,669  
 Int. Cl. B63b 59/00, 35/44

U.S. Cl. 114—222

4 Claims U.S. Cl. 115—35



A floating platform is ballasted and trimmed to allow the passage of a ship through a U-shaped channel. A plurality of cylindrically shaped brushes is brought to bear against the ship's hull and interconnected motors rotate the brushes to clean fouling from the ship's hull as it traverses the length of the channel. Locating the platform outside of a harbor permits the cleaning of outgoing ships prior to transoceanic voyages to reduce fuel consumption while incoming ships are cleaned before entry to eliminate the possibility of harbor pollution. Incorporating a suction-pump filter unit in the close vicinity of each rotating brush ensures the collection of removed marine organisms to avoid contamination of surrounding waters. Additionally, a paint roller assembly is included to coat the scrubbed and cleaned surfaces with a new layer of anti-fouling paint to complete preventative maintenance of the hull and to recondition it.

3,752,110

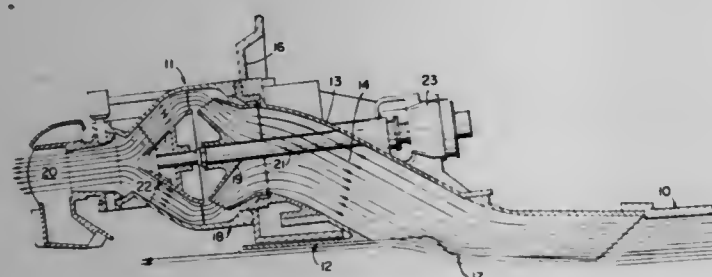
**AFTERPLANE FOR MARINE JET-POWERED BOATS**

Ralph A. Rhoda, Orinda, Calif., assignor to Berkeley Pump Company, Berkeley, Calif.

Filed Mar. 20, 1972, Ser. No. 236,130  
 Int. Cl. B63h 11/02

U.S. Cl. 115—16

2 Claims



In a jet-powered boat wherein water is drawn through an inlet opening in the bottom of the hull, accelerated by an impeller pump and discharged through a jet nozzle to propel the boat forwardly, the improvement wherein an afterplane is secured to the boat rearwardly of the inlet opening, the afterplane being positioned so that the water flowing past the hull just below the layer of water taken into the inlet opening flows past and in contact with the underplane to exert upward forces thereon.

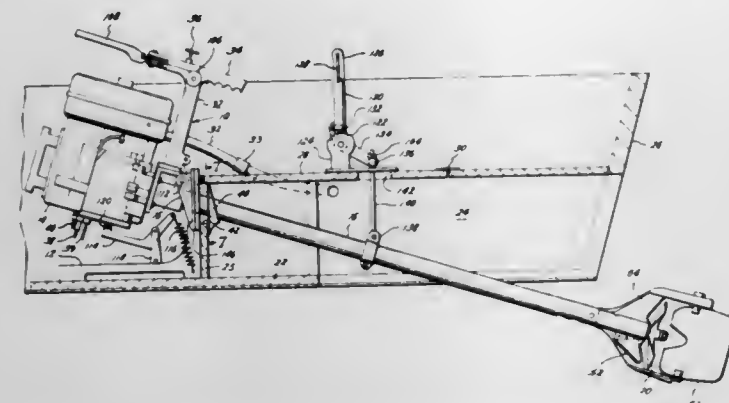
3,752,111

**PIVOTING MOTOR BOAT DRIVE UNIT**

Maurice J. Meynier, Jr., Houston, Tex., assignor to Crawfish Boat Company, Inc., Houston, Tex.

Filed May 5, 1971, Ser. No. 140,335  
 Int. Cl. B63h 5/12

6 Claims



A Pivoting Motor Boat Drive Unit for essentially flat bottom boats which automatically retracts upon hitting obstructions with a self-repositioning feature which is both variable and predetermined. The entire unit is readily removed from a tunnel mounted in a boat. The pivotal mounting includes a spring bias arrangement and may include an automatic throttle retarding switch and a cut-off switch when the unit is fully retracted. The propeller shaft includes a water bearing with a flow-through washer.

3,752,112

**RUDDER PROPELLER FOR SHIPS AND AMPHIBIAN VEHICLES**

Hans Eichinger, Munich, Germany, assignor to Schottel-Werft Josef Becker KG, Spay/Rhein, Germany

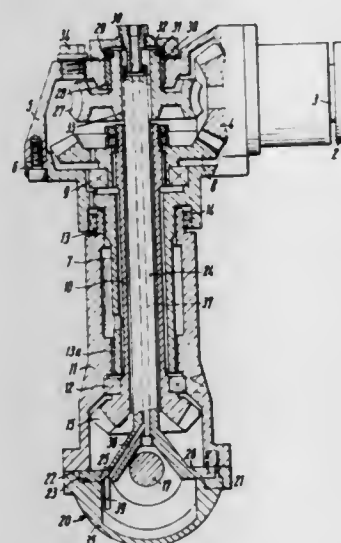
Filed Oct. 21, 1971, Ser. No. 191,523

Claims priority, application Germany, Oct. 31, 1970, P 20 53 633.8

Int. Cl. B63h 25/42

U.S. Cl. 115—35

9 Claims



Outboard-inboard steering propeller construction. There is provided a non-rotatable upper housing attachable to the vessel and a rotatable lower housing supported by and from said upper housing. A propeller is rotatably supported in the lower housing and means for effecting rotation thereof extend through both housings and are drivingly connected to the propeller. A steering gear is rotatably supported within the upper housing but axially nonmovable with respect thereto. A steering shaft is splined to said gear and fixedly connected to the lower housing for effecting pivotal movement thereof. The

3,752,115

**APPARATUS FOR AUTOMATICALLY PRODUCING POULTICE**

Motoyasu Watanabe, Tokyo, Japan, assignor to Daiichi Seiyaku Company Limited, Tokyo, Japan

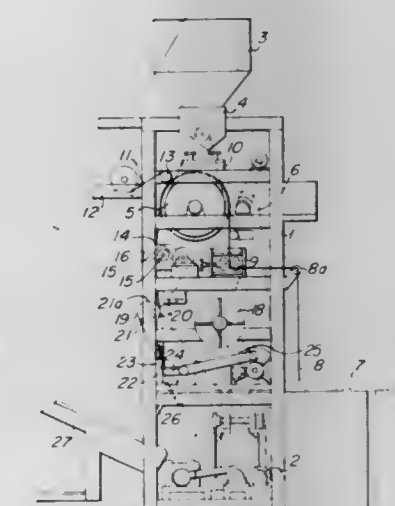
Filed Oct. 4, 1971, Ser. No. 186,070

Claims priority, application Japan, Oct. 5, 1970, 45/99089 (utility model); Oct. 9, 1970, 45/100669 (utility model)

Int. Cl. B05c 11/00

U.S. Cl. 118—39

1 Claim



An apparatus for automatically producing poultice and a means for applying poultice paste to substrate cloth automatically supplied which may be used in the said apparatus.

3,752,116

**SHAKER DEVICE FOR COMPACTING POWDERED RESIN INTO SLOTS OF MAGNETIC CORES**

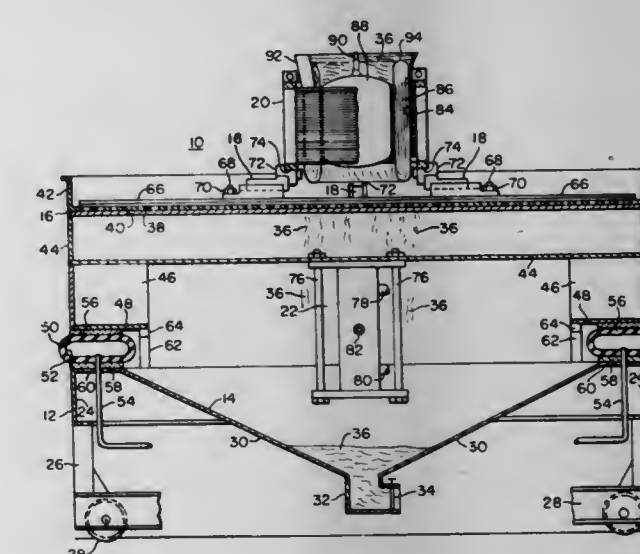
Kippie Harry P., Pittsburgh, Pa.; Virgil J. Cozzarin, Clarence, N.Y., and Francis C. Kapperman, deceased, late of Eggertsville, N.Y. (by Dorothy M. Kapperman, administratrix), assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 14, 1970, Ser. No. 71,933

Int. Cl. B05c 11/14, 7/00

U.S. Cl. 118—57

7 Claims



Apparatus for shaking and compacting heat hardenable powdered resin into interstices between coil windings in a slot of a core of magnetic material, including a vibrating perforated table, clamps adjustably mounted on the table for holding a core in place with the slot in vertical position, a vibrator mounted under the table for shaking the core vertically, and a hopper under the table for collecting excess resin when powdered resin is spread over the upper open ends of the slot.

3,752,113

**CASSETTE TAPE MOVEMENT INDICATOR**

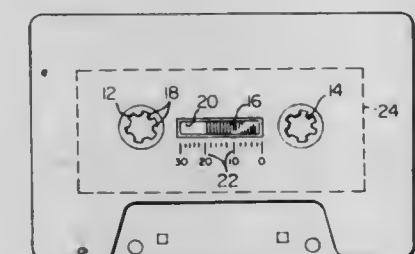
Frederick Blechman, 23958 Archwood St., Canoga Park, Calif.

Filed Aug. 2, 1971, Ser. No. 168,081

Int. Cl. G01d 21/00

U.S. Cl. 116—114 R

12 Claims



A cassette tape movement indicator having indicating means coupled to the takeup hub of the tape cassette, the indicating means being viewable through the window of a cassette recorder. In one embodiment the indicating means is a removable insert having a plurality of radially extending tines from a central portion having downwardly depending projections adapted for engagement with the inwardly extending projections on the hub of the cassette. In a second embodiment a transparent disc is coupled to the hub internally of the cassette, the disc having markings thereon viewable through the window in the cassette, one disc being associated with each hub of the cassette, the discs being positioned on that side of the hub which is viewable through the window of the cassette when that particular hub has tape being wound thereon.

3,752,114

**ADHESIVE APPLYING MACHINE**

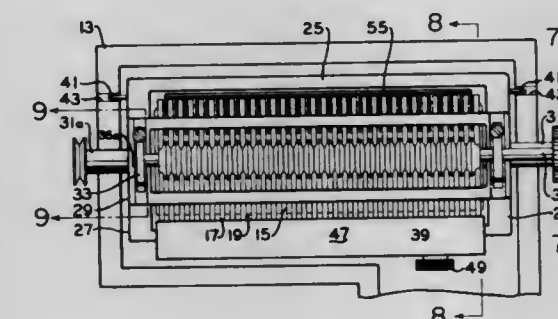
Charles L. Knight, Akron, Ohio, assignor to Portage Newspaper Supply Company, Summit, Ohio

Continuation-in-part of Ser. No. 4,702, Jan. 21, 1970, abandoned. This application June 16, 1971, Ser. No. 153,564

Int. Cl. B05c 1/08

U.S. Cl. 118—5

10 Claims



The invention relates to a compact, inexpensive, and highly efficient adhesive wax applying machine which utilizes an adhesive applying roller dipping into a heated tank carrying the adhesive. A top roller is arranged in cantilevered relationship to cooperate with the bottom roller. Means are provided to drive both rollers. The adhesive tank is heated, and is preferably cast aluminum to facilitate heat transfer to both rollers. The cover is plastic to provide insulation, and is easily removable. Adjustments are provided for doctor bars, and takeoff means, as well as for the rollers to facilitate its use and cleaning.



3,752,117

## SPRAYING APPARATUS

Paul Hammelmann, Zum Sundern 17, Oelde, Germany

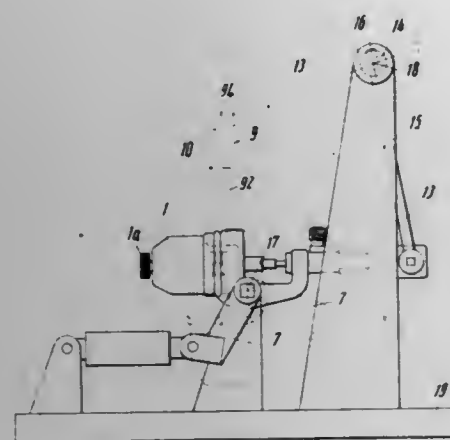
Filed Nov. 30, 1971, Ser. No. 203,494

Claims priority, application Germany, Dec. 1, 1970, P 20 59 038.9

Int. Cl. B05b 15/02

U.S. Cl. 118—302

8 Claims



A spray head supplies paint under pressure and is mounted for pivotal movement through 90°. A spray nozzle receives the paint from the spray head and has a passage which converges towards its outlet. The spray nozzle is also mounted for 90° pivotal movement, and coupling means couples the spray head with the spray nozzle, so that the same will move in unison between their respective positions so that the spray nozzle may be pivoted from spraying position to a position in which its outlet is directed away from the surface to be sprayed and permits clearing of the passage.

3,752,118

## APPARATUS FOR LIQUID EPITAXY

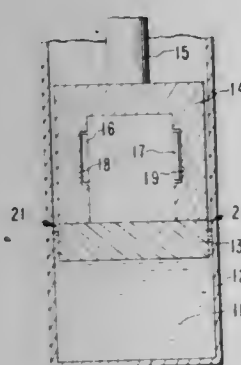
Raymond Solomon, Sunnyvale, and Dennis De Fevere, Palo Alto, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Oct. 13, 1971, Ser. No. 188,785

Int. Cl. B05c 3/09

U.S. Cl. 118—422

4 Claims



Apparatus and method for the deposition of semiconductor material onto semiconductor wafers by immersing them in a source of liquid semiconductor material. The apparatus includes a chamber, a wafer holder, and a plug, the plug adapted to rest upon the liquid residing in the chamber during mixing of the liquid, and to be pushed through the liquid, thereby forcing the liquid to flow through the space between the plug and the walls of the chamber, that space acting as a filter to prevent solid contaminants from coming into contact with the wafers in the holder. The floating plug also serves to prevent volatilization of constituents during the mixing of the semiconductor and dopants.

3,752,119

## LIQUID TONER APPLICATOR

Josef Matkan, Malvern, Australia, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

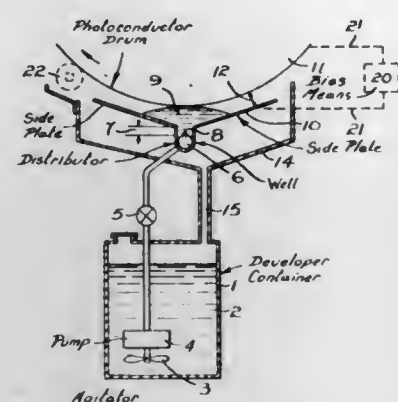
Filed June 10, 1971, Ser. No. 151,843

Claims priority, application Australia, June 11, 1970, 1483/70

Int. Cl. G03g 13/00

U.S. Cl. 118—637

5 Claims



A means for developing electrostatic latent images using liquid dispersed toners, using a distributor mounted in a substantially horizontal position and having disposed in it exit means whereby dispersed toner fed into the distributor is moved to form a pool in an area above the distributor in which the distributor and side plates are positioned in relation to the surface bearing the electrostatic latent image to be developed so that the pool of liquid dispersed toner touches the image bearing surface without direct stream impingement on the surface being developed.

3,752,120

## CAT LITTER BOX

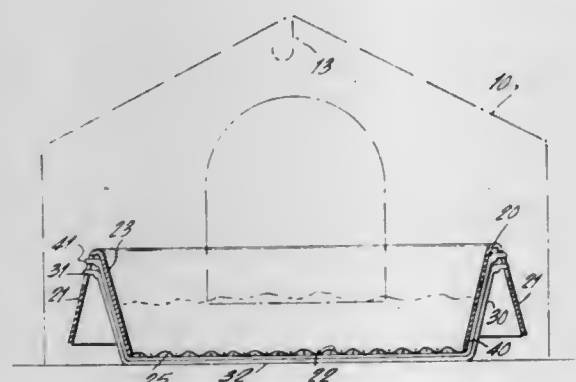
Sam W. Pallesi, Fresno, Calif., assignor to Th Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Nov. 22, 1971, Ser. No. 200,818

Int. Cl. A01k 29/00

U.S. Cl. 119—1

2 Claims



A litter box for use by cats, consisting of a series of three nesting containers, which may be enclosed by a removable hood shaped in the form of a house. The uppermost nesting container has a bottom of screen wire, with a pair of handholds in the side of the container. This container, when nested over the other two containers is partially filled with sand. Each of the other two containers, with solid bottoms have projecting tabs along the side for use as handholds.

3,752,121

## ANIMAL COMMODE

Jack W. Brazzell, 3416 Brigham St., Toledo, Ohio

Filed Nov. 12, 1971, Ser. No. 198,349

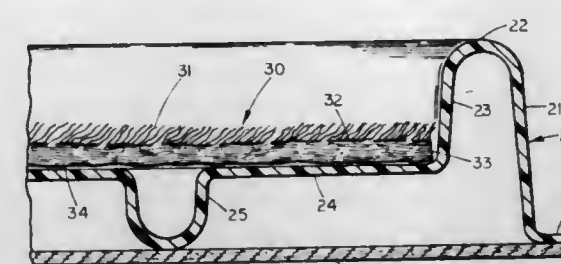
Int. Cl. A01k 29/00

U.S. Cl. 119—1

15 Claims

A reinforced bottom grooved plastic tray in which is placed disposable pads, each pad comprising a top layer of artificial

grass impregnated with an animal attractant, which is adhered to a perforated plastic sheet beneath which is an absorbant



layer backed by an impervious sheet. A container of deodorizer and a plurality of disposable pads may be packaged with each tray.

3,752,122

## EQUIPMENT FOR MILKING

Giorgio Ciribelli, Via Privata Penza 6, Milan, Italy

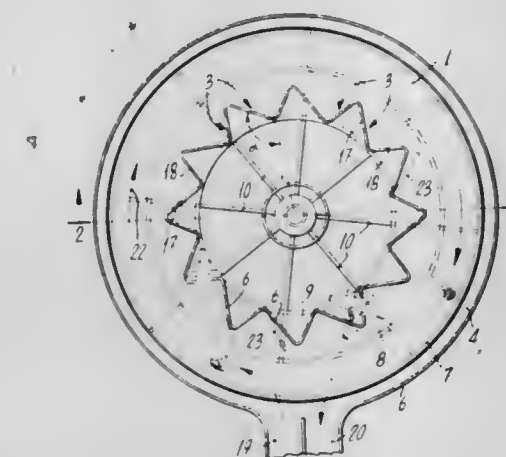
Filed Sept. 1, 1971, Ser. No. 176,996

Claims priority, application Italy, Sept. 11, 1970, 29622 A/70

Int. Cl. A01j 5/00

U.S. Cl. 119—14.04

5 Claims



A cow milking equipment comprises a rotatable annular platform continuously rotated at a constant speed by a suitable motor and is provided with a plurality of stall angulated relative to a radial direction, for accommodating a cow that is to be milked, so as to enable the animal to enter and exit from the stall always passing over the outer peripheral edge of the platform.

3,752,123

## ANIMAL CAGE

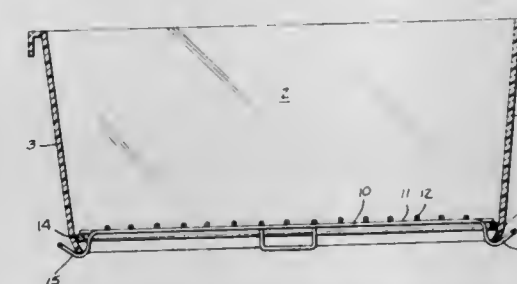
Anthony V. Classe, New York, N.Y., and Robert P. Mehn, Middletown, N.J., assignors to Maryland Plastics Incorporated, Federalsburg, Md.

Filed Dec. 1, 1971, Ser. No. 203,604

Int. Cl. A01k 31/06, 01/00

U.S. Cl. 119—17

2 Claims



The present invention comprises an animal cage lid which has a removable wire mesh bottom.

3,752,124

## WATERING BOTTLE ASSEMBLY FOR ANIMALS

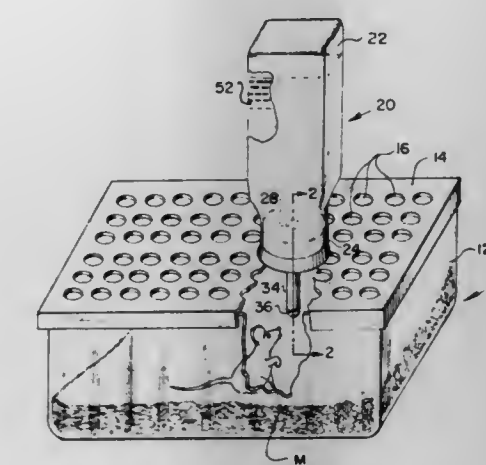
George S. Gabriel, Mahwah, N.J., assignor to Lab Products, Inc., Garfield, N.J.

Filed Sept. 28, 1971, Ser. No. 184,442

Int. Cl. A01k 07/00

U.S. Cl. 119—72.5

7 Claims



A watering bottle assembly for caged laboratory animals includes a completely hollow cylindrical tube of transparent plastic material mounted at one end in the stopper of a water bottle. In the free end of the tube a one-piece metal tip is frictionally mounted, the tip having an enlarged semi-spherical head portion projecting from the plastic tube and having a water outlet aperture accessible to the caged animals for drinking. The outer diameter of the tube is substantially equal to the outer diameter of at least a portion of the enlarged head portion of the metal tip.

3,752,125

## ANIMAL BRUSH

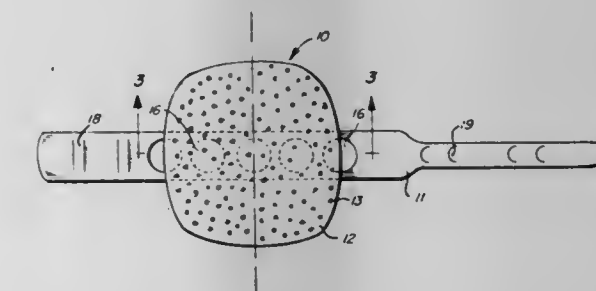
M. Ward Jackson, 1789 E. Maryland Avenue, St. Paul, Minn.

Filed July 14, 1971, Ser. No. 162,574

Int. Cl. A01k 13/00

U.S. Cl. 119—83

14 Claims



An article is taught for removing shedded hair from animals by stroking action, comprising a flexible abrasive sheet structure and holder means, such as a strap, connected to the abrasive sheet structure for fastening it to the palm side of one's hand for stroking action. The abrasive sheet structure includes a flexible backing and a layer of randomly-distributed coarse abrasive grit particles of a size larger than grit 70, preferably larger than grit 40, bonded to the exposed face. Open coated aluminum oxide grit layers are preferred. A mechanical interlock structure comprising the abrasive sheet, a special back up pad, and an intermediate strap holder member, permits adhesive locking of the abrasive sheet to the strap even though the strap may be of a material to which it is notoriously difficult to adhere anything by the usual adhesive or bonding techniques.

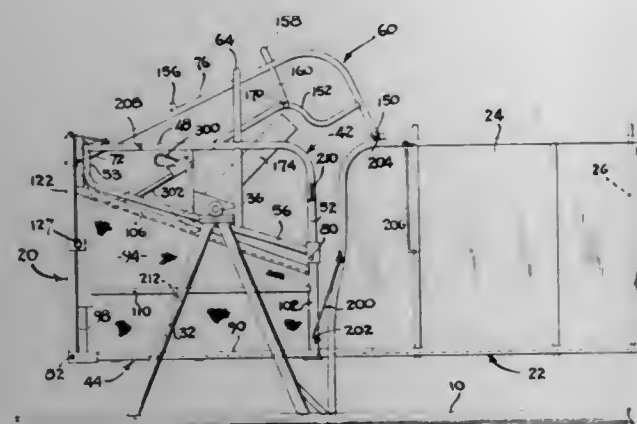


### 3,752,126 ANIMAL HANDLER

Henry W. Rhoades, 849 I St., Williams, Calif.  
Filed Jan. 26, 1972, Ser. No. 220,827  
Int. Cl. A61d 3/00

U.S. Cl. 119—103

28 Claims



An apparatus for upending animals such as sheep, having a chute adapted to entice entry of such animals, a cradle adapted to be forced into contact with the animal, and means for rotating the cage formed between the chute and cradle.

### 3,752,127 LEASH FOR AN ANIMAL

Calvert W. Baker, R.D. No. 2, Buffalo St. Ext., Jamestown, N.Y.

Filed Nov. 8, 1971, Ser. No. 196,678  
Int. Cl. A01k 03/00

U.S. Cl. 119—109

2 Claims



A leash for an animal. The leash is made of a strap that is bent back on itself at each end, forming a loop at each end, and a snap is placed in each loop. The snap has a rounded part through which the strap passes. The rounded part is slightly lesser in diameter than the width of the strap whereby the snaps deform the strap and hold the strap in position. The ends of the strap each pass through a buckle where the loop is held intact. A keeper is formed at one end of the strap between the buckle and the strap and a D-shaped ring is supported on the end of the strap adjacent the keeper between the keeper and the buckle. This ring can receive the second snap. The first snap can be snapped into the collar of a dog or the like to lead the dog. Thus the second loop formed is considerably larger than the first loop and forms a convenient hand-receiving handle. A person can pass his forearm through the large loop, or it could be placed over a fence post or other anchoring means to restrain the dog. The dog can be lead on a short effective leash by snapping the second snap into the ring and snapping the first snap into the dog's collar.

### 3,752,128 SPARK PLUG IGNITION SYSTEM FOR USE IN ROTARY PISTON ENGINE

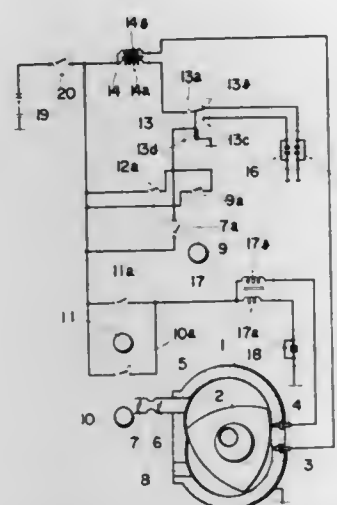
Yasuo Tatsutomi, and Hitoshi Nakamura, both of Hiroshima-shi, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan

Filed Dec. 29, 1971, Ser. No. 213,519  
Claims priority, application Japan, Dec. 29, 1970, 45/135552

U.S. Cl. 123—8.09

Int. Cl. F02b 53/12

4 Claims



A spark plug ignition system for use in a rotary piston internal combustion engine which essentially comprises a leading spark plug ignition circuit for controlling the ignition timing of the leading spark plug and a trailing spark plug ignition circuit for controlling the ignition of the trailing spark plug. In this arrangement, the provision has been made to retard the ignition timing of the leading spark plug in response to the engine operating condition while the trailing spark plug is switched off, for the purpose of substantially eliminating the emission of noxious unburned compounds present in the exhaust gas emerging from the exhaust system of the engine.

### 3,752,129 TWO-CYCLE INTERNAL COMBUSTION ENGINES

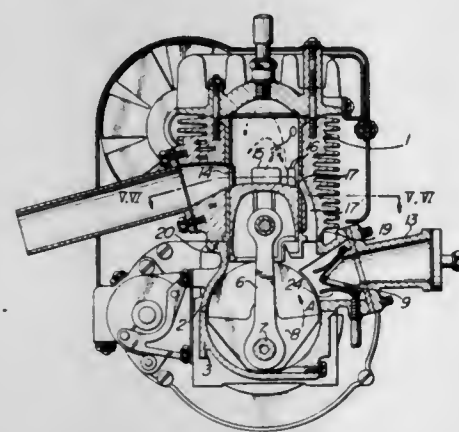
Torao Kobayashi; Hisashi Inaga, both of Suginami-ku, Tokyo, and Kumaichi Nakagawa, Kokubunji-shi, all of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Mar. 7, 1972, Ser. No. 232,569  
Claims priority, application Japan, Dec. 17, 1971, 46/102483

U.S. Cl. 123—73 A

Int. Cl. F02b 33/04

1 Claim



In a two-cycle internal combustion engine, a charging port is provided in the wall of a cylinder at the diametrically opposite position to an exhaust port; at least one main scavenging port at least one auxiliary scavenging port are provided on each side of a vertical plane which includes the straight line interconnecting the centers of said exhaust and charging ports

and extends along the axis of the cylinder, in such a way that said auxiliary scavenging port is closer to said charging port than said main scavenging port; the directions of said main and auxiliary scavenging ports are so established that the mixture may be injected from said respective ports upwardly at an angle of about 15° to the transverse sectional plane of the cylinder and the jets of mixture may intersect each other in a predetermined region which is located on the diameter of the cylinder contained in said vertical plane and at a position more than the half of the distance between the center of the cylinder and said charging port distant from the center of the cylinder toward said charging port; the direction of said charging port is so established that the jet of mixture injected from said port may be directed toward a space slightly above said region of intersection of said scavenging flows and flow along the upper side of said scavenging flows without directly crossing them; and that reed valve means through which the mixture is sucked is disposed in that side of the crank case where the tangential component of rotational force of the crank shaft is directed toward the cylinder skirt and at a position adjacent said cylinder skirt, and the openings of said charging and auxiliary scavenging passage and, if necessary, the opening of said main scavenging passage are located circumferentially of said cylinder skirt and adjacent said reed valve means, whereby a kinetic energy is imparted to the mixture, sucked into the crank case, by making use of the tangential component of rotational force of the crank shaft and thereby the mixture is urged toward and directed into the openings of said respective passages and, therefore, the charging of the mixture into the cylinder is promoted, the scavenging and charging efficiency are enhanced and the engine output is increased.

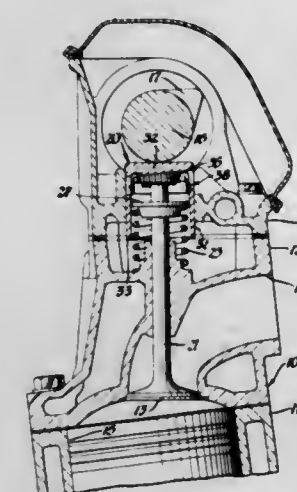
### 3,752,130 MECHANICAL VALVE LIFTER

Elias W. Scheibe, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 15, 1972, Ser. No. 289,418  
Int. Cl. F01l 1/20; F16h 53/06

U.S. Cl. 123—90.52

3 Claims



A mechanical valve lifter having a sliding tapered wedge to effect valve adjustment, the wedge being retained in the desired position within the lifter by means of a retainer secured within the lifter and having spring arms thereon positioned to engage serrations in the wedge.

### 3,752,131 PRIMARY AIR SUPPLYING MEANS FOR AN INTAKE SYSTEM OF INTERNAL COMBUSTION ENGINE

Terutoshi Tsumura, Aki-gun, Hiroshima-ken, and Koso Iida, Hiroshima-shi, both of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan

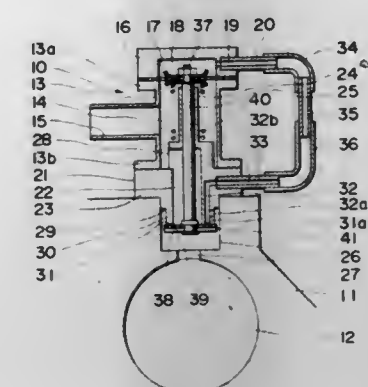
Filed June 3, 1971, Ser. No. 149,543  
Claims priority, application Japan, June 4, 1970, 45/55443  
Int. Cl. F02d 31/00; F02b 33/00

U.S. Cl. 123—97 B

11 Claims

A primary air supplying means for an intake system of an internal combustion engine having a valve member adapted to

permit the flow of a primary air during the deceleration of the engine, said valve member forming an orifice in cooperation with a valve housing for housing said valve member, and a sensing tube opened at the upstream of the orifice of the valve member when said valve member is in the open condition and



opened at the downstream of a valve seat when said valve member is in the closed condition, the pressure present in said sensing tube being equalized to the negative pressure during the normal drive of the engine and to the atmospheric pressure during the deceleration thereof.

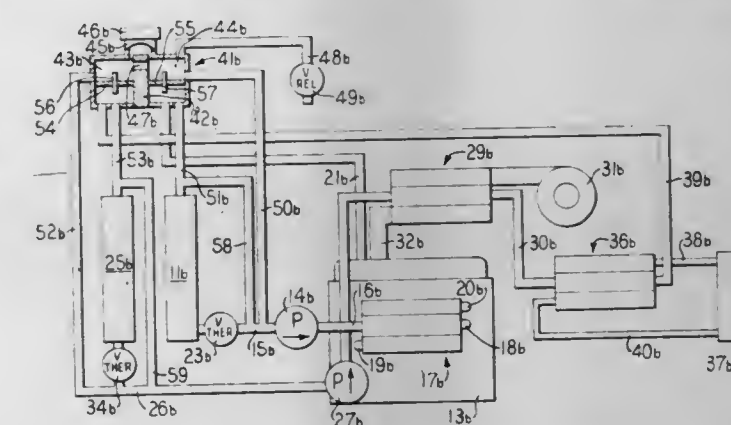
### 3,752,132 DUAL COOLING SYSTEM FOR ENGINES

Erwin J. H. Bentz, Washington, and Roger D. Hiserote, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 810,255, March 25, 1969, abandoned. This application Apr. 19, 1971, Ser. No. 135,497  
Int. Cl. F01p 3/04; F02b 33/00

U.S. Cl. 123—119 CD

10 Claims



A dual cooling system comprises first and second closed circuits, each circuit including an air-to-liquid radiator therein. The first circuit is adapted to cool an internal combustion engine whereas the second circuit functions to cool air discharged from a turbocharger to the intake manifold of an internal combustion engine. The system may comprise means for bypassing the radiators when temperature levels fall below predetermined levels and a single supply and expansion tank for supplying the two circuits with cooling fluid. A baffle is positioned in the tank's chamber to divide it into two compartments with each compartment communicating with one of the circuits.

### 3,752,133 MULTIPLE HEAT AUTOMATIC CHOKE

David C. Irish, Dearborn, and Richard J. Junttonen, Farmington, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 15, 1972, Ser. No. 306,776  
Int. Cl. F02d 11/08; F02n 1/10, 23/04

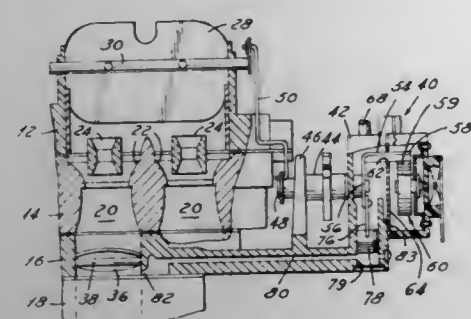
U.S. Cl. 123—119 F

12 Claims

The carburetor has a conventional automatic choke construction heating a bimetallic coil by engine exhaust stove heat to slowly open the choke valve during cold weather starts; supplemental heat is provided by electrically controlled positive



temperature coefficient heater devices, the smaller of which is operable at all times concurrent with the stove heat, the larger



device being operable above a predetermined ambient temperature to move the choke valve open faster, to reduce emissions.

3,752,134

## VAPOR REGULATING VALVE

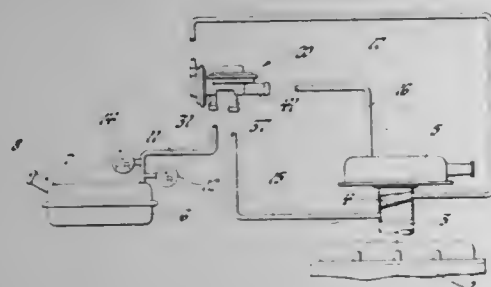
Thomas J. Hollis, Jr., Fairport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 5, 1972, Ser. No. 241,350

Int. Cl. F02d 19/00

U.S. Cl. 123—136

8 Claims



A vapor regulating valve for use in a system for mixing air with fuel tank vapor stored in a fuel tank, the valve being constructed so that fuel tank vapor pressure applied against a diaphragm raises a metering valve to control the flow of fuel vapor and air to the intake manifold of an internal combustion engine. A second diaphragm responsive to engine intake manifold vacuum is used to effect the opening and closing of a valve to control the flow of fuel vapor as a function of engine operating conditions.

3,752,135

## VEHICLE FUEL TANK VENTING SYSTEM

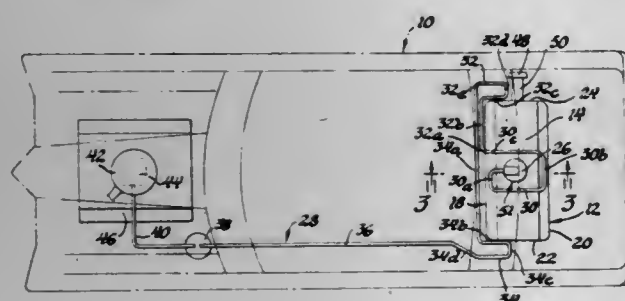
Donald W. Peterson, Fenton, and Floyd A. Wyczalek, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1971, Ser. No. 202,263

Int. Cl. F02m 59/00

U.S. Cl. 123—136

4 Claims



A venting system for a vehicle fuel tank has a vent line which extends a selected distance above, below, and to either side of the fuel tank to contain liquid fuel against loss to the atmosphere irrespective of the attitude of the vehicle.

3,752,136  
LIQUID FUEL INJECTION PUMPING APPARATUS  
Basil Edward Knight, deceased, late of Kings Langley, England (by Norman Henderson Knight, executor); Harold Redmore Hodge, executor, Eastcote, Pinner, and Ivor Fenne, Greenford, both of England, assignors to C. A. V. Limited, Birmingham, England

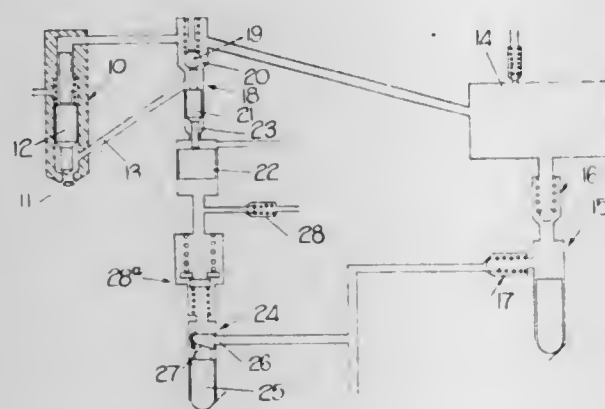
Filed July 8, 1971, Ser. No. 160,805

Claims priority, application Great Britain, July 10, 1970, 33,570/70

Int. Cl. F02m 47/02

U.S. Cl. 123—139 AT

14 Claims



A fuel injection pumping apparatus includes an accumulator, a pump for charging the accumulator with fuel under pressure and a differential valve for controlling fuel flow from the accumulator to an orifice. In addition, a control valve is provided to control the application of fuel under pressure to the differential valve, the control valve embodying a valve element which is lifted from its seating to apply fuel to the differential valve, and there is in addition, a piston which upon closure of the control valve, moves to reduce the pressure acting on the differential valve.

3,752,137

## APPARATUS FOR CONTROLLING RATE OF FUEL INJECTION

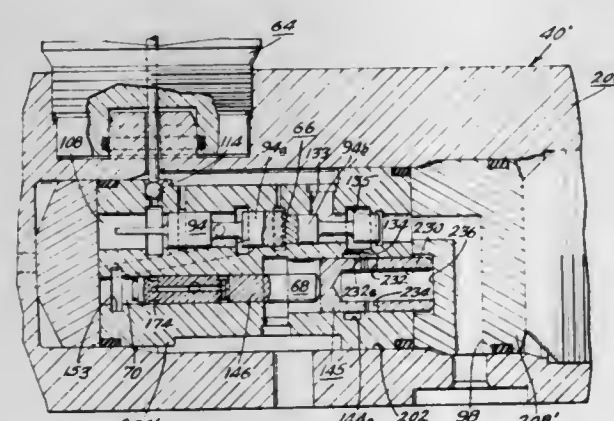
John A. Kimberley, East Granby, Conn., assignor to AMBAC Industries, Inc., Springfield, Mass.

Filed Apr. 25, 1972, Ser. No. 247,333

Int. Cl. F02d 11/06

U.S. Cl. 123—139 R

13 Claims



Means for control of the rate of fuel injection in a diesel engine injection system characterized by a separate fuel injector for each engine cylinder. Each injector is supplied with discrete metered quantities of fuel which are discharged therefrom upon actuation of the injector by an injector piston which is driven by a high pressure fluid to pump the fuel through an associated injection nozzle. The rate of injection is controlled by varying the rate of flow of the high pressure fluid into the piston chamber. In the preferred embodiment, the piston comprises an elongated cylindrical member having a concentric bore open at one end and having ports opening into said bore through which the high pressure fluid passes

from a communicating annulus. The piston ports are shaped in a predetermined configuration to cooperate with the annulus as the piston travels across the annulus to regulate the rate of flow of fluid into the piston bore and hence the rate of travel of the piston and the rate of injection of the fuel through the injection nozzle. In a modified embodiment, a plurality of piston ports are utilized to produce a pilot injection prior to the main injection. To facilitate the return of the piston following injection, a spill conduit connecting with the end of the piston chamber is provided which is opened in proper timed relationship to the piston movement by the valve controlling the admission of the high pressure fluid to the piston chamber.

3,752,138

## ENGINE INJECTION PUMP OPERATING ALL CYLINDERS OR LESS

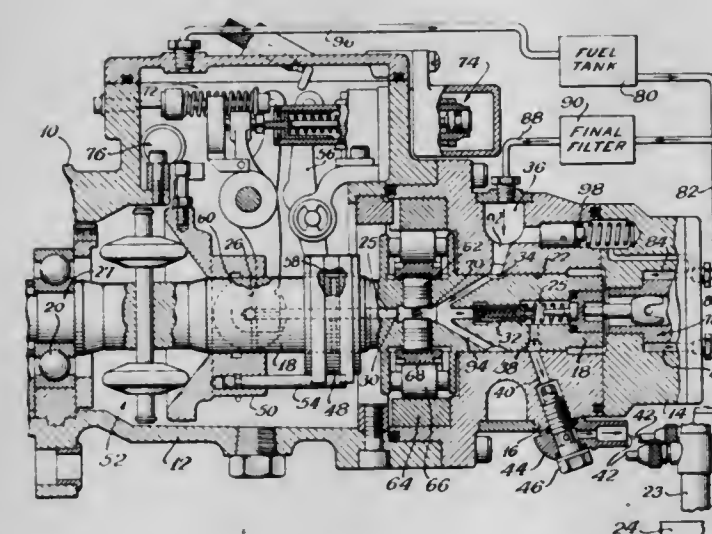
John W. Gaines, Wheaton, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Aug. 9, 1971, Ser. No. 170,178

Int. Cl. F04b 49/08; F04d 15/00; F02m 39/00

U.S. Cl. 123—139 R

2 Claims



Multi-cylinder engine, and injection pump for operating same on a fraction of the number of cylinders, then a greater fraction of that number and, finally, all of the cylinders when operating in all higher portions of the speed range. Viewed the other way, the pump operates all cylinders at full load, and cuts a plurality or pluralities of those cylinders out of operation until, at engine idle, the transition is made such that only a plurality of cylinders is still firing, and all such transition control is consolidated in a controlled fuel metering sleeve in the pump. The pump is of the rotary distributor type, and has a variable volume pump chamber portion whereof the pump chamber number is materially fewer than the number of engine cylinders and preferably is limited to one or two pump chambers.

3,752,139

## ELECTRONIC IGNITION TIMING SYSTEM FOR INTERNAL COMBUSTION ENGINES

Robert W. Asplund, Williamsport, Pa., assignor to GTE Sylvia Incorporated, Seneca Falls, N.Y.

Filed Nov. 23, 1971, Ser. No. 201,363

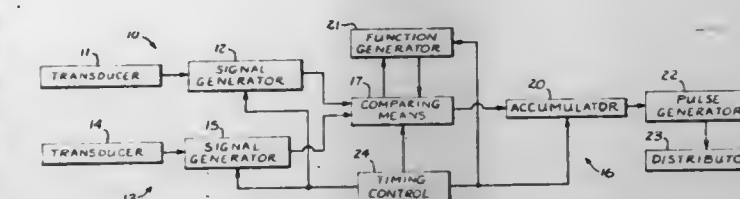
Int. Cl. F02p 3/02, 3/00

U.S. Cl. 123—146.5 A

15 Claims

An electronic ignition timing system for internal combustion engines is disclosed which utilizes electronic circuitry

to vary the timing of ignition pulses in response to engine speed and vacuum to provide optimum or improved per-



formance by the engine. Preferably the electrical circuitry utilizes digital signals for high accuracy.

3,752,140

## IGNITION DISTRIBUTORS

Alfred Rees, Perry Barr, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

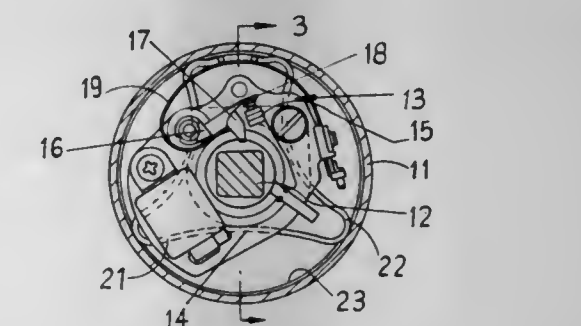
Filed Oct. 7, 1971, Ser. No. 187,270

Claims priority, application Great Britain, Oct. 30, 1970, 51,632/70

Int. Cl. H01h 19/62

U.S. Cl. 123—146.5 A

8 Claims



An ignition distributor including a hollow casing having journaled for rotation therein a cam shaft. A contact breaker assembly is mounted within the casing and is operable by rotation of the cam shaft, the contact breaker assembly including a carrier plate supporting the fixed and movable contacts of the contact breaker assembly. The carrier plate is mounted on a support member which carries the contact breaker assembly within the casing. The support member is formed from resilient wire and engages the inner surface of the casing at at least three angularly spaced points. The arrangement of the support member within the casing resists relative axial movement between the casing and the support member, and conveniently the arrangement includes a groove on the inner surface of the casing within which the wire seats.

3,752,141

## VACUUM CONTROLLED CARBURETOR THROTTLE VALVE POSITIONER

William W. Charron, Orchard Lake; Robert S. Harrison, Detroit, and Harold E. Marcum, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 165,991, July 26, 1971. This application Aug. 7, 1972, Ser. No. 278,673

Int. Cl. F02m 19/12, 1/14; F02d 33/00

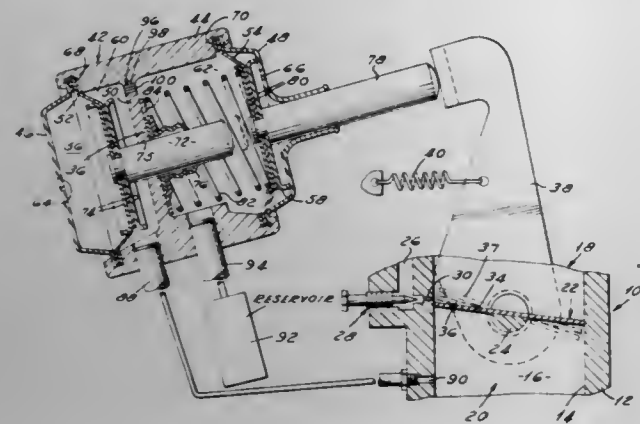
U.S. Cl. 123—198 DB

6 Claims

A downdraft type carburetor in one embodiment has an idle system discharge port that is straddled by the normal idle speed and closed throttle positions of the throttle valve so as to permit idle speed fuel and air flow in one position and no flow in the other position; a second embodiment has a conventional idle system including a transfer port cooperating with the edge of the throttle valve to provide normal idle speed fuel and air flow while reducing the idle system fuel flow in the



closed position of the throttle valve; both embodiments have a third beyond normal idle, or fast idle speed position provided for engine startup; the three positions are controlled by a servo operatively engaging the throttle valve; the servo operation is controlled by intake manifold vacuum to initially close



the throttle valve upon engine shut off, with a subsequent return of the throttle valve to its fast idle position for engine restarting, or to return the throttle valve to a normal idle position upon release of the vehicle accelerator pedal during engine operation.

3,752,142

# IN COMBINATION AN ARCHERY BOW AND VIBRATION DAMPENER

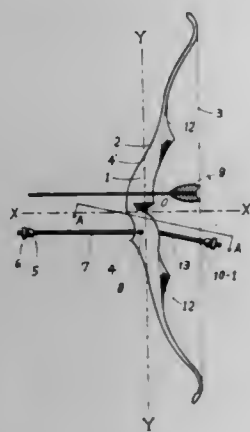
Houyu Morita, No. 9 c/o Tanaka Bldg. 2-14 Dogenzaka 4-chome, Dhinuys-ku, Tokyo, and Kazuyoshi Okino, 3050-2 Mukainada-Ohhara, Hiroshima, both of Japan

Filed Apr. 9, 1971, Ser. No. 132,739

Claims priority, application Japan, Apr. 18, 1970, 45/33762  
Int. Cl. F41b 5/00

U.S. Cl. 124-24

2 Claims



A vibration dampener for an archery bow having a bow handle and a bow string. The dampener has two legs arranged in a U shape and positioned rearwardly of the belly of the bow on either side of a plane passing through and including the full length of the archery bow and the bow string. A third leg extends outwardly from the back side of the bow, and each one of said legs has a weighted member attached to its free terminal end.

3,752,143

# APPARATUS FOR SHAPING A GRINDING WHEEL

Pierre Trochet, 4 bis, Avenue Foch 92, La Garenne-Colombes, France

Filed Apr. 8, 1971, Ser. No. 132,439

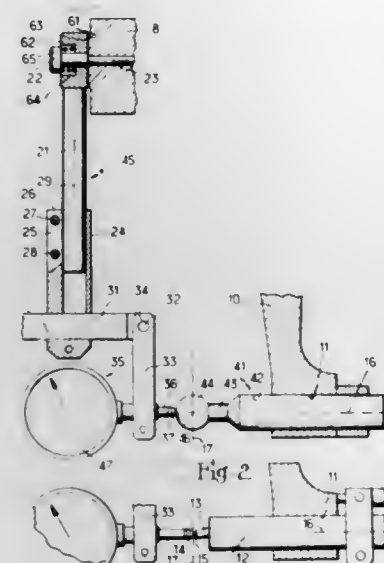
Claims priority, application France, Oct. 28, 1970, 7038864  
Int. Cl. B24b 53/06

U.S. Cl. 125-11 A

5 Claims

A device for adjusting the position of a diamond point in an apparatus for shaping a grinding-wheel. A holder for the diamond point is slidably mounted in an arm which is

rotatably mounted about a working axis. The working axis intersects the axis of the path of travel of the diamond point. The device itself comprises a comparator including a probe retractably mounted on the apparatus. The probe is adapted to be brought into position along the axis of the path of travel of the diamond point. To check the position of the diamond point, the latter is removed from the holder and a measuring



rod having a spherical end portion of predetermined diameter is substituted in its place. The coincidence of the center of the spherical portion along the working axis is checked on the dial of the comparator. The holder for the diamond point then put back in the arm and brought into position in contact with the probe; a particular value on the dial of the comparator indicates that the diamond point is on the working axis.

3,752,144

# MUSCULAR EVALUATION METHOD AND TESTING APPARATUS

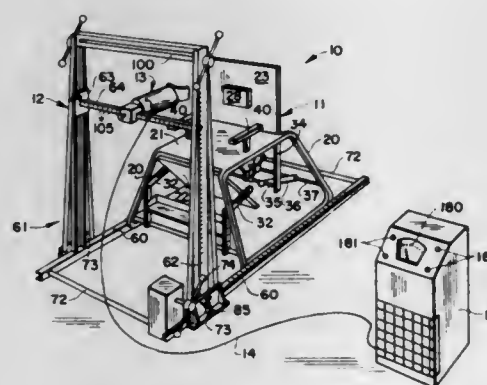
Keith E. Weigle, Jr., Chagrin River Rd., Gates Mills, Ohio

Filed July 23, 1971, Ser. No. 165,683

Int. Cl. A61b 5/00

U.S. Cl. 128-2 S

31 Claims



An adjustable apparatus and method for positioning a force sensor adjacent various portions of the patient's body and for measuring and recording forces exerted by the voluntary muscles of the patient. The apparatus is calibrated such that the adjustment of the apparatus for positioning the patient and the force sensor may be recorded and later exactly reproduced. An adjustable calibrated platform positions the patient while an adjustable calibrated frame positions the force sensor. The frame and the patient support platform are relatively movable such that the force sensor may be positioned adjacent substantially any portion of the patient's body. The adjustments of the apparatus are recorded such that the position of the patient and the force sensor may later be duplicated to compare the patient's muscular condition at spaced time intervals.

3,752,145

# METHOD FOR PREVENTING AIR EMBOLISM IN A SYRINGE FOR ANGIOGRAPHIC POWER INJECTOR

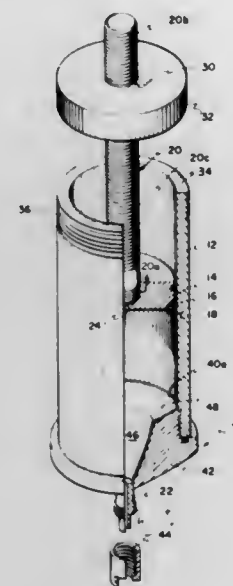
Robert R. Runnells, Fruit Heights, and Frank W. Longson, Salt Lake City, both of Utah, assignors to MDT Instrument Company, Salt Lake City, Utah

Filed Nov. 1, 1971, Ser. No. 194,747

Int. Cl. A61b 5/02; A61m 5/18

U.S. Cl. 128-2 R

3 Claims



A power injector or syringe designed for use in angiographic studies having a cylindrical, hollow housing and a plunger or piston fitted for reciprocating action within the housing. The housing is provided with a transparent, magnifying conical-shaped head for more easily detecting air bubbles entrained in a liquid contained by the syringe. Detection of these bubbles prior to injection minimizes the chances of air embolism during intravenous injections.

3,752,146

# CENTRIFUGE TUBE FOR ULTRA-VIOLET ANALYSIS

William M. Kline, Gloversville, N.Y., assignor to Medical Evaluation Devices & Instruments Corp., Gloversville, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,192

Int. Cl. A61b 10/00

U.S. Cl. 128-2 A

8 Claims



This invention is directed to a centrifuge tube formed from a transparent plastic and provided at its bottom with a penetratable membrane through which an optical fiber element is passed upon completion of centrifuging of the contents to enable visual observation of the effect of light, particularly ultra-violet light, on the contents, when compared with a standard or control, to detect the presence or absence of a predetermined type of foreign matter in the centrifuged contents of the tube. The optical fiber element may be formed from quartz or from such a material as a methyl methacrylate capable of transmitting ultra-violet light.

3,752,147

# BLOOD PRESSURE CUFF

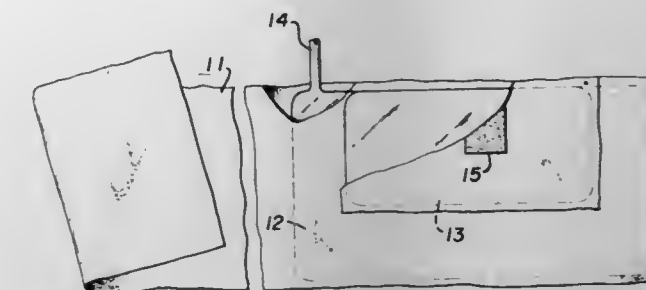
Salvador Castro, Levittown, Pa., and Edwin Lewis Schmalzbach, Roosevelt, N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed June 13, 1972, Ser. No. 262,424

Int. Cl. A61b 5/02

U.S. Cl. 128-2.05 C

4 Claims



An inflatable cuff for deriving blood pressure data by uniform vessel occlusion in all shape limbs to provide accurate compression comprising an inflatable bag and a pad positioned lengthwise in the cuff and in an overlying relationship within the cuff, the pad being smaller than the bag in its width dimension and distally positioned on the cuff and connected so as to anchor the cuff to the subject's extremity and generate a substantially uniform pressure compression pattern along the extremity length under the cuff.

3,752,148

# DUAL BAG BLOOD PRESSURE CUFF

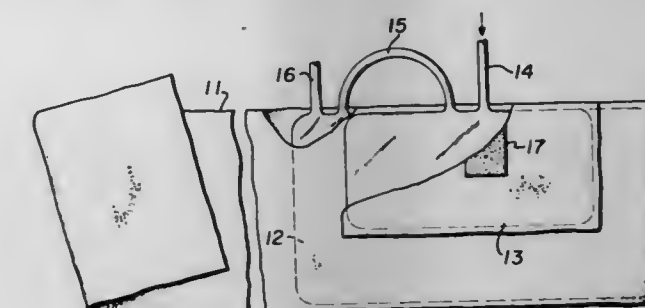
Edwin Lewis Schmalzbach, Roosevelt, N.J., assignor to Hoffman-La Roche Inc., Nutley, N.J.

Filed June 13, 1972, Ser. No. 262,425

Int. Cl. A61b 5/02

U.S. Cl. 128-2.05 C

5 Claims



An inflatable cuff for deriving blood pressure data by uniform vessel occlusion in all shape limbs to provide accurate compression comprising first and second inflatable bags positioned lengthwise in the cuff and in an overlying relationship within the cuff, the second bag being smaller than the first in its width dimension and distally positioned on the cuff, and the first and second bags connected so as to initially supply the second bag with a greater air pressure than that supplied to the first bag to anchor the cuff to the subject's extremity and generate a uniform pressure compression pattern along the extremity length under the cuff.

3,752,149

# VAGINAL SPECULUM

Leslie Ungar, 37 Heathdale Rd., and Arthur Rosenthal, 67 Baycrest Ave., both of Toronto, Ontario, Canada

Filed Dec. 16, 1971, Ser. No. 208,714

Int. Cl. A61b 1/30

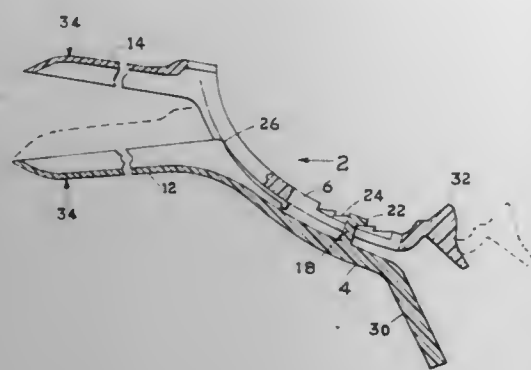
U.S. Cl. 128-12

10 Claims

A vaginal speculum of the bivalve type which includes two blades in superposed relation capable of moving from a closed



position in which the blades are closely spaced to an open position in which they are widely spaced; said blades being



movable between said open and closed positions along an arcuate path which provides angular variation as well as separation in one sweeping movement.

3,752,150

**EXERCISING APPARATUS**

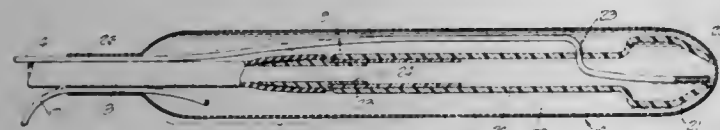
John P. Harris, P.O. Box 187, Wofford Heights, Calif.

Filed Aug. 30, 1971, Ser. No. 176,170

Int. Cl. A61b 5/10

U.S. Cl. 128—2 S

9 Claims



An elongated resilient core member is surrounded by an oversize flexible covering having one open end through which a portion of the core extends. The covering adjacent the opening is sealed to the core. A first tubing attached to the core and extending from the covering provides a supply of pressurized liquid through a channel in the core to the covering interior for filling and distending the same, spacing it from the core at all points except where sealed. A second tubing provides communication between the contained liquid and an externally located pressure measuring device, e.g., a manometer. In use, the core and liquid-filled covering are inserted full depth into the vagina and the individual then tries to produce controlled contraction of the vaginal musculature, noting the degree of success on the pressure measuring device.

3,752,151

**DISPOSABLE MEDICAL ELECTRODE WITH LAMINATE CONTACT MEMBER**

Robert M. Robichaud, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 30, 1971, Ser. No. 176,050

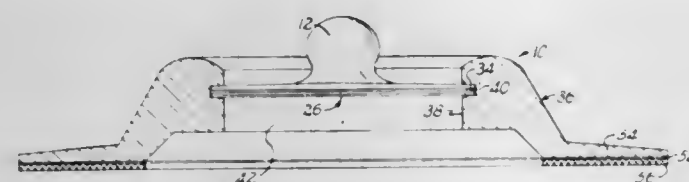
Int. Cl. A61b 5/04

U.S. Cl. 128—2.06 E

7 Claims

An electrode which provides improved performance while being characterized by a very economical construction to enhance disposability of the electrode after a single use in an electrocardiograph, heartbeat monitoring device or the like is shown to include a silver-plated, brass, snap-fastener component having a disc-like portion and a projecting ball-shaped portion. A disc of laminate material having a very thin layer of

silver chloride bonded to a layer of silver-nickel alloy is secured to the disc-like portion of the snap-fastener by means of a weld which is located close to the edge of the laminate disc and to the edge of the snap-fastener disc portion, the layer of silver chloride being disposed to face away from the snap-fastener. The electrode further includes a body of electrically insulating material which has a central opening and which has an annular groove extending around the wall of the body opening, this annularly grooved portion of the insulating body being fitted over and sealed to the edge of the laminate disc and the edge of snap-fastener disc portion so that the projecting ball-shaped portion of the snap-fastener is disposed at one end of the body opening in a convenient location to be releasably connected to electrical contact means such as a mating snap-fastener component and so that the opposite end of the body opening cooperates with a portion of the silver



chloride layer of the laminate disc to define a cavity which receives and holds an electrolyte paste between the layer of silver chloride and the skin of a patient. In this electrode construction, the advantages in performance known to result from the use of a silver chloride layer on a body of silver material are inexpensively achieved and additional improvement in performance is provided by use of a nickel-bearing silver alloy to support the silver chloride material. In addition, although the electrode construction is characterized by low cost, the construction avoids all possible contact of the electrolyte paste with junctures of unlike metal materials in the electrode, thereby avoiding the development of spurious electrochemical effects so that the electrode provides an accurate, rapidly stabilized signal in physiological measuring apparatus with minimal introduction of noise in the signal traceable to the electrode construction.

3,752,152

**EYE EXAMINATION DEVICE**

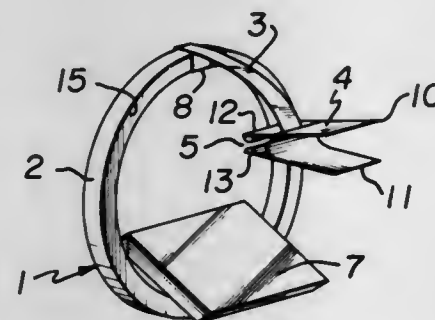
Seymour P. Kern, Belleville, N.J., assignor to Applied Life Design Corporation, Bloomfield, N.J.

Filed Feb. 16, 1972, Ser. No. 226,818

Int. Cl. A61b 1/00

U.S. Cl. 128—21

5 Claims



Disclosed herein is a simple, eyelid-supportable device useful for painlessly examining the upper conjunctival sac of the eye.

3,752,153

**HEAD STAND EXERCISER**

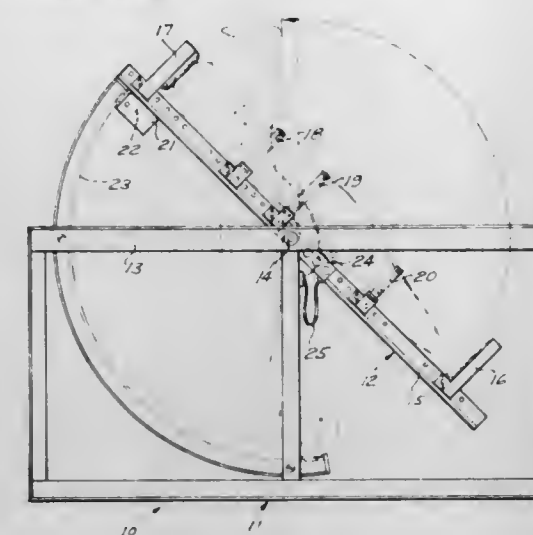
Doris E. Copeland, 457 Bryn Mawr St., San Antonio, Tex.

Filed May 5, 1972, Ser. No. 250,792

Int. Cl. A61h 1/00

U.S. Cl. 128—24 R

1 Claim



A platform provided with a harness for complete comfortable support is rotatable by the user and controlled during use both in degree of rotation and duration at any position up to the head down position.

3,752,154

**THERAPEUTIC VIBRATING MACHINE**

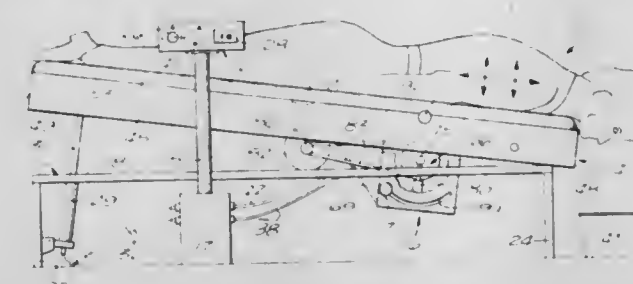
James A. Clark, Orange, Calif., assignor to Clark Mobilizer, Inc., Downey, Calif.

Filed May 16, 1972, Ser. No. 253,825

Int. Cl. A61h 1/00

U.S. Cl. 128—33

14 Claims



A vibrating machine for use in treating obstructive respiratory disorders, such as emphysema. The machine provides a table which is suspended from loops depending from an adjustable frame portion thereof. Means is provided for raising one end of the adjustable frame portion so as to tilt the table on which the patient is lying in a prone position with his head in a lowered position. In a preferred embodiment of the machine, a first control means provides for simultaneously varying the eccentricity of a pair of spaced rotating weights mounted below the table and thereby varying the intensity of the vibratory impulses imparted to the patient; and a second control means provides for varying the relative phase angle of the pair of rotating weights and thereby varying the direction of the vibratory impulses imparted to the patient.

3,752,155

**APPARATUS FOR HEATING OR COOLING A SURFACE WHILE SIMULTANEOUSLY DISPENSING A LIQUID PRODUCT THEREON**

William Blinoff, Jr., 1332 Woodland Ln., Deerfield, Ill.; Robert A. De Napoli, 980 Sheridan Rd., Glencoe, Ill., and Richard Hart, 24W051 North Ave., Wheaton, Ill.

Filed Jan. 4, 1972, Ser. No. 215,339

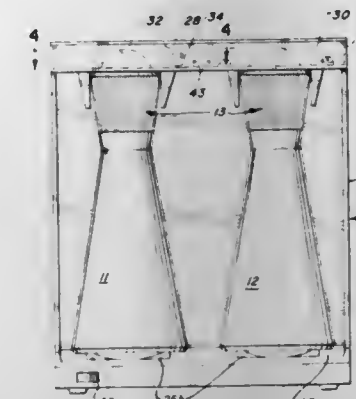
Int. Cl. A61h 15/02; A46b 11/08

U.S. Cl. 128—65

9 Claims

An apparatus is provided for either heating or cooling the skin surface while simultaneously dispensing a liquid product

thereon. The apparatus includes a rotatably mounted mass of thermal energy storage material having a hardened, curved heat transfer exterior to which a film of the liquid product adheres when the mass rotates. The mass and the skin surface



engaged thereby have disparate temperatures, thus producing either a hot or cold sensation on the skin surface when the mass is in rolling contact therewith and the product is being dispensed thereon.

3,752,156

**THERAPY BATH CABINET**

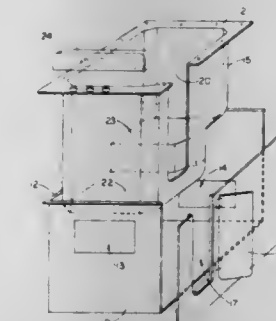
Reber B. Wack, Box 83, Watseka, Ill.

Filed May 19, 1972, Ser. No. 254,874

Int. Cl. A61h 9/00

U.S. Cl. 128—66

6 Claims



A cabinet comprising an inner and outer preformed shell assembled into a unitary structure with a water tight side door. The inner shell includes an integrally formed seat for use by an occupant. The outer shell is spaced from the inner shell forming a chamber containing water conduits, pump and associated equipment. Control means permit an attendant or occupant to provide either a shower or bath and also a whirlpool effect.

3,752,157

**DISPOSABLE HEADBAND AND FILTER**

Oscar Malmin, 127 E. Wayne Ave., Akron, Ohio

Filed Nov. 8, 1971, Ser. No. 196,405

Int. Cl. A61m 16/00

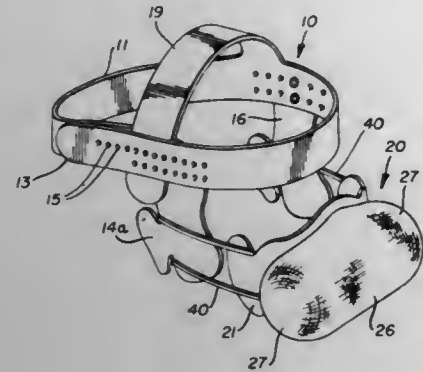
U.S. Cl. 128—146.7

6 Claims

A disposable headband and filter bag for use by dentists, doctors and the like. The headband is stamped or cut from a single piece of paper or other similar lightweight, inexpensive material and has a base or head-encircling portion which is perforated at one end and which carries a series of buttons, snaps, projections, or other joining means at the other end. At approximately the midpoint of the band a top strap integrally projects at substantially right angles, and this also has a plurality of apertures or holes. At about the midpoint of the headband, a supporting member or tab is provided which may be either integral with the band or removable. At one end also a



similar tab is provided. When folded or bent, the end with the button or other joining means is brought into engagement with the end with the apertures, and the buttons or joining means engage the apertures, with the presence of the plurality of



apertures making it possible to adjust for various head sizes. Similarly, the top strap is connected to the button and is also adjustable. A filter bag is provided and may be secured by strips of elastic or similar material which engage tabs on the filter and the aforementioned tabs on the headband itself.

3,752,158

#### APPARATUS AND METHOD FOR SUPRAPUBIC DRAINAGE OF THE URINARY BLADDER

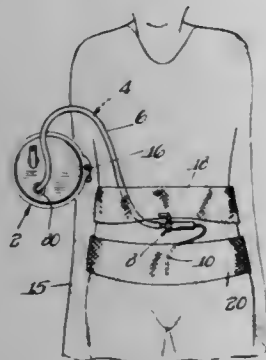
Donald H. Kariher, St. John's, Antigua, British West Indies, assignor to Snyder Manufacturing Company, Inc., New Philadelphia, Ohio

Filed Nov. 23, 1970, Ser. No. 91,885

Int. Cl. A61m 01/00

U.S. Cl. 128-278

2 Claims



Apparatus and method for suprapubic drainage of the urinary bladder comprises a small trocar for puncturing the bladder wall following which a flexible drainage tube is inserted through the lumen of the trocar and into the bladder. The trocar is then retracted from the patient and withdrawn from the tubing over the proximal end thereof. The proximal end of the tubing is then connected through a three way stopcock which is in turn connected to an additional piece of flexible tubing, the latter running to a portable suction-producing device which may be secured to the patient's garment. A fully closed evacuating system is provided. The stopcock has an auxiliary passageway into which a hypodermic needle may be inserted to irrigate or flush the system, or to introduce medication into the bladder.

3,752,159

#### RESECTOSCOPE CUTTING ELECTRODE

Reinhold D. Wappler, New Canaan, Conn., assignor to American Cystoscope Makers, Inc., Pelham Manor, N.Y.

Filed May 3, 1971, Ser. No. 139,541

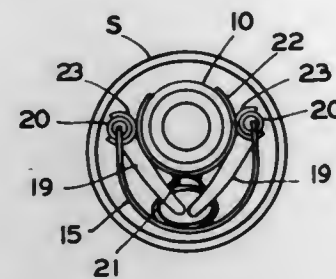
Int. Cl. A61b 17/32

U.S. Cl. 128-303.15

10 Claims

A resectoscope including a tubular sheath, an optical telescope comprising a tubular stem within the sheath, an eyepiece at the proximal end of the stem and an objective lens

at the distal end of the stem; and a cutting electrode carried by and reciprocable along the telescope stem and comprising a tubular body, an electrode wire including a rectilinear first part extending through and insulated from the inner surface of the tubular body, a generally loop-shaped second part extending beyond the distal end of the first part and having a pair of electrically insulated arms and an uninsulated cutting element constituting a continuation of each arm and positioned in the field of vision of the telescope. Mounted on the tubular body is



a saddle unit comprised of an arcuate first member secured to the body, an arcuate second member affixed to the first member and embracing the telescope stem and slidable therealong, and a pair of arcuate third members which are disposed and attached to opposite sides of the second member. A portion of each arm is retained in a corresponding third member whereby the arms are adequately supported and rendered more stable against undesirable flexing, bending and/or deformation.

3,752,160

#### DISPOSABLE ELECTRODE SWITCH

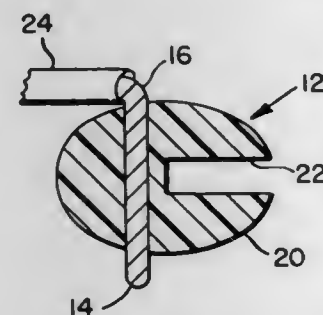
Arthur G. Billin, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed July 15, 1971, Ser. No. 162,799

Int. Cl. A61b 17/36; A61n 3/00

U.S. Cl. 128-303.17

1 Claim



The invention is a disposable switch and conductor cord which clips on a forceps and connects the forceps to the working circuit of an electrosurgical device wherein any forceps made of a conducting material may be adapted for use as a cautery.

3,752,161

#### FLUID OPERATED SURGICAL TOOL

John H. Bent, Fullerton, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 2, 1971, Ser. No. 168,297

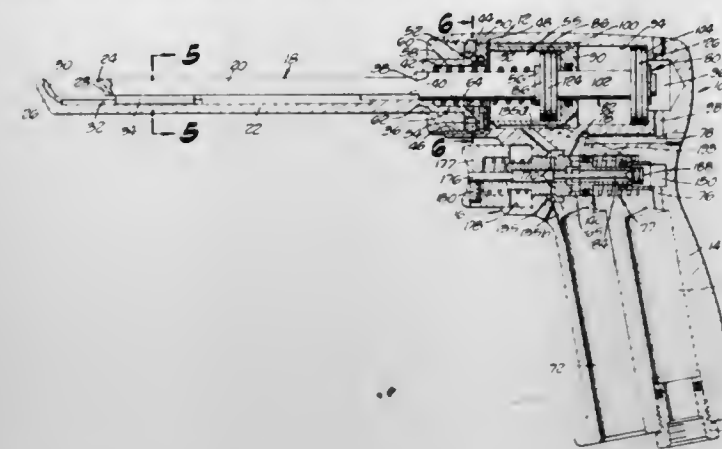
Int. Cl. A61b 17/16, 17/32; F15b 11/10

U.S. Cl. 128-312

24 Claims

A fluid operated surgical tool having a body to which variously configured object-engaging elements may be removably attached for gripping, cutting or perforating bone, tissue or other structures. Housed within the body is an assembly, responsive to fluids under pressure, for operating the object-engaging elements. A fluid regulating valve assembly is provided for precisely controlling the flow of fluids to the pressure-responsive assembly, so that the surgeon may deftly and accurately control the movement of the object-engaging elements. The fluid regulating valve assembly comprises a valve

seat through which fluid flows to the pressure-responsive assembly, a valve, an operator control for disengaging the valve from the valve seat, and an automatic pressure-balancing



mechanism for moving the valve seat into reengagement with the valve to stop the flow of fluid therethrough when pressures acting on the pressure-responsive assembly reach predetermined levels.

3,752,162

#### ARTIFICIAL CUTANEOUS STOMA

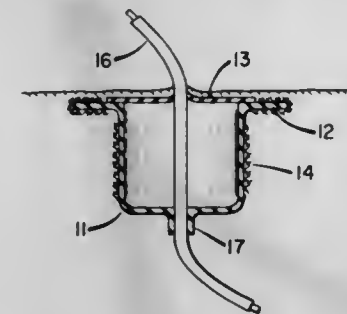
Mahmoud S. Newash, Saginaw, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Apr. 10, 1972, Ser. No. 242,505

Int. Cl. A61m 25/02

U.S. Cl. 128-348

10 Claims



A device for providing a long term percutaneous pathway for elongated members such as catheters, pacemaker leads, fiber optics, and the like, comprising a flanged cup-shaped body containing coils of the elongated member or members and having tissue fixation means on its surface, at least one aperture in the bottom of the body through which the elongated members pass and to which the elongated member may be permanently affixed and a membranous cover designed to be cut along with overlying skin for withdrawal of the coiled portion of the elongated member after cutaneous implantation and healing.

3,752,163

#### BINDER

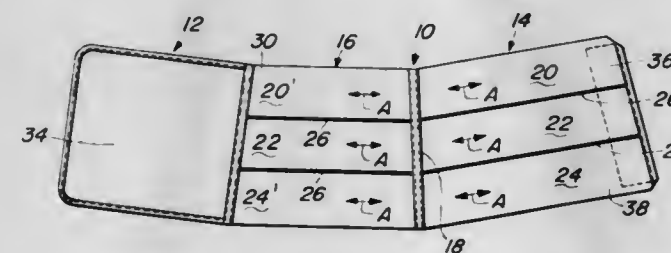
David Kaplan, 124 S. Main St., Sharon, Mass.

Filed Sept. 22, 1972, Ser. No. 291,349

Int. Cl. A41c 1/00

U.S. Cl. 128-541

3 Claims



A body support comprising a body encircling member having a first section made of elastic webbing stretchable in the

body encircling direction and a second section formed of a looped fabric and forming an extension of the first section to complete encirclement of the body. A narrow strip of fastener material having hook-like members is secured to the free end of the first section, and the hooks releasably lock on the loops of the looped fabric to close the member about the body.

3,752,164

#### GIRDLE WITH MULTI-REGION ABDOMINAL CONTROL

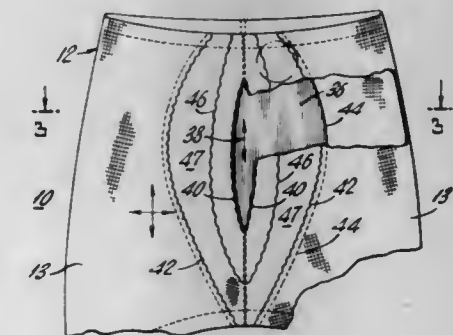
Sallyann Zanca Salisky, Washington Township, N.J., assignor to International Playtex Corporation, New York, N.Y.

Filed Sept. 2, 1971, Ser. No. 177,297

Int. Cl. A41c 1/00

U.S. Cl. 128-547

11 Claims



A girdle is disclosed which includes a body encircling region of two-way stretch material with said region having an opening in the front abdominal controlling portion thereof; and a layer of one-way stretch material secured to the body encircling region in overlying relationship with respect to the opening with the line of stretch of the layer oriented in a vertical direction. Starting at the front center of the garment, the girdle of the invention thereby includes three areas of abdominal control including; the layer of one-way vertical stretch material spanning the opening; a double layer region surrounding the opening and including superimposed layers of one-way vertical stretch material and the two-way stretch material; and the two-way stretch material comprising the body encircling region of the garment. Preferably, vertically distensible spaced apart lines of zig-zag stitching are employed to secure the layer of one-way stretch material to the body encircling region with the horizontally extending stitch portions of the zig-zag construction being increasingly and decreasingly modulated from an imaginary lineal base line to produce a scalloped effect which helps resist horizontal stresses which tend to shift the layers laterally with respect to one another.

3,752,165

#### SMOKE FILTER PLUG AND PROCESS AND CIGARETTE MADE THEREFROM

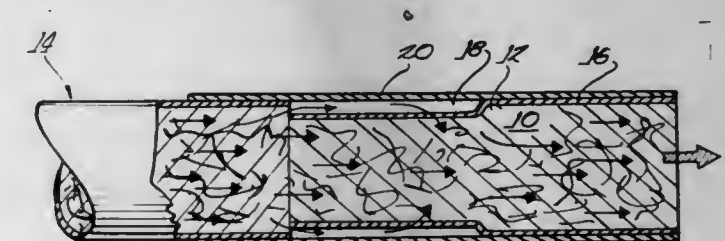
Gloria C. Harlee, 605 Muirs Chapel Rd., Greensboro, N.C., and John D. Woods, 3051 Magazine Dr., Winston-Salem, N.C.

Filed Dec. 20, 1971, Ser. No. 209,797

Int. Cl. A24d 01/04; A24f 07/04, 13/06

U.S. Cl. 131-10.5

14 Claims



A porous filter plug for a smoking article comprising a tow of longitudinally extending fibers enclosed within a plug wrap and having a cavity molded in the outer surface at one end. The plug is formed by molding a conventional tow of ther-



moplastic filamentary material. In use, a portion of the smoke passes from end to end through the plug and the remainder passes through the channel formed by the cavity and then axially through the plug wrap and the plug.

3,752,166

## TOBACCO SMOKE FILTER

Henry Lyon, Garuth; Harald David Mathewson, London; James Thomson Davidson Williamson, Radlett, and Stanley William Byrne, Newport Pagnelle, all of England, assignors to American Filtrona Corporation, Richmond, Va.

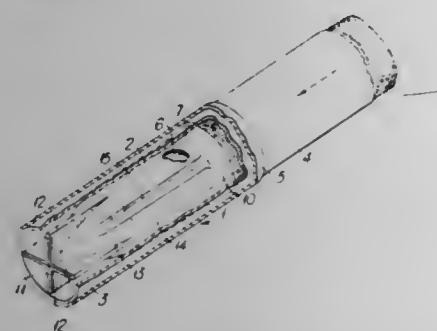
Filed Dec. 24, 1970, Ser. No. 101,295

Claims priority, application Great Britain, Dec. 24, 1969, 62,856/69; Mar. 21, 1970, 13,767/70

Int. Cl. A24d 01/04; A24f 07/04

U.S. Cl. 131—261 B

20 Claims



A tobacco smoke filter, particularly for use with cigarettes, has a high filtration efficiency and novel construction, at least one end of the filter having an appearance similar to conventional filters comprising cylinders packed with crimped filaments or creped paper. The filter comprises a tube within which is a rod having an outer wall of filtering material and an inner part of supporting material. At one end the rod has the same cross sectional shape as the tube and is in engagement with the tube around its periphery, at the other end or between the ends, its cross sectional shape changes so that opposed surfaces of the filtering material engage each other, so that tobacco smoke drawn through the filter is constrained to pass through the wall of filtering material. The filter has a high efficiency at an acceptable pressure drop.

3,752,167

## FLUID SWITCHING DEVICE

Hideki Makabe, Nakakyo-ku, Kyoto, Japan, assignor to Shimadzu Seisakusho Ltd., Kyoto, Japan

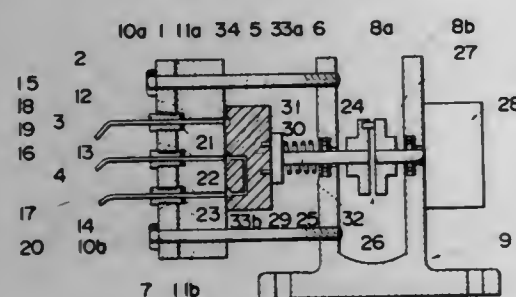
Filed June 30, 1971, Ser. No. 158,227

Claims priority, application Japan, July 7, 1970, 45/59688; July 28, 1970, 45/65998

Int. Cl. F16k 11/14

U.S. Cl. 137—609

9 Claims



A rotary valve having a stationary member formed therein with a plurality of fluid passages and a rotary member formed therein with at least one channel adapted to communicate one of said fluid passages to another therethrough upon rotation of said rotary member. To facilitate a satisfactorily smooth rotation of said rotary member in contact with the stationary member, both the stationary member and the rotary member are made of materials of dissimilar quality having relatively

higher and lower hardness, respectively, and, in addition thereto, the contact surfaces thereof are polished very accurately.

3,752,168

## COIN ORIENTING, SORTING AND DISPENSING APPARATUS

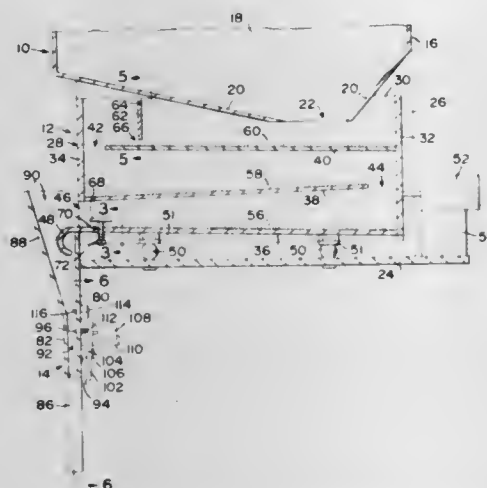
Jack E. Bayha, Chesterland, Ohio, assignor to Ardac/USA Incorporated, Chesterland, Ohio

Filed Apr. 3, 1970, Ser. No. 25,527

Int. Cl. G07d 3/04

U.S. Cl. 133—3 D

11 Claims



Randomly oriented coins are moved along a series of upwardly inclined ramps to orient the coins in a single plane and to separate stacked coins. The ramps are covered with a mohair fabric which has been treated so as to make it resistive of deformation in one direction and compliant in another direction. The ramps are vibrated to move the coins along the fabric. Non-jamming gates and bars are provided to assure that none of the coins are stacked on one another. The oriented coins are directed from the end of the last ramp into a chute in which they are held in a vertical plane. In one embodiment, retractable stops are provided for holding and dispensing a predetermined number of coins from the chute. In a second embodiment, the chute is provided with sized slots for sorting the coins by denominations. A limit switch is provided to stop the vibrator and, thus, the feeding of coins to the chute when the chute is filled.

3,752,169

## STEEL PICKLING METHOD

Stewart E. Rauch, Jr., and Edward H. Mayer, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 45,929, June 12, 1970, Pat. No. 3,660,253. This application Oct. 29, 1971, Ser. No. 194,065

Int. Cl. C23g 1/08

U.S. Cl. 134—3

4 Claims

A method and bath for cleaning and conditioning steel prior to tinplating in which the strip is pickled in a dilute aqueous solution of nitric and sulfuric acids. The pickled strip, when tinplated, has improved corrosion resistance.

3,752,170

## METHOD AND APPARATUS FOR CLEANING CALIBRATED NOZZLES

Erwin Murbach, Werikon-Uster, Switzerland, assignor to Zellweger Ltd., Uster, Switzerland

Filed Oct. 25, 1970, Ser. No. 84,632

Claims priority, application Switzerland, Nov. 25, 1969, 17508/69

Int. Cl. B08b 5/02; G01b 13/04

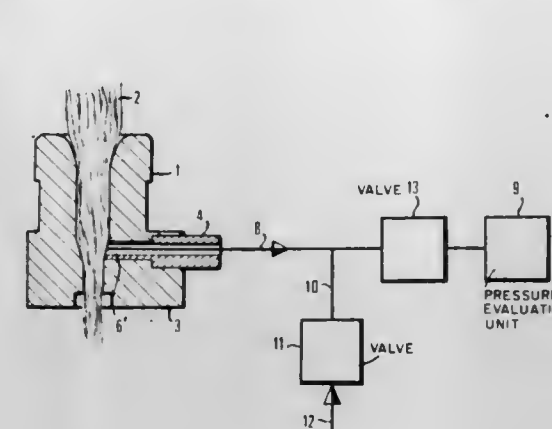
U.S. Cl. 134—37

7 Claims

Method and apparatus for cleaning of calibrated nozzles for obtaining measurements corresponding to the substance

cross-section of a sliver of textile material, wherein the sliver is guided through a constricted nozzle with pneumatic pressure being evaluated as the measured quantity. The method of cleaning includes introducing a pressure surge into a measur-

layer. Both transpiration of small amounts of gas into the boundary layer, and positioning a trip or blockage element up-



ing line leading to the nozzle with a pressure-evaluation unit so as to blow out deposits blocking the nozzle. The apparatus includes a second line leading into the measuring line and admitting a pressure surge into the measuring line.

3,752,171

## FLUID GAIN CHANGE CIRCUIT

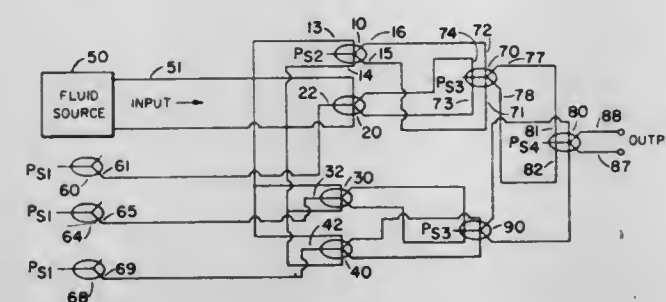
Vernon H. Ayre, Falkville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 25, 1971, Ser. No. 156,784

Int. Cl. F15c 1/12

U.S. Cl. 137—1

6 Claims



A fluidic gain change circuit is disclosed that produces a variable output pressure for providing an adjustable gain guidance and control circuit in response to gain changing signals. For a relatively fixed input signal at control ports, fluid amplifiers respond to a power jet change to couple discrete or digital change signals to a proportional output stage. This allows a differential fluidic output signal to increase or decrease by discrete steps of fluid flow levels.

3,752,172

## JET PENETRATION CONTROL

Leonard S. Cohen, West Hartford, and Lawrence J. Coulter, Manchester, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

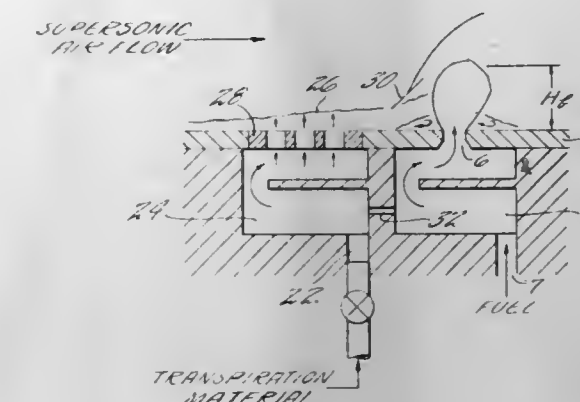
Filed June 14, 1971, Ser. No. 152,923

Int. Cl. F15c 1/08, 3/00

U.S. Cl. 137—12

15 Claims

The penetration of a sonic or supersonic gaseous jet injected through a bounding wall into a sonic or supersonic cross flow is controlled by modification of the approach flow boundary layer. Penetration is increased when the separation pressure is reduced by disturbing the approach flow boundary



stream of the injection station, will produce increased penetration.

3,752,173

## NONSPILL BATTERY VENT PLUG

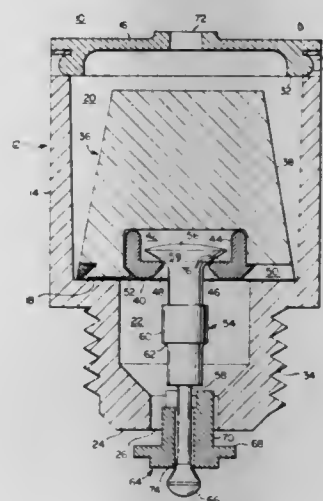
David L. Karpal, Pomona, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Dec. 10, 1971, Ser. No. 206,729

Int. Cl. G05d 16/00

U.S. Cl. 137—43

9 Claims



A nonspill battery vent plug is disclosed which includes a tiltable member which lifts a valve stem to close the plug whenever it is tilted. Improved means of connecting the valve stem and the weight member is provided to prevent fouling and malfunction.

3,752,174

## RELIEF VALVES

Marco Turolla, 213 Via Toscana, Bologna, Italy

Filed June 8, 1971, Ser. No. 150,968

Claims priority, application Italy, June 16, 1970, 12750 A/70

Int. Cl. F16k 31/36

U.S. Cl. 137—491

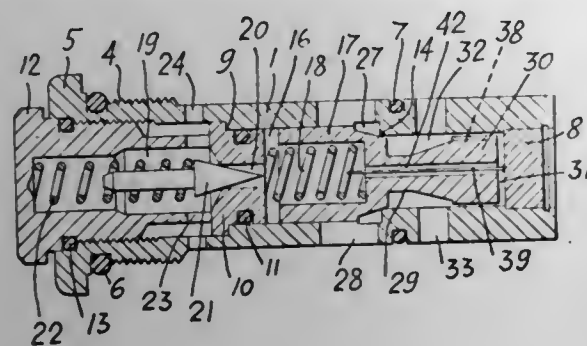
7 Claims

A safety valve device of the kind provided with a throttle bore has the bore kept clean and free from impurities entrained in a fluid pressure medium passing through the device by a wire which is at least partly housed with clearance in the



throttle bore and which is so supported that relative longitudinal and transverse movement between the wire and the bore

between such poppet and seat with further decreases in ambient pressure to thereby adjust the control valve to maintain a substantially constant pressure in the control passage.



is directly or indirectly effected by the action of pressure medium passing through the device.

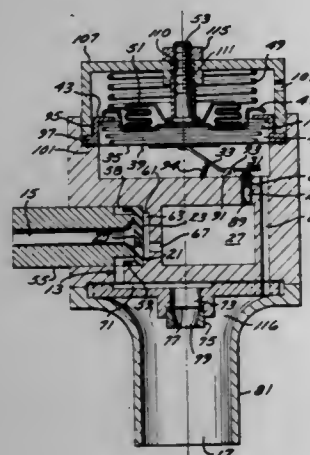
3,752,175

**ALTITUDE COMPENSATING PRESSURE REGULATOR**  
Robert M. Hamilton, Brea, and Walter R. Anderson, Yorba Linda, Calif., assignors to Robertshaw Control Company, Richmond, Va.

Filed Aug. 20, 1971, Ser. No. 173,415  
Int. Cl. F16k 17/36

U.S. Cl. 137-81

5 Claims

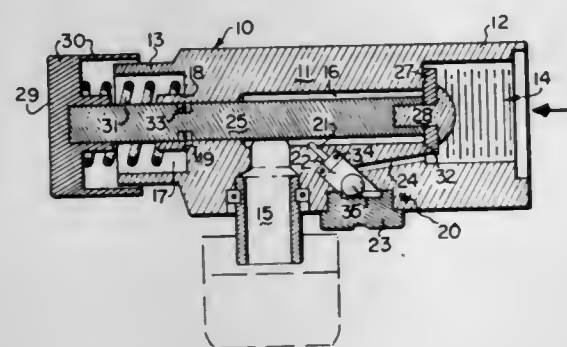


An altitude compensating pressure regulator for use with an aircraft breathing device and including a housing formed with a flow passage having inlet and outlet ports and including a control valve responsive to pressure in a control chamber to control flow through such passage. A pilot valve chamber is in communication with such control chamber by means of a passage having flow therethrough controlled by a pilot valve. One wall of the pilot chamber is in the form of a pressure responsive diaphragm which includes a bleed passage and is in engagement on one side with the pilot valve to effect control thereof. A reference chamber is formed on the opposite side of the diaphragm and is formed with an outlet having a reference valve seat formed therein. A reference valve poppet is disposed adjacent the reference valve seat and it is normally biased toward such seat by means of an override spring. Interposed between the override spring and the reference poppet is an aneroid having its exterior exposed to ambient pressure whereby the inlet may be connected with an oxygen supply and the outlet with a pilot's face mask and as the ambient pressure drops with increases in altitude, the aneroid will expand to move the reference poppet toward the reference valve seat to gradually increase the pressure in the reference chamber to adjust the pilot valve for decreasing the pressure in the control chamber to adjust the control valve and progressively increase the flow through the control passage. When a predetermined ambient pressure is reached, the aneroid will be totally relaxed and the pressure in the reference chamber will raise the reference valve poppet against the override spring off the reference valve seat to progressively increase the spacing

**3,752,177**  
**SELF VENTING VALVE**  
Robert A. Nordskog, 18135 Karen Dr., Tarzana, Calif.  
Filed Nov. 8, 1971, Ser. No. 196,346  
Int. Cl. F16k 45/00

U.S. Cl. 137-216

11 Claims



A self-venting valve wherein a valve is interposed between an inlet and an outlet, a vent bypasses the valve and has a sealing means therein, the sealing means is adapted to open the vent allowing water to flow from the inlet to the outlet when the system operating pressure drops below a predetermined value.

**3,752,178**  
**VALVE CONSTRUCTION**  
Marvin H. Grove, and Michael A. Karr, Jr., both of Houston, Tex., assignors to M & J Valve Company, Houston, Tex.  
Filed May 15, 1972, Ser. No. 253,129  
Int. Cl. F16k 5/22

U.S. Cl. 137-246.22

7 Claims

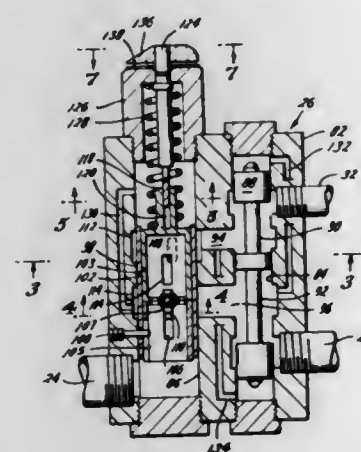
A valve having at least one sealing assembly comprising a metal seat ring carried by the valve body and urged toward the valve member by circumferentially disposed coil springs. The springs are disposed within an annular retainer formed of

3,752,176

**FLUID FLOW PROPORTIONING DEVICE**  
William Roy King, 1909 Sunshine Square, Longview, Tex.  
Continuation-in-part of Ser. No. 44,383, June 8, 1970, Pat. No. 3,669,572. This application Feb. 17, 1972, Ser. No. 227,142  
Int. Cl. G05d 11/00

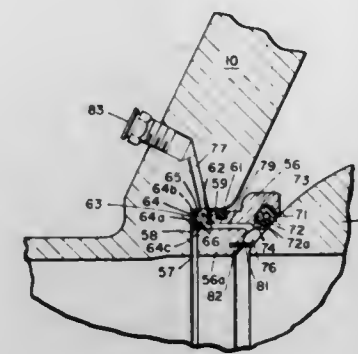
U.S. Cl. 137-118

3 Claims



A proportioning device for maintaining a constant flow ratio to two separate outlets regardless of changes in the pressure of such outlets, in which the fluid pressure in each outlet is applied to a valve means to adjust the position of the valve means to compensate for pressure changes.

resilient material that is U-shaped in section and which seats within the body recess. The seat ring is sealed with respect to the body and carries resilient means for sealing with respect to

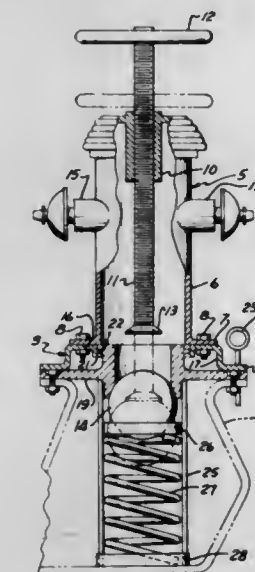


the valve working surface of the valve member. Preferably means is provided for injecting a viscous sealant into a region adjacent the sealing means, and means is also provided for confining the viscous sealant to this region.

**3,752,179**  
**PORTABLE FIRE HYDRANT**  
Luther C. Atkins, and Jimmy G. Atkins, both of 5207 N. Villa, Space No. 7, Clovis, Calif.  
Filed Mar. 9, 1971, Ser. No. 122,470  
Int. Cl. E33b 9/02

U.S. Cl. 137-272

2 Claims



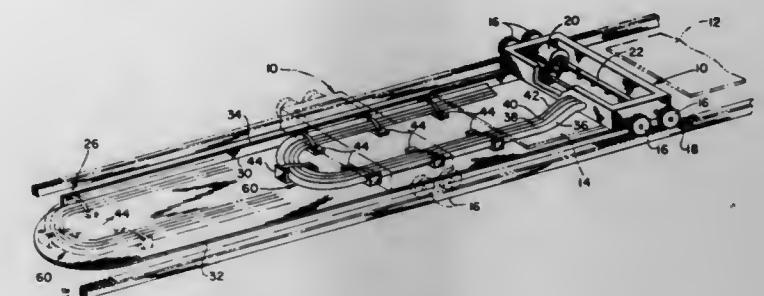
This invention consists of a vertically disposed steel or cast iron tubular member adapted to be bolted onto a support collar which in turn is secured by a key to a ball valve support flange that is bolted over an opening in a water main. The aforesaid tubular member is provided with both a plurality of horizontally disposed water outlets and a vertically disposed threaded rod whose upper end extends out of the top of the tubular member to terminate in the center of a hand wheel. The lower end of the aforesaid threaded rod is provided with a ball cup that presses down onto the top of a spring-loaded ball valve that is located in the lower end of the aforesaid ball valve support flange. The invention is adapted to be quickly removed from the top of the outlet of a water main at which time the water supply automatically will be shut off by the automatic action of the aforesaid spring-loaded ball valve.

3,752,180

**RECIPROCATING MULTIPLE CONDUCTOR SUPPORT**  
Fred Grove Elder, Atwater, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio  
Continuation of Ser. No. 836,410, June 25, 1969, abandoned.  
This application July 24, 1972, Ser. No. 274,370  
Int. Cl. B65h 75/36

U.S. Cl. 137-355.17

3 Claims

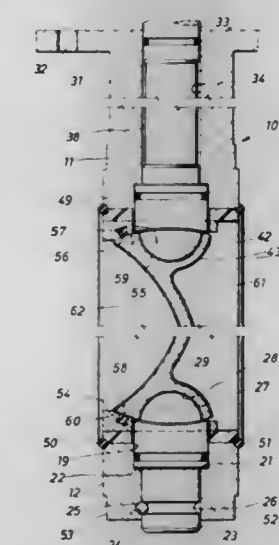


A horizontally reciprocating mechanism, including a plurality of attached, flexible conduits or conductors for carrying electricity, air or oil essential to operating certain devices, e.g. motors, and air and hydraulic cylinders, carried by the mechanism. A plurality of specially configured blocks or wearing shoes are secured to the conductors in spaced relation to maintain the conductors in a predetermined arrangement as they move along a horizontal pathway in response to reciprocation of the mechanism.

**3,752,181**  
**HIGH PRESSURE BUTTERFLY VALVE**  
William A. Morris, 2 Gessner Rd., Houston, Tex., and Samuel S. Clark, P.O. Box 795, Cleveland, Tex.  
Filed Oct. 20, 1971, Ser. No. 190,751  
Int. Cl. F16k 1/22

U.S. Cl. 137-375

11 Claims



A high pressure butterfly valve having a pressure actuable valve element that is flexed by fluid pressure to enhance the sealing ability of the valve in direct proportion to the pressure of the fluid controlled by the valve. The butterfly valve of this invention incorporates an annular seat element retained within the valve body by an upper valve actuating stem and a lower trunnion. A concavo-convex butterfly valve element is rotatably carried by the trunnion and valve actuating stem with the convex surface thereof facing upstream in the closed position. The valve element is capable of flexing responsive to application of fluid pressure in this manner as to expand the peripheral sealing surfaces thereof and enhance the mechanical sealing pressure as fluid pressure increases. The butterfly element also floats relative to the trunnion and valve stem thereby allowing the valve element to float or self-align itself to obtain optimum sealing engagement as pressure is applied by the fluid controlled by the valve.



3,752,182

**PRESSURE COMPENSATED FLOW CONTROL VALVE**

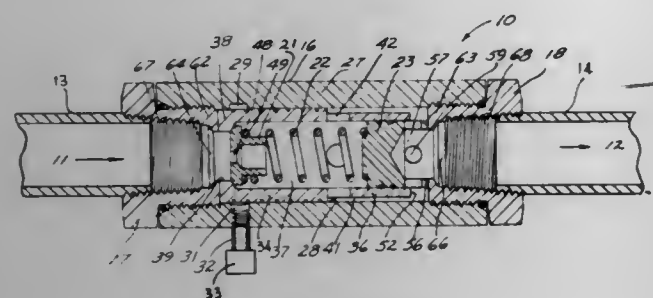
Glen Brand, 4114 N. 79th St., Omaha, Nebr.

Filed Apr. 21, 1971, Ser. No. 135,878

Int. Cl. F16k 31/12

U.S. Cl. 137-504

2 Claims



A valve for regulating the volume of fluid flow through a fluid line by the automatic movement of a cylindrical piston within a cylinder, the piston having an orifice in its one end and a plunger slidably disposed in its other end, the automatic movement being brought about by a pressure differential across the orifice and the regulation of flow being accomplished by the movement of the piston relative to the plunger.

3,752,183

**FLOW VALVE HAVING TAPERED CUP**

David E. Griswold, Corona, Del Mar, Calif., assignor to

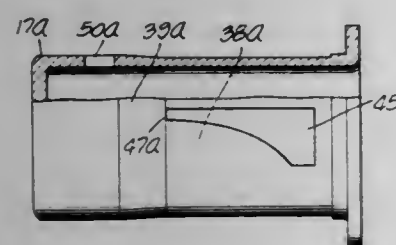
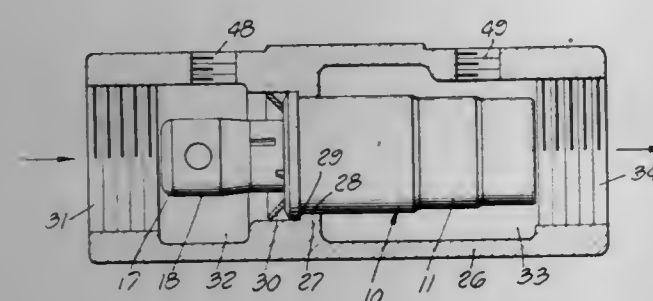
Griswold Controls, Santa Ana, Calif.

Filed Dec. 2, 1971, Ser. No. 204,022

Int. Cl. F16k 31/163, 31/36, 31/76

U.S. Cl. 137-504

8 Claims



A flow control valve has a stationary member provided with an orifice plate together with a ported cup which slides within the opening in the orifice plate against the action of a spring, to provide substantially constant rate of flow under varying differential pressures across the cup. The ported cup has a generally cylindrical side wall and an end wall, the side wall having an outer surface comprising a first cylindrical surface near the end wall and a concentric second cylindrical surface axially spaced therefrom of smaller diameter, and a tapered surface joining the first and second cylindrical surfaces. Ports in the side wall extend through at least one of said cylindrical surfaces. This construction provides a minimum port area change which is lower than the range which can be obtained with the minimum width of a single port segment.

3,752,184

**FLOW CONTROL VALVE**

David E. Griswold, Corona Del Mar, Calif., assignor to

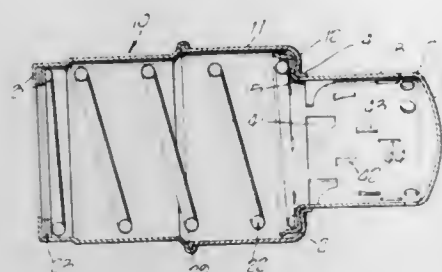
Griswold Controls, Santa Ana, Calif.

Filed Dec. 2, 1971, Ser. No. 204,027

Int. Cl. F16k 31/12

U.S. Cl. 137-504

18 Claims



A flow control valve employs a ported cup which slides within an opening in a stationary member under increasing pressure differential and against the action of a spring, so that pressure differential changes have little or no effect on the rate of flow through the valve. A cylindrical side wall of the cup is provided with a plurality of axially extending duplicate series of circumferentially staggered separate port segments, the port segments in each of the series decreasing in circumferential width toward a closed end of the cup. Adjacent port segments in the series have end boundaries in substantially the same transverse plane normal to the cup axis, and one side boundary of each port segment in the series lies in a plane containing the axis of the cup. The shape and pattern of the port segments provide greater cup strength and minimize trapping of foreign objects carried by the fluid.

3,752,185

**REFRIGERANT SIGHT GLASS**

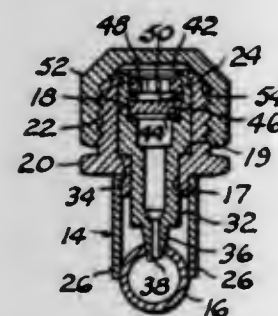
John W. Mullins, P. O. Box 20524, Oklahoma City, Okla.

Filed Nov. 10, 1971, Ser. No. 197,240

Int. Cl. F16k 43/00; G01F 15/06

U.S. Cl. 137-559

3 Claims



A generally cylindrical centrally bored housing is coaxially secured at one end portion within a short length of copper tubing. The other end of the copper tubing is contoured for connection with a fluid containing line. A tubular core, having a transparent disk closing its bore adjacent one end portion and a line piercing tip formed on its other end portion and having an overall length slightly less than the combined length of the housing and copper tubing, is coaxially received by the bore of the housing. A cap, removably engaged threadedly with the free end of the housing, forces the line piercing tip into the line and seals the core with the housing and the line.

3,752,186

**VENTING DEVICE AND METHOD FOR ANESTHETIC ADMINISTRATION**

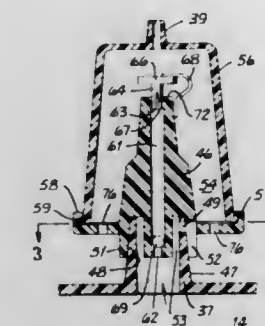
Gale E. Dryden, Indianapolis, Ind., assignor to Dryden Corporation, Indianapolis, Ind.

Filed Oct. 9, 1970, Ser. No. 79,595

Int. Cl. F17d 1/00

U.S. Cl. 137-608

7 Claims



A valve assembly in a circle absorber system includes a removable plug to permit limited escape of gases from the absorber system, and a manually adjustable body accommodating escape of additional volumes of gas as determined by adjustable registry of vent openings therein. A valve assembly cover is provided with a fitting connectible to a vacuum system to facilitate disposition of vented gases outside of the operating room environment.

3,752,187

**LAMINATED FLOW ELEMENT**

David Arthur Retallick, Betzenweg 68, 8 Munich 60, Germany

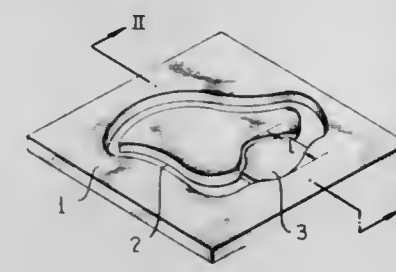
Filed Nov. 10, 1971, Ser. No. 197,396

Claims priority, application Germany, Nov. 10, 1970, P 20 55 237.8

Int. Cl. F17d 1/00; F15c 5/00

U.S. Cl. 137-608

5 Claims



The invention concerns a flow element and method of making which consists of several plates stacked (layered) on top of each other having flow channels arranged therein and in which the number of layers is reduced by providing at least one channel completely enclosing a section of a plate. The above is accomplished by etching such a channel from both surfaces of a plate in which the channel is to be formed except in one region which is etched from one side only. A connecting web remains at this latter region and if a restriction is not desired in this region of the channel, the channel is made wider than the rest of the channel to the extent necessary to compensate for the lesser depth thereof.

3,752,188

**VALVE WITH CONTROLLED FLOW CHARACTERISTICS**

Alexander Sage, 112 W. Jersey St., Elizabeth, N.J.

Filed Mar. 30, 1971, Ser. No. 129,489

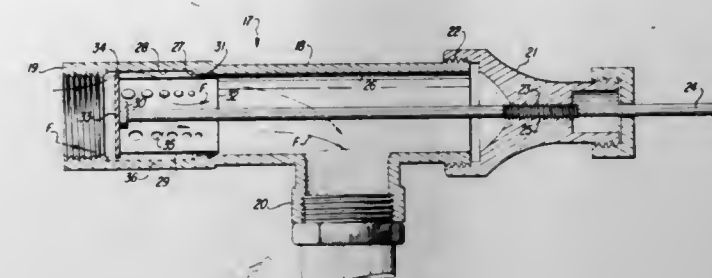
Int. Cl. F16k 1/52

U.S. Cl. 137-625.12

10 Claims

This disclosure relates to a valve having a cylindrical flow restricting element housed therein: Ports formed in the flow

restricting element are progressively and cumulatively exposed to the flow of fluid thereby controlling flow through the



valve. The ports are of a predetermined configuration such that the flow area varies as a characteristic function of the length of the axial movement of the flow restricting element.

3,752,189

**ELECTRICAL FEEDBACK SERVOVALVE**

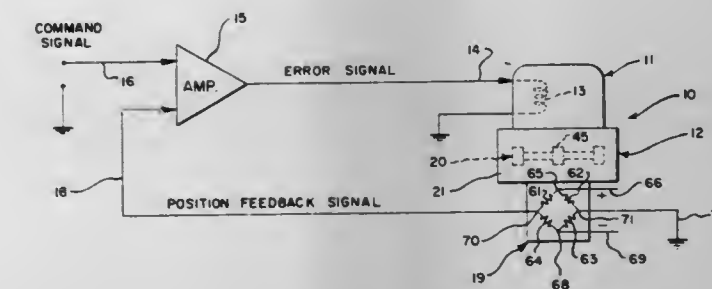
John A. Marr, and Robert H. Maskrey, both of East Aurora, N.Y., assignors to Moog Inc., East Aurora, N.Y.

Filed Sept. 15, 1971, Ser. No. 180,643

Int. Cl. F16k 11/07

U.S. Cl. 137-625.65

11 Claims



An electrical feedback signal for an electrohydraulic servovalve is provided by electrical strain gauge means influenced by the bending of a cantilever beam one end of which is constrained to move in a frictionless manner with the output stage valve member of the servovalve, said strain gauge means including a strain sensitive element having a resistance value varied by bending of said beam thereby to generate an electrical feedback signal proportional to the displacement of said valve member which is operatively associated with the electrical command signal for the servovalve.

3,752,190

**RELAY VALVE FOR TRACTOR TRAILER BRAKE SYSTEMS**

Cecil Clifford Brake, Raleigh, N.C., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Dec. 28, 1971, Ser. No. 213,034

Int. Cl. F16k 31/12

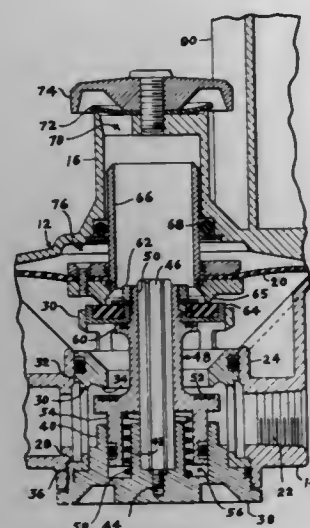
U.S. Cl. 137-627.5

3 Claims

A relay valve for air systems in which a poppet valve member having seats for controlling respectively venting and supply is formed with an axial cylindrical bore and the valve housing has a polygonal shaft extending centrally upward,



received by the bore for precise guiding of the poppet and permitting communication between the opposite ends of the pop-



pet to provide a balanced valve member making springs and other compensating means unnecessary.

3,752,191

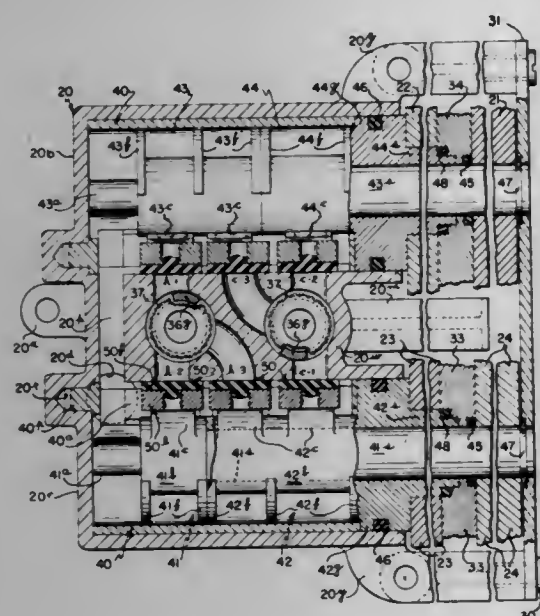
**PUSH BUTTON MIXING VALVE**

Irlin Botnick, 3155 Kersdale Rd., Pepper Pike, Ohio  
Division of Ser. No. 782,798, Dec. 9, 1968, Pat. No. 3,658,094.  
This application Apr. 20, 1972, Ser. No. 246,072

Int. Cl. F16k 11/10

U.S. Cl. 137—636.1

11 Claims

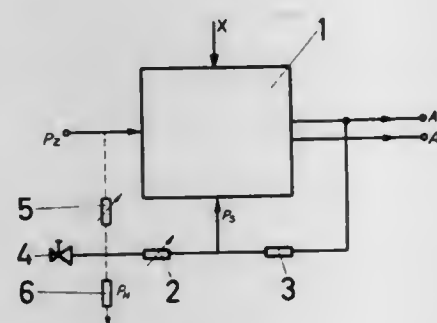


3,752,193  
**PNEUMATIC TWO-POSITION CONTROLLER**  
Horst Bader, Stuttgart, Germany, assignor to J. C. Eckardt A.G., Stuttgart, Germany  
Filed Mar. 25, 1971, Ser. No. 128,063  
Claims priority, application Germany, Mar. 25, 1970, P 20 14 307.1

Int. Cl. F15c 3/04

U.S. Cl. 137—829

16 Claims



A push-button multi-temperature selection valve, having at least two parallel chamber bores and hot and cold water supply connections communicating variously through radial ports with the chambers, has valve members for the respective ports radially slideable in support sleeve structures, each inserted endwise as a sub-assembly in a bore; and within each bore at least one coaxially-stemmed either rotary or sliding camming type valve operator. Two operators, selecting flow solely from respective inlets, and at least one selecting mixing flow from both inlets are actuated by respective push-button mechanisms.

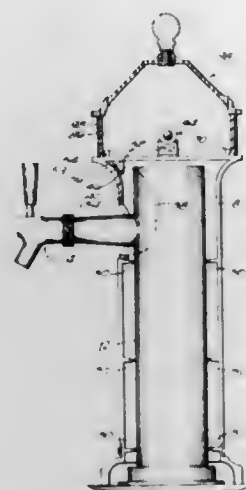
A pneumatic two-position controller in which the control point is adjusted pneumatically by means of a pressure distributor network connected between one output of a differential pressure amplifier and a source of auxiliary pressure, the pressure distributor network providing the control point pressure to one input of the differential pressure amplifier.

**ERRATUM**

For Class 137—609 see:  
Patent No. 3,752,167

3,752,192  
**STANCHION FOR BEVERAGE TAP**  
Roland P. Kleppin, Greenfield, Wis., assignor to Display Corporation International, Milwaukee, Wis.  
Filed Apr. 7, 1972, Ser. No. 242,123  
Int. Cl. F16k 27/08, 27/12  
U.S. Cl. 137—802

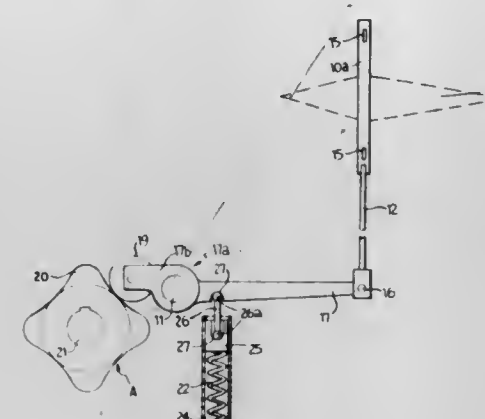
15 Claims



A stanchion in two separable sections surrounds a vertical tap. A faucet opening is provided in the side wall of the stanchion at a joint between the separable sections. A detachable faucet plate is held in position in the faucet opening by interengagement between the plate and the separable sections when they are joined to form the stanchion. The tap faucet extends through an opening in the faucet plate. Faucet plates with different openings to accommodate taps with different numbers and arrangements of faucets can be fitted into the stanchion. The top of the stanchion is free to carry point of purchase advertising.

3,752,194  
**LOOM SHEDDING MECHANISM**  
John Dalton Griffith, Littleover, Derby, England, assignor to Bonas Machine Company Limited, Staffordshire, Great Britain  
Filed Feb. 29, 1972, Ser. No. 230,319  
Int. Cl. D03d 5/00  
U.S. Cl. 139—79

4 Claims



A heald shaft operating means for a heald shaft of a loom whereby the shaft is operably associated with a pivotal lever arranged to be driven in one directional sense by the action of a cooperating cam means acting upon a follower carried by the lever, and in the opposed directional sense by the action of a compression spring operably associated with the pivotal lever.

3,752,195  
**LOOM**

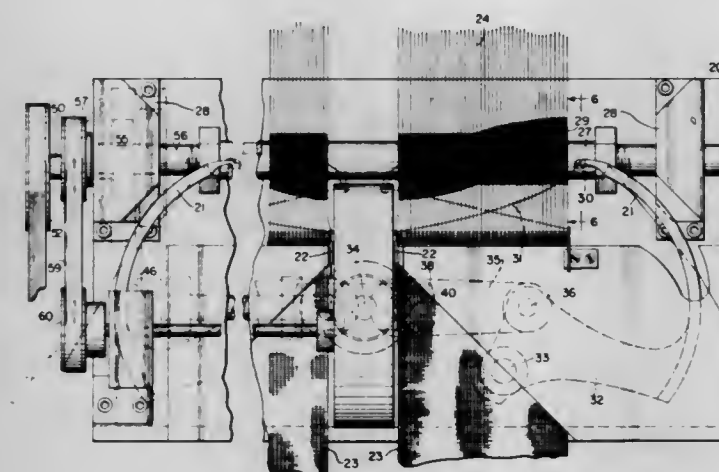
Carl F. Libby, Stoughton, Mass., assignor to John D. Riordan and Gertrude C. Libby, Brockton, Mass., Trustees under Trust dated Oct. 13, 1955

Filed Mar. 23, 1970, Ser. No. 21,967

Int. Cl. D03d 47/46, 49/68

U.S. Cl. 139—124 A

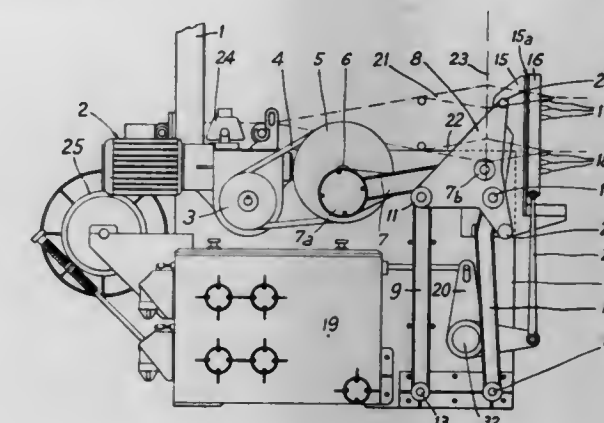
11 Claims



A shuttleless loom for simultaneously weaving two fabrics or webs independently of each other, but using a balanced common crank drive linkage with a flywheel to minimize inertial vibrations, a common knitting needle drive assembly, one needle for each fabric, a common rotating reed shaft with helically arranged beat-up dents, and a common power source. The knitting needles are held in a crank and pivot mechanism that causes the ends of the needle tips to move in a looped path that intersects the path of the weft-laying fingers to provide positive engagement of knitting needles and weft yarns, and the height of such looped paths are adjustable at their extremities by changes in the crank throw.

3,752,196  
**SLAY OPERATING MECHANISM FOR A LOOM**  
Jean-Jacques Hirsch, Neuilly; Eugene Mayeur, and Jacky Mayeur, both of Montreuil-Aux-Lions, all of France, assignors to Societe en Commandite par actions dite: Adolphe et Andre Caen, Paris, France  
Filed Mar. 13, 1972, Ser. No. 233,923  
Claims priority, application France, Mar. 12, 1971, 7108830  
Int. Cl. D03d 43/04  
U.S. Cl. 139—179

16 Claims



A slay operating mechanism for a loom comprises an operating rod adapted to be pivoted at one end to a slay; a bell crank lever, one arm of which is pivoted to the other end of the operating rod and the central portion of which is pivotally mounted on a shaft; a connecting rod pivoted at one of its ends to a second arm of the bell crank lever; an operating lever pivoted at one end to the other end of the connecting rod and at its other end to fixed structure; a beam pivoted intermediate its ends to the operating lever; two cams cooperating with the ends of the beam, each being mounted on a support shaft; a driving shaft for driving the cams; a Maltese cross for each cam and having at least four radial openings evenly distributed about the periphery thereof, each cam having at least one active face which cooperates, directly or indirectly, with one of the ends of the beam; an arm for each cam and rotatable with the driving shaft and axially movable relative thereto, each arm carrying, at its free end, a roller engageable into one of the openings and, a selection mechanism for selectively positioning the roller either in the plane of the Maltese cross or in a plane parallel to the plane of the Maltese cross; and a cam locking device for locking each cam in the selected position, the locking device being operated by the selection mechanism.

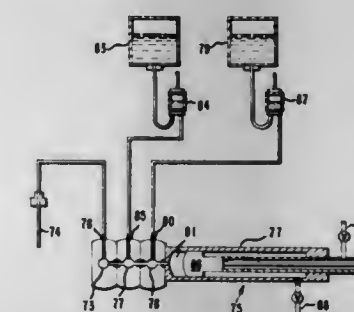
3,752,197  
**APPARATUS AND METHOD FOR FLUID HANDLING AND SAMPLE**

William J. Ambrose, Springfield, Pa., and James F. McErlane, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 753,199, Aug. 16, 1968, Pat. No. 3,612,360. This application Mar. 4, 1971, Ser. No. 121,146  
Int. Cl. B65b 3/04

U.S. Cl. 141—1

3 Claims



An apparatus and a method for handling and sampling fluids which comprises principally a nonpumping valve designed so



that in operation it moves less than a microliter of fluid, and a pumping valve designed to aspirate a precisely determined amount of fluid into the body of the valve with no more motion than is inherent in the operation of the valve itself and with no change in the physical dimensions of the valve. These valves, when used in combination with a transfer probe and a pump designed to handle minute quantities of fluid, form a precision fluid handling and sampling system which will not contaminate or dilute the fluid to be sampled.

3,752,198

## HARNESS BOARD MODULE

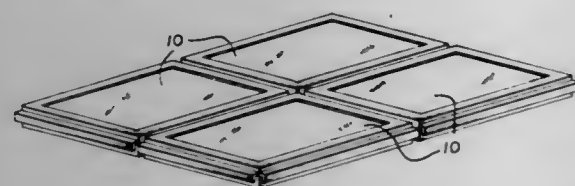
Arthur A. Fiorentino, Piscataway, and Alan Collis McCree, Union Township, Union County, N.J., assignors to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Oct. 27, 1971, Ser. No. 193,082

Int. Cl. B21f 27/00

U.S. Cl. 140—92.1

9 Claims



The invention is directed to harness board module coupling means for coupling such modules together to form a harness board of desired dimensions. A central retention means arranged to receive and retain therein harnessing aids is bounded on at least one of its four edges by a framing member to which is coupled a coupling means whereby similar harness board modules may be coupled one to another. The coupling members may be in the form of hermaphroditic hooks such that adjacent modules are placed in inverted relationship one to another. Magnets may be used as a coupling means, or by the use of dovetail slots, within the framing members and appropriately shaped coupling pins, respective modules may be coupled to one another. The framing member may be applied to the edges of the retention means by employing adhesive means or by the use of barbed projections engaging themselves within the surface of the retention means. Attentively, the framing member may also include extending portions which overlie a portion of the surface of the retention means providing complete framing for the retention means.

3,752,199

## SEMI-AUTOMATIC TYING AND CUTTING TOOL FOR HARNESSING AND WIRE BUNDLING

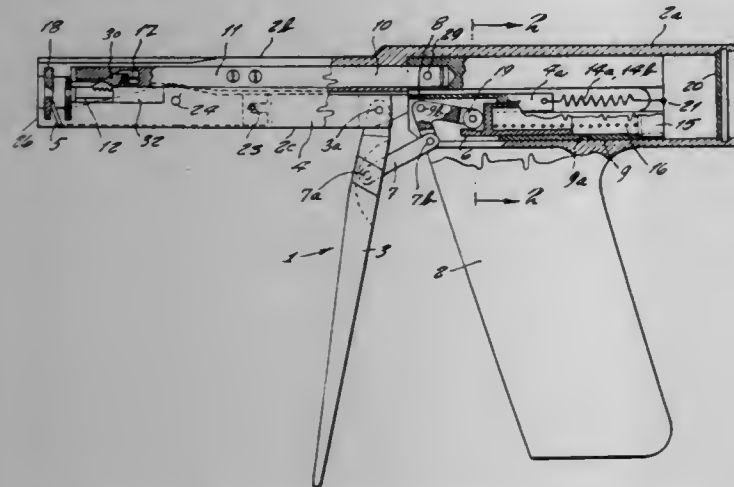
Imre Fekete, Manville, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Dec. 29, 1971, Ser. No. 213,331

Int. Cl. B21f 9/02

U.S. Cl. 140—123.6

6 Claims



A manually operated semi-automatic tool for tying wire bundles with a plastic cable tie and cutting the tie a predeter-

mined tension by the actuation of a trigger. The tool is of gun-like shape having a nose section of minimum dimension especially adopted for miniature harnessing. The mechanical components are especially designed to be contained in a housing shaped for more effective miniature harnessing operations common to modern electronic packaging.

## ERRATUM

For Class 141—1 see:  
Patent No. 3,752,197

3,752,200

## POWERED HAND TOOL

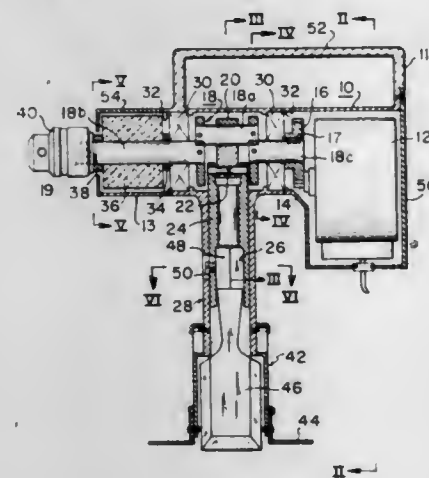
Oscar D. Coffman, 11 Station St., Pittsburgh, Pa., and Thomas W. Reichner, Pittsburgh, Pa., assignors to said Coffman, by said Reichner

Filed Oct. 26, 1971, Ser. No. 192,419

Int. Cl. B27c 9/02; B27f 5/10; B27c 3/08

U.S. Cl. 144—1 E

2 Claims



A housing with an elongated stem portion has a crankshaft mounted within the housing. A tool such as a saw or wood chipper extends through the elongated stem and is coupled to the shaft. An electric motor rotates the shaft causing reciprocal motion of the tool. A grinding wheel and a drill chuck are mounted on the shaft.

3,752,201

## VENEER LATHE CHARGER

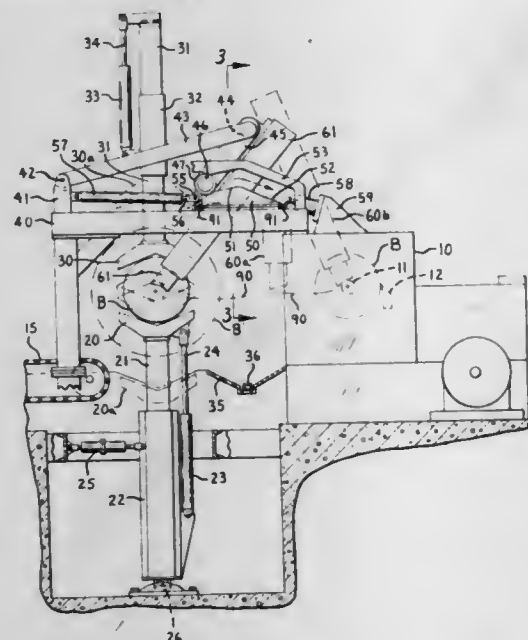
Edwin M. Heth, 4310 S.E. 35th Pl., Portland, Oreg., and John W. Tidland, 213 N.W. 94th St., Vancouver, Wash.

Filed May 25, 1972, Ser. No. 256,894

Int. Cl. B27f 5/04

U.S. Cl. 144—209 A

11 Claims



A simple linkage is provided for transferring cylindrical blocks of wood in horizontal movement from the yokes of a

pre-centering cradle to the chucks of a veneer lathe. The block is transferred by a pair of chucking arms which grip the ends of the block at points off center from the lathe chucking centers. The blocks are carried by the lower ends of the chucking arms which swing in a complex movement from overhead supporting mechanism. The movements of the chucking arms are controlled by wheels rolling on a pair of cam plates and a pair of link arms which together impart approximately straight line horizontal movement to the blocks instead of an undesirable arcuate path of movement.

3,752,202

## HAND FASTENER DRIVING TOOL

Harry F. Condon, Hillsdale, Mich., assignor to Vaco Products Company, Chicago, Ill.

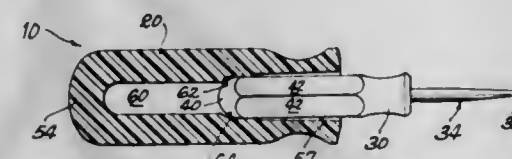
Continuation-in-part of Ser. No. 20,295, March 17, 1970,

abandoned. This application Feb. 22, 1972, Ser. No. 227,880

Int. Cl. B25g 3/02

U.S. Cl. 145—61 L

14 Claims



A hand driving tool, such as a screwdriver, comprising a torque magnifying handle and a headed bit. The handle defines a longitudinal bore to receive the head of the headed bit. The bore is specially configured to minimize mechanical binding forces and to eliminate suctional resistance to bit removal without requiring the perforation of the head end of the handle.

3,752,203

## LOCK-SCREW FASTENERS

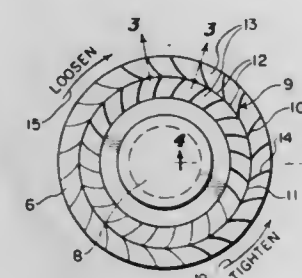
William E. Hill, Jr., Rock Falls, Ill., assignor to Hill Fastener Corporation, Rock Falls, Ill.

Filed July 28, 1971, Ser. No. 166,764

Int. Cl. F16b 39/282

U.S. Cl. 151—37

6 Claims



The present lock-screw fasteners involve the provision of a ring of inclined V or chevron-shaped locking projections on the under-side of an annular flange on the head of a lock-screw or a lock-nut, these projections being arranged so that the points, all of which are on a circle around the center line, are in trailing relation in the tightening of the screw or nut and are accordingly in leading relationship to take the best possible hold in turning in the opposite direction for a good locking action. In the tightening, razor sharp edges are swedged on the projections to increase the take-hold action to resist turning in a loosening direction.

3,752,204

## CABLE TIRE CHAIN TENSIONING AND LOCKING DEVICE

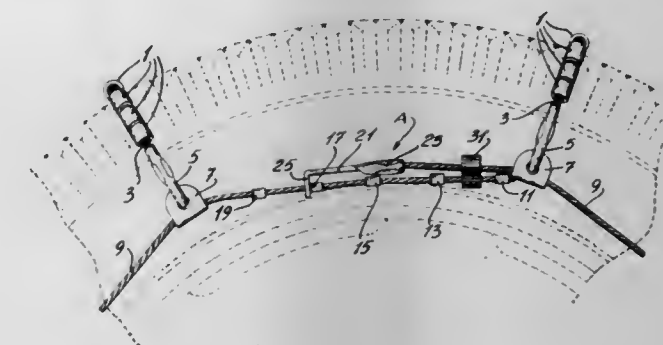
Paul Rene Ouellette, deceased, late of P.O. Box 124, Lakewood Dr., Swanton, Vt. (by Yvonne Ouellette, legatee)

Filed Dec. 29, 1971, Ser. No. 213,500

Int. Cl. B60c 27/10

U.S. Cl. 152—219

3 Claims



The disclosure describes a device for tensioning and locking the lateral wire of a cable tire chain comprising at least one abutment element fixed to one end portion of the lateral wire. The device also comprises a retaining member which is fixed at the other end of the lateral wire. The retaining member is formed with an opening through which the abutment element can be inserted, and means by which the abutment element abut the retaining member after the abutment element has been inserted through the opening in order to tension and lock the lateral wire.

3,752,205

## CHAIN ASSEMBLY FOR IMPROVING TRACTION OF AUTOMOTIVE VEHICLES

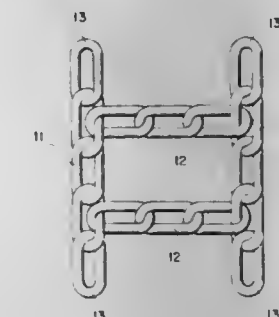
Roger L. Gower, Room 302, 1911 Jefferson Davis Hwy., Arlington, Va.

Filed Apr. 12, 1971, Ser. No. 133,283

Int. Cl. B60c 27/00

U.S. Cl. 152—243

2 Claims

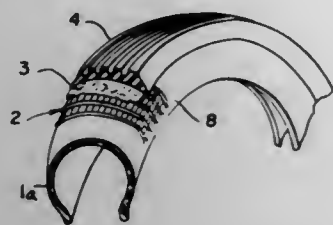


This invention comprises longitudinal and transverse lengths of chain fitted over the tread portion of an inflated tire. The links of chain forming the longitudinal portions of the assembly are bent out of plane in one direction, and the links forming the transverse portions are bent out of plane in the opposite direction. The opposite distortion of the links in the longitudinal and transverse chains ensures disposition of the chain flat upon the tire tread when said chains are assembled in perpendicular relationship to each other, and thus the traction side of the chain links is at all times in equal elevation above the surface of the tire tread. When lugs are attached upon the links, each lug projects from the face of the link which is disposed outwardly from the tread surface of the tire, and each lug is likewise equally engageable with the surface of the terrain over which the vehicle is travelling. Said longitudinal and transverse chains are assembled into units, and such units are connected to each other and to the side chains, to effect complete encirclement of the tire.



### 3,752,206 VENTED VEHICLE TIRE

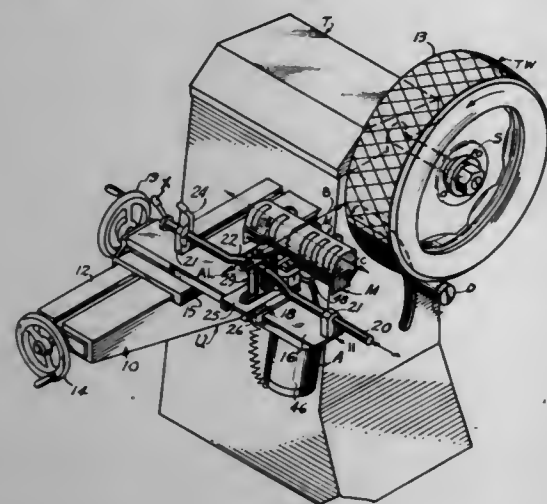
Dean R. Hough, 3901 Nantasket St., Pittsburgh, Pa.  
Filed Jan. 18, 1972, Ser. No. 218,757  
Int. Cl. B60c 9/14, 19/00  
U.S. Cl. 152—330



A vehicle tire construction and method for retreaded (or new) tires involving the use of a single patch, or two patches of cord of large mesh extending laterally of the tire casing between the buffed surface and tread rubber. The patch has stretchable or elastic cords, an intermediate portion thereof being connected to the cord ply layer of the casing and the ends projecting about half way or more of the sidewalls, and possibly as far as the beads, to vent air pockets which tend to accumulate. The patch makes use of the porous nature of the buffed surface.

### 3,752,207

**METHOD AND APPARATUS FOR STABILIZING**  
Norvel R. Branham, 2312 Armand Rd., N.E., and Peter C. Pantaze, 2378 Johnson Rd., N.E., both of Atlanta, Ga.  
Continuation of Ser. No. 803,030, Feb. 27, 1969, abandoned.  
This application Apr. 5, 1971, Ser. No. 131,506  
Int. Cl. B29h 21/01  
U.S. Cl. 157—13



A method of and apparatus for stabilizing a vehicular wheel and tire assembly rotatable about an axis and having a circumferential tread which rolls along a surface wherein the method comprises the steps of rotating the wheel and tire assembly while simultaneously determining the radial deviations of the tread with respect to the axis at two or more points along a line across the tread parallel to the axis and rotating about the circumference of the wheel and tire assembly; correlating the determinations thus taken to indicate the curvature of the tread across its width and the irregularity of the tread produced by lateral runout, radial runout or a combination thereof; and subsequently cutting away portions of the tread to redefine the tread so that the irregularity of the tread is substantially eliminated and the curvature of the tread across its width remains the same.

The apparatus includes an indicator mechanism, a cutter assembly and a control unit which mounts the indicator mechanism and cutter assembly adjacent the wheel and tire assembly. The indicator mechanism includes one indicator for measuring the radial runout along one edge of the tread,

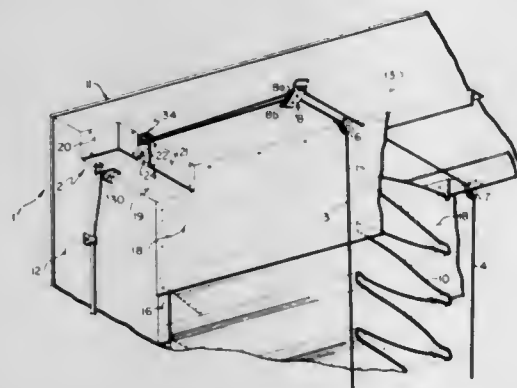
another indicator for measuring the radial runout along the opposite edge of the tread; and means for correlating the indicators to indicate the deviation of the radii across the tread. Another indicator may be provided for correlation with one of the above indicators to indicate the curvature of the tread across its width. The cutter assembly includes a cutter and the control unit includes guide means for controlling the cutter assembly.

7 Claims

### 3,752,208 CLOSURE OPERATOR

Frank D. Roberts, North Reading, Mass., assignor to Rixson-Firemark Inc., Franklin Park, Ill.  
Filed Apr. 12, 1971, Ser. No. 132,959  
Int. Cl. E05f 15/20  
U.S. Cl. 160—1

7 Claims

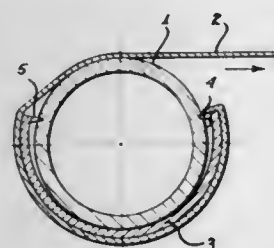


A closure operator to effect remote, failsafe opening and closing of a damper, particularly a multi-fold or interlocking slat curtain damper. A frame or shell envelops a damper curtain which is capable of opening and closing an air passage through the frame or shell. A housing containing an electromechanical curtain operator is optionally positioned within or outside the frame or shell. The curtain is lifted by a tray connected to two wire cables, in response to the winding of the cable upon a takeup drum located within the housing. The principal components of the electromechanical curtain operator are a motor, planetary gear train and its associated latch mechanism which form a clutch, cable drum, speed control brake, and limit switch assembly. All of the foregoing components are protectively contained within an operator housing which is formed with an irregular shaped projecting finger which engages a mating opening formed in a damper supported bracket or in a baffle which isolates the curtain in its open position.

### 3,752,209 WEBBING CLIP

David A. Swanson, 1217 W. 4th St., Tempe, Ariz.  
Filed Oct. 14, 1971, Ser. No. 189,142  
Int. Cl. A47 13/01; A44b 21/00  
U.S. Cl. 160—327

5 Claims



A C-shaped clip is disclosed for securing webbing to tubular framework. The clip is of resilient hardenable material and includes a plurality of teeth extending inwardly in a row at the extremity of each of the longitudinal sides. One end of a strip of webbing is inserted within the clip and impaled upon the prongs of one row. The webbing is then extended in a bight

over the extremity of the clip and then along the outside of the clip. The clip and webbing is fitted onto the tubular framework such that each of the rows of prongs engage the tubular framework and the remaining portion of the clip is adjacent the tubular framework. The webbing is then wrapped about the clip, a portion of the exposed tubular framework and thence across the open space intermediate the framework. The force exerted upon the webbing disposed across the framework is translated to a force acting upon the rows of prongs to imbed them within the tubular framework, whereby the clip is inhibited from rotating and will securely fasten the webbing to the framework.

### 3,752,210

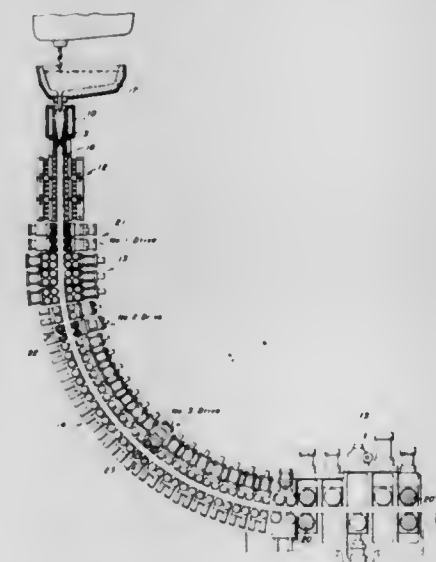
#### METHOD FOR CONTROLLING FORCES ON A STRAND AS IT SOLIDIFIES

Francis Gallucci, Irwin, and Frank Slamar, Monroeville, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Aug. 24, 1971, Ser. No. 174,350  
Int. Cl. B22d 11/12

U.S. Cl. 164—82

5 Claims



A method and mechanism for controlling the forces on a partially solidified strand formed in a continuous-casting operation. A speed-regulating tractive force is applied to the strand at a location in the line preceding that where the starter bar is disconnected. In apparatus utilizing a relatively long flexible starter bar, auxiliary tractive forces are applied at preceding locations. In apparatus utilizing a rigid starter bar or a relatively short flexible bar, the auxiliary tractive forces may be applied at locations following the speed-regulating force. The speed-regulating force is maintained at a predetermined maximum, and the auxiliary forces adjusted accordingly to supply the increasing force needed to move the strand, yet avoid excessive tensile or compressive stresses.

### 3,752,211

**METHOD OF MAKING STRETCHABLE ZINC FIBERS**  
Yoshihiro Kuniyasu, Kawasaki-shi, Kanagawa-ken; Akio Matsumoto, and Eiji Isobe, both of Tokyo, all of Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan  
Filed Mar. 1, 1971, Ser. No. 119,870

Claims priority, application Japan, Dec. 15, 1970, 45/112126

Int. Cl. B22d 11/02

U.S. Cl. 164—89

1 Claim

A zinc fiber having a superior stretching ability, which is prepared through the steps of: melting an ingot metal having a zinc content of 99.6 percent or more, extruding the resulting melt through a nozzle having a bore diameter in the range of 20–250 $\mu$  by the use of an inert gas having a pressure in the range of 0.5–2.0 Kg/cm<sup>2</sup>, and cooling the resulting extruded

fiber by contacting it with an air current flowing crosswise of the fiber at a speed of 3–5 m/sec, said zinc fiber consisting essentially of zinc, having a diameter in the range of 20–250 $\mu$  and having crystalline structure composed of crystals of zinc, the mean size of the crystals being substantially equal to the diameter of the fiber.

### 3,752,212

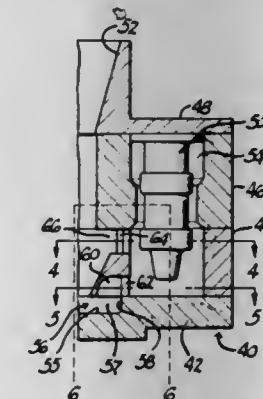
#### METHOD OF FORMING CASTINGS OF DIFFERENT METALS

Earl A. Thompson, Bloomfield Hills, Mich., assignor to Earl A. Thompson Manufacturing Co., Ferndale, Mich.  
Continuation of Ser. No. 485,270, Sept. 7, 1965, abandoned.  
This application July 20, 1970, Ser. No. 56,740

Int. Cl. B22d 23/00

U.S. Cl. 164—93

7 Claims



A second and different metal may be cast onto the solidified free surface of an otherwise still molten first cast metal which partially fills a mold cavity in such a way that said solidified surface forms a temporary barrier which remelts, autogenously uniting the metals into a composite cast product upon solidification. Vertical velocity in casting the upper metal should be minimized. Metal may be cooled in a lower gate to block flow therethrough to permit an upper gate in the same system to feed the mold.

### 3,752,213

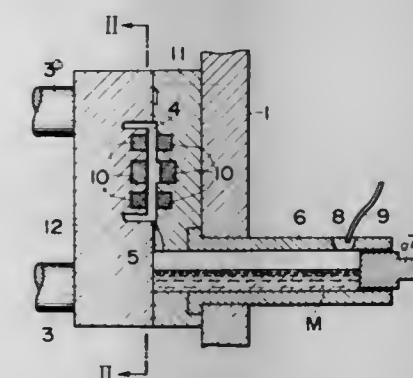
#### OXYGEN FLUSH DIE CASTING METHOD AND APPARATUS

Isao Miki, Fuji, Japan, assignor to Nippon Light Metal Company Limited, Tokyo, Japan

Filed July 13, 1971, Ser. No. 162,153  
Int. Cl. B22d 27/12

U.S. Cl. 164—113

9 Claims



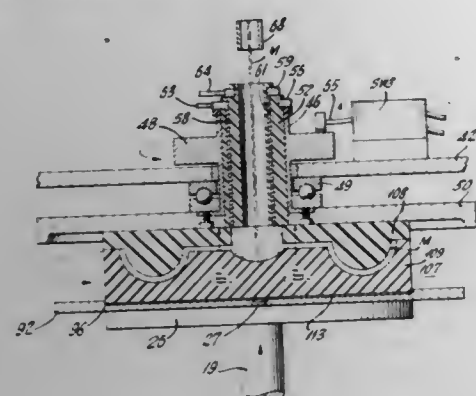
The invention is directed to a die casting method and apparatus wherein the shrinkage pores are concentrated in the unimportant regions of the product by positively retarding solidification of the cast metal in those regions so that the strength defects may be reduced in essential regions of the resultant product.



# 3,752,214 CENTRIFUGAL CASTING MACHINE HAVING MOLTEN METAL LEVEL DETECTOR

Alfred G. Pertot, 2 Yale Rd., Merrick, N.Y.  
Filed Dec. 23, 1971, Ser. No. 211,268  
Int. Cl. B22d 13/00  
U.S. Cl. 164—156

17 Claims

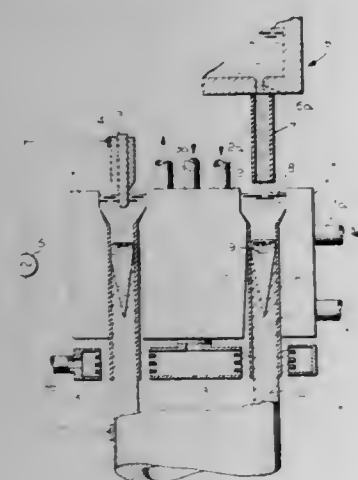


A centrifugal casting machine includes upper and lower rotatable axially movable coaxial clamp members the lower clamp member being engageable and disengageable with a drive motor. An indexing table conveys successive split centrifugal molds having upper central sprues and conductor members on their underfaces between the clamps. A molten metal reservoir is located above the clamps and has a valved nozzle directed to a hollow shaft of the top clamp which has at its bottom a pair of spaced electrodes. A swingable plate is located next to the table proximate the clamps. A control network including sensing switches and actuating devices is provided for raising the lower clamp to clamp the mold to the upper clamp, the restricting raising of the upper clamp causing the drive coupling between the motor and the lower clamp and thereafter the opening of the reservoir valve. Upon filling of the mold as sensed by the electrodes the valve is closed, the motor then disengaged and the lower clamp lowered. The sensing elements are shorted by an inverted mold conductor member to prevent valve opening, the absence of a mold as sensed by the excessive raising of the lower clamp terminates the cycle as does the sensing of metal centrifugally flung from the mold.

# 3,752,215 CONTINUOUS CASTING APPARATUS FOR SHAPED METAL BODIES

Kiyoshige Torikai, Mihara City, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan  
Filed Nov. 9, 1971, Ser. No. 196,972  
Claims priority, application Japan, Nov. 12, 1970, 45/99057  
Int. Cl. B22d 27/02, 11/10  
U.S. Cl. 164—252

6 Claims



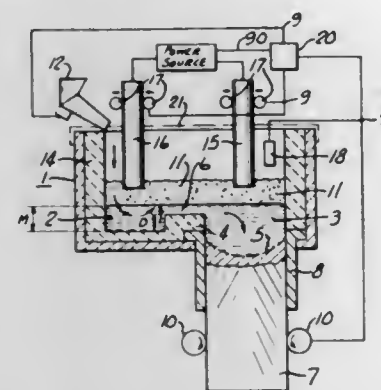
A slag bath is formed in the upper portion of a molding cavity formed between casting molds. Molten metal is poured into the molding cavity through the slag bath. Viscous slag films

are formed by the slag bath between the casting molds and the metal. The metal is cooled through the slag films.

# 3,752,216 APPARATUS FOR HOMOGENEOUS REFINING AND CONTINUOUSLY CASTING METALS AND ALLOYS

Gale Ray Fritsche, Bradfordwoods, Pa., assignor to Sandel Industries, Inc., Pittsburgh, Pa.  
Division of Ser. No. 824,589, May 14, 1969, Pat. No. 3,650,311. This application Dec. 27, 1971, Ser. No. 212,149  
Int. Cl. B22d 27/02  
U.S. Cl. 164—252

28 Claims



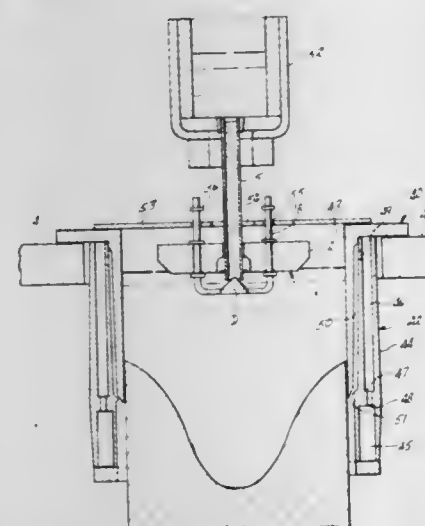
An electroslag vessel for melting, refining and continuously casting alloy constituents in a single unitary vessel having a melting section offset from a casting section being separated by a dam with the casting section having a casting throat. Metallic constituents are fed into the melting section where they are melted to form a molten metal bath and thence refined to transfer over into the casting section to form a molten metallic pool. The bath and pool are blanketed by a molten flux bath through which heating medium is applied, as by electro-energized heating methods. The liquid-solid interface between the molten metal pool is controlled as to shape and level to thereby also control the level of both the bath and pool to be maintained substantially at the same level.

# 3,752,217 FLOAT-DISTRIBUTOR FOR DIRECT CHILL CASTING

Peter E. Sevier, Woodbridge, Conn., assignor to Olin Corporation, New Haven, Conn.  
Filed Aug. 13, 1971, Ser. No. 171,462  
Int. Cl. B22d 11/10

U.S. Cl. 164—281

32 Claims



A float-distributor for direct chill casting of metals, particularly, aluminum and aluminum base alloys. The float-distributor comprises a float adapted to float on the surface of the molten metal in the mold. The float is adapted to fit about a feed nozzle which supplies the molten metal to the mold. Means for distributing the molten metal about the periphery of the mold is provided and is supported beneath the float. The distributing means generally comprises a cone shaped dis-

tributor which is supported in axial alignment with the feed nozzle. The apex angle of the distributor is generally kept between about 60° and 150°. The float may include means for increasing its buoyancy as the flow rate of molten metal issuing from the feed nozzle increases. The float may also contain means for preventing capillary flow of molten metal between the float and the feed nozzle.

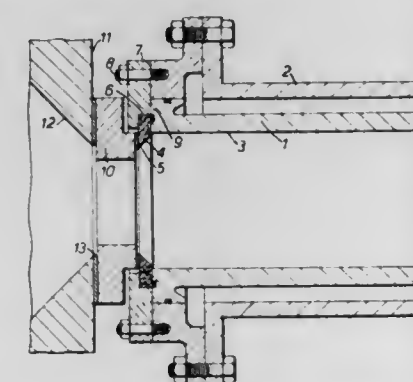
# 3,752,218 CONTINUOUS CASTING MOULDS

Peter Charles David Gamble, Marton, and John Marsh, Fairfield, Stockton-on-Tees, both of England, assignors to Ashmore, Benson, Pease & Company Limited, Teeside, England  
Continuation-in-part of Ser. No. 20,981, March 19, 1970, abandoned. This application Jan. 25, 1971, Ser. No. 109,312  
Claims priority, application Great Britain, Mar. 21, 1969, 15,040/69

Int. Cl. B22d 11/10

U.S. Cl. 164—281

12 Claims



A continuous casting machine includes a tundish having an outlet defined by a body of refractory material, a mould of a material having high thermal conductivity and defining a mould passage arranged with its inlet end in communication with the outlet of the tundish and an apertured plate of silicon nitride positioned between the refractory material and the mould and held in compression by a metal body which surrounds the perimeter of the plate. The metal body is mounted in good heat transfer relationship with the mould.

# 3,752,219 STRAND GUIDE APPARATUS FOR CONTINUOUS CASTING

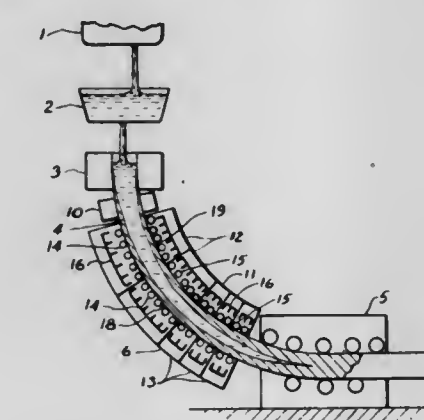
Max Burkhardt, Zurich, Switzerland; Horst Ruber, Roselle Park, N.J., and Christian Chateau, Saint-Chamond, France, assignors to Concast AG, Zurich, Switzerland and Concast Incorporated, New York, N.Y.  
Filed May 13, 1970, Ser. No. 36,764

Claims priority, application Switzerland, May 13, 1969, 7275/69

Int. Cl. B22d 11/12

U.S. Cl. 164—282

10 Claims



A guideway for the secondary cooling zone of curved type continuous casting plants in which guide rollers are carried in

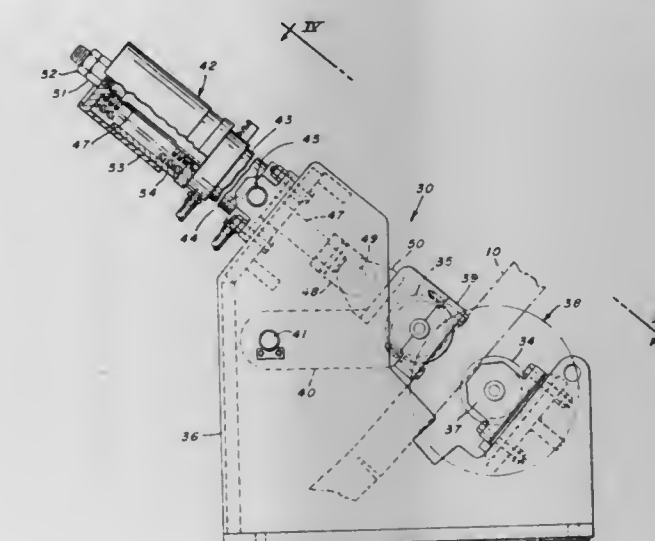
pivotaly mounted yokes adapted to equalize the load on the guide rollers.

# 3,752,220 APPARATUS FOR RESTRAINING AN ABORTED CASTING IN A CONTINUOUS-CASTING MACHINE

Gottfried Hofmann, Pittsburgh, and George F. Schwartz, Allison Park, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.  
Filed Sept. 10, 1970, Ser. No. 71,037  
Int. Cl. B22d 11/12

U.S. Cl. 164—282

10 Claims



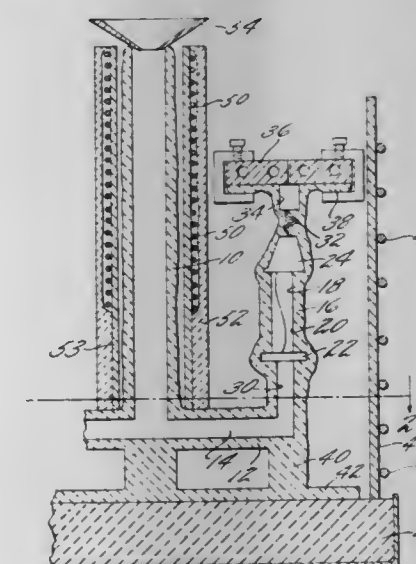
Structure for removing an aborted casting from a continuous-casting machine, in which machine the product is bent from the vertical to the horizontal. The aborted casting is cooled, notched, bent, moved downwardly, and removed. Apparatus is disclosed for restraining the descent of the aborted casting, and for controlling the depth of notches.

# 3,752,221 MOLD APPARATUS FOR CASTING WITH DOWNWARD UNIDIRECTIONAL SOLIDIFICATION

Stephen M. Copley, Madison, and Anthony F. Giamei, New Haven, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.  
Division of Ser. No. 872,562, Oct. 30, 1969, Pat. No. 3,598,172. This application July 22, 1971, Ser. No. 165,302  
Int. Cl. B22d 27/04

U.S. Cl. 164—338

5 Claims



Unidirectionally solidified castings are produced by inverted solidification using a chill plate at the top of the mold and controlling the temperature gradient to cause solidification to occur from the top downwardly through the mold.



3,752,222

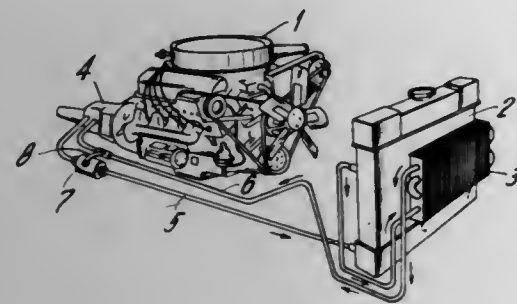
**TRANSMISSION OIL COOLING SYSTEM**

John H. Olbermann, Jr., 19 Thunderbird Park, Sierra Vista, Ariz.

Filed Nov. 18, 1971, Ser. No. 200,111  
Int. Cl. G05d 23/00

U.S. Cl. 165-35

2 Claims



A transmission oil cooling system is improved by a thermostatically controlled bypass valve in the line transferring transmission oil to the oil cooling system whereby the oil flows to the cooling system when the oil is at the desired operating temperature and the valve is opened by the thermostat, but the oil is directed to the return line when below operating temperature and the valve is closed by the thermostat.

3,752,223

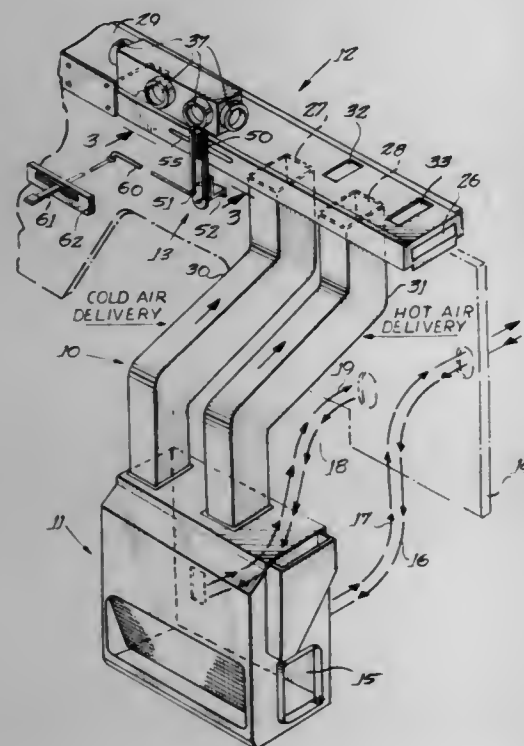
**AIR CONDITIONING APPARATUS FOR AUTOMOTIVE VEHICLES**

Kenneth W. Finch, Fort Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed July 31, 1972, Ser. No. 276,504  
Int. Cl. G60h 3/00

U.S. Cl. 165-43

8 Claims



An air conditioning apparatus for an automotive vehicle including an air distribution duct assembly incorporating a pair of relatively slidably movable elongated ducts for distributing air to selected locations in the vehicle and utilizing a single lever to selectively open and close air discharge openings in the duct assembly.

3,752,224

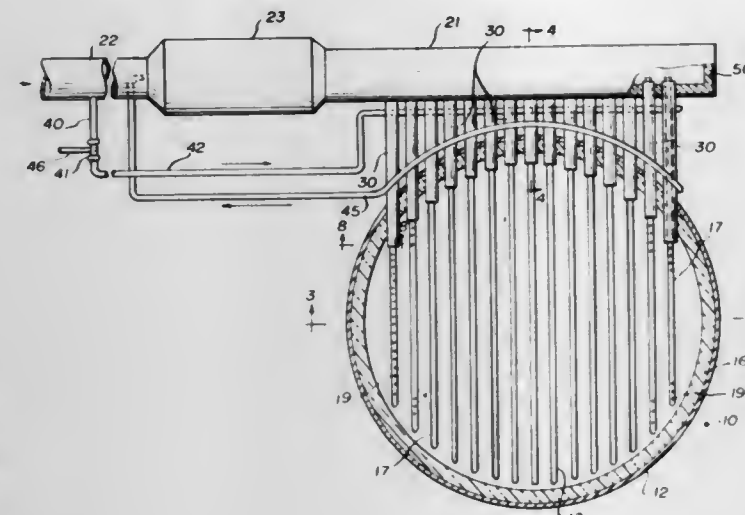
**JACKET COOLED HEADER AIR DISTRIBUTION SYSTEM FOR FLUIDIZED BED REACTOR**

David Douglas Sproul, Villa Park, Ill., assignor to Chicago Bridge &amp; Iron Company, Oak Brook, Ill.

Filed Sept. 21, 1971, Ser. No. 182,378  
Int. Cl. F27b 15/00

U.S. Cl. 165-47

5 Claims



An internally insulated enclosed metal walled reactor having a plurality of air distribution pipes extending from an air manifold header to inside a bottom portion of the reactor, a jacket tube closed at each end surrounding each air distribution pipe and projecting through, and joined to, the reactor metal wall and means to circulate a cooling fluid through each jacket tube to control heat transfer from the air distribution pipes to the reactor metal wall.

3,752,225

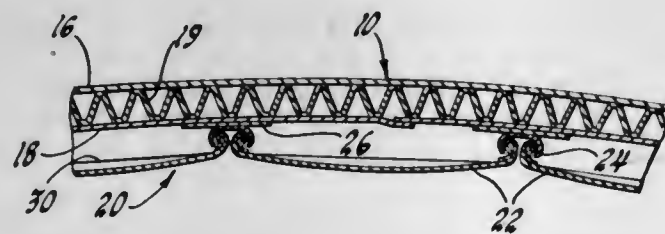
**DUCT FOR HOT GAS**

Douglas Johnson, and Henry M. Mar, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 42,679, June 2, 1970, Pat. No. 3,612,400.  
This application May 5, 1971, Ser. No. 140,487  
Int. Cl. F24h 3/00

U.S. Cl. 165-47

3 Claims



An exhaust duct for a turbofan engine. The exhaust duct wall is characterized by lightweight construction and arrangements for cooling the structure exposed to hot gas. The wall is lined by loosely fitted plates which are corrugated so as to tolerate differential expansion due to temperature differences.

3,752,226

**ENVIRONMENTAL AIR CONTROL UNIT**

Oakle P. Bullock, 15858 Septo St., Granada Hills, Calif.

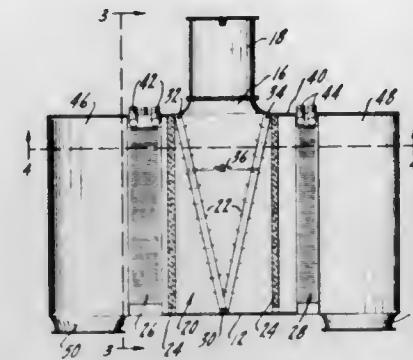
Filed June 25, 1970, Ser. No. 49,634  
Int. Cl. F24f 13/08

U.S. Cl. 165-59

24 Claims

This disclosure is concerned with a so-called environmental air control unit which is made up of a basic module which may include heating and cooling components, a directional controller structure, filters and appropriate connections, all of

which may be structured into various housings and shrouds with vortex generators and appropriate controls for discharging hot and cold air separately or together with a proportion-



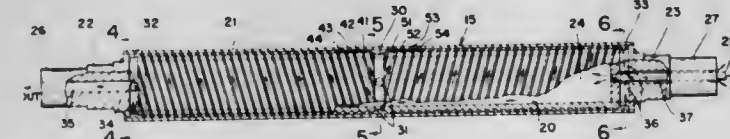
ing arrangement. The emphasis is on the basic module itself, but the housing, shrouding and vortex generators are important.

3,752,227

**EMBOSSING ROLL WITH INTEGRAL COOLING MEANS**  
Douglas W. Bulson, Sylvania, Ohio, assignor to The General Tire & Rubber Company, Akron, OhioFiled Jan. 6, 1972, Ser. No. 215,746  
Int. Cl. F28b 13/06

U.S. Cl. 165-89

3 Claims



A heat transfer roll, such as an embossing roll, for use in connection with systems for continuously advancing a length of flexible sheet material while the material is subjected to thermal treatment. The roll turns with a wrap of the sheet material that passes therearound, and has a thin-walled cylindrical outer shell and a tubular cylindrical core tightly fitted within the shell with passages for cooling fluid defined therebetween. The passages are defined by helical grooves formed in the outer surface of the core, that progress axially in a plurality of closely spaced helical convolutions. Cooling water, for example, is circulated through the passages to cool the roll surface and the sheet material.

3,752,228

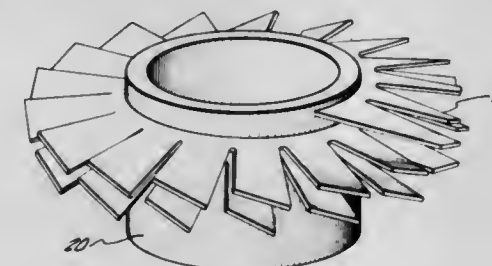
**I-TYPE SEGMENTED FINNED TUBE**

Robert Carl Bosse, Pryor, Okla., assignor to Escon Fintube Corporation, Pryor, Okla.

Continuation of Ser. No. 49,874, June 25, 1970, abandoned.  
This application July 13, 1972, Ser. No. 271,287  
Int. Cl. F28b 1/36

U.S. Cl. 165-184

4 Claims



An I-type segmented finned tube is disclosed having a fin composed of an elongated flat strip of metal, the upper portion of which forms the major fin portion having a plurality of segmented fins formed thereon and extending radially outward therefrom. The lower portion of the flat strip forms the base which serves as a contact area for a welding electrode.

The method of bonding the segmented fin to the tube is accomplished by an ultra-high frequency welding process which melts the root portion of the fin and the registering surface of the tube just prior to their mutual engagement. A force is then applied to the tips of the fins at the point of mutual engagement to forge the molten root portion of the fin to the molten surface of the tube to create a fused bond therebetween.

3,752,229

**OIL WELL TUBING CLEANER**

Whetstone B. Pridy, 861 Stevely Ave., Long Beach, Calif.

Filed Feb. 18, 1972, Ser. No. 227,470  
Int. Cl. F21b 37/02, 19/00

U.S. Cl. 166-72

6 Claims



A power driven oil well tubing cleaner so operatively associated with a vehicle-supported tubing puller of the type that includes a vertically positionable mast that when a string of tubing is being sequentially moved upwardly in a well bore hole by the puller, each stand may have foreign material removed from the interior thereof by the cleaner prior to the stand being separated from the string.

3,752,230

**PULLING TOOL**

Henry A. Bernat, and William K. Murray, Bossier City, La., assignors to Tri-State Oil Tool Industries, Inc., Bossier City, La.

Filed June 21, 1971, Ser. No. 154,989  
Int. Cl. E21b 31/00

U.S. Cl. 166-98

7 Claims



A hydraulic pulling tool including inner and outer tubular members adapted for relative axial movement, hydraulic slips



on the outer member, a pipe grapple on the inner member, indicator valve means which are automatically opened at the completion of each pulling stroke to release pressurizing fluid to indicate completion of the stroke and dump valve means operable by vertical manipulation of the drill string to complete the release of pressurizing fluid.

3,752,231

# APPARATUS FOR INSTALLING AND REMOVING FLOW CONTROL UNITS

Harold E. McGowen, Jr., and Ben D. Terral, Houston, Tex., assignors to Camcor, Incorporated, Houston, Tex.

Filed Mar. 27, 1972, Ser. No. 238,363

Int. Cl. E21b 7/06

U.S. Cl. 166—117.5

7 Claims



A flow control unit handling apparatus adapted for use in placing a flow control unit in a selected offset seat in a well tubing mandrel and for removing said unit therefrom. An elongate housing adapted to support a flow control unit and pivotally connected at its upper end to a supporting means for raising and lowering the housing in the well tubing and an elongated protective guide means pivotally supported from the housing allowing the apparatus to pass freely downwardly through an offset mandrel. A key for locating, positioning and tripping the apparatus into position to allow a valve to be placed or pulled from a selected offset seat. The apparatus being of a minimum elongate length such that the apparatus may pass through a curved tubing in a pump-down system.

3,752,232

# WELL TOOL AND METHOD FOR USING SAME

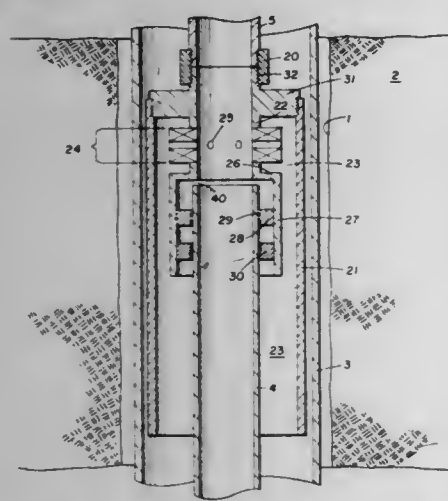
Larry N. Bell; Charles R. Knowles, both of Anchorage, Alaska, and Frank M. Schuh, Dallas, Tex., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Jan. 12, 1972, Ser. No. 217,362

Int. Cl. E21b 33/14

U.S. Cl. 166—285

5 Claims



A tool for use in a wall such as a gas or oil well which comprises spaced apart inner and outer cylinders and means for

admitting fluid from the interior of the inner cylinder to the annulus between the inner and outer cylinders, a cylindrical means (overshot) carried by the inner cylinder to extend over the outside of an external pipe already existing in the wellbore and to seal and grip with the external pipe. A method for connecting a new section of pipe which carries the above tool to an existing, external section of pipe in the wellbore by stabbing the cylindrical means (overshot) over one end of the pipe in the wellbore, sealing the joint between the overshot and the external pipe, gripping the external pipe so that it cannot be removed from inside the overshot, and cementing around at least part of the exterior of the overshot whereby the new pipe above the tool is joined to the existing pipe below the tool in a rigid manner.

3,752,233

# HYDRAZINE OVERFLUSH TREATMENT IN HYDRAULIC FRACTURING

Marvin A. Svaldi, Morrison, and Bruce L. Knight, Littleton, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Dec. 15, 1971, Ser. No. 208,461

Int. Cl. E21b 43/25, 43/26

U.S. Cl. 166—308

11 Claims

Improved fracturing of subterranean reservoirs with fracturing fluids containing high molecular weight polymers, e.g., polyacrylamides, is obtained by first fracturing the formation with the fracturing fluid, and thereafter injecting 5–1,000 gallons per vertical foot of reservoir of an aqueous solution containing 0.005 percent to about 30 percent by volume of hydrazine. The hydrazine tends to increase permeability to the flow of reservoir fluids, the permeability having been reduced by the high molecular weight polymers in the fracturing fluid.

3,752,234

# FIRE FIGHTING SYSTEM

Edward R. Degginger, and Thomas R. Steadman, both of Convent Station, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 081,517, Oct. 16, 1970, abandoned. This application Aug. 19, 1971, Ser. No. 173,269

Int. Cl. A62c 1/12, 3/02

U.S. Cl. 169—1 A

8 Claims

Aqueous dilatant solutions containing alkali metal borate, polyvinyl alcohol (PVA) and a fluorocarbon foaming agent are effective suppressants for burning lighter than water organic liquids. The solubility of borate in water is enhanced by the use of a C<sub>2</sub> to C<sub>12</sub> polyol. These dilatant solutions are most advantageously formed by combining streams of aqueous borate solution and aqueous PVA solution.

3,752,235

# REMOTE CONTROLLED FIRE PROTECTION SYSTEM

Henry J. Witkowski, 5625 E. Lade Rd., Erie, Pa.

Continuation-in-part of Ser. No. 855,209, Sept. 4, 1969, abandoned. This application Aug. 24, 1971, Ser. No. 174,402

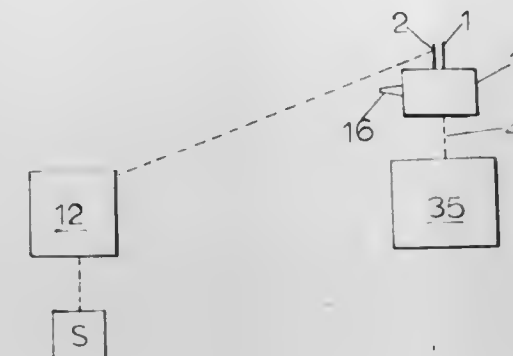
Int. Cl. A62c 35/00

U.S. Cl. 169—2 R

3 Claims

This specification discloses a fire extinguishing system for use in a relatively small or large enclosure or building where goods are kept which might be damaged by the fire extinguishing medium. The invention is carried out by a dispensing device located at the center of the building which will dispense extinguishing medium to specific locations in the building, thus avoiding damage to goods in the areas where there is no fire. The dispensing device is directed by a mechanism on the dispenser and a number of fire sensing devices located at the several areas to be protected. One of the fire sensing devices is located in each sector of the enclosure that is to be protected. These fire sensing devices may be, for example, in the form of a switch actuated by a thermostat or a photo cell or any device sensitive to heat or light, which will actuate a radio trans-

mitter. The signal from a transmitter can actuate a radio receiver which will in turn operate a motor or a direct wire controlled by a thermally actuated switching device, which



will drive the nozzle to a position where it will direct its material to the area of the building where the fire has occurred.

3,752,236

# CHANGEABLE PLOW SWEEP

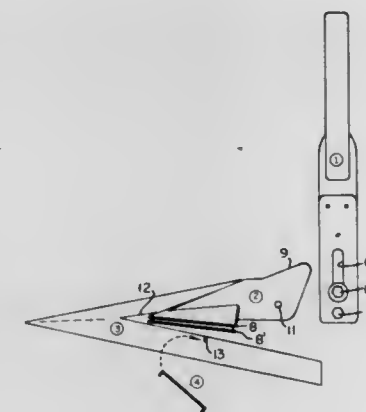
Clifford R. Foster, RFD 2, Avoca, Tex.

Filed May 19, 1971, Ser. No. 94,489

Int. Cl. A01b 15/00

U.S. Cl. 172—751

7 Claims



A changeable plow sweep comprising a shank adjustably affixed to a frog in a manner which enables the relative angle between V-shaped blades to the sweep and the frog to be adjusted.

The frog includes a laterally disposed groove formed in the forward edge portion thereof which receives a rear marginal edge portion of the sweep blade therein. A relatively flexible rod is abuttingly received against the frog and is placed into engagement with the sweep blades so as to removably affix the blade to the frog.

3,752,237

# PRESS WHEEL ASSEMBLY

Michael C. Hornung, Spearville, Kans.

Continuation of Ser. No. 861,635, Sept. 29, 1969, abandoned.

This application Mar. 20, 1972, Ser. No. 236,208

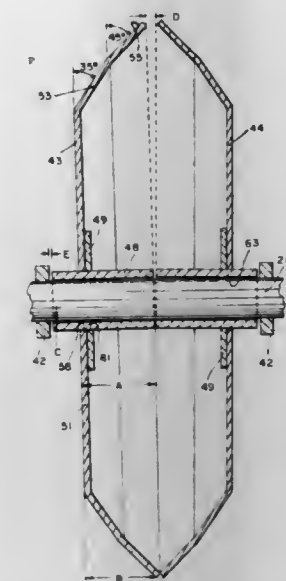
Int. Cl. A01b 5/00

U.S. Cl. 172—531

3 Claims

This invention relates to a press wheel means to be mounted upon a cultivating implement utilized in a seed planting process. More particularly, this invention is an improved press

wheel assembly having cooperating half wheel assemblies loosely mounted upon a main support shaft and constructed so



as to create a constant wobbling or vibrating effect to maintain the same free and clear of mud and the like.

3,752,238

# SOD PLANTING ATTACHMENT

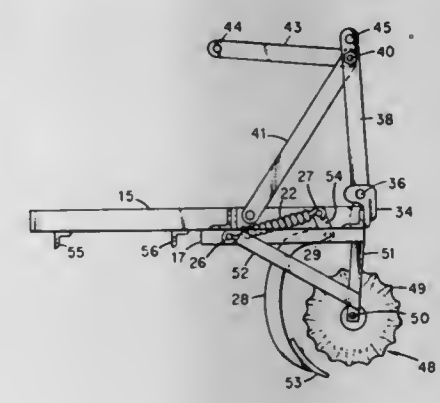
Gustavous W. Chilton, P. O. Box 27, Wartburg, Tenn.

Filed July 30, 1971, Ser. No. 167,603

Int. Cl. A01b 49/02

U.S. Cl. 172—180

1 Claim



An attachment for conventional seed planters which permits the planting of crop seed in sodded areas which may have been undisturbed for as many as 20 years. The attachment is self-drafting; that is, no load weight must be applied to bring about proper ground preparation. The essential components are a semi-rigid curved foot immediately following a fluted disk colter. These are supported below a frame which has provisions for adjusting row width and has connections for standard three-point tractor hitches and corresponding attaching points on a seed planter unit.

3,752,239

# VARIABLE RIPPER PLOW SHANK ASSEMBLY

Leon O. Kelley, P.O. Box 488, Stamford, Tex.

Filed June 1, 1971, Ser. No. 148,727

Int. Cl. A01b 13/08

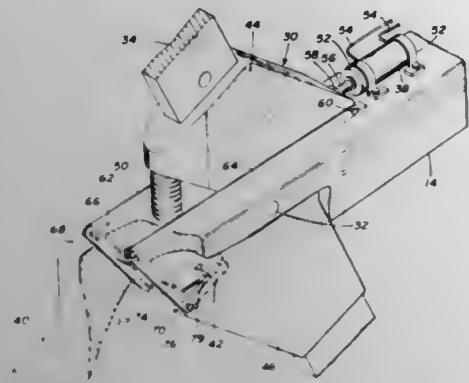
U.S. Cl. 172—699

11 Claims

A variable plow shank positioning assembly for use on a variety of plows. The assembly includes a shank support member pivotally mounted in a plow and including an aperture therein for rigidly receiving a plow shank. Wedges are slideably moveable by a hydraulic cylinder to abut with upper



and lower pads pivoted on the shank support member to selectively pivot the support member relative to the plow. A spring structurally supported by the gas channeling conduit. The pneumatic supply and exhaust conduit is provided with a clo-



sure valve which automatically prevents a flow of gas therethrough when it is disconnected from the hand-held instrument. is disposed to normally bias the shank support member in a predetermined angular orientation.

3,752,240

### METHOD OF AND APPARATUS FOR PROVIDING AN IMPACT TO A VEHICLED CARRIED PENETRATING TOOL

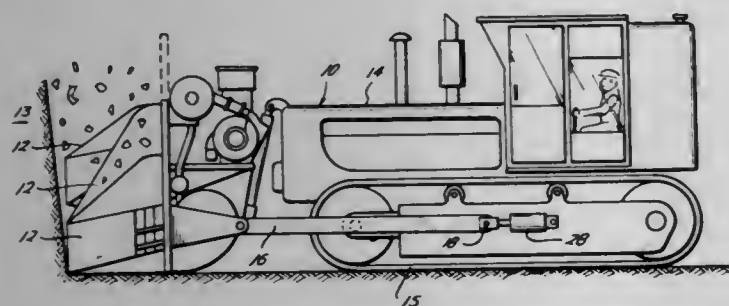
Charles D. Wood, III, San Antonio, and John M. Clark, Jr., Seguin, both of Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Dec. 23, 1971, Ser. No. 211,282

Int. Cl. E02f 1/00, 3/76

U.S. Cl. 173-1

5 Claims



Providing an impact force on the push arm of a material penetrating tool by the tool carrying vehicle. A cutting tool slidably connected to a tractor in a generally longitudinal direction which is extended and held forwardly of the tractor by hydraulic cylinders which are released as the tractor is pushing the tool forwardly whereby the tractor will move forward and impact the tool push arms greatly increasing the thrust on the tool. A material moving combustion chamber slidably and releasably carried by a tractor and having a hydraulic piston and cylinder assembly for extending and holding the chamber in front of the vehicle and hydraulic control means for slowly releasing the hydraulic pressure when the chamber is fired to absorb the recoil of the chamber explosion.

3,752,241

### PNEUMATIC TOOL

John H. Bent, Fullerton, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

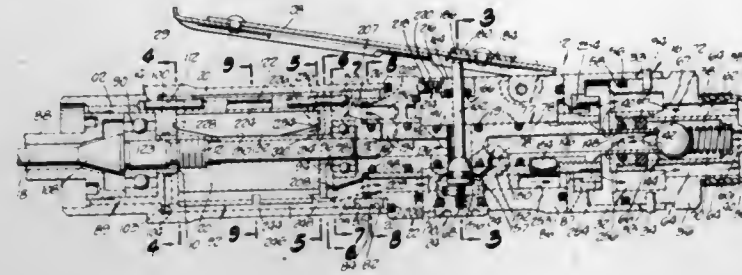
Filed June 29, 1971, Ser. No. 157,933

Int. Cl. A61b 17/32; A61c 1/02

U.S. Cl. 173-163

20 Claims

A pneumatically operated surgical tool for driving various types of surgical attachments and cutters comprising a hand-held instrument which may be interconnected with a pneumatic supply and exhaust conduit for conducting gases under pressure to and away from the instrument. The hand-held instrument comprises, in coaxial alignment, a spindle rotatably driven by a pneumatic motor and a gas channeling conduit for channeling gases from the supply conduit to the pneumatic motor. Coarse and fine control valves for regulating the direction and speed of rotation of the pneumatic motor are



3,752,242

### HYDRAULICALLY ACTUATED CAVITY FORMING DEVICE

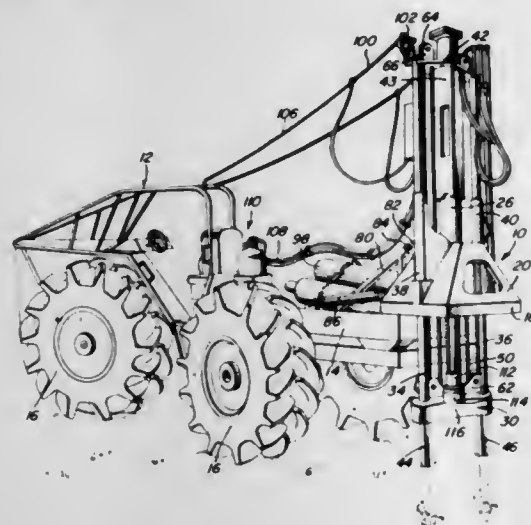
Ernest J. Gremillion, P.O. Box 11-K, Cut Off, La.

Filed Nov. 16, 1971, Ser. No. 199,121

Int. Cl. E21c 5/06, 5/11

U.S. Cl. 175-108

12 Claims



A pair of longitudinally movable stems supported for generally vertical movement by a supporting and guiding structure on a mobile vehicle with the stems being extended and retracted by a unique actuating mechanism in the form of a hydraulically powered piston and cylinder assembly and an overdrive driving connecting with the stems for moving the stems a longitudinal distance twice the longitudinal extension and retraction of the piston and cylinder assembly. A hydraulic motor is provided for rotating the stems which are hollow and provided with an auger flight on the lower end thereof to facilitate insertion into the ground surface after which the stems may be slightly elevated to form an underground cavity into which an explosive charge may be introduced through the hollow stems for detonation, such as is employed in determining underground formations in underground surveys.

3,752,243

### ROLLER CUTTER ASSEMBLY WITH IMPROVED BEARING SEAL RING

Herbert B. Hummer; Donald P. Jackson, and Rex E. Hall, all of Kalamazoo, Mich., assignors to Durametallic Corporation, Kalamazoo, Mich.

Filed Sept. 20, 1971, Ser. No. 181,820

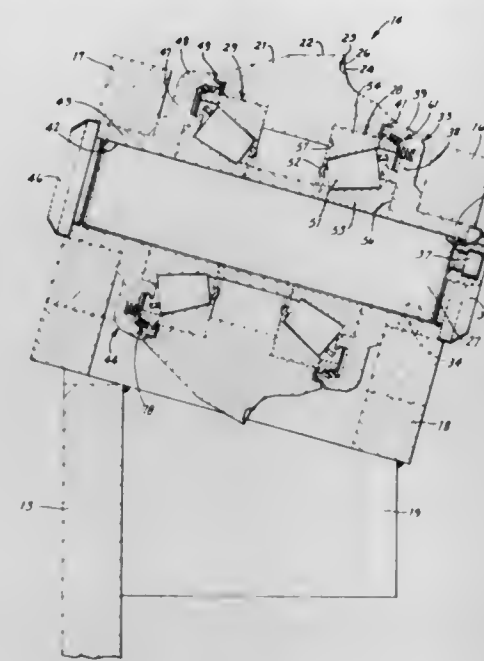
Int. Cl. E21b 9/08

U.S. Cl. 175-364

3 Claims

An improved seal assembly, and a method of manufacturing same, for use in a rock cutter assembly of a tunneling machine. The cutter assembly includes a rotary cutter

rotatably mounted on a frame by anti-friction bearings. Seal means coact between the frame and the cutter for preventing undesirable materials from contacting the bearings. The seal means includes a seal ring resiliently urged into sliding sealing engagement with the outer race of the anti-friction bearing. The seal ring is provided with a thin ceramic layer defining the



sealing face thereof. The end surface of the bearing race is lapped as a seal face by a special lapping tool which comprises an annular plate-like member having an annular ring-like lapping surface on the axial face thereof adjacent the periphery of the tool. The lapping surface surrounds an annular groove formed in the tool.

3,752,244

### WEIGHT-MEASURING UNIT

Basile Rouban, Clamart, France, assignor to Trayvou S.A., Val de Marne, France

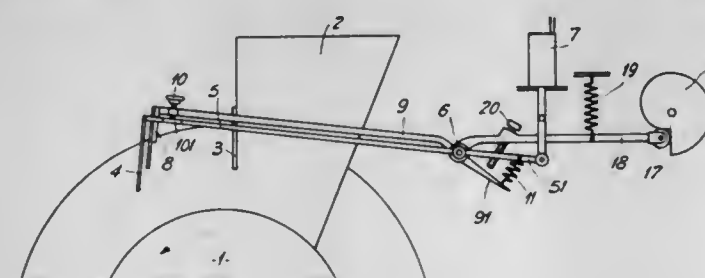
Filed July 20, 1972, Ser. No. 273,643

Claims priority, application France, July 21, 1971, 7126731

Int. Cl. G01g 13/02

U.S. Cl. 177-1

14 Claims



A two stage method of performing weighings of repeated dosages of granulated or powdered material in which the variations in "surplus" of the dosages are reduced by modulating, in dependence on the time taken by a "predosage" step, the rate of volume flow of the material to a weight sensing device during a second or "balance quantity" step, so as to obtain from one weighing operation to the next a substantially constant rate of flow of material by weight during the "balance quantity" step. A device for weighing repeated dosages is also described. This has a hopper adjacent the exit of which is mounted a rotatable metering drum for feeding material to a weight sensing device. A screen having an opening therein can be brought at the end of the "predosage" step into contact with the drum in order to reduce the rate of volume flow of material to the weight sensing device during the "balance quantity" step. A shutter can be adjusted relative to the screen to vary the size of the opening and is arranged to move with the screen. A cam is rotated from a start position at the beginning of each weighing operation and is stopped at the

3,752,245

### SCALE APPARATUS

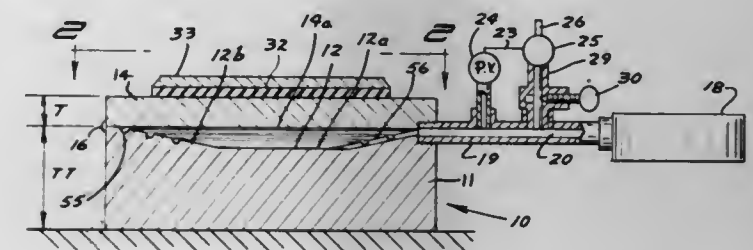
Berthold Thomas Johnson, 1551 97th St., North Battleford, Saskatchewan, Canada

Filed Apr. 17, 1972, Ser. No. 244,668

Int. Cl. G01g 5/04

U.S. Cl. 177-208

13 Claims



Scale apparatus that includes a base plate having an upwardly opening shallow generally conical or frusto conical recess, a second plate having a bottom flat surface, a weld seam for attaching the plates in abutting relationship at their adjacent peripheral edges whereby said recess and flat surface form a liquid chamber, a fitting attached to said plates and mounting a pressure gauge to measure the liquid pressure in said chamber, a reserve tank at a higher elevation than said chamber, a line having a pressure relief valve for fluidly connecting the tank to the fitting, a line having a hand operated valve connecting the tank to the fitting, a resilient pad mounted on the second plate and a reinforcing plate mounted on the pad. A ramp may be pivotally mounted on a hemisphere member that in turn is mounted on the reinforcing plate whereby the dual wheels may be driven onto the ramp with one wheel on each side of the hemisphere member.

3,752,246

### RACING CAR

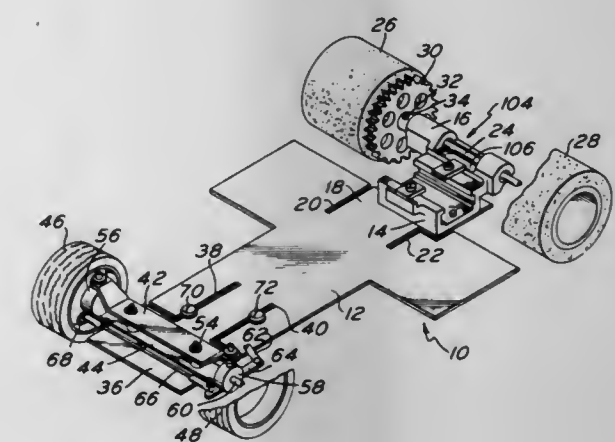
Matthew A. Sullivan, Elkins Park, Pa., assignor to Sullivan Products, Inc., Willow Grove, Pa.

Filed June 28, 1971, Ser. No. 157,561

Int. Cl. A63h 17/26

U.S. Cl. 180-56

9 Claims



A radio control racing car having a resilient suspension system which is adjustable is provided. The wheels of the car are permitted to flex substantially independently of each other with a positive control provided for the amount of flexibility of each wheel. A motor mount is provided which permits the motor to be fixedly clamped into its desired operative position.

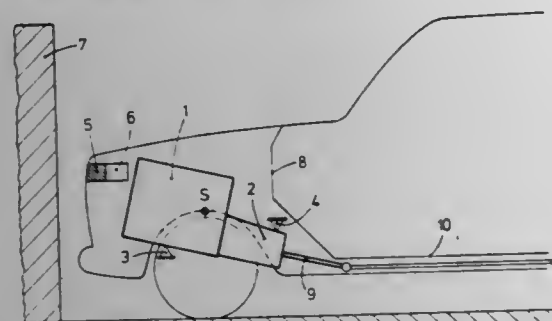


**3,752,247**  
**ARRANGEMENT OF A DRIVING MEANS IN THE FRONT PORTION OF A VEHICLE, SUCH AS A MOTOR VEHICLE**  
 Kurt Schwenk, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany  
 Filed Nov. 8, 1971, Ser. No. 196,419

Claims priority, application Germany, Nov. 14, 1970, P 20 56 102.8

Int. Cl. B60k 5/12  
 U.S. Cl. 180—64 R

14 Claims



In a motor vehicle having a motor block secured to the chassis in a front portion of the vehicle, means projecting along the direction of travelling associated with the motor block and arranged above the center of gravity of the motor block, the arrangement of the projecting means and the securing members being such that during an impact having a certain force magnitude effecting the projecting means causes the motor block to rotate with its end facing the passenger cabin of the vehicle downwardly towards the road by creating a rotational momentum pivoting the block downwardly.

**3,752,248**  
**HYDRAULIC STEERING SYSTEM**  
 Daryl Stevens, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.  
 Filed Aug. 31, 1971, Ser. No. 176,562  
 Int. Cl. B62d 5/06  
 U.S. Cl. 180—79.2 R

12 Claims



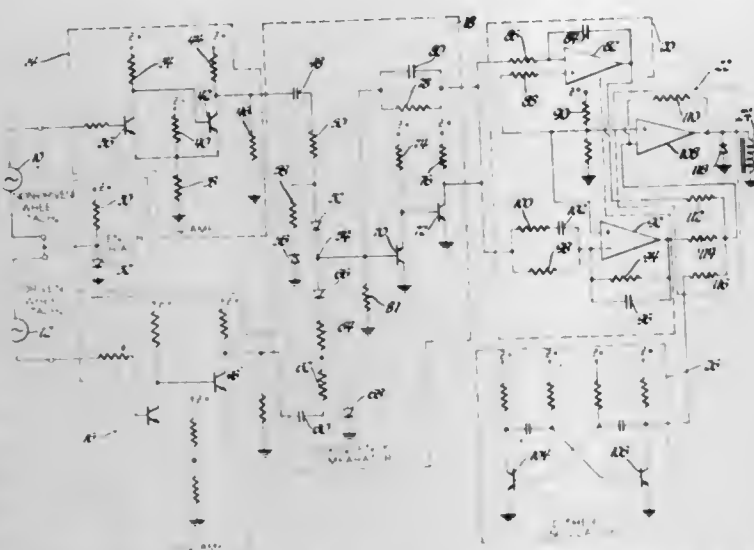
A hydraulic steering system for vehicular equipment, such as lift trucks, earth moving equipment, and the like, having two steerable wheels, an axle bed for the wheels and a linkage interconnecting the wheels, in which the steerable wheels are operated by power cylinders connected to the axle bed and to the linkage, and a valve controls a fluid under relatively high pressure for operating the two cylinders. A pilot cylinder normally operating under a relatively low pressure is controlled by a remotely positioned metering pump responsive to the operation of the steering wheel by the operator. The pilot cylinder is connected to the linkage and to the steering valve to provide a follow-up effect through the pilot cylinder and steering valve. This system permits the use of a relatively high pressure sub-system for operating the power cylinders and a relatively low pressure sub-system controlled by the operator at a position remote from the steering mechanism for controlling the power cylinders.

**3,752,249**  
**COMBINED WHEEL SLIP LIMITING AND VEHICLE SPEED LIMITING APPARATUS**  
 Robert B. Gelenius, Davison, and Wayne A. Levijoki, Flushing, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 27, 1971, Ser. No. 175,629  
 Int. Cl. B60k 31/00

U.S. Cl. 180—82 R

3 Claims



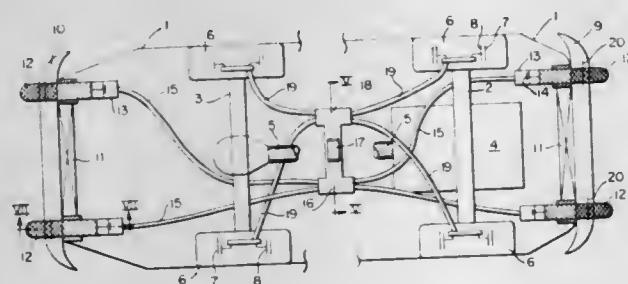
Maximum traction of a vehicle during acceleration is assured by a circuit responsive to signals from driven and non-driven wheel transducers including a frequency comparator for determining the difference in wheel speeds and an electro-vacuum servo motor in the engine throttle linkage responsive to a predetermined wheel speed difference for reducing engine torque output upon excessive slipping of the driven wheels. The non-driven wheel speed signal is limited to a maximum at a predetermined speed so that at higher vehicle speeds a simulated wheel slip signal is generated to reduce engine torque and limit vehicle speed.

**3,752,250**  
**MOTOR VEHICLE AUTOMATIC IMPACT BRAKING SYSTEM**  
 Eugene Speer, 401 Jennie Jewel Dr., Orlando, Fla.

Filed Nov. 17, 1971, Ser. No. 199,419  
 Int. Cl. B60t 7/12

U.S. Cl. 180—92

8 Claims

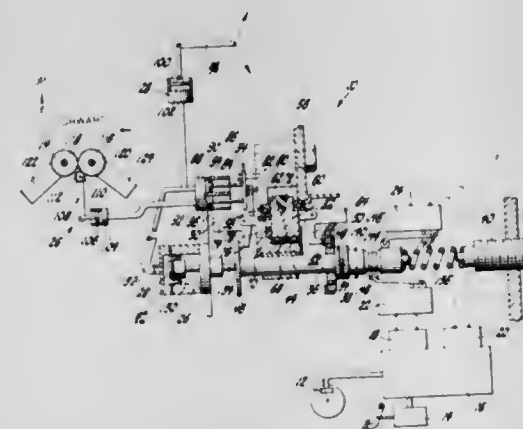


The system automatically actuates the standard otherwise operator controlled wheel brakes of a motor vehicle upon impact to either longitudinal end of the vehicle. The impact may be delivered directly to projections, two for each bumper, that extend freely through the vehicle bumper for a considerable distance beyond the confines of the bumper so that with a head-on collision the brakes will be actuated before there is contact with the bumper, or with a collision from the side the bumpers, which are elastically connected to the vehicle frame, will elastically deform a substantial extent in the longitudinal and transverse direction before a longitudinal lost motion connection between the bumper and projections drivingly connects the two for actuating the brakes upon further longitudinal movement of the bumper and projection as a unit. In

either event, longitudinal inward movement of the projection, through the intermediary of a coil spring, will contract an expandable chamber, one associated with each projection, to pressurize fluid within a line leading to a balancing chamber having a fluid output connected to each of the wheel brakes. The wheel brakes are provided with conventional hydraulic wheel cylinders to be pressurized selectively by the vehicle operator and auxiliary hydraulic wheel cylinders to be pressurized as mentioned above automatically in response to impact through inward longitudinal driving of the projections.

**3,752,251**  
**ROAD GRADE SENSOR**  
 Edward G. Gaeke, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.  
 Division of Ser. No. 883,386, Dec. 9, 1969, Pat. No. 3,632,176.  
 This application Aug. 17, 1971, Ser. No. 172,507  
 Int. Cl. B60t 8/16  
 U.S. Cl. 180—104

2 Claims



A vehicle wheel brake system in which vehicle and wheel speed signals are generated and utilized to generate a wheel brake pressure command signal, with the road grade sensor generating a signal reflecting the grade of the road on which the vehicle is moving. The road grade signal is used to further refine the command signal by taking into account the road grade. The system also senses brake torque and refines the command signal by considering the effect of changes in brake torque. The command signal controls mechanism, which, in turn, controls the wheel brake apply pressures.

**3,752,252**  
**METHOD AND APPARATUS FOR CONTROL OF A VEHICLE CONSTANT SPEED MECHANISM**  
 Naoji Sakakibara, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi Prefecture, Japan  
 Filed July 6, 1971, Ser. No. 159,969  
 Claims priority, application Japan, July 3, 1970, 45/58594; July 3, 1970, 45/58595

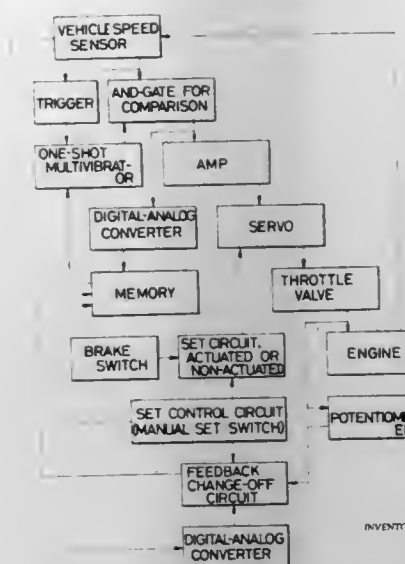
Int. Cl. B60k 31/00

U.S. Cl. 180—105 E

7 Claims

A method and apparatus for control of a vehicle at constant speed. An actual vehicle speed signal is developed and when it is desired to operate the vehicle continuously at this actual speed, the actual speed is stored in a memory. A negative feedback signal responsive to the opening degree of the throttle valve is applied to the storage means storing the desired vehicle speed and varies the stored desired vehicle speed in

accordance with the opening degree of the throttle valve. The actual vehicle speed signal is then brought into coincidence



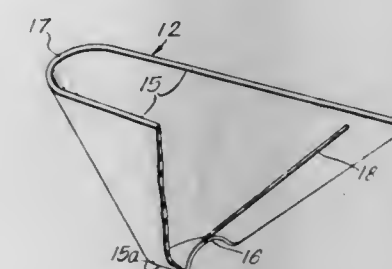
with the desired vehicle speed, thus maintaining the vehicle at a constant speed equal to the desired vehicle speed.

**3,752,253**  
**FLEXIBLE SKIRTS FOR GAS-CUSHION SUPPORTED EQUIPMENT**  
 Leslie A. Hopkins, and Robert R. Henvest, both of Southampton, England, assignors to Air Cushion Equipment Limited, Southampton, Hampshire, England  
 Filed Apr. 22, 1971, Ser. No. 136,533  
 Claims priority, application Great Britain, Apr. 23, 1970, 19,535/70

Int. Cl. B60v 1/16

U.S. Cl. 180—117

10 Claims



The invention relates to a flexible skirt for use on craft vehicles or devices which can be supported on a gas cushion, the skirt serving to prevent an escape of gas from the gas cushion to the atmosphere and comprising a plurality of juxtaposed segments which in use are downwardly extending and can seal against one another, each segment being U-shaped in transverse cross-section to form two side walls which gradually decrease in depth from their upper end towards their bottom end and the bottom edge or tip of each segment is disposed in a plane which is horizontal or at an angle to the horizontal less than the curved front edge of the segment.

**3,752,254**  
**AUTO BATTERY THEFT PREVENTING DEVICE**  
 Joseph E. Carley, 51 Carmon Rd., Harrington Park, and Emil A. Steup, 27 Ardsleigh Dr., Madison, both of N.J.  
 Filed Oct. 21, 1971, Ser. No. 191,509

Int. Cl. B60r 18/02

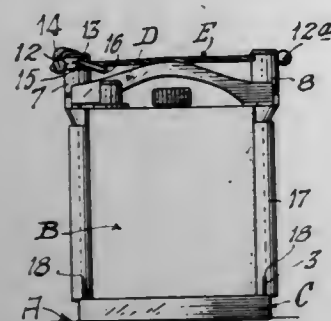
U.S. Cl. 180—68.5

6 Claims

The lower ends of hold-down bolts at opposite sides of a storage battery are separately secured to anchoring structure in the engine compartment and their upper ends have elongated nuts screw-threaded thereon and tightly against the respective ends of a clamp bar that spans the top of the battery. A locking element has its ends respectively permanently



secured to one nut and locked to the other nut by a key or permutation operated lock and a guard tube is associated with each hold-down bolt, said clamp bar and said anchoring struc-



ture prevents unauthorized separation of the hold-down bolts from the anchoring structure, thereby to thwart attempted theft of the battery.

3,752,255

## ULTRASONIC SCANNING APPARATUS

Christopher Rowland Hill, 29 The Warren, Surrey, Carshalton, and Victor Ralph McCready, 87 Grove Rd, Surrey, Sutton, both of England

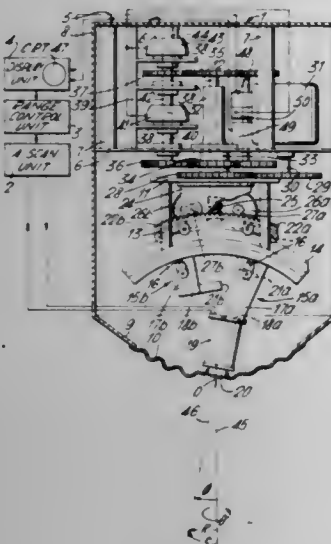
Filed Apr. 4, 1972, Ser. No. 241,012

Claims priority, application Great Britain, Apr. 6, 1971, 8,847/71

Int. Cl. G01n 9/24

U.S. Cl. 181—5 NP

10 Claims



A pulse-echo method of ultrasonic scanning to investigate the interior of a body involves contacting the body with an ultrasonic transducer at a fixed point having a first axis therethrough which is fixed relative to the body, projecting a pulsed ultrasonic beam through the fixed point along a second axis which is fixed relative to the transducer, and rotating the transducer about the first axis while progressively varying the angular inclination of the second axis to the first axis. The beam path then describes a spirally wrapped conical surface with its apex at the fixed point, which means that the transducer does not track across the body, but simply rolls on it at the fixed point, and this alleviates the transducer/body coupling problems which otherwise arise. Apparatus for this purposes comprises a support structure to define the first axis, a circular arcuate carriageway rotatable about this axis to produce the wrapping motion and to define by its centre of curvature the fixed point, a carriage extending transversely from the carriageway to define the second axis and movable along the carriageway to produce the progressive angular variation or spiral effect, and a transducer with its periphery at the fixed point, its beam path along the second axis, and rotatably mounted in the carriage to effect a rolling action on the body.

### 3,752,256 METHOD FOR GENERATING SEISMIC IMPULSES BELOW THE EARTH'S SURFACE

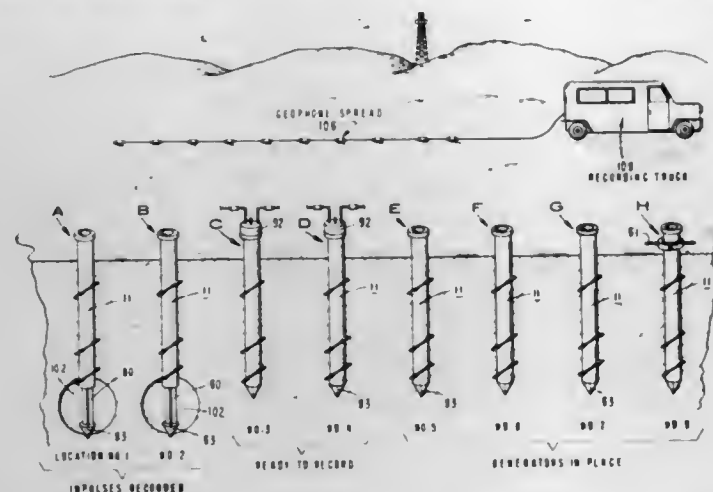
John C. Mollere, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed Dec. 14, 1970, Ser. No. 97,932

Int. Cl. B01v 1/02; G01v 1/12

U.S. Cl. 181—5 XC

4 Claims



This invention relates to a method and means for generating undersurface seismic impulses by positioning a combustion chamber at a desired point below the earth's surface, exploding in the chamber a first charge of an explosive gas, using the energy of the explosion to create a cavity in the soil around the combustion chamber, filling the combustion chamber and the cavity with at least a second charge of the explosive gas, and exploding the second charge both in the combustion chamber and in the cavity to produce a seismic impulse below the earth's surface.

3,752,257

### ACOUSTIC WELL LOGGING METHOD AND APPARATUS USING PIPE AS AN ACOUSTIC TRANSMITTER

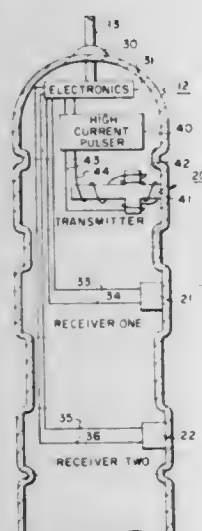
Mike Davis, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 7, 1972, Ser. No. 232,377

Int. Cl. E21b 49/00

U.S. Cl. 181—5 AG

3 Claims



A well logging tool using high voltage pulses coupled into a coil surrounding a high permeability material is caused to traverse an earth borehole having a metal pipe therein. The magnetic field resulting from the voltage pulses passing through the coil distorts the pipe and causes the pipe to be an acoustic transmitter. The acoustic pulses are passed through the earth formation to one or more acoustic receivers within the well logging instrument. The tool is used to measure acoustic velocity within the formations and also to measure the quality of the cement bond between the pipe and the earth formations.

3,752,258

## SPEAKER SYSTEM

Haruo Ishikawa, 12-35-314 Matsunoki, 1-chome, Suginami-ku, Tokyo, Japan

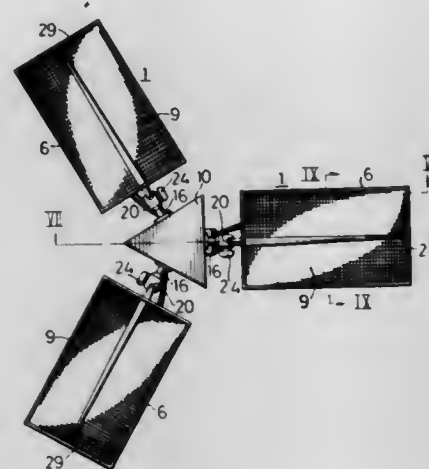
Filed Oct. 28, 1971, Ser. No. 193,453

Claims priority, application Japan, Nov. 4, 1970, 45/96444

Int. Cl. G10k 13/00; H04r 1/28

U.S. Cl. 181—31 B

11 Claims



A speaker system provided with a plurality of radially arranged flat speaker units, a speaker-unit support comprising support walls corresponding, respectively, to the speaker units and sections capable of attaching onto structures, such as partitions, ceilings, etc., joint units connecting the speaker units with the support so that the speaker units can be turned towards desired directions at various angles to the corresponding support walls either co-operatively or selectively, and means holding the speaker units at a desirable position.

3,752,259

### SOUND REDUCING DEVICE FOR USE WITH BAR FED MACHINERY

Donald James Wright, Stapleford, and James Boote, Burton Joyce, both of England, assignors to Wright Engineering Company (Nottingham) Limited, Nottingham, England

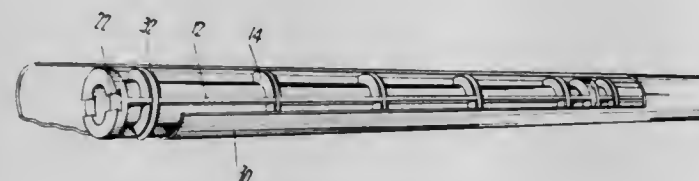
Filed Jan. 12, 1972, Ser. No. 217,373

Claims priority, application Great Britain, May 13, 1971, 14,736/71

Int. Cl. G10k 11/00; B65g 11/16; F16l 9/22

U.S. Cl. 181—33 M

10 Claims



A device for reducing sound created by feeding of metallic bar material to a machine working the bar, the device comprising a substantially rigid tube of plastics material for positioning around the bar and within the bar carrier tube of said machine, in which said tube has a plurality of longitudinal ribs on its curved surface so that in use a plurality of chambers are formed between said plastics tube and the bar feed or carrier tube. In use the chambers may be left empty or filled with acoustic insulating material.

3,752,260

## AIR RUSH SILENCER

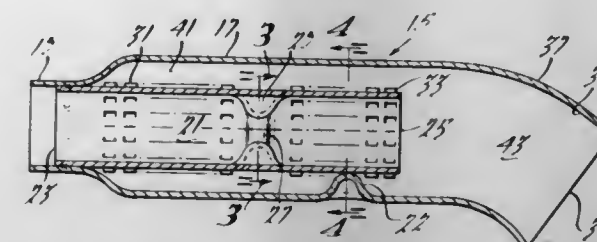
Robert A. Heath, Jackson, Mich., assignor to Tenneco Inc., Racine, Wis.

Filed July 15, 1971, Ser. No. 162,959

Int. Cl. F01n 1/00

U.S. Cl. 181—47 R

4 Claims



A silencer for the end of an internal combustion engine exhaust system comprises a perforated open end gas flow tube inside of an imperforate open end shell, the tube having restrictive means in it to force gas to flow through the perforations.

3,752,261

## MULTI-STAGE LIFT

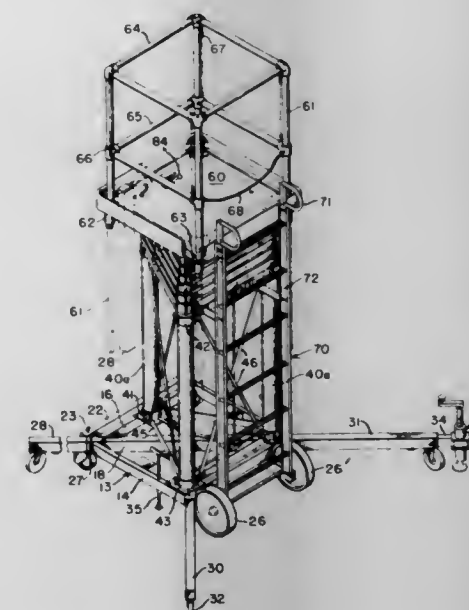
Sherman W. Bushnell, Jr., 1631 E. Olive Way, Seattle, Wash.

Continuation-in-part of Ser. No. 889,235, Oct. 30, 1969, abandoned. This application June 21, 1971, Ser. No. 155,076

Int. Cl. E04g 1/22

U.S. Cl. 182—17

24 Claims



A multi-stage lift that is portable, compact, lightweight and easily handled like a hand truck, and yet is stable at relatively high extensions by virtue of a special outrigger system, three multi-stage telescopic cylinder units arranged and interconnected in a unique manner to operate in unison, and a working platform with a drop-down guard rail assembly.

3,752,262

## SCAFFOLD GUARD RAIL ASSEMBLY

Burl Helms, 9828 Mallard Creek Rd., Charlotte, N.C.

Filed June 1, 1972, Ser. No. 258,553

Int. Cl. E04g 5/00

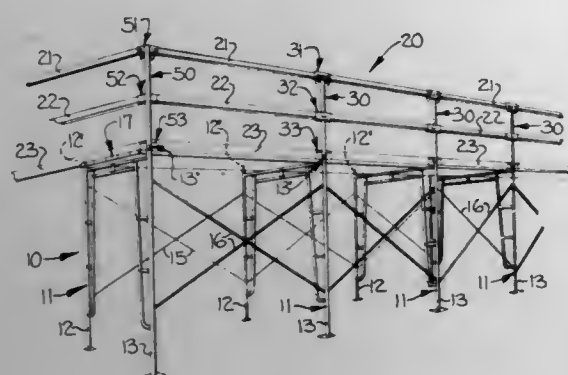
U.S. Cl. 182—113

6 Claims

A guard rail assembly mounted on a conventional scaffolding structure to be used primarily during the construction of a building to protect workers from falling from the scaffolding and to prevent construction materials from being kicked from the scaffolding. The guard rail assembly comprises a plurality of spaced tubular guard rail posts, having lower ends matingly

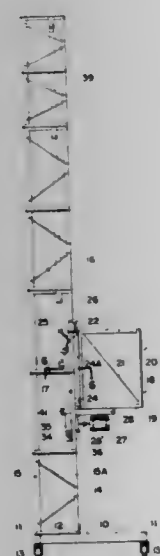


receiving reduced upper end portions of outer legs of the scaffolding structure and being carried thereby. A plurality of guard rail brackets are affixed to each guard rail post in vertical



cal spaced relation, a plurality of horizontal guard rails being supportingly carried by said guard rail bracket and interconnecting the guard rail posts to provide a protective railing along the outer side edge of the platform.

**3,752,263**  
**ELECTRIC TRAVELLING POWERED MAINTENANCE SCAFFOLD**  
Henry Thevenot, 589 Spence St., Winnipeg, Manitoba, Canada  
Filed Jan. 10, 1972, Ser. No. 216,372  
Int. Cl. E04g 1/18  
U.S. Cl. 182-148

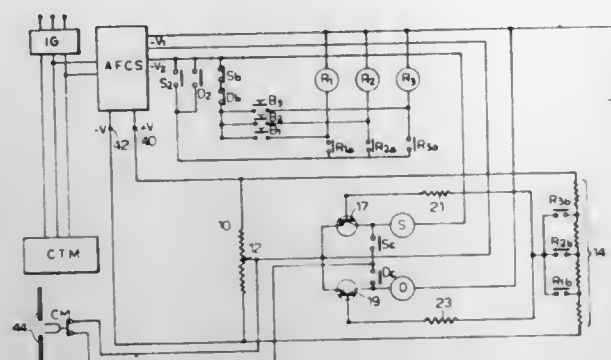


A cage is mounted for reciprocation vertically in a scaffold or framework. An electric motor is secured to the cage together with a reduction gear box. A drive sprocket and an idler sprocket are mounted on said cage, the drive sprocket being connected to the electric motor. A further idler is journaled at the top of the scaffold and a sprocket chain is anchored by one end thereof to the cage. It extends upwardly of the scaffold, over the idler at the top of the scaffold and then back down to the cage whereupon it engages around the idler on the cage and around the drive sprocket so that the other end of the chain loops freely and is supported on the cage for convenience. Rotation of the drive sprocket pulls the cage up and down the scaffold with friction and mechanical advantage remaining constant.

**3,752,264**  
**STOREY SELECTOR DEVICE FOR LIFTS**  
Romano Chiappella, Via Falletti 20, Biella, Italy  
Filed Oct. 18, 1971, Ser. No. 190,159  
Int. Cl. B66b 1/16  
U.S. Cl. 187-29 R

A storey selector device for elevators and the like has a number of destination selector switches for different stopping

levels which connect different tappings of a fixed resistance to one end of a sensing diagonal of a Wheatstone bridge, the other end of the sensing diagonal being connected to the slider of a potentiometer controlled by movement of the elevator



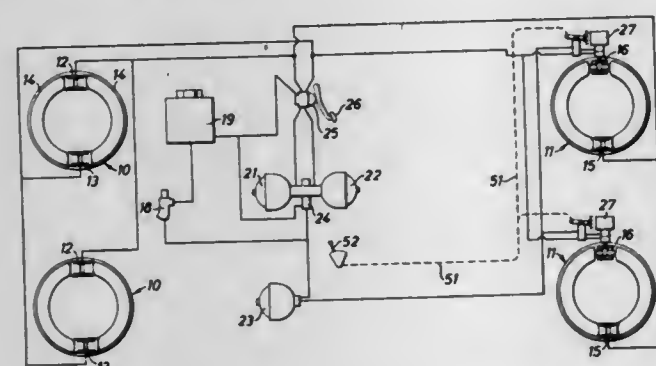
carriage. The sensing diagonal incorporates unidirectional conductive elements responsive to imbalance currents in opposite directions to control movement of the elevator motor in opposite respective directions to bring the elevator carriage to the selected destination level.

**3,752,265**  
**WHEEL CHAIR LOCKING ARRANGEMENT**  
Alfred W. Lyder, 3611 Ridge Rd., Lansing, Ill.  
Filed Dec. 20, 1971, Ser. No. 209,977  
Int. Cl. B60t 1/14  
U.S. Cl. 188-2 F



A locking attachment for a wheel chair. The locking arrangement includes vertical shafts lowerable to a position for threading into a socket member fixed to a vehicle floor, thereby to maintain the wheel chair locked against movement.

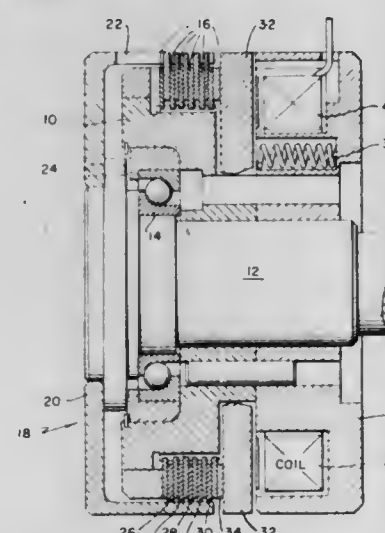
**3,752,266**  
**FLUID PRESSURE BRAKING SYSTEMS**  
Leslie Cyril Chouings, Leamington Spa, England, assignor to Automotive Products Company Limited, Warwickshire, England  
Filed Jan. 13, 1971, Ser. No. 106,147  
Int. Cl. F16d 65/24  
U.S. Cl. 188-170



A vehicle braking system comprising internal shoe drum brakes of the two-leading shoe type for each wheel. Each front

brake is operated by two wheel cylinders. Each rear brake is operated by a wheel cylinder at one end of the brake shoes and by a wedge-type mechanical expander at the other end. A first liquid accumulator is connected through a pedal operated valve to the wheel brake wheel cylinders and to one of the wheel cylinders of each front brake. A second liquid accumulator is connected through the pedal operated valve to the other front brake wheel cylinders and through a manually operable valve also to motor cylinders for the expanders. A third liquid accumulator is connected through the manually operable valve to said motor cylinders. The piston of each motor cylinder is urged in the brake applying direction by a spring acting through a plunger. Normally liquid pressure from the third accumulator acts on the plungers in opposition to the springs so that, for service braking, the expanders are operated by liquid supplied by operation of the pedal operated valve. For parking purposes, the manually operable valve is operated to cut off the supply of liquid from the third accumulator so that the expanders act to apply the rear brakes either due to the action of the spring, or due to the action of liquid pressure supplied by the pedal operated valve which liquid pressure is directed also by the manually operable valve to act on the plunger in opposition to the spring.

**3,752,267**  
**DISC BRAKE MECHANISM**  
Clark W. Dovell, Potomac, and Gerhard B. Winkler, Rockville, both of Md., assignors to the United States of America as represented by the Secretary of the Navy  
Filed Dec. 7, 1971, Ser. No. 205,690  
Int. Cl. B60t 13/04  
U.S. Cl. 188-171

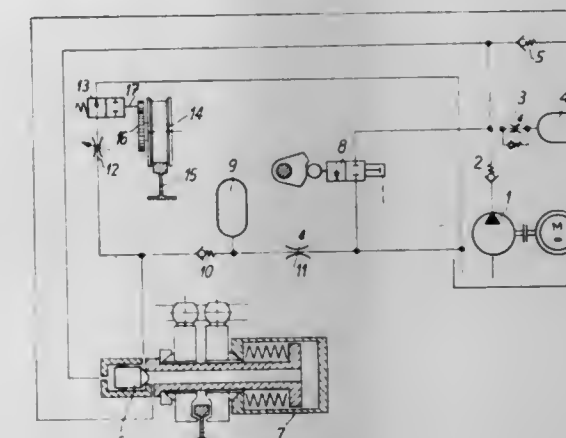


A brake mechanism including a housing adapted to receive a rotating shaft, the housing having a plurality of annular discs, fixed thereto. The shaft is coupled to a second plurality of discs alternately spaced with the first plurality. A pressure plate is provided to engage the disc assembly under the action of a spring when an electromagnetic coil is deactivated. The discs coupled to the shaft have notches formed therein of varying size which cooperate with fingers formed on a spider member so as to provide an incrementally increasing braking torque to the shaft upon actuation of the brake.

**3,752,268**  
**BRAKING SYSTEM**  
Hans Gfeller, Haldenstrasse 65, Langenthal, Switzerland  
Filed May 12, 1971, Ser. No. 143,690  
Claims priority, application Switzerland, May 12, 1970, 7005/70; Apr. 22, 1971, 5850/71  
Int. Cl. B60t 8/14  
U.S. Cl. 188-181 A

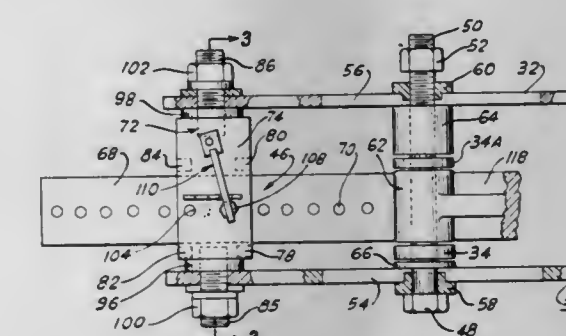
The braking system for the braking of a part which is moving relative to another part, of the type including a brake cylinder which is charged with a fluid under pressure when the brake is off, and which pressure is relieved for braking purposes,

the system comprising a pressure accumulator connected with the brake cylinder through a nonreturn valve to receive part of the fluid escaping from the cylinder, the accumulator containing a gas under pressure, the pressure of which gas determines the value of the initial braking force, and a deceleration regulator connected to the brake cylinder through a throttle valve, the deceleration regulator including a casing, a cut-off valve, a flywheel rotated by a spindle



rotatably mounted in said casing and which is driven by an axle of the moving part so as to be capable of overrunning with respect to the spindle to cause the cut-off valve to operate to stop the passage of fluid into the regulator when a predetermined deceleration value is reached, and spring means opposing overrunning of the flywheel, the force of which spring determines the deceleration rate.

**3,752,269**  
**QUICK SLACK ADJUSTER FOR LOCOMOTIVE BRAKES**  
Roy Henry Touchstone, P.O. Box 2003, Jackson, Tenn.  
Continuation-in-part of Ser. No. 815,062, April 10, 1969, Pat. No. 3,613,840. This application Sept. 29, 1971, Ser. No. 184,798  
Int. Cl. F16d 65/44  
U.S. Cl. 188-197



A brake adjustment device for locomotives wherein slack in the brake mechanism may be quickly and easily adjusted, and the brake shoes may be quickly removed and replaced when they have become sufficiently worn, or are otherwise damaged or in need of repair. The adjustment device includes an apertured slide bar connected with a brake lever and extending through a trunnion carried by the pull rods whereby the brake may be quickly adjusted by pulling the slide bar through the trunnion and securing the bar in the proper position by inserting a keeper pin through the slide bar and trunnion. Spring urged lever means is provided for retaining the keeper pin in position. In addition, the slide bar device facilitates release of the brake lever to provide for a quick clearance between the brake shoe and wheel, thus reducing the time required for the replacement of worn brake shoes.



3,752,270

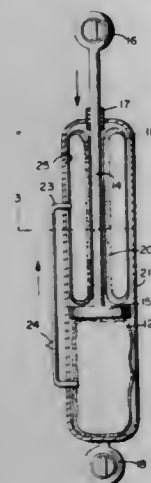
**SHOCK ABSORBER STRUCTURE INCLUDING FLEXIBLE BLADDER MEANS**

Joseph M. Valdespino, 5023 Golf Club Parkway, Orlando, Fla.

Filed Dec. 29, 1971, Ser. No. 213,473

Int. Cl. F16f 9/18

U.S. Cl. 188—281



A vehicle shock absorber for dampening spring oscillations on a vehicle having a pair of bladders located in a casing and separated by a dividing member. The shock absorber may be attached between the body of a vehicle and its wheel suspension, whereby movement of the wheel suspension will move the dividing member between the bladders against one or the other bladder forcing a fluid in the bladders to flow therebetween through a bladder connecting member. A valve allows the fluid to flow easier in one direction than the other, or the valve may be eliminated by the choice of bladder material and design whereby a shock absorber is provided which may be of tubular design without having the usual fluid seals.

3,752,271

**DUAL NETWORK HYDRAULIC BRAKE SYSTEM**

Tetsuo Haraikawa, Funabashi-shi, Chiba-ken, Japan, assignor to Tokico Limited, Kawasaki-shi, Kanagawa-ken, Japan

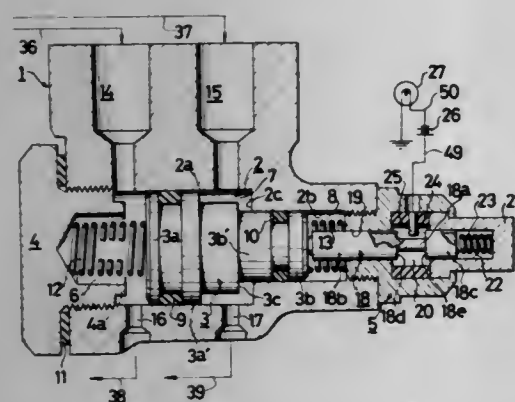
Filed Aug. 23, 1971, Ser. No. 173,956

Claims priority, application Japan, Aug. 22, 1970, 45/73728

Int. Cl. B60t 11/20

U.S. Cl. 188—345

2 Claims



A hydraulic brake system for motor vehicles in which a master cylinder having two chambers is operably connected with a brake pedal. A plurality of wheel brake cylinders and a dual network hydraulic system connects the two chambers of the master cylinder with the wheel brake cylinders. A pressure regulator valve of a dual piston type is provided in the network and carries a movable contact for actuating an alarm device to indicate to the driver of an operational failure in the hydraulic system.

3,752,272

**FLOATING TYPE DISC BRAKE**

Toshio Ooka, Itami City, Hyogo Prefecture, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

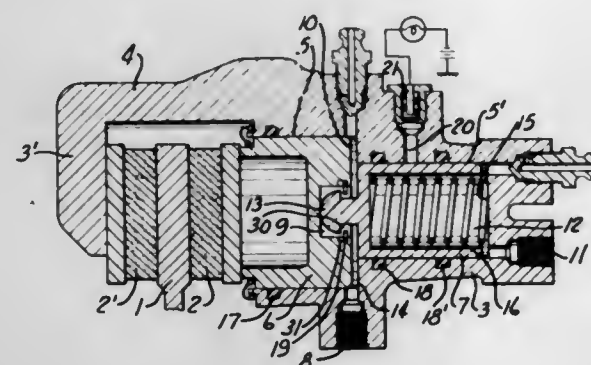
Filed Dec. 21, 1970, Ser. No. 99,775

Claims priority, application Japan, Dec. 22, 1969, 44/103670; Apr. 8, 1970, 45/29866

Int. Cl. B60t 11/10

U.S. Cl. 188—345

7 Claims



A floating type disc brake which is actuated by two separate braking pressure lines. This disc brake has friction pads which face each other with the two sides of the brake disc therebetween and a caliper which straddles over the said disc and which can float in the direction of the axis of revolution of the disc. On one side of this caliper with respect to the disc is provided a pressing mechanism which presses one of the friction pads against the friction surface of the disc. This pressing mechanism has one cylinder and two pistons. The two pistons are actuated by fluid pressure supplied from their respective braking pressure lines, and are connected with each other by a mechanical linking mechanism to prevent their separation from each other.

3,752,273

**DUAL HYDRAULIC BRAKE SYSTEM**

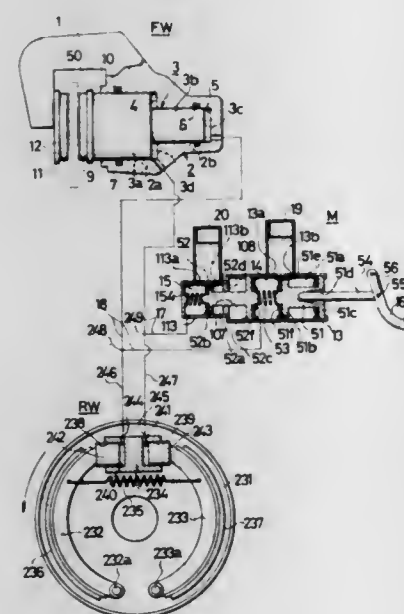
Tetsuo Haraikawa, Funabashi-shi, Chiba-ken, Japan, assignor to Tokico Limited, Kanagawa-ken, Japan

Filed May 25, 1971, Ser. No. 146,707

Int. Cl. B60t 11/20

U.S. Cl. 188—345

4 Claims



In a dual hydraulic brake system the front wheels are each provided with disc brakes or two leading shoe and drum type brakes and the rear wheels are each provided with leading-trailing shoe and drum type brakes. The higher pressure brake

system is applied to the trailing shoe in the rear brake system and a portion of the front braking piston and the lower pressure brake system is applied to the leading shoe in the rear braking piston and another portion of the front braking piston. By selecting the piston areas and pressures the ratio of the braking force between the front and rear braking units can be maintained not only under normal conditions but even if one of the hydraulic systems is disabled.

3,752,274

**ELECTRIC CURRENT COLLECTOR ARRANGEMENTS**

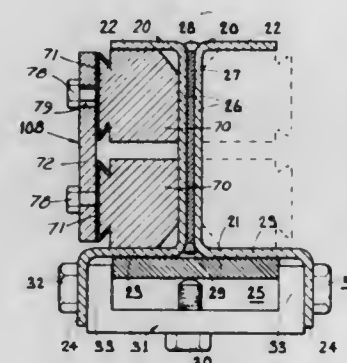
George Robert Falkiner-Nuttall, Richmond, England, assignor to Trucked Hovercraft Limited, London, England

Filed Sept. 7, 1971, Ser. No. 178,203

Int. Cl. B60l 5/38

U.S. Cl. 191—49

12 Claims



An electric current collector arrangement for co-operation with an electric conductor rail having three surfaces forming the inside surfaces of a generally channel-shaped concavity. The arrangement has a pair of conductive pick-up members which in operation are together biased into contact with the centre of the three conductor rail surfaces and are biased apart into separate guiding engagement with the other two rail surfaces. In the described embodiments the collector arrangements have opposed pairs of pick-up members carried by the arms of bifurcated yoke assemblies.

3,752,275

**TRANSMISSION WITH BRAKE OPERATED DOWN SHIFTER**

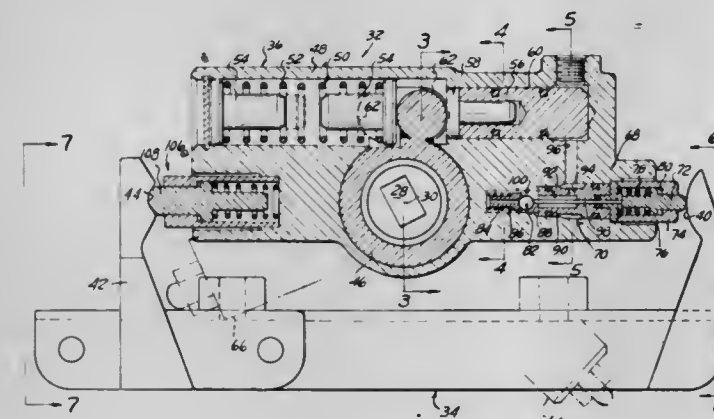
Otto Mueller, 13 Byfield Ln., Dearborn, Mich.

Filed Feb. 9, 1972, Ser. No. 224,680

Int. Cl. B60k 29/02

U.S. Cl. 192—4 A

15 Claims



Apparatus for a motor vehicle that shifts the automatic transmission from a normal drive setting of the selector lever to a low speed setting to utilize the engine braking effort when the vehicle brakes are applied and shifts the automatic transmission back to its drive setting when the brakes are released.

3,752,276

**SYNCHRONIZATION DEVICES**

David John Hoyle, and Eric Albert Whateley, both of Huddersfield, Yorkshire, England, assignors to David Brown Gear Industries Limited, Huddersfield, England

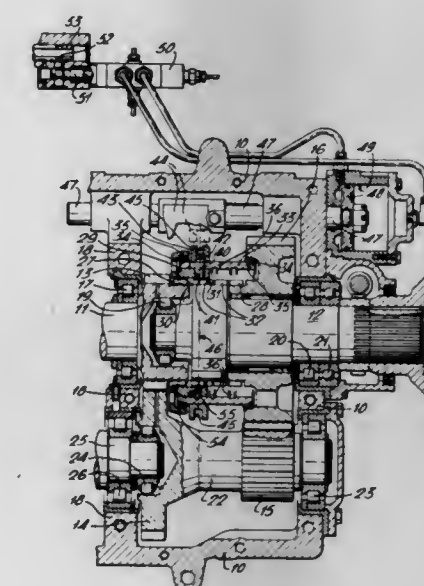
Filed Dec. 3, 1971, Ser. No. 204,662

Claims priority, application Great Britain, Dec. 18, 1970, 60,360/70

Int. Cl. F16d 23/06

U.S. Cl. 192—53 E

4 Claims



A synchronization device associated with a dog clutch for selectively connecting either of two rotating driving members to a rotatable driven shaft comprises a sleeve moveable axially upon the slidable toothed member of the dog clutch and having friction cones at its ends engageable alternatively with respective mating surfaces on the driving members, at least one longitudinally-extending slot of cranked shape forming inclined baulking surfaces in the sleeve, and a cylindrical pin passing through said slot and engaging at its radially inner end in a hole in said slidable toothed member and at its outer end in a hole in a ring slidable axially on the sleeve by a selector fork of a gear shift mechanism.

3,752,277

**TORQUE CLUTCH MECHANISM IN AN AIR WRENCH**

Sinji Nakai, No. 799 Kurotani, Yao, Osaka Prefecture, Japan

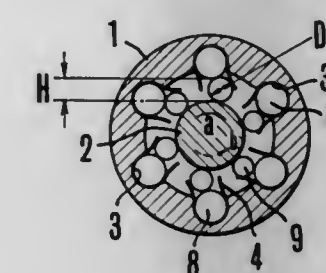
Filed Oct. 26, 1971, Ser. No. 192,228

Claims priority, application Japan, Mar. 13, 1971, 46/16741; Mar. 13, 1971, 46/16742; Mar. 13, 1971, 46/16743; Mar. 13, 1971, 46/16744; Oct. 27, 1970, 45/94951

Int. Cl. F16d 41/07, 71/00; E21c 5/16

U.S. Cl. 192—56 R

4 Claims



A torque clutch mechanism in an air wrench, comprising a torque clutch means capable of not only closing an air supply suspension valve by detecting an excess counterreactive force when such force is applied to the rotor shaft of said air wrench, but also reversing said rotor shaft.



3,752,278

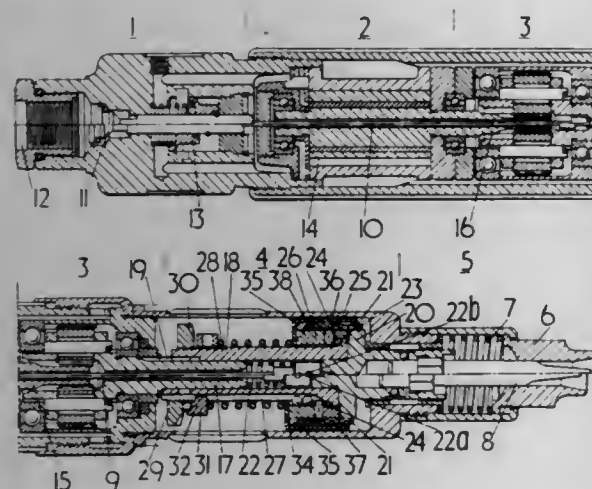
**IMPROVED POWER OPERATED WRENCH OR SCREWDRIVER**

Ronald Frederick States, London, England, assignor to Desoutter Brothers Limited, London, England  
 Filed Feb. 22, 1971, Ser. No. 117,655  
 Claims priority, application Great Britain, Dec. 22, 1970, 60,815/70

Int. Cl. F16d 43/20

U.S. Cl. 192—56 R

2 Claims



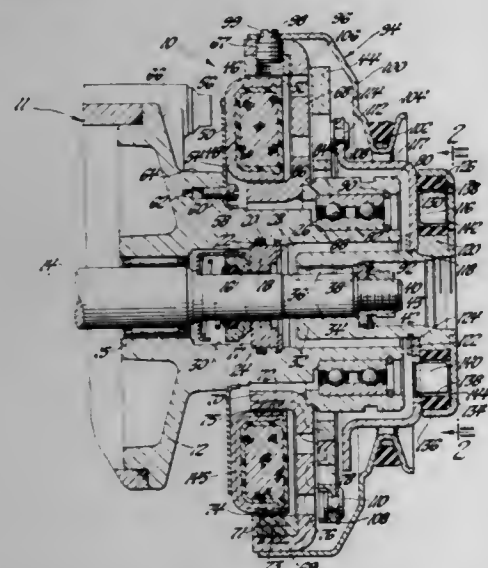
A power operated wrench or screwdriver having two dog clutches in series for the transmission of the drive in which one is a torque sensitive dog clutch having ramped interengaging driving surfaces adapted to be induced to become disengaged against the action of a spring when the torque applied by the tool exceeds a predetermined value while the other one is a non-torque sensitive clutch which is adapted to become disengaged by displacement of the torque sensitive clutch.

3,752,279

**ELECTROMAGNETIC CLUTCH**

John R. Briar, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.  
 Filed Mar. 20, 1972, Ser. No. 236,021  
 Int. Cl. F16d 27/10, 3/12  
 U.S. Cl. 192—84 C

5 Claims



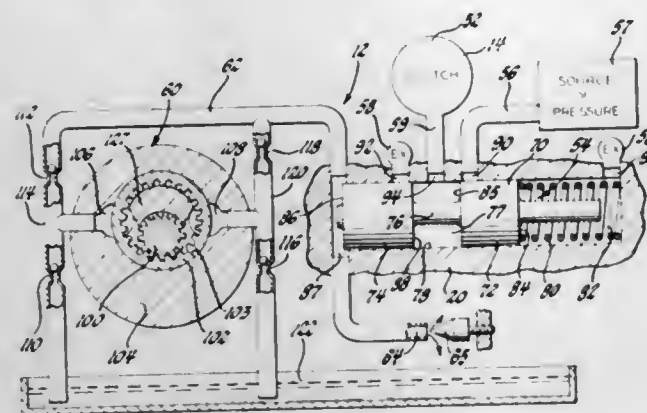
The drawings illustrate an electromagnetic clutch including torque dampener means having portions thereof compressed during operation between driving and driven elements, the driven element being secured through a hub member to an output shaft, and the driving element being engageable with an input rotor upon energization of a coil and mounted on the output shaft so as to be axially located thereon and yet rotatable thereon to the extent of any operational compression or expansion of the torque dampener means.

3,752,280

**CONSTANT SPEED DIFFERENTIAL FLUID CLUTCH**

Forrest R. Cheek, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.  
 Filed Dec. 22, 1971, Ser. No. 210,682  
 Int. Cl. F16d 25/00

1 Claim



A fluid-pressure-operated slip clutch is operable to provide a slipping torque-pulse-isolating mechanical drive between two shafts. A positive displacement pump is operatively connected with the shafts to provide a pressure varying with the speed differential between the shafts. A clutch control valve is responsive to the varying pump pressure to supply fluid pressure to the slip clutch to maintain a substantially constant speed differential between the shafts.

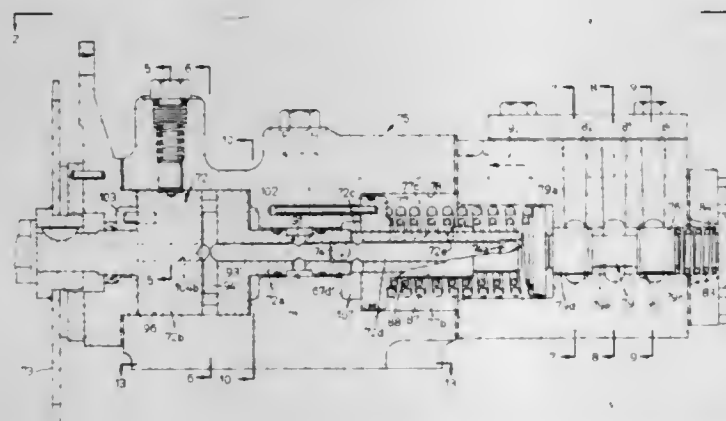
3,752,281

**REVERSING CLUTCHES WITH SELECTOR AND PRESSURE MODULATING VALVE**

Bruce C. Arnold, Racine, Wis., assignor to Twin Disc Incorporated, Racine, Wis.  
 Filed May 10, 1972, Ser. No. 252,098  
 Int. Cl. F16d 25/10

U.S. Cl. 192—87.19

8 Claims



A power transmission including a forward, friction plate, modulating type friction clutch; a reverse, friction plate, modulating type clutch; a selector control valve assembly therefor, which assembly has a rotatable selector spool that during its first rotational movement acts to select the proper direction of the travel for the water craft or vehicle with which the present invention is used. Additional rotation of the selector spool in the selected direction then acts to cause a predetermined amount of modulating pressure to the selected hydraulically actuated friction type clutch. The amount of modulating pressure available selectively to either the forward or reverse clutch is determined by the amount of rotation given to the selector spool of the valve assembly and when this selected pressure has been reached, the valve assembly then reaches an equilibrium condition.

An improved valve assembly having a rotatable selector spool which during its initial rotational movement acts to select either a forward or reverse, hydraulically actuated, friction plate type clutch, and then during additional rotational movement of the valve acts to provide modulating pressure for

the selected clutch at the pressure determined by the rotational movement of the selector spool. After the desired amount of modulating pressure has been provided to the selected clutch, the valve assembly again reaches an equilibrium position where it is ready for the next command of the operator.

A water craft having a propeller shaft capable of being driven in either rotational direction, a source of power, and a transmission driven by said source of power, said transmission including a pair of hydraulically actuated, friction plate, modulating type clutches, one for reverse and one for forward direction of the craft, and a control valve assembly for said clutches and including a rotatable selector spool. During the initial rotational movement of the selector spool, one of the clutches is selected to drive the craft in either forward or reverse directions and then continued rotational movement of the spool causes the desired amount of modulating pressure to be available to the hydraulically actuated, modulating type friction plate clutch.

3,752,282

**CLUTCH WITH PLURAL FLUID RELEASING MEANS**

Helmut Espenschied, Ludwigsburg-Pflugfelden, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

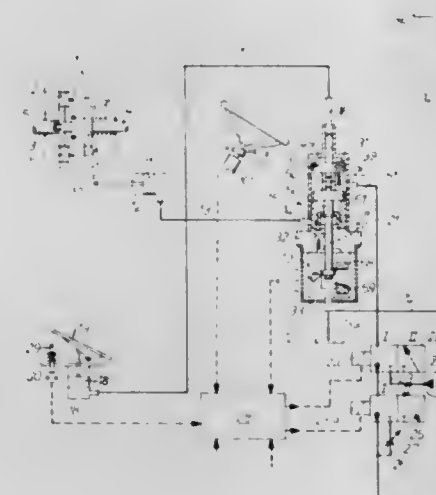
Filed Feb. 1, 1972, Ser. No. 222,485

Claims priority, application Germany, Feb. 3, 1971, P 21 04 934.3

Int. Cl. F16d 25/08

U.S. Cl. 192—91 R

10 Claims



A clutch pedal is connected by a master cylinder and clutch cylinder through an operating valve with the clutch of a motor car so that the clutch can be disengaged and engaged by an operator before shifting the gear transmission. By operation of electromagnetic control valves, a source of pressure fluid can be connected with the operating valve to operate the same to supply pressure fluid to the clutch cylinder without operation of the clutch pedal. The control valves have another position in which the source of pressure fluid is disconnected while fluid is discharged through the control valves into a low pressure region by a spring-biased piston of the operating valve. The operating piston moves first rapidly, and then slowly while fluid is discharged from the operating cylinder through a throttle, and the clutch performs a corresponding movement first quickly and then slowly to the engaged position as required for shifting to a higher gear. Control means electrically control the electromagnetic control valve for automatic operation of the clutch during up and down shifting of the transmission.

3,752,283

**POSITIVE LOCKING CLUTCH SHIFT MECHANISM**

Allen J. Fisher, Fort Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 21, 1972, Ser. No. 219,804

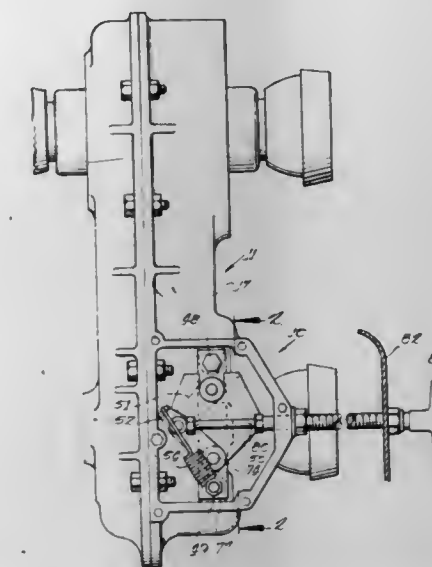
Int. Cl. F16d 11/00

U.S. Cl. 192—99 S

12 Claims

An actuating mechanism for a positively engaging clutch including a pair of balanced clutch actuating cranks, a pair of in-

terconnected crank levers connected to the cranks, and a unitary mounting and guide plate effective to cause the cranks to turn in unison when actuated by a suitable mechanical linkage. The clutch actuating cranks are so disposed when en-



gaged as to present a moment arm of zero length to any axial force tending to cause clutch disengagement. A detent spring is also provided which acts on one of the lever arms and is effective to positively hold the actuating mechanism in either a totally engaged or a totally disengaged position.

3,752,284

**ACCELERATION AND SPEED RESPONSIVE ELECTRONIC CLUTCH CONTROLS**

William J. Brittain, Westcliff-on-Sea, and David J. Price, Rayleigh, both of England, assignors to Ford Motor Company, Dearborn, Mich.

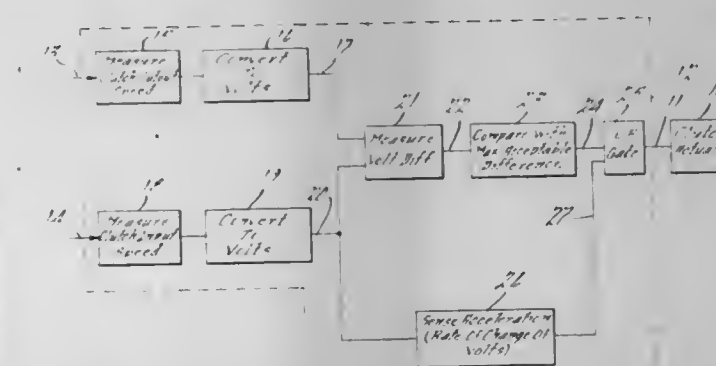
Filed Sept. 23, 1971, Ser. No. 183,192

Claims priority, application Great Britain, Feb. 23, 1971, 5,202/71

Int. Cl. F16d 43/284; B60k 21/00

U.S. Cl. 192—103 F

5 Claims



A system for controlling the engagement and disengagement of a clutch for a motor vehicle. Voltages proportional to clutch input member acceleration and speed and to clutch output member speed are developed. Clutch actuator means coupled to electrical circuitry responds to these voltage signals to control clutch engagement and disengagement. Additional control circuitry may be provided.

3,752,285

**CENTRIFUGAL CLUTCH**

Akio Tanaka, Neyagawa, Osaka Prefecture; Heiji Fukutake, Toyonaka, Osaka Prefecture, and Kunihiko Ikeda, Neyagawa, Osaka Prefecture, all of Japan, assignors to Kabushiki Kaisha Daikin Seisakusho Kido-Motomiya, Neyagawa, Osaka Prefecture, Japan

Filed Aug. 19, 1971, Ser. No. 173,125

Claims priority, application Japan, Aug. 19, 1970, 45/83038

Int. Cl. F16d 7/00

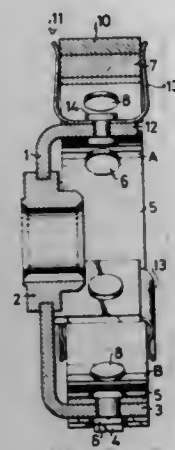
U.S. Cl. 192—105 CD

1 Claim

In a centrifugal clutch including straps each made of an arcuate plate spring and having one end secured to a mounting



seat of a drive plate and the other end serving as a free end and clutch plates each fixed to the free end of each of the straps and having a clutch facing on the outer face thereof, damping springs being mounted on a suitable portion of the drive plate



in resilient pressing contact with at least one of the opposite side faces of each of the clutch plates so as to produce sliding friction to effect a damping action when the clutch plates are moved radially. The clutch further includes means to guide the clutch plates in the radial movement.

3,752,286

## SELF-ADJUSTING CLUTCH

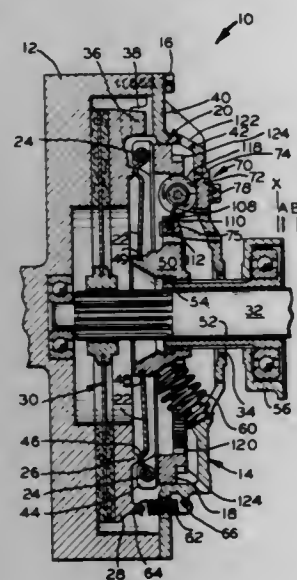
William Howard Sink, Auburn, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Feb. 24, 1972, Ser. No. 229,050

Int. Cl. F16d 13/75

U.S. Cl. 192-111 A

5 Claims



An automatic adjusting device for a spring loaded friction type clutch is incorporated, as a sub-assembly, in the lever system of the clutch between an actuating collar and an axially movable adjuster ring so as to be operable to advance the adjusting ring by very small increments as the friction surfaces of the clutch wear. The improvement being an adjusting device having support means secured to the clutch cover and coil springs concentrically disposed about a pair of hub members adapted to be coupled through a lost motion connection and rotatably carried on the support means. The coil spring associated with the first hub member is connected to the actuating collar and operable thereby to rotatably drive the hub members through the coupling connection. The coil spring associated with the second hub member engages the support means and reacts thereon to function as a backstop or drag brake when the first coil spring is not rotatably driving the first hub member. A worm gear integral with the second hub member engages and effects axial movement of the adjusting ring when the hub members are rotated past their lost motion connection by the first spring.

### 3,752,287 PRICE SELECTION VENDING MACHINE ARRANGEMENT

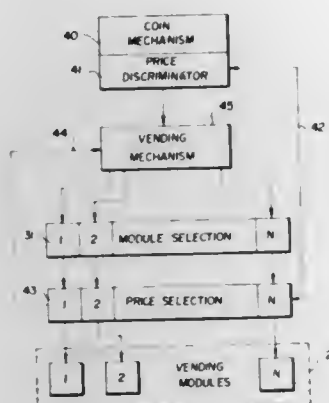
Troy Cullum, Conway, Ark., assignor to Polyvend, Inc., Conway, Ark.

Filed June 10, 1971, Ser. No. 151,792

Int. Cl. G07t 11/58

U.S. Cl. 194-10

8 Claims



A vending machine electrical control system provides for setting a selected price in each of a plurality of modules by means of a simplified circuit using a common price selection relay arrangement for all modules and a price selection switch for each of the modules.

3,752,288

## ELECTROGRAPHIC PRINTER WITH PLURAL OSCILLATING PRINT HEADS

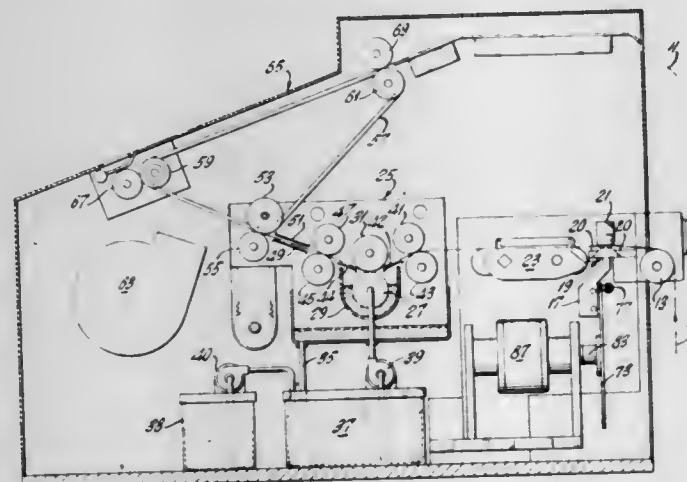
Robert H. Detig, Old Tappan, N.J., and Bertrand Boyson, Manhasset, N.Y., assignors to Ing. C. Olivetti & Co., S.p.A., Ivrea, Italy

Filed Feb. 18, 1971, Ser. No. 116,361

Int. Cl. G01d 15/06, 15/08, 15/012

U.S. Cl. 197-1 R

12 Claims



A high speed, electrographic, non-impact printer for printing matrix-type characters on the dielectric coated face of a paper web. A print head having a plurality of linearly arranged styli therein is transported in an oscillatory fashion across the dielectric coated face of the web with the styli in virtual contact therewith. Means are provided for selectively energizing the styli for depositing dots of electric charge in image configuration on the dielectric as the print head traverses the web in both directions. The position of the print head as it traverses the web in both directions is sensed for controlling the selective energizing means for depositing dots of electric charge on the dielectric only when the print head is in predetermined positions in its path across the web. The dots of electrical charge are developed by means of a toner system.

### 3,752,289 TYPEWRITER ESCAPEMENT AND CONTROL DEVICES THEREFOR

Manfred Link, Nuernberg, Germany, assignor to Triumph Werke Nuernber A.G., Nuernberg, Germany

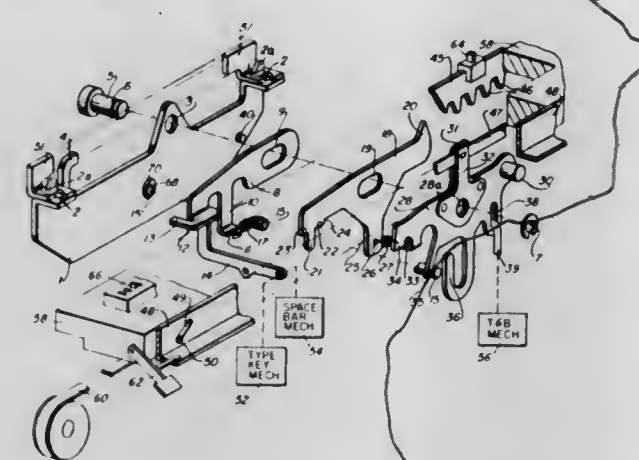
Filed Sept. 30, 1970, Ser. No. 76,730

Claims priority, application Germany, Dec. 31, 1969, P 19 65 752.4

Int. Cl. B41j 19/00

U.S. Cl. 197-82

12 Claims



In connection with an escapement which comprises a flying dog which for causing each escapement step of the carriage reaches out counter to the letter feed direction, there is provided a device which incidental to carriage return motion is operated by friction drag influence to block first said dog against outreaching movement and then to disengage said dog, the device being effective by a short advance movement of the carriage following the return movement to reapply the dog. The device is also operated by the tabulation control mechanism for durations of tabulating runs but not resultant to friction drag influence.

3,752,290

## ADVANCED MECHANISM FOR INKED RIBBONS OR THE LIKE

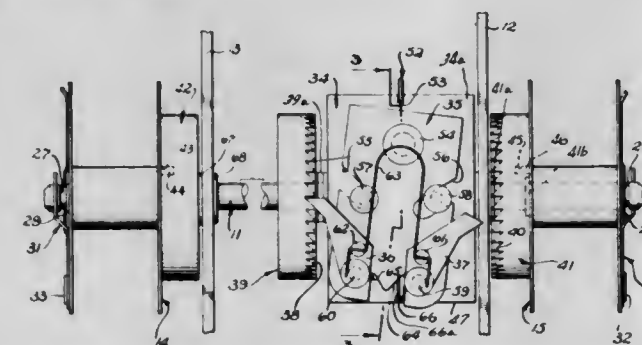
Wolfgang Friedrich Langheinrich, Sherman Oaks, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 29, 1971, Ser. No. 128,963

Int. Cl. B41j 33/46

U.S. Cl. 197-162

5 Claims



A mechanism for advancing and reversing an inked ribbon in a counter-printer or the like. A bistable device holds two pivoted pawls which selectively advance ratchet wheels. At each end of the ribbon, the bistable device changes position by a direct pull of the ribbon.

3,752,291

## TYPEWRITER CORRECTION RIBBON AND PROCESS OF MANUFACTURE

Victor Barouh, 935 Plum Tree Rd. West, Westbury, L. I., and Robert Glenn, 70-20 108th St., Forest Hills, both of N.Y.

Continuation-in-part of Ser. No. 875,939, Nov. 12, 1969,

abandoned. This application Oct. 12, 1971, Ser. No. 187,947

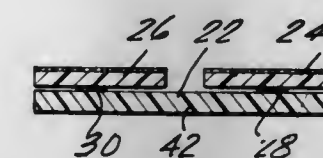
Int. Cl. B41j 31/02

U.S. Cl. 197-172

1 Claim

A typewriter ribbon comprising a base strip of a fluid impervious thin plastic material having spaced parallel coatings of

adhesive thereon. A correction strip having a coating of a correction material and a transfer strip having a coating of solvent



carbon formula thereon are bonded to the base strip in spaced parallel relationship.

3,752,292

## METHOD AND APPARATUS FOR CONVEYING CONTAINERS

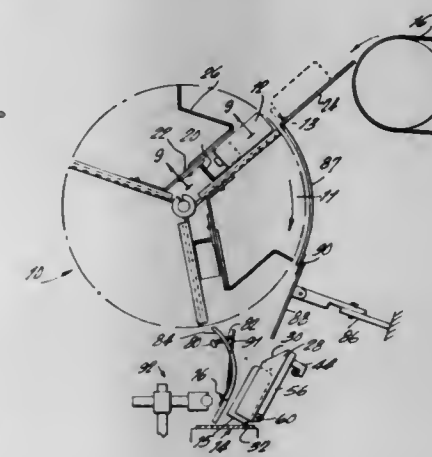
Burton R. Garrett, 836 Logan St., Brooklyn, N.Y.

Filed Sept. 20, 1971, Ser. No. 181,815

Int. Cl. B65g 47/00

U.S. Cl. 198-25

19 Claims



Method and apparatus for conveying containers on a conveyor in upright position is provided in which an open-ended movable receptacle is mounted adjacent to and above a conveying belt. The receptacle is adapted to stabilize a container after placement on a conveyor and to permit the continuous placement of containers on the conveyor.

3,752,293

## ARTICLE GROUPING SYSTEM

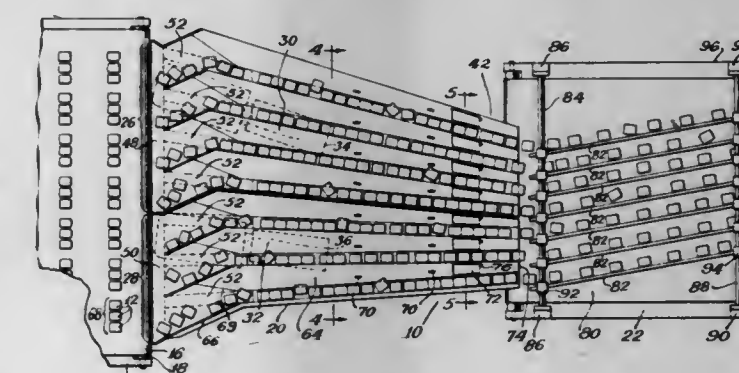
Paul H. Fort, Anderson, Ind., assignor to Lynch Machinery, Anderson, Ind.

Filed Dec. 17, 1970, Ser. No. 99,008

Int. Cl. B65g 47/24, 47/26

U.S. Cl. 198-30

19 Claims



An article grouping apparatus includes a downwardly inclined fanshaped platform adapted to columnate and transport a plurality of articles. The apparatus includes a first conveyor adapted to receive, space apart and further columnate articles from the vibrating platform and a second conveyor adapted to receive articles from the first conveyor and to transport the articles in columns for inspection and processing.



The fan-shaped platform includes a plurality of troughs adapted to accommodate the articles and inclined surfaces flanking the troughs adapted to urge the articles into the troughs. Wire members connected to the inclined surface align the non-aligned articles. Discharge openings are defined on the inclined surfaces to discharge articles traveling on the inclined surfaces before the articles are deposited onto the first conveyor.

3,752,294

**CAP SORTING APPARATUS**

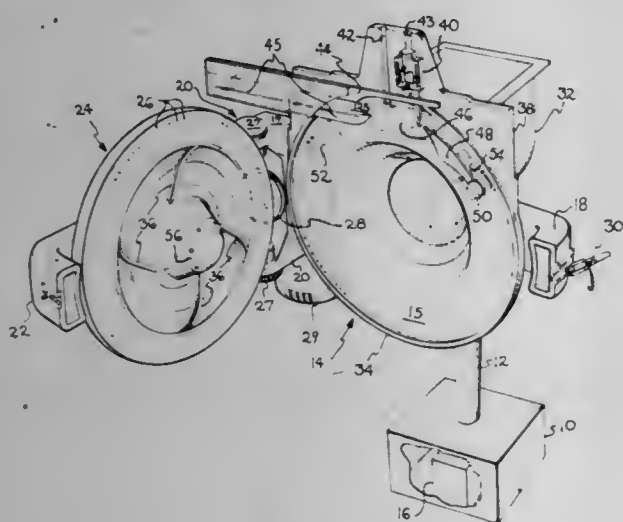
Shepard Lewis Harmon, Toledo, Ohio, assignor to Owens-Illinois Inc., Toledo, Ohio

Filed June 8, 1972, Ser. No. 260,818

Int. Cl. B65g 47/24

U.S. Cl. 198—33 AA

13 Claims



An improved wheel-type sorter for magnetic and nonmagnetic skirted closure caps. A hollow cap transfer disk is rotated by a rim drive system. The transfer disk is mounted in facing relationship with an annular, bell-shaped support member. A series of orifices in the periphery of the face of the transfer disk facing the support member are connected to a source of vacuum. Caps to be sorted are fed through the support member and are adhered on the transfer disk, in substantially single file, near the bottom of the transfer disk's path of travel by the effect of the vacuum present at the orifices. The caps so adhered are rotated upwardly as the disk moves to a sorting zone. A guide member just prior to the sorting zone positions caps for accurate discrimination in the sorting zone. A rotating wheel in advance of the guide member deflects slightly misaligned caps into contact with the guide member. In the sorting zone, a discriminating finger accepts caps which have their interior facing the transfer disk and rejects caps having their interior facing away from the disk. Finally, outlet guide rails guide accepted caps away from the influence of the vacuum in the orifices and deliver the caps in single file to a capping process.

3,752,295

**INDEXING FEEDER FOR PACKAGE HANDLING MACHINE**

Roger K. Hubbell, Plymouth, Mass., and Eugene M. Noel, 42 Kingston Rd., Newton Highland, Mass., assignors to said Noll, by said Hubbell

Continuation of Ser. No. 782,525, Dec. 10, 1968, abandoned.

This application Mar. 12, 1971, Ser. No. 123,907

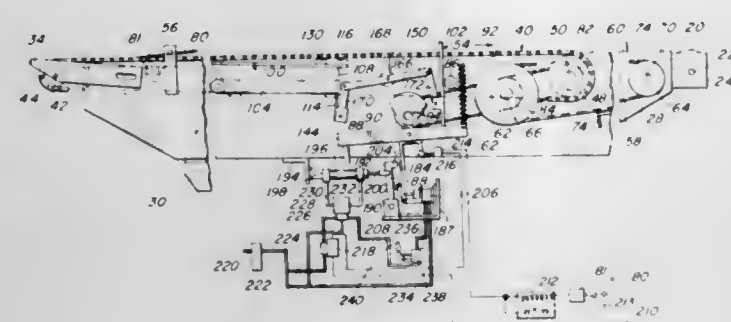
Int. Cl. B65g 47/29

U.S. Cl. 198—34

7 Claims

The disclosure describes a package handling device including escapement mechanism to transform incoming random or intermittent product feed into uniformly timed and spaced discharge. In one embodiment, the device includes switch means on the inlet conveyor to detect product input to the machine and an escapement mechanism comprising a barrier

carriage adapted to be raised to prevent passage of product and a release means adapted to be lowered from the path of product to time its release from the escapement, latch means to hold the barrier carriage in raised position in response to the switch means to allow the build-up of product on the inlet conveyor and means to delay the disengaging of the latch means sufficient to allow a predetermined product build-up



behind the barrier carriage which is necessary for uninterrupted product discharge from the machine in timed and spaced relationship according to the infeed requirement of the subsequent processing machine. Other embodiments are disclosed.

3,752,296

**HYDRAULICALLY OPERATED ELEVATOR FEEDER**

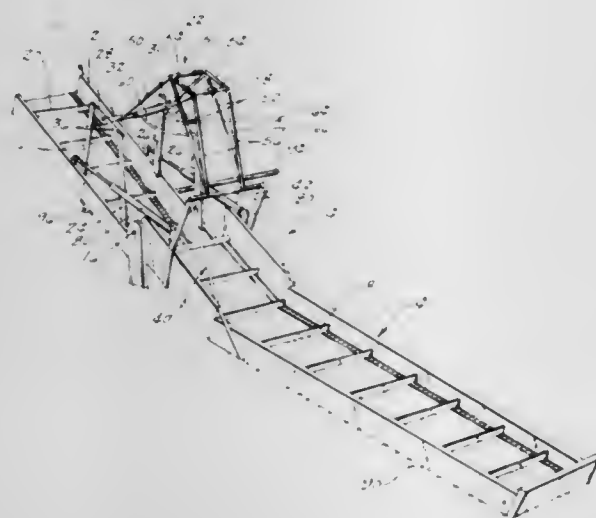
Virgil V. Peterson, Paton, Iowa, assignor to Dean W. Mitchell, Des Moines and James B. Smith, Perry, Iowa, part interest to each

Filed Dec. 27, 1971, Ser. No. 211,969

Int. Cl. B65g 37/00

U.S. Cl. 198—94

7 Claims



A baled hay and grain elevator having a feeder section hydraulically powered by a double acting hydraulic power cylinder to pivotally move and hold the feeder section at any desired position. The double acting power cylinder is positioned between upstanding frame side members on the elevator and feeder sections which are pivotally interconnected by connecting members extending inwardly and upwardly. Hydraulic cylinder is operatively connected to the upstanding frame on the elevator section and intermediate the ends of the connecting member associated with the other upstanding frame member. A telescoping guide member extends between the elevator section and the feeder section. The conveying means on the elevator section and feed section is powered by a power take-off on a tractor which also includes a hydraulic system for operating the double acting cylinder.

3,752,297

**ROLLER CONVEYOR HAVING AN ENDLESS DRIVING ARRANGEMENT**

Pierre Francois Lemaesquier, 9, avenue de L'Observatoire, Paris (5<sup>e</sup>eme), France

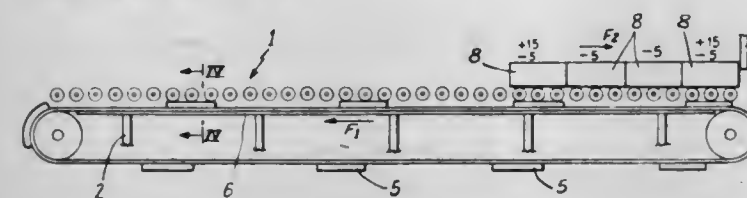
Filed Dec. 11, 1970, Ser. No. 97,155

Claims priority, application France, Dec. 17, 1969, 6943689

Int. Cl. B65g 13/02

U.S. Cl. 198—127 R

1 Claim



A roller conveyor having a drive arrangement of the endless type which is capable of driving the rollers intermittently.

3,752,298

**FOOD CONVEYOR CONSTRUCTION**

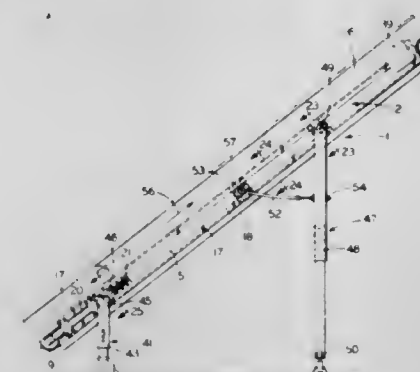
Carl D. Wenger, Orrville, Ohio, assignor to The Biro Manufacturing Company, Marblehead, Ottawa, Ohio

Filed Dec. 16, 1971, Ser. No. 208,757

Int. Cl. B65g 15/60

U.S. Cl. 198—204

7 Claims



A conveyor having an endless belt for conveying food products such as meat products between meat processing units such as grinders and mixers, which may be cleaned readily with quick dismantling and reassembly of trough sections, pan unit and endless belt, and with complete belt removal, at normally daily intervals as required by government and inspection regulations.

3,752,299

**CONVEYOR TROUGH FOR SCRAPER-CHAIN CONVEYORS**

Gunter Blumenthal, Westerholt, and Reinhold Krohm, Herne, both of Germany, assignors to Klockner-Werke AG, Duisburg, Germany

Filed Mar. 6, 1972, Ser. No. 231,914

Claims priority, application Germany, Mar. 12, 1971, G 71 09 416.1

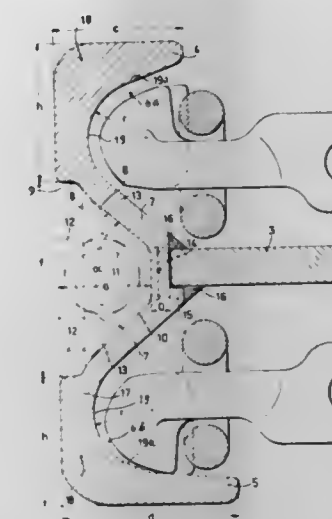
Int. Cl. B65g 15/60

U.S. Cl. 198—204

4 Claims

The trough has transversely spaced mirror-symmetrical sidewalls of substantially sigma-shaped cross-section connected by a transverse wall extending between them substantially midway of their height. The sidewalls each have an outer side provided with a longitudinally extending first groove of substantially trapezoidal cross-section and having a transverse depth smaller than the height of its open side, with the latter height being greater than one third of the height of the respective side wall. Each sidewall each has an inner side provided with a pair of inwardly open longitudinally extending grooves which are located above and below the transverse wall,

respectively, and which are each bounded in part by one side wall portion extending from an upper or lower ridge towards the transverse wall and having an inwardly directed semi-circularly curved face of a large first radius, and in part by an inwardly inclined second side wall portion extending from the



3,752,300

**BALER FEEDING SYSTEM**

Harry G. Eberly, Narvon, and Raymond E. Fisher, New Holland, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

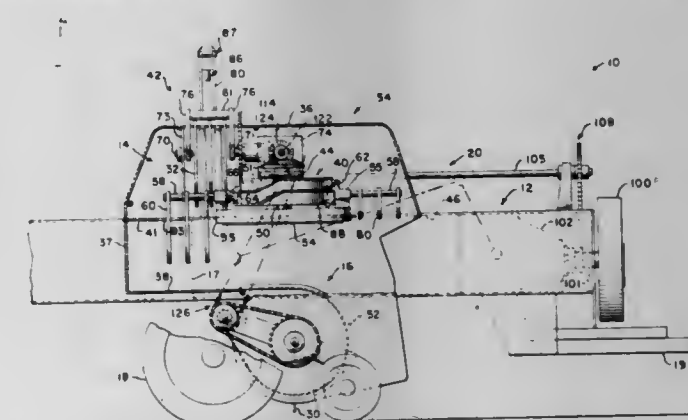
Division of Ser. No. 664,685, Aug. 31, 1967, Pat. No.

3,570,395. This application Dec. 23, 1970, Ser. No. 100,978

Int. Cl. B65g 29/00

U.S. Cl. 198—212

1 Claim



A feeding mechanism for a pickup baler in which a rotary feed unit delivers crop material to a set of packer fingers which convey the material into the bale chamber between plunger strokes. The rotary feed unit is mounted for operation about a generally vertical axis and comprises two sets of feed fingers which successively sweep crop material across the feeder platform and into the path of the packer fingers. Tee angular position of the feed fingers is controlled by a circular cam track.

3,752,301

**SHOCK-PROOF PACKING CONTAINER**

Oscar Bluemel, 4530 N. Albany Ave., Chicago, Ill.

Filed Feb. 22, 1971, Ser. No. 117,468

Int. Cl. B65d 85/30

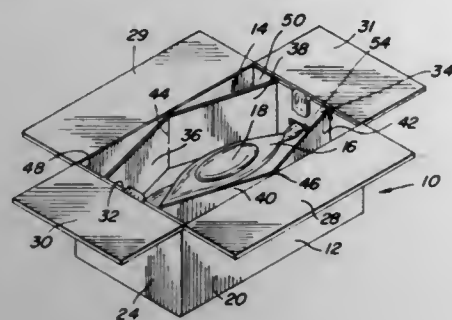
U.S. Cl. 206—46 FR

10 Claims

A shock-proof packing container for shipping fragile articles comprises a rectangular outer carton, a polygonal inner



support member that is adapted to fit snugly within the outer carton and bear against all four side walls of the outer carton, and a flexible sling attached to opposing walls of the inner support member and extending therebetween. Fragile articles are



wrapped in this sling and are thereby suspended in the interior of the packing container. Locking flaps are attached to the inner support member so that the position of the inner support member with respect to the outer carton remains fixed.

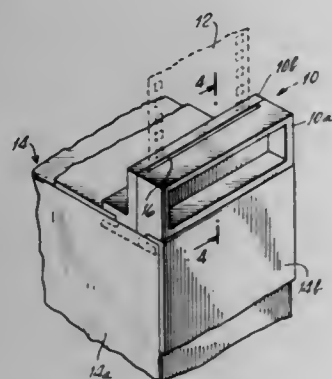
### 3,752,302 FILM DISPENSER

Nick G. Branibar, Sparta, N.J., assignor to Anken Industries, Morristown, N.J.

Filed June 1, 1971, Ser. No. 148,623  
Int. Cl. B65d 85/67

U.S. Cl. 206—52 F

4 Claims



A lightproof film dispenser for a box formed from telescoping box parts. The box parts have adjacent cut-out portions in telescoping wall portions thereof. The dispenser is formed from a housing having a pair of spaced, parallel channels into which are fitted the longitudinal edges of the cut-out portions of the box parts. Each end of the dispenser is cut-away. A top wall of the cut-away portion at one end of the dispenser is at a level which is spaced from that of the corresponding top wall of the cut-away portion at the other end of the dispenser by a distance the same as the thickness of the material from which the box parts are made. This difference in levels of the top walls provides for a light-tight seal.

### 3,752,303 SEED TAPE DISPENSER

Russell G. Foster, Mankato, Minn., assignor to Northrup, King & Co., Minneapolis, Minn.

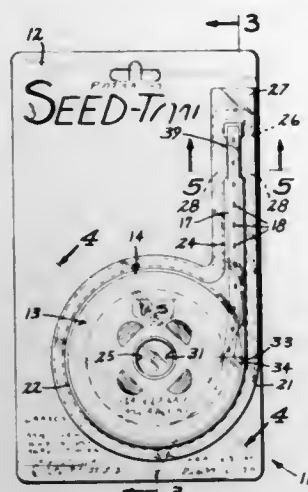
Filed Apr. 5, 1972, Ser. No. 241,217  
Int. Cl. B65d 75/40, 85/67

U.S. Cl. 206—52 R

9 Claims

A dispensing package for a roll of seed tape consisting of a plasticized cardboard backing to which a transparent cover member is hermetically sealed to define a reel cavity. A reel for the seed tape is rotatably carried in the cavity, which includes a tangential outlet through which the tape can be dispensed. The reel consists of a flat circular cardboard member, having suitable printed indicia on one face for viewing through the transparent cover, and a plastic spool which cooperates with the cardboard member to carry the tape.

Means are provided for locking the reel in a predetermined position to preclude its rotation due to hygroscopic expansion



and contraction of the tape, and to thereby maintain the printed indicia in an upright position.

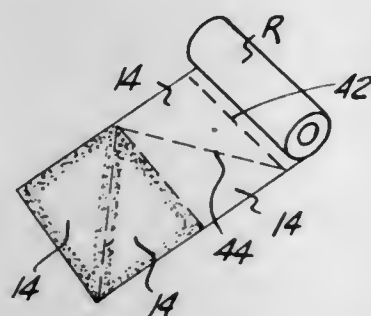
### 3,752,304 MASKING DEVICES

Philip M. Alef, 160 St. Clair River Dr., Algonac, Mich.

Filed Sept. 7, 1971, Ser. No. 178,322  
Int. Cl. B65d 85/00

U.S. Cl. 206—58

1 Claim



Masking device for use in painting at peripheries of rectangular surfaces comprising two triangular masks of sheet material.

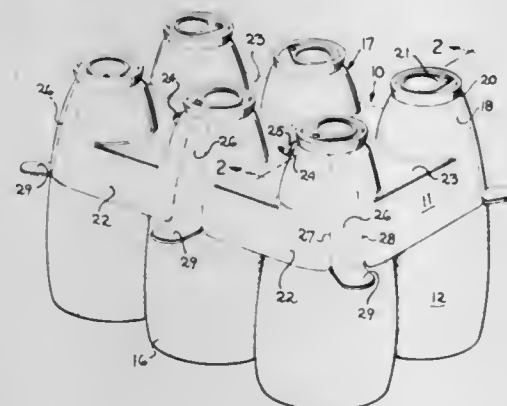
### 3,752,305 PLASTIC CARRIER FOR CONTAINERS

Clarence A. Heyne, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 10, 1971, Ser. No. 141,491  
Int. Cl. B65d 71/00, 85/62

U.S. Cl. 206—65 E

5 Claims



The invention disclosed relates to a multi-pak plastic jacket-type container carrier. The carrier is thermoformed from thermoplastic sheet or web stock and provides individual compartments or cavities in annular substantially sleeve form. The

upper annular margin of the compartment wall includes a radially inwardly directed lip or rim that permits container movement into the carrier and engages a bead or edge at the upper end of the container upon reverse movement, thereby retaining the container in suspended support for transport. The carrier has a tear strip means at each cavity for removal of the container and includes finger carrying means for transport.

### 3,752,306

#### GEL ENCAPSULATING ENCLOSURE AND METHOD

John T. Thompson, 244 Loring St., Los Angeles, Calif., and George W. Gillemot, 233 20th St., Santa Monica, Calif.

Filed July 6, 1971, Ser. No. 159,715

Int. Cl. B65d 79/00

U.S. Cl. 206—47 A

20 Claims



A protective encapsulating enclosure for and method of protecting spliced wires, terminal strip assemblies and the like from the elements and contact with foreign bodies. The enclosure may be formed of tough, flexible, impervious material and is precharged in selected portions with a quantity of non-setting gel-like potting compound. This charge is retained in place during storage and shipping by one of several simple expedients so that the gel-free portion of the bag can be readily expanded to receive the splice or terminal strip and then secured closed about the wires after which the walls are kneaded until the splice and/or terminal strip has been completely immersed in the compound.

### 3,752,307

#### COMBINATION CIGARETTE AND MATCH HOLDER

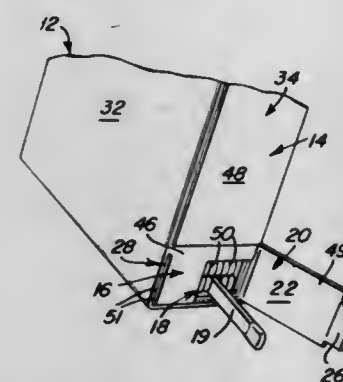
Ronald L. German, 5131 Blairwood Dr., La Palma, Calif.

Filed Dec. 23, 1971, Ser. No. 211,451

Int. Cl. B65d 79/00

U.S. Cl. 206—48

13 Claims



A combination cigarette and match holder having a housing provided with a cigarette holding portion, and a match holding portion provided with an opening in the housing for passing matches therethrough and a hinged flap for selectively covering and uncovering the opening. The opening is arranged in a side wall of the housing adjacent an end wall thereof and the front wall, while being spaced from the rear wall so as to form a restricted opening. A tab on the flap cooperates with a slot in the housing for retaining the flap in a position covering the opening. An insert element is arranged within the housing and

provided with a wall separating and partially defining the cigarette and match holding portions. This insert may be constructed from a flat piece of material as a longitudinally extending member folded along four transverse and two longitudinal fold lines.

### 3,752,308

#### PACKAGING OF CIGARETTES

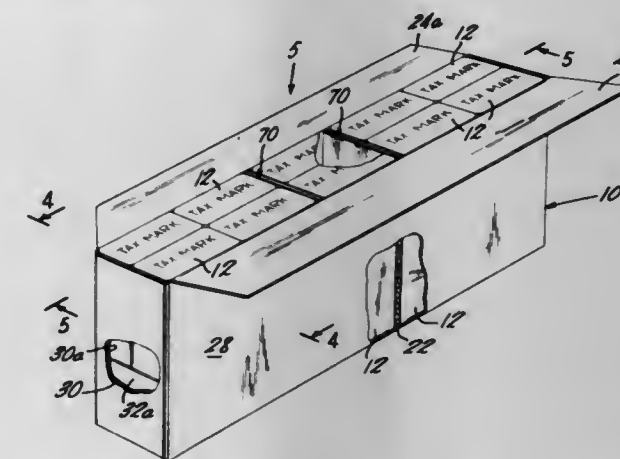
Carl J. Begemann, Miami, Fla., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Aug. 28, 1972, Ser. No. 284,126

Int. Cl. B65d 85/10

U.S. Cl. 206—48.5

7 Claims



Packaging is provided in which smaller than standard-size cigarette packages are packed in a carton designed to permit the cigarette packages to be marked in a tax marking machine for marking standard-size cigarette packages.

### 3,752,309

#### SHEATH PACKAGE WITH SHEATH REMOVAL SIGNALLING FOR CLINICAL TEMPERATURE MEASUREMENT INSTRUMENT

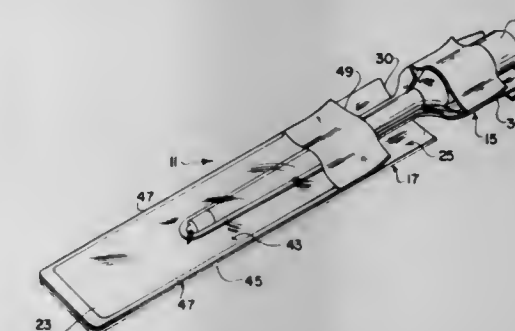
Gene Hopkins, Tulsa, Okla., and Raymond F. Mohrman, St. Louis, Mo., assignors to LaBarge, Inc., St. Louis, Mo.

Filed Nov. 3, 1971, Ser. No. 195,242

Int. Cl. A61b 19/02; B65d 85/00

U.S. Cl. 206—63.2

9 Claims



A sheath package for use with a clinical temperature measurement probe. An elongate sheath has a mouth at one end for receiving the probe and is normally enclosed by a cover, the sheath extending into a mouth at one end of the cover such that the probe may be inserted in the sheath while the latter is in the cover and then withdrawn with the sheath thereon. A signal means has a normally concealed position when the sheath is in the cover before being withdrawn and is moved to a position in which it is visible when the probe with the sheath thereon is reinserted in the cover.

### 3,752,310

#### LOCK FOR BOTTLE-CONTAINING CASES

Will L. Higgin, 23 Heritage Ln., Newport Beach, Calif.

Filed Apr. 3, 1972, Ser. No. 240,546

Int. Cl. B65d 71/00; B65g 1/14

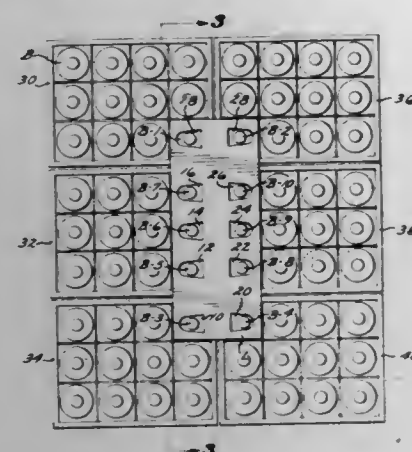
U.S. Cl. 206—65 E

10 Claims

An arrangement for temporarily locking together the upper layer of a multi-layered stack of beverage bottle-containing



cases. A sheet formed with a plurality of apertures is dropped over the bottles of the upper layer of cases, with the apertures being received by at least one bottle in each case of the layer.



In this manner relative horizontal movement of the cases out of their abutting relationship beyond a predetermined distance is restrained.

### 3,752,311 SORTING DEVICES

Klaus Kobusch, and Arno Manke, both of Bielefeld, Germany, assignors to APEG-Hochdrucktechnik, Brackwede, Germany

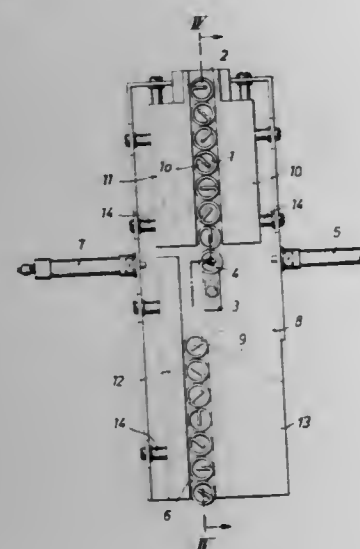
Filed Mar. 22, 1972, Ser. No. 236,930

Claims priority, application Germany, Mar. 24, 1971, P 21 14 125.3; Feb. 17, 1972, P 22 07 346.7

Int. Cl. B65g 47/24; B07c 1/20

U.S. Cl. 209-72

23 Claims



A sorting device for helical springs for sorting springs equipped with a mounting leg and comprising a conveyor for the springs, a feed duct arranged to receive springs from the conveyor, a supporting element mounted in the feed duct, for supporting springs thereon, a sensor piston operated by a pressure source and arranged to engage with a spring resting on the supporting element whereby the piston moves to different positions depending on whether the mounting leg of the spring is in the correct or incorrect position, means for transferring a spring having its mounting leg in the correct position to a station for further processing and means for ejecting a spring having its mounting leg in the incorrect position.

### 3,752,312 LABEL, METHOD AND SYSTEM FOR BAGGAGE HANDLING

Louis Soltanoff, 127 Four Brooks Rd., Stamford, Conn.

Filed Feb. 16, 1971, Ser. No. 115,662

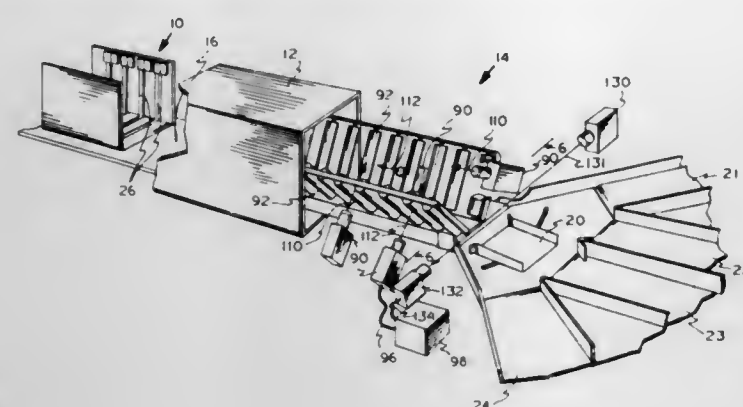
Int. Cl. B07c 5/342

U.S. Cl. 209-111.7

34 Claims

This is a baggage-handling system in which luggage of any size or shape is wrapped with an encircling belt made of a

heat-shrinkable plastic material at a baggage-tagging station designed for this purpose. The baggage is then put on a conveyor which carries it through an oven to shrink the plastic so that the tag is securely attached to the luggage, and the belt lies flat against the surface of the luggage. Destination-identifying indicia printed on the plastic belt are then read by an op-



tical scanner which is positioned alongside the baggage conveyor. Suitable electronic data processing equipment responsive to the optical scanner then controls additional baggage conveying equipment to determine the destination of each individual piece of baggage according to the indicia read from the plastic belt.

### 3,752,313 FLOTATION APPARATUS

Jean Benito Watin, Paris, France, assignor to Societe Miniere Et Metallurgique De Penarroya, Paris, France

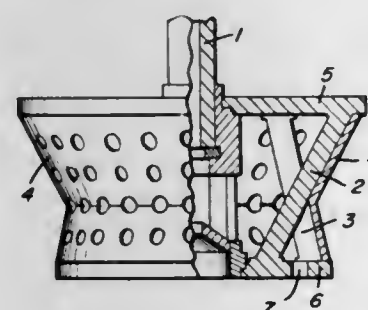
Filed Feb. 15, 1972, Ser. No. 226,625

Claims priority, application France, Feb. 19, 1971, 7105710

Int. Cl. B01f 3/04

U.S. Cl. 209-169

3 Claims



The efficiency of the agitator shown in French Pat. No. 1,200,365 is improved by enveloping the outer bars defining two coaxial and oppositely disposed frustums of cones with a sheet of perforated material.

### 3,752,314 FLUME WATER RECYCLING APPARATUS

James A. Brown, Birmingham; Eddie G. Chieves, Leeds, and Wesley D. Runyan, Pinson, all of Ala., assignors to The Rust Engineering Company, Pittsburgh, Pa.

Filed Aug. 27, 1971, Ser. No. 175,516

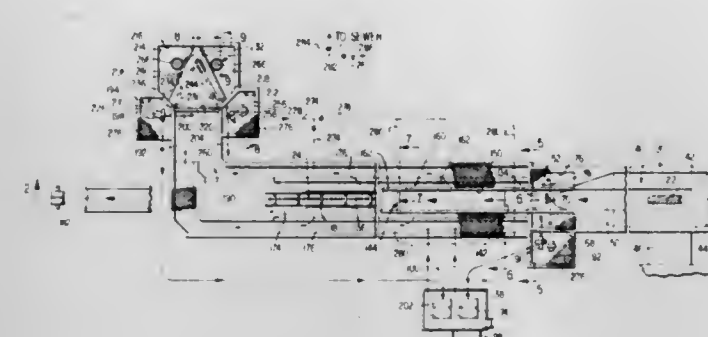
Int. Cl. B03d 1/00

U.S. Cl. 209-173

12 Claims

Flume water recycling apparatus operates in conjunction with a flume and a jackladder of a log handling system. Flume water with logs, loose bark, grit and sand flows down the flume toward the jackladder. The sand and some grit pass through a sand outlet into a collection pit beneath the end of the flume, whereas the logs, water, remaining grit and bark flow over a bridge toward the jackladder. Logs and large pieces of bark are removed from the water by a series of flights of the jackladder. Water, grit and small pieces of bark flow through tapered apertures provided in a tail section of the jackladder and into a grit settling trough. Slow water velocity in the

trough promotes settling of the grit to the bottom of the trough. The return run of the flights extends along the bottom and scrapes the grit into the collection pit. The flights then extend around a tail pulley for advancement into a flight guide tunnel formed by the bridge and the tail section to prevent



jamming of the flights. Bark and relatively clear water flow from the trough into side channels that extend to a second grit settling trough. Water and bark from the second trough flow into a bark basin where the bark is separated from the water and the water is returned to the flume.

### 3,752,315 COMBINATION SCALPER CLEANER

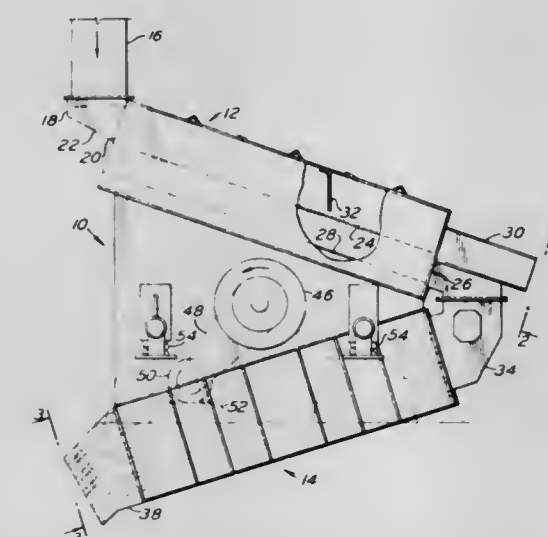
Louis E. Hubach, Aurora, Ohio, assignor to W. S. Tyler, Incorporated, Cleveland, Ohio

Continuation-in-part of Ser. Nos. 795,260, Jan. 30, 1969, Pat. No. 3,680,697, and Ser. No. 130,311, April 1, 1971, Pat. No. 3,688,902. This application July 26, 1971, Ser. No. 165,929

Int. Cl. B07b 1/36

U.S. Cl. 209-240

7 Claims



Grain cleaning apparatus providing a flow path for grain including, in sequence, a scalper and a cleaner. First ducting means is connected to a hopper on the inlet side of the scalper and a second ducting means is connected to the outlet portion of the scalper to conduct grain from the scalper to the grain cleaner. The scalping unit separates grain from impurities which are larger than the grain. The grain cleaning unit separates grain from impurities smaller than said grain. The scalping unit and the grain cleaning unit are rigidly connected together to operate as a unit in vibratory motion to shake the grain on industrial screens in both units. The inlet hopper and the outlet of the grain cleaning unit are in vertical alignment to allow the insertion of the grain cleaning apparatus into an existing vertical ducting arrangement without need for extensive revision or restructuring of an existing building or ducting network.

913 O.G.—21

### 3,752,316 DEVICE FOR DEVELOPMENT IN THIN-LAYER CHROMATOGRAPHY

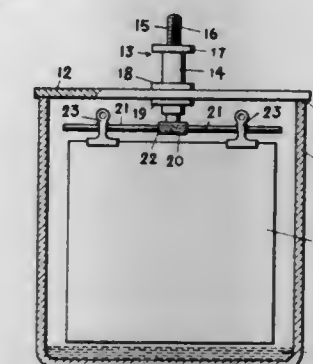
Ryuzo Takeshita, No. 5-4-11, Koenji Minami, Tokyo, Japan

Filed June 25, 1971, Ser. No. 156,766

Int. Cl. B01d 15/08

U.S. Cl. 210-198

5 Claims



A device for development in thin-layer chromatography comprising a solvent chamber, a support means, a plurality of horizontal bars and one or more plates for development. The plate is suspended with a support means which can be rise or fall, and the lower end of said plate is soaked in solvent when it has become completely saturated. This solvent chamber brings about a good result on the reproducible quality of R<sub>f</sub> values in thin-layer chromatography.

### 3,752,317 OIL RECOVERY VESSEL

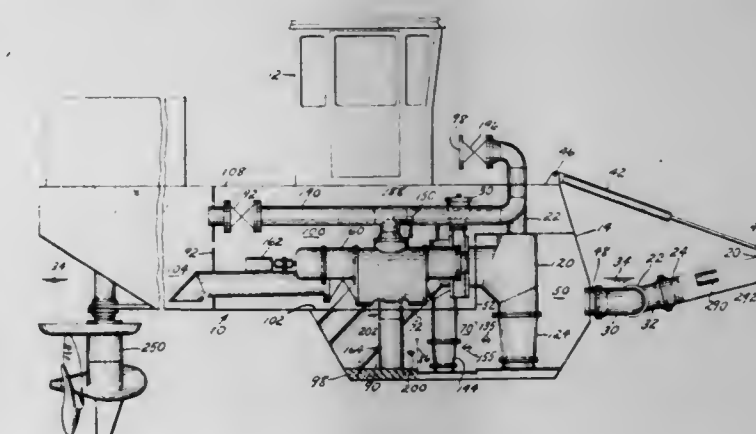
Eric E. Lithen, Garden City, N.Y., assignor to Oil Recovery Systems, Inc., Mineola, N.Y.

Filed Nov. 10, 1971, Ser. No. 197,248

Int. Cl. E02b 15/04

U.S. Cl. 210-242

3 Claims



A vessel for collection and salvage of oil spills having a vertically adjustable forward-mounted scoop from which fluid collected under the action of gravity and the forward motion of the vessel is directed through conduits into submerged separation tanks under conditions of laminar flow. In the submerged tanks, the fluid is separated into oil, which is transferred to storage tanks, and water which is discharged.

### 3,752,318 LIQUID SEPARATION APPARATUS

Ray J. DeRouen, New Iberia, La.; Ray Tuggle, and Richard H. Graves, both of Bellaire, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 6, 1971, Ser. No. 205,141

Int. Cl. C02c 1/26

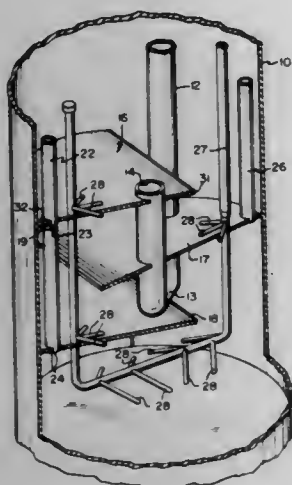
U.S. Cl. 210-251

5 Claims

The invention relates to an apparatus for effecting the separation of a multi-phase liquid mixture comprising water, and a hydrocarbon or similar material characterized by a



specific gravity not exceeding the specific gravity of water. The apparatus comprises an elongated casing into which the said liquid mixture is introduced. The latter is then caused to pass through a labyrinthine passage formed of continuous, though discrete passage segments in a general vertical



direction. In the course of traversing said passage, the water will gravitate toward the lower end of the casing, and be discharged. The non-aqueous liquid phase segment will rise outwardly and upwardly within the discrete segments of said passage, whereby to be readily withdrawn from the apparatus.

3,752,319

#### STRAINER DEVICE IN A CONTINUOUS CELLULOSE DIGESTING PLANT

Ole J. Richter, Karlstad, Sweden, assignor to Kamyr Aktiebolag, Karlstad, Sweden

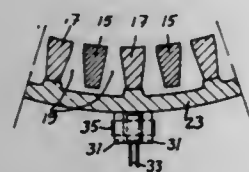
Filed Sept. 20, 1971, Ser. No. 181,773

Claims priority, application Sweden, Sept. 24, 1970, 12997/70

Int. Cl. B01d 33/22

U.S. Cl. 210-357

2 Claims



A strainer for separating liquid from a wood chips-liquid mixture passed vertically through a feeding chute or a treating vessel comprises parallel vertical rods spaced to form straining slots. Every second strainer rod is stationary and the intermediate strainer rods which are pivoted at their upper ends, are united to form a unit that is moveable back and forth by means of a reciprocating drive means in order to prevent clogging of the strainer.

3,752,320

#### ICE GUARD FOR DRINKING GLASSES

F. Joseph Biro, 209 Comly Rd., Apt. K-12, Lincoln Park, N.J.

Filed June 27, 1972, Ser. No. 266,657

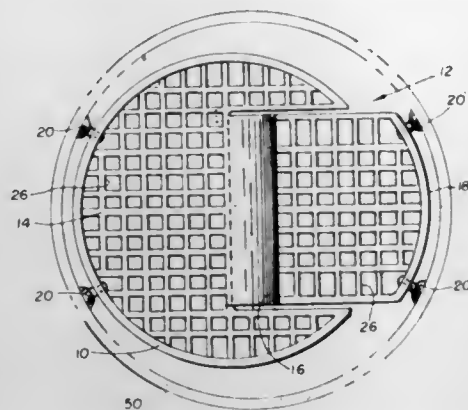
Int. Cl. B01d 35/28

U.S. Cl. 210-469

8 Claims

This invention pertains to an ice guard particularly adapted to be placed within a drinking glass to hold solid or semisolid material within the glass while the glass is tilted for drinking from said glass. The guard is preferably a plastic unit molded so as to incorporate and provide an integral tongue member connected to the guard body by a U-shaped portion. This U-shaped portion acts as a spring and moves the tongue into engagement with and retains the tongue in engagement with the

interior of the glass. The installed guard is perforated and provides a screen which prevents the larger particles of ice and



like material from passing from the glass while the fluid is permitted to pass by and around the screen and from the glass.

3,752,321

#### PLEAT DEFORMATION CONTROL FOR PLEATED FLUID TREATMENT MEDIA

James C. McLaren, Racine, Wis., assignor to Tenneco Inc., Racine, Wis.

Filed June 3, 1971, Ser. No. 149,508

Int. Cl. B01d 27/06

U.S. Cl. 210-493

6 Claims



A continuous ribbon or fillet of an adhesive plastic, such as a hot melt adhesive, epoxy, or plastisol, adhered to selected areas of the internal surfaces and terminations of the pleats of an annular, inside-out flow longitudinally pleated fluid treatment medium, such as a fluid filter or coalescer medium, prevents pleat deformation and consequent "pinch-off" or blockage of the pleats when the medium is subjected to fluid pressure during use.

3,752,322

#### RACK SYSTEM FOR A DISHWASHING MACHINE

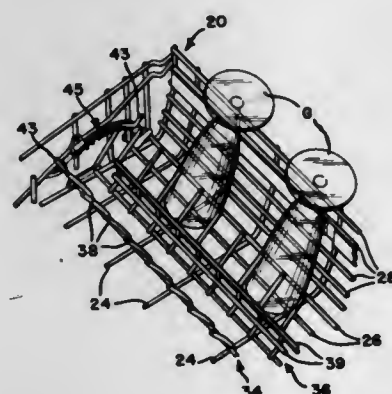
John A. Fiocca, and Ernst Grunewald, both of Troy, Ohio, assignors to The Hobart Manufacturing Co., Troy, Ohio

Filed July 8, 1971, Ser. No. 160,869

Int. Cl. A47g 19/08

U.S. Cl. 211-41

7 Claims



A dish supporting rack includes a series of parallel rows of spaced pins, some of which are rotatably supported for move-

ment between upright dish supporting positions and collapsed positions adjacent the bottom of the rack. The rack also includes means for positively retaining each outer row of rotatable pins at a plurality of intermediate inclined positions where the pins are effective to press against lightweight articles and to hold the articles in fixed relation within the rack while cleaning liquid is being recirculated over and into the articles.

3,752,323

#### DISPLAY DEVICES

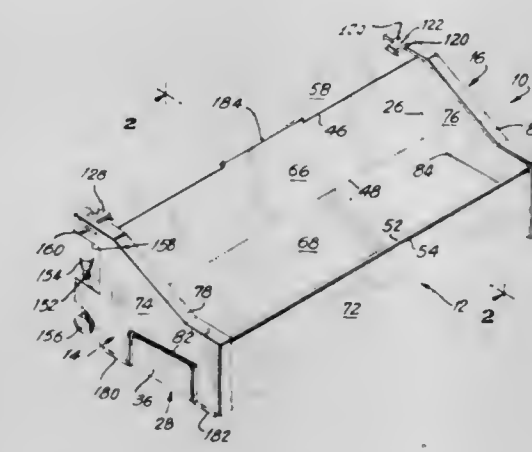
Edward Kayden, 22 Park Place, Great Neck, N.Y.

Filed July 29, 1971, Ser. No. 167,357

Int. Cl. A47I 3/14

U.S. Cl. 211-132

14 Claims



A display device for displaying articles carried by the device. The device includes a foldable body of sheet material having top and bottom edges and opposed side edges and divided between its top and bottom edges with a fold line along which the sheet material is folded so that it has a rear wall extending upwardly from the fold line and a second wall extending forwardly from the fold line. A pair of side tabs respectively project laterally from the side edges of the sheet material. A pair of hollow end members respectively have hollow interiors directed toward each other and receiving the side edges of the body of sheet material, these end members having upright walls which are perpendicular to the body of sheet material and which are respectively formed with openings through which the tabs respectively extend. These hollow end members respectively have structures coacting with outer end regions of the tabs for maintaining the body of sheet material assembled with the end members, and a supporting structure coacts with the end members for supporting the latter with the body of sheet material extending therebetween at any desired location. The articles to be displayed are situated between the end members and along the second wall of the body of sheet material in front of the rear wall thereof.

3,752,324

#### REFRIGERATOR SHELF GUARDS

Howard P. Moser, 685 E. Second St., Sonoma, Calif.

Filed Aug. 13, 1971, Ser. No. 171,617

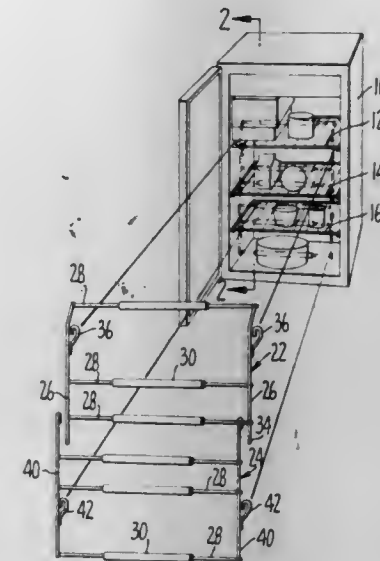
Int. Cl. A47I 5/00

U.S. Cl. 211-153

6 Claims

A shelf guard or fencing system for refrigerators comprising a fence-like barrier member for ready connection to and disconnection from the front edges of refrigerator shelves for the purpose of preventing food items and the like from falling off of the shelves due to tipping of the refrigerator, as occurs

on occasion with trailers and mobile homes. The shelf guard is provided with novel means for connecting it to the refrigerator



shelves and the guard is adjustable as to width to adapt it to various sizes of refrigerators.

3,752,325

#### LOADING BALANCER

Kenji Sato; Kanji Yamazaki, and Isami Tanaka, all of Kanazawa, Japan, assignors to Tsudakoma Industrial Co., Ltd., Ishikawa-ken, Japan

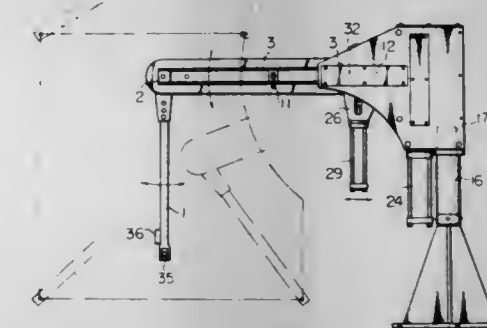
Filed Nov. 16, 1971, Ser. No. 199,102

Claims priority, application Japan, Nov. 17, 1970, 45/100750

Int. Cl. B66c 23/54

U.S. Cl. 212-35 R

6 Claims



A loading balancer including a pivotal intermediate arm and accompanying main and auxiliary pressure cylinders wherein changes in the position of the hoisted load in the vertical plane are mechanically converted into corresponding changes in the turning moment about the pivotal point of the intermediate shaft and such changes in the moment are automatically balanced by corresponding changes in the pressure forces provided by the pressure cylinders upon sensing said changes in the moment.

3,752,326

#### OFFSHORE OIL AND GAS WELL DRILLING RIG

Clarence W. Livingston, Orange, Tex., assignor to Livingston Shipbuilding Company, Orange, Tex.

Filed Feb. 1, 1972, Ser. No. 222,586

Int. Cl. B66c 23/00

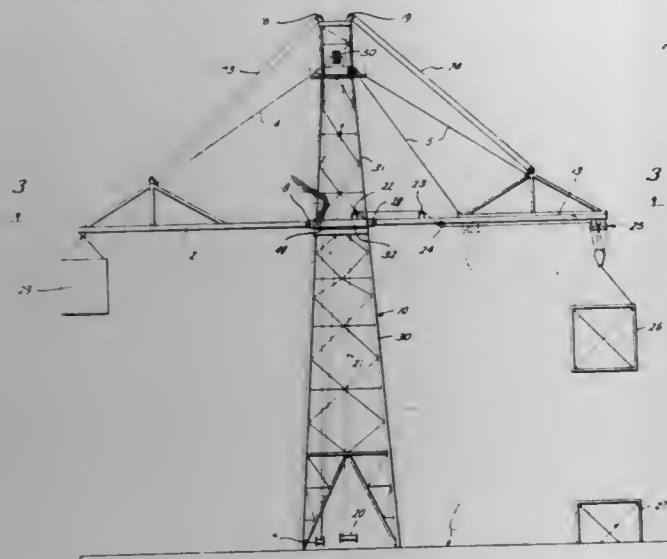
U.S. Cl. 212-47

2 Claims

An offshore drilling platform and drilling rig mounted



thereon having a load boom assembly and a balance boom assembly mounted for pivotal movement on the derrick of the



drilling rig. The boom assemblies are erected into load bearing position to move loads about the platform.

3,752,327

## MULTIPLE STAGE CRANE BOOM

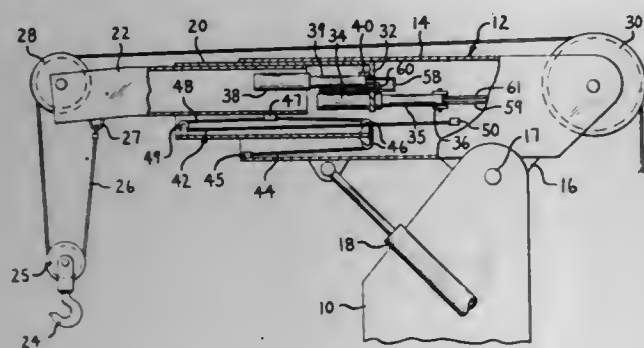
John E. Olson, Portland, Oreg., assignor to Hyster Company, Portland, Oreg.

Filed Apr. 29, 1971, Ser. No. 138,431

Int. Cl. B66c 23/06

U.S. Cl. 212—55

1 Claim



A multiple stage crane boom has a vertically pivotable outer stage, a movable intermediate stage telescoping within the outer stage and a movable inner stage telescoping within the intermediate stage. A material-handling device is raised and lowered with respect to the outer end of the inner stage by a winch-powered cable. The boom is extended and retracted through simultaneous extension and retraction of the intermediate and inner stages by separate but simultaneously energized hydraulic cylinders. These cylinders are mounted and hydraulically interconnected in a manner which eliminates the need for extensible hydraulic hoses between the cylinders and the fluid pressure source. A cable-phasing arrangement interconnecting the stages provides in conjunction with the cylinders a boost to ensure proper phasing movement of the movable stages upon extension and retraction should friction tend to restrain one of such stages upon application of hydraulic power to the cylinders.

3,752,328

## MOBILE DERRICK

Roy Balogh, Ladue, Mo., assignor to McCabe-Powers Body Company, St. Louis, Mo.

Division of Ser. No. 835,445, June 23, 1969, Pat. No. 3,643,815. This application Nov. 9, 1971, Ser. No. 197,033

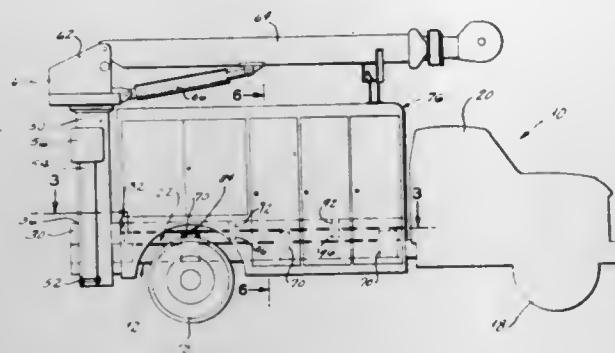
Int. Cl. B66c 23/62

U.S. Cl. 212—145

18 Claims

A mobile derrick includes a chassis frame and a mast frame having a rectangular front section rigidly mounted on the

chassis frame. A mast is rigidly secured to the mast frame by means of a cross-beam provided at one end of the rectangular front section such that the mast extends upwardly therefrom for supporting a derrick at its upper end. A body is mounted



over the chassis frame in a manner which permits it to be free from rigid connection with the mast so as to allow the mast, mast frame, and chassis frame to deflect independently of the body.

3,752,329

## HYDRAULIC CUSHIONING APPARATUS FOR RAILWAY CARS

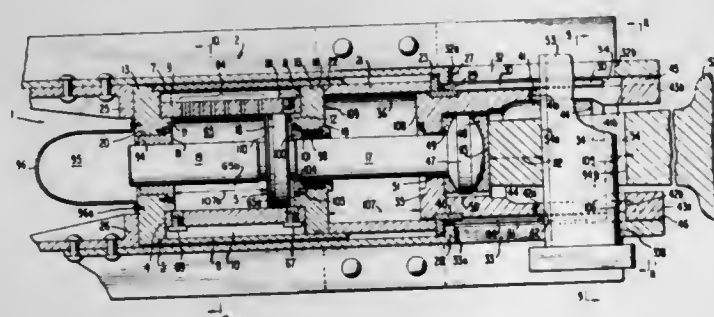
Orum E. Seay, Fort Worth, Tex., and Robert Q. Shelton, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. Nos. 89,544, Nov. 16, 1970, Pat. No. 3,647,088, and Ser. No. 732,236, May 27, 1968, Pat. No. 3,568,855. This application Mar. 2, 1972, Ser. No. 231,202

Int. Cl. B61g 9/16

U.S. Cl. 213—8

8 Claims



A cushioning apparatus for railway cars, which apparatus includes hydraulic cylinder means, piston means telescopingly disposed within the cylinder means, stabilizing housing means telescopingly receiving a connection between the piston means and draft means connected with the piston means, and additional movement limiting abutment means engaging or cooperable with the cylinder means and the stabilizing means. The cylinder means includes an inner high pressure cylinder side wall means and an outer relatively lower pressure containing side wall means. A force control means serves to prevent the transmission of cylinder damaging compressive force through the relatively lower pressure containing side wall means when the piston means has moved to its extreme buff position.

3,752,330

## PAN TURNING DEVICE

Robert L. Whitmill, Collegedale, Tenn., assignor to McKee Baking Company, Collegedale, Tenn.

Filed Oct. 18, 1971, Ser. No. 190,070

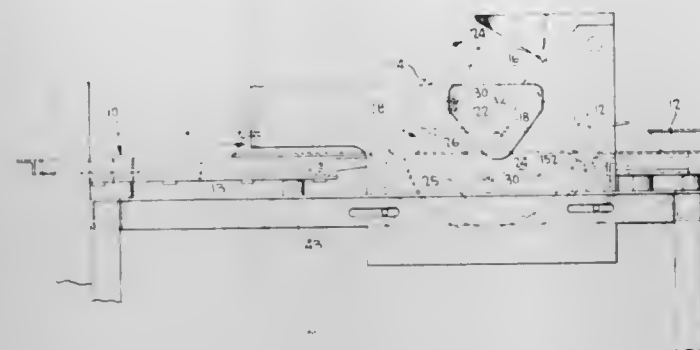
Int. Cl. B65g 29/00

U.S. Cl. 214—10

5 Claims

A high speed turner is disclosed for inverting pans by rotat-

ing them 180°. A feeding means is provided for inserting the pans into the pan turner rotor, which is then rotated 180°.



Subsequent feeding of another pan into the rotor forces the already inverted pan out of the rotor.

3,752,331

## EXTENSIBLE LIFT MECHANISM

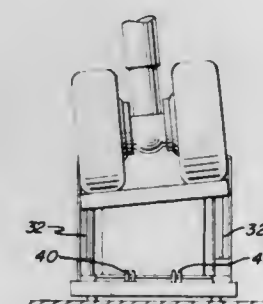
Richard L. Colburn, Los Angeles, Calif., assignor to Fansteel Inc., Chicago, Ill.

Filed Apr. 19, 1972, Ser. No. 245,324

Int. Cl. B60p 1/02

U.S. Cl. 214—1 A

25 Claims



The invention relates to a lifting mechanism that includes a base frame and a load supporting frame that are operatively interconnected by a scissor linkage. The load supporting frame is raised and lowered on the base frame by screw drives supporting carriers operatively connected to the load supporting frame. The interconnection between the carrier and the load supporting frame includes linkage means that universally accommodate lateral movement of the load supporting frame relative to the axes of the screws to allow the load supporting frame to be tilted relative to the base frame. The device also incorporates air cushioning supports on the base that allow the entire unit to be floatingly supported on a film of pneumatic fluid for final alignment of the support frame relative to a reference point.

3,752,332

## PALLET FOR TRANSPORTING TRACK TIES

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Nov. 17, 1971, Ser. No. 199,678

Claims priority, application Austria, Dec. 17, 1970, A 11353/70

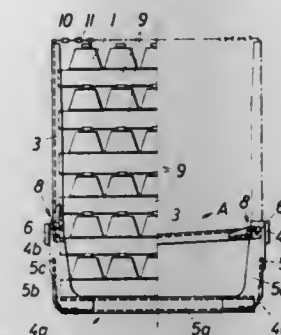
Int. Cl. B65g 1/14

U.S. Cl. 214—10.5 R

5 Claims

A pallet for conveying elongated objects, such as track ties, comprises a bottom support frame and stanchions at the op-

posite edges of the frame. The stanchions are inwardly pivotal, and balancing means are arranged in the region of each ful-



3,752,333

## DEVICE FOR AXIAL CHARGING OF A ROTARY MELTING FURNACE

David Yerouchalmi, Le Mesnil Saint-Denis, France, assignor to Commissariat a l'Energie Atomique, Paris, France

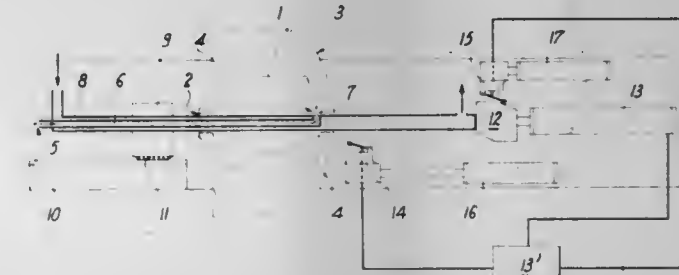
Filed Oct. 16, 1970, Ser. No. 81,345

Claims priority, application France, Oct. 24, 1969, 6936564

Int. Cl. F27b 7/32

U.S. Cl. 214—26

21 Claims



In a rotary melting furnace having two axial openings, a device for axial charging of the furnace comprises a tube which is intended to be introduced along the axis of the furnace through one of the openings. The material to be charged is injected under pressure at one end of the tube together with an addition of volatilizable binder. A lateral orifice is provided at the other end of the tube for injecting the material into the furnace and a drive system is provided for displacing the tube in reciprocating motion.

3,752,334

## INDUSTRIAL BULK MATERIAL TRANSPORTATION

Melville W. Robinson, Jr., Beaver, and Charles M. Jaco, Jr., Upper St. Clair Twp., Allegheny County, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Nov. 18, 1971, Ser. No. 199,865

Int. Cl. B65g 67/04, 67/44

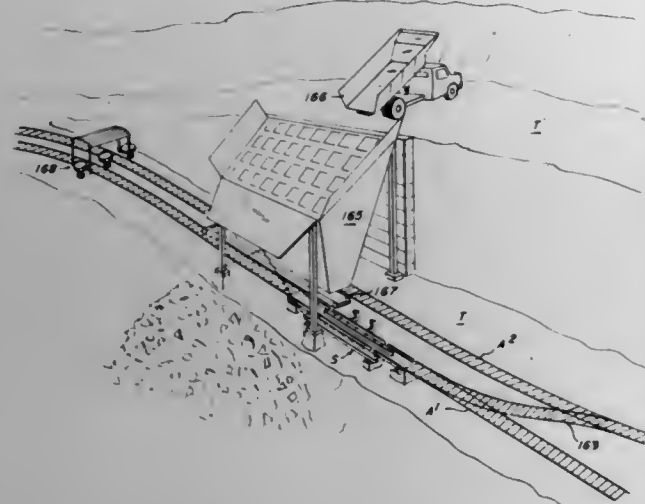
U.S. Cl. 214—41

20 Claims

An industrial railway is provided wherein a train of cars is propelled along a track by motor-driven friction wheels at intervals along the track which contact friction strips along the sides of the cars. The cars are dumped while the train is moving by successively tilting them sideways, but cooperating



means on the track and cars keep the cars on the track. Unloading stations include adjustable and mobile arrangements



3,752,335

## MOBILE SUGAR CANE WAGON UNLOADER

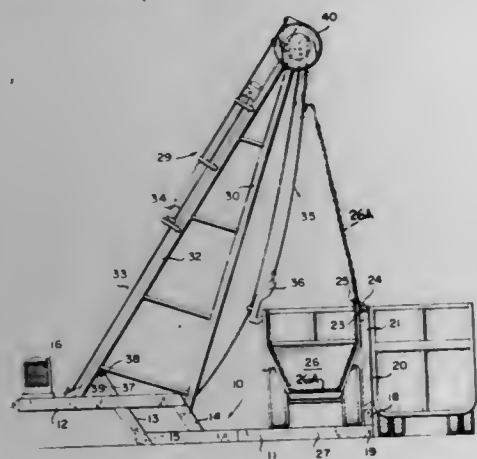
Ivan Gomez, Thibodaux, La., assignor to Cane Machinery & Engineering Company, Inc., Thibodaux, La.

Filed Apr. 21, 1972, Ser. No. 246,328

Int. Cl. B65g 67/30

U.S. Cl. 214-44 B

5 Claims



The present invention is directed to a mobile, transportable sugar cane wagon unloader which may be moved about from site to site by a tractor and which has ramps to receive loaded sugar cane wagons and which has a dumping wall immediately adjacent the ramps so that the unloader can pick up and dump the cane loaded on the wagon over the dump wall into a transport truck to be taken to the mill. When all the cane in a particular land section has been harvested, piled and loaded into cane wagons, transferred to transport trucks and taken to the mill, the device of the present disclosure may then be placed in its transport mode and moved to another harvest area.

3,752,336

## VEHICLE LOADING AND STORAGE SYSTEM FOR WHEELED CONTAINERS

Bobby J. Blount, 530 La Rue Way, El Cajon, Calif.

Filed Mar. 19, 1971, Ser. No. 126,136

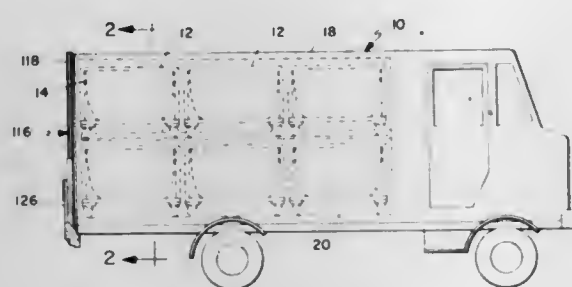
Int. Cl. B60p 1/44

U.S. Cl. 214-75 T

1 Claim

A vehicle loading and storage system for storing and loading containers within the body of the vehicle comprising a plurality of rows of tracks on at least two levels, each row of tracks being capable of storing a plurality of wheeled containers, and an elevator for raising the containers from ground level, or from a platform, to the height corresponding to the tracks for

a given level. The tracks are foldable, or stowable, so as to make the vehicle convertible from the container carrying configuration to a conventional configuration. The folding configuration employs a plurality of track supporting members which pivot against the side wall of the vehicle. They are maintained in their supporting position by legs which also fold, and



partially retract, to allow a compact folding action of the entire track structure against the side of the vehicle. The stowable configuration employs vertical members which are carried on an overhead longitudinal bar in the use position and stowed on a second overhead longitudinal bar adjacent the side of the vehicle in the stowed position.

3,752,337

## DEVICE FOR HANDLING BAGGED OR BUNDLED SOFT MATERIAL

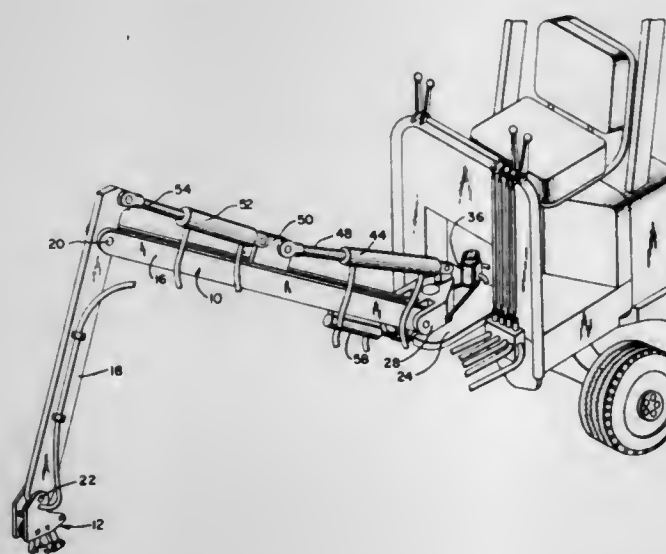
Jesse Randolph Pinkham; Douglas Copeland Clark, both of Winston-Salem, and Donald Ross Wilkinson, Clemmons, all of N.C., assignors to Reynolds, R. J., Tobacco Company, Winston-Salem, N.C.

Filed Aug. 20, 1971, Ser. No. 173,498

Int. Cl. B66c 1/42

U.S. Cl. 214-147 G

6 Claims



Article transporting apparatus with an articulated two section boom assembly connected at one end to a movable base, for example, a wheeled vehicle to allow rotation of the boom assembly about a vertical axis as well as vertical pivotal movement. A gripper assembly including a pair of swinging gripper arms is pivotally connected at the free end of the boom assembly. A parallel motion control system maintains a predetermined attitude of the gripper assembly during vertical pivotal movement of the boom assembly. The gripper arms are especially adapted for grasping material subject to tearing, for example, a burlap sheet containing bundled material.

3,752,338

## DEVICE FOR LINING A DRUM WITH LINER PLATES

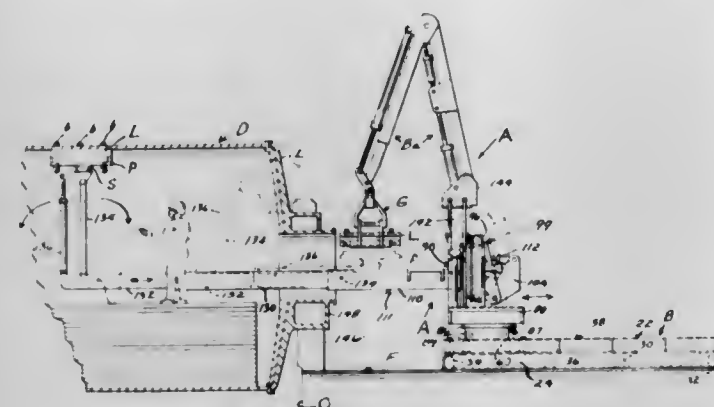
Maurice J. Bartell, Duluth, Minn., assignor to Barko Hydraulics, Inc., Duluth, Minn.

Filed Apr. 5, 1972, Ser. No. 241,308

Int. Cl. B66c 1/10

U.S. Cl. 214-147 T

19 Claims



A device for connection with a liner plate at a point without a drum to be lined and moving it into positions within the drum and onto the walls thereof for connection therewith including a retractable boom having an arm pivoted on the outer end of the boom with a platen pivotally mounted on the outer end of the arm and a rack and pinion for pivoting the arm in a plane on the centerline of the boom together with means for pivotally moving the platen on the arm, a head member mounting the other end of the boom on a supporting surface together with means for rotating the boom to rotate the platen with respect to the horizontal axis of the boom, with means for pivoting the boom to move the platen substantially radially of the axis of the boom independent of the means for pivotally moving the platen together with means for positioning said platen at a point without a drum to receive a liner plate thereon and to points within said drum for positioning the liner plate on the walls of the drum for connection therewith.

3,752,339

## CARGO HANDLING SYSTEM AND METHOD

Norman M. Sullivan, and Francis J. Fitzgerald, Jr., both of Grand Rapids, Mich., assignors to Rapistan Incorporated, Grand Rapids, Mich.

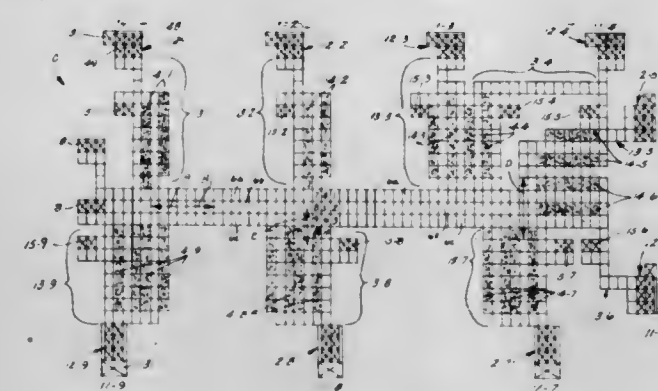
Division of Ser. No. 703,514, Jan. 23, 1968, Pat. No.

3,592,333. This application July 2, 1970, Ser. No. 60,970

Int. Cl. B65g

U.S. Cl. 214-152

2 Claims



A method of conveying articles from one location to another on a series of modular conveyor units having self-contained load-driving means. A plurality of individual conveyor modules are controlled from a central control unit such that the articles are automatically transferred according to a predetermined program on a series of related preferred modules until the desired location is reached. In the event a

module is occupied by another article, the method includes the step of determining an alternate route to convey the articles to the desired location.

3,752,340

## ARTICLE HANDLING APPARATUS

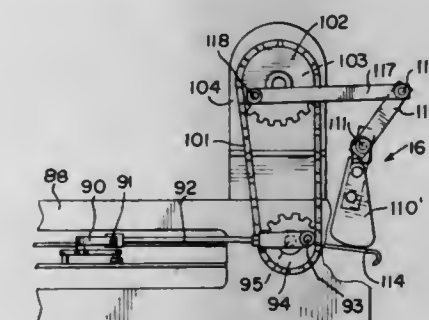
Charles H. Willsey, Topeka, Kans., assignor to Seymour Foods, Inc., Topeka, Kans.

Filed Sept. 7, 1971, Ser. No. 177,931

Int. Cl. B65b 21/02

U.S. Cl. 214-314

16 Claims



An apparatus for loading egg processing or handling equipment which comprises a swingably mounted support frame on which loaded filler flats may be placed in upright position with an associated, swingably mounted conveyor which is operable to hold the eggs on the filler flats while they are inverted by rotation of the support frame for deposit of the eggs on the conveyor and for advancing the eggs to an accumulator table when in a generally horizontal position, the eggs being deposited on the conveyor by retraction of the support frame and removal of the inverted filler flats. The accumulator table serves as a reservoir from which the eggs are transferred in parallel lines or row formation.

3,752,341

## SEMI-AUTOMATIC LOADER FOR CONTINUOUS MUFFIN GRIDDLES

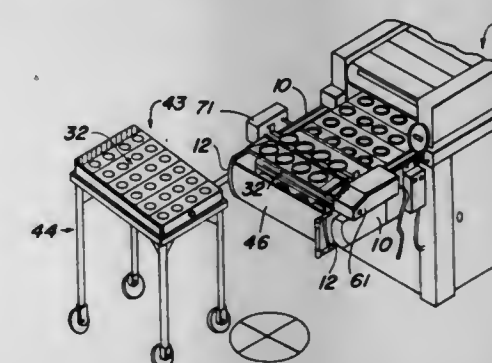
Eugene M. Noel, 42 Kingston Rd., Newton Highlands, Mass.

Filed Sept. 17, 1971, Ser. No. 181,513

Int. Cl. B65g 47/04

U.S. Cl. 214-314

10 Claims



A semi-automatic dough piece feeding process, and apparatus capable of being used in practicing the process, for the loading of continuous griddles of the conveyor type, comprising the steps of placing dough pieces on a tray having a plurality of positioned cups, placing a multiplicity of trays in a drawer on a mobile rack conveniently located aside the infeed end of the continuous griddle, removing a tray from the drawer and engaging it in a locating assembly mounted to the infeed end of the continuous griddle, up-ending the tray thus engaged to deposit the dough pieces thereon into receiving cups positioned on an auto-turn assembly mounted to the infeed end of the continuous griddle, dumping of the dough pieces from the receiver cups into positioned griddle cups on the moving conveyor flight, and returning the empty tray to starting position and removal therefrom ready for a repeat cycle.



3,752,342

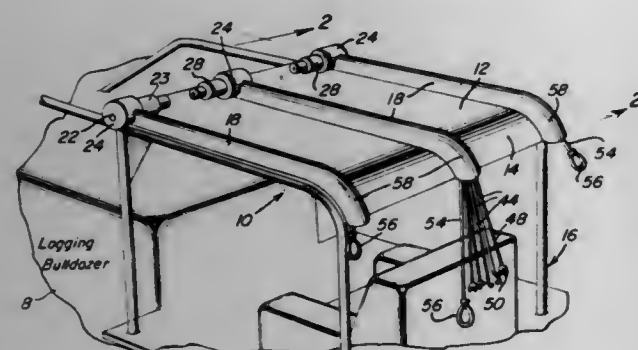
**VEHICLE MOUNTED CHOKER CABLE STORAGE MEANS**

Ray C. Stevens, and Joe E. Stevens, both of P.O. Box 173, Kootenai, Idaho

Filed Aug. 27, 1971, Ser. No. 175,616  
Int. Cl. B60r 9/04

U.S. Cl. 214-450

5 Claims



Time and labor saving dispensing means by way of which short cables, designated as chokers, can be systematically, protectively and readily stored for selectively withdrawable use. Almost any logging job requires the use of a multiplicity of choker-cables ranging from eight to ten feet in length and which, as is known, are used to wrap around logs so that the wrapped logs can be dragged to a decking or loading area. To cope with this storage problem means is mounted accessibly atop an available roof of a canopy embodied, for example, in a logging bulldozer. For the result desired a plurality of tubes are mounted atop a canopy roof, each tube having self-contained facilities in which the withdrawable chokers are orderly stored in a manner to reduce intertwining to an acceptable minimum.

3,752,343

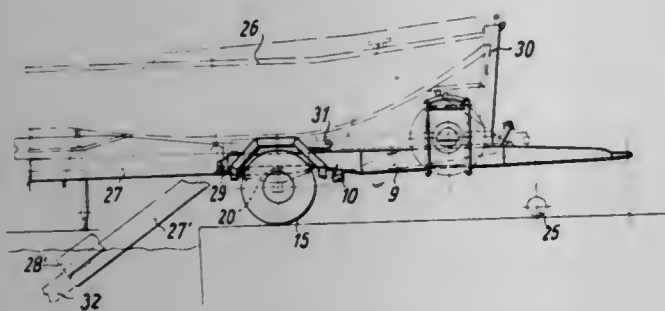
**MOVABLE CARRIER FOR A WATERCRAFT**Franz Krautkremer, Muhren, Germany, assignor to Schottel-Werft, Josef Becker KG, Spay/Rhein, Germany  
Filed Sept. 13, 1971, Ser. No. 179,987

Claims priority, application Germany, Dec. 12, 1970, G 70 45 952.8; Mar. 22, 1971, G 71 10 776.1

Int. Cl. B60p 3/10

U.S. Cl. 214-505

5 Claims



A boat trailer having an intermediate carriage provided for receiving the boat thereon and movable with respect to the trailer frame. The boat trailer has a light weight frame which is mounted on a single axle which axle in turn is mounted to the trailer frame by leaf springs. Hollow rubber bumpers are interposed between the axle and the frame and vibration (shock) absorbers are also positioned between the wheel axle and the frame. A single support guide or rail extends centrally of the trailer frame and supports a carriage thereon for longitudinal movement with respect thereto. Said carriage supports the boat. A winch is provided on the carriage to draw the boat onto the carriage and the winch is provided on the trailer frame to draw the carriage onto the trailer frame.

3,752,344

**BULK MATERIAL HANDLING SYSTEM**

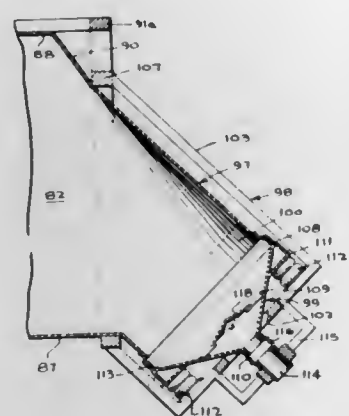
Edwin E. Clarke, Allentown, and Albert J. Florig, Norristown, Pa., assignors to Bulk Liner Corporation, Allentown, Pa., by said Clark

Division of Ser. No. 1,078, Jan. 7, 1970. This application Aug. 26, 1971, Ser. No. 175,389

Int. Cl. B60p 1/58

U.S. Cl. 214-508

8 Claims



A bulk material handling system generally including a carrier for transporting bulk material, the carrier having an opening closed by a rupturable panel, means for supporting the carrier, means for tilting the support means to cause the bulk material within the carrier to gravity flow toward the closed opening when the carrier is positioned on the support means, a rigid upright frame structure mounted on the support means, a rigid panel mounted on the upright frame structure, movable into engagement with the rupturable panel when the carrier is positioned on the support means, for supporting the weight of the bulk material within the carrier when the support means is tilted to cause the bulk material to flow toward the closed opening, and the rigid panel having discharge means through which bulk material within the carrier may be conveyed and discharged when the rigid panel engages the rupturable panel on the carrier, a portion of the rupturable panel is ruptured to intercommunicate the interior of the carrier and the interior of the discharge means and the support means is tilted to cause the bulk material within the carrier to gravity flow towards the closed opening and into the discharge means.

3,752,345

**STOCK PICKER ASSEMBLY WITH SELF-CONTAINED DRIVE MEANS**

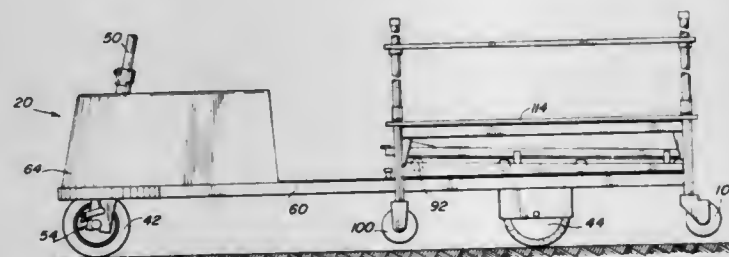
Benedict Molis, Lake Villa, Ill., assignor to Lift Parts Mfg., Inc., Elk Grove Township, Ill.

Filed Aug. 5, 1971, Ser. No. 169,242

Int. Cl. B60p 1/52

U.S. Cl. 214-515

7 Claims



A motor-driven truck adapted for use as a prime mover and including means for engaging and for supporting and propelling an auxiliary conveyance such as a cart, the truck including a frame-carried friction-reducing bed defining a support base for the cart bearing thereupon, and means for positioning the cart on the truck for transport thereby.

3,752,346

**EXPANDABLE SIDE-HANDLING CONTAINER ATTACHMENT**

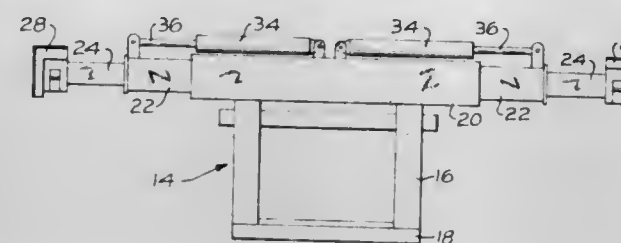
Norman D. Thompson, and Charles R. Chelin, both of Dallas, Oreg., assignors to Towmotor Corporation, Cleveland, Ohio

Filed Oct. 1, 1971, Ser. No. 185,699

Int. Cl. B66f 9/18; B66c 1/42

U.S. Cl. 214-621

8 Claims



An expandable, side-handling container lift frame attachment for lifting and moving empty or lightly loaded cargo containers of various lengths is provided. The lift frame attachment is adapted for attachment to or detachment from a carriage of a fork-lift truck, and includes telescoping, transverse beam members that can be extended or retracted in length to fit intermixed containers of various lengths.

3,752,347

**CLOSURE FOR LINED VACUUM BOTTLE**

Vernon D. Bell, Westerly, R.I., assignor to King-Seeley Thermos Co., Norwich, Conn.

Filed Feb. 2, 1971, Ser. No. 111,848

Int. Cl. A47j 41/00

U.S. Cl. 215-13 R

2 Claims



A vacuum bottle incorporating a liner for protecting the glass vacuum filler. A closure construction is used in which the stopper and liner have cooperating sealing surfaces that are disposed at an angled relationship to each other. At least one of the angled sealing surfaces is flexible for deformation upon the exertion of a sealing pressure to establish and maintain a good seal.

3,752,348

**MOTOR VEHICLE ELECTRICALLY HEATED WINDSHIELD AND BACKLIGHT SYSTEM**

Richard T. Dickason, Birmingham; Donald J. Ray, Southgate, and Charles D. Simmons, Dearborn Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 30, 1971, Ser. No. 176,083

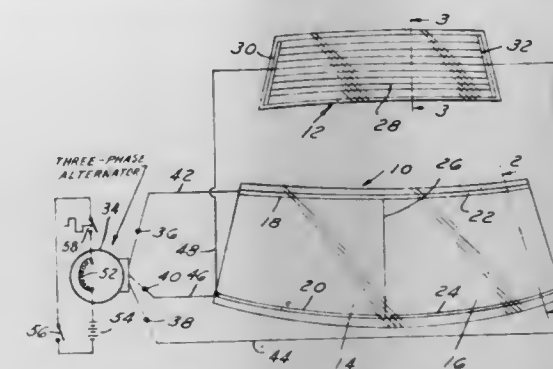
Int. Cl. H05b 1/02, 3/26; E06b 7/12

U.S. Cl. 219-203

1 Claim

A system is described for electrically heating a motor vehicle windshield and backlight. The system includes a

windshield having at least two conductive surfaces and a backlight having at least one conductive surface. Each of the conductive surfaces is provided with a pair of bus bars spaced from one another to permit flow of electrical charge therebetween via the conductive surfaces. This generates heat in the windshield and backlight for defogging and defrosting purposes. The system includes a three phase alternator having the conductive surfaces of the windshield and backlight con-



nected thereto to provide substantially balanced loading of the alternator phases. The alternator may have a field winding supplied by a dc source of electrical energy located in the motor vehicle. A switch connected in series with the field winding may be provided to energize the system. Over-temperature protection for the alternator may be achieved by the provision of a thermostat also connected in series with the alternator field winding.

3,752,349

**COLLAPSIBLE CONTAINER**

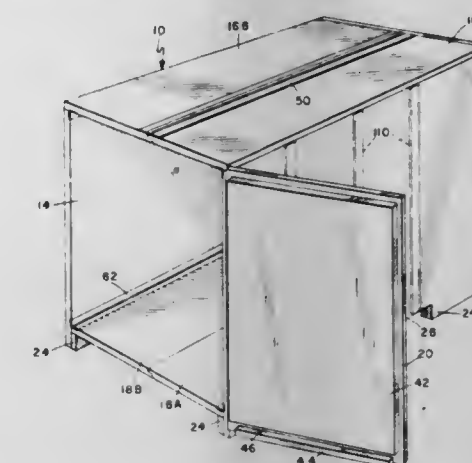
Sudhir N. Rana, Del Mar, Calif., assignor to Flexogenics, Inc., Solana Beach, Calif.

Filed Mar. 15, 1971, Ser. No. 123,952

Int. Cl. B65d 7/26, 9/14

U.S. Cl. 220-6

10 Claims



A collapsible container in which the doors at opposite ends provide rigidity for the structure. Opposed walls of the container are hinged to fold inwardly between the other walls, the doors folding back against the outside of the structure. In the erected position the doors have plug portions which fit closely into the ends of the box structure and maintain the alignment and rigidity of the walls. The hinges used in the structure are sealed on both sides to make the container weatherproof.

3,752,350

**REFRIGERATOR CABINET CONSTRUCTION**

Howard S. Franck, Oxford, Ohio, assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed Sept. 28, 1971, Ser. No. 184,466

Int. Cl. B65d 25/18

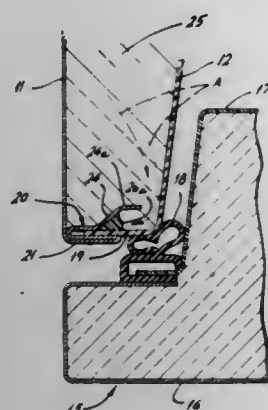
U.S. Cl. 220-9 G

1 Claim

A refrigerator cabinet having a metallic outer shell, a plastic inner liner spaced therefrom, and foamed-in-place insulation



filling the space between the shell and liner. The outer shell includes a forwardly positioned, inwardly facing channel that receives a flanged forward portion of the liner to provide an access opening for the compartment defined by the liner. One leg portion of the channel is spaced inwardly of the access



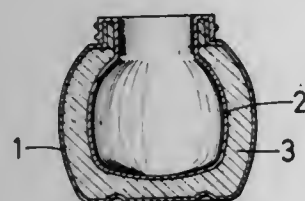
opening and has a section that is divergent from the liner flange and extends into the insulation. A strip of pliant sealing material is received within the wedge-shaped recess formed by the divergent section and the liner flange, and is urged into tight sealing engagement by the expansion of the foamed insulation.

### 3,752,351 HIGH IMPACT RESISTANT DOUBLE-WALLED CONTAINER

Kanjiro Nagata, 9-chome 1 Banchi Yasunaka-cho Yao-chi, Osaka, Japan  
Continuation-in-part of Ser. No. 63,917, Aug. 14, 1970. This application Jan. 27, 1971, Ser. No. 110,109  
Claims priority, application Japan, Sept. 6, 1969, 44/70781  
Int. Cl. B65d 25/18

U.S. Cl. 220-9 R

2 Claims



Plastic double-walled containers having a high impact-resistance wherein the space between the outer and inner walls is filled with a hardened gypsum cement and resin combination.

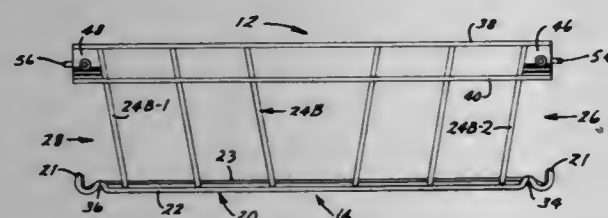
### 3,752,352 STACKABLE NESTABLE CONTAINER

Yvan Senecal, 347 Tait Cres., St. Laurent, Montreal 378, Canada

Filed July 8, 1971, Ser. No. 160,829  
Int. Cl. B65d 7/20, 21/02

U.S. Cl. 220-19

15 Claims



An open-ended stackable and nestable wire container having a base, two opposite substantially vertical side walls and a

pair of transversely extending bails journaled at their respective ends to the opposite upper corners of the side walls. The bails are swingable inwardly to permit continuous stacking of like containers, or the bails may be swung outwardly to permit continuous nesting of like containers. The container is constructed substantially entirely from wire and the side walls of the container have a thickness of approximately two wire diameters. The end walls of the container are substantially open to permit free access to the goods stored in the container, and the swingable bails interconnect adjacent upper ends of the side walls to provide the container with desired strength and durability and to promote ease of stacking of like containers.

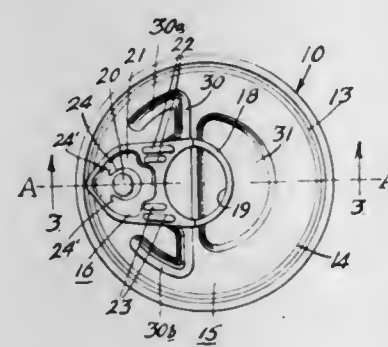
### 3,752,353 CAN END

William J. Slade, Moorestown, N.J., assignor to Campbell Soup Company, Camden, N.J.

Filed Jan. 24, 1972, Ser. No. 220,359  
Int. Cl. B65d 17/24

U.S. Cl. 220-54

2 Claims



A can end having a score line defining a removable panel and a lanced pull tab mounted by means of a rivet on the panel for use in rupturing the score line and removing the panel is provided with shaped embossments in the panel for providing first and second bend lines in the panel transverse to the tab to cause the panel to bend readily during separation without requiring thumb pressure on the panel. The first bend line extends along a chordal line located rearwardly adjacent the rivet and tangent to the terminii of two arcuate extensions of one of the embossments, which extensions extend peripherally from their terminii to locations adjacent the diameter of the panel and are there linked together by a depressed region which is located under the pull tab and which cooperates with another semi-circular embossment on the other half of the panel to provide the second bend line when the tab is pulled after being pivoted upwardly to rupture the score line and to bend the panel along the first bend line.

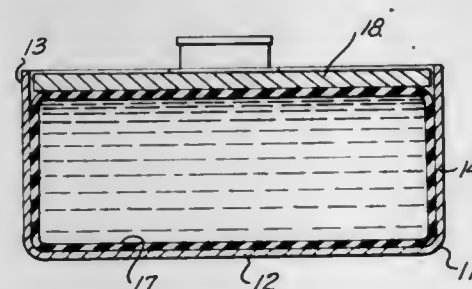
### 3,752,354 CONVERTIBLE TRANSPORTING DEVICE

Galip Demirag, Beyaglu Tokatliyan Ishani, Kat: 5 No: 40, Istanbul, Turkey

Filed July 30, 1971, Ser. No. 167,589  
Int. Cl. B65d 25/14

U.S. Cl. 220-63 R

3 Claims



A convertible transporting device in which a flexible fluid containing bag is supported in an open top container. The

flexible bag fills the container when full of fluid and lies in the bottom of the container when empty. A support platform forms a movable top wall in the container supported by the bag. The platform moves downwardly in the container as the bag empties and with the bag completely empty forms a floor in the bottom portion of the container overlying the bag. With the bag empty and the platform in its lowermost position, dry freight can be stacked on the platform within the container to provide a payload on the reverse trip.

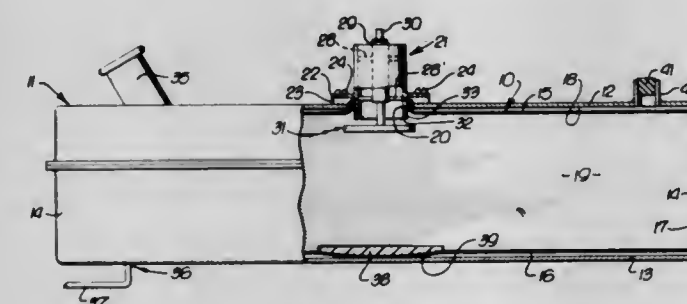
### 3,752,355 CONTAINED VOLATILE LIQUIDS VAPOR RETENTION SYSTEM

Joseph Weissenbach, Los Angeles, Calif., assignor to Joseph Weissenbach and Vernon D. Beehler, both of Los Angeles, Calif., part interest to each

Filed Jan. 5, 1971, Ser. No. 104,079  
Int. Cl. B65d 3/00; B67c 3/00; B65d 51/16

U.S. Cl. 220-86 R

13 Claims



A tank for volatile fuel has a flexible bag inside with its own breather valve separate from the fill pipe for the tank. When the tank is filled, a muff around the fill pipe seals the tank against exhaust of volatile vapors and air from the bag is forced out the breather valve as it is displaced by the liquid fuel until a valve element on the bag shuts off the breather valve, whereby only pure air is vented to the atmosphere. As the tank empties during use, air returns through the breather valve to fill the bag and replace the space in the tank previously occupied by the liquid fuel.

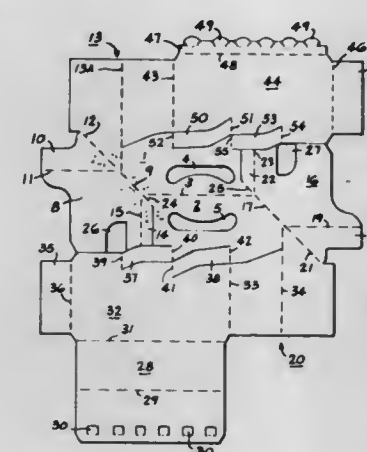
### 3,752,356 ARTICLE CARRIER

Homer W. Forrer, Jonesboro, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Dec. 13, 1971, Ser. No. 207,491  
Int. Cl. B65d 75/00

U.S. Cl. 220-113

8 Claims



An article carrier of the basket style comprises a bottom wall, a pair of side walls foldably joined respectively to opposite side edges of the bottom wall, a pair of end walls foldably joined at each end edge thereof to corresponding end edges of different side walls, a pair of anchoring panels affixed in face contacting relation to the end walls respectively and each anchoring panel having one vertical edge disposed medially of the associated end wall and constituting means for

securing to the associated end wall a riser panel which is foldably joined to the vertical edge of each anchoring panel and which extends upwardly above the top edges of the end walls to form a means for connecting the handle to the carrier, the handle comprising a pair of handle panels secured in face contacting relation to each other and disposed about the upper portions of the riser panels. A handle reinforcing panel may be foldably joined to the top edge of each riser panel and disposed between the riser panel and one of the handle panels to provide a four ply handle at each end of the carrier.

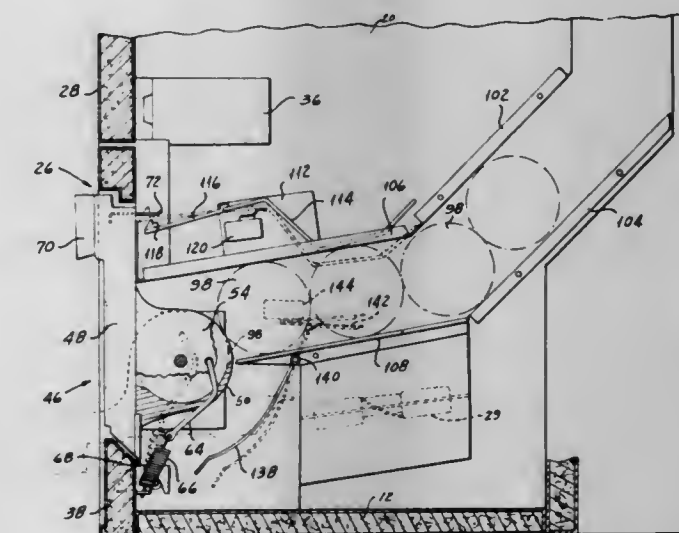
### 3,752,357 HIGH CAPACITY, SMALL SIZE VENDOR FOR CANS

John A. Harris, Hagerstown, Md., assignor to Rowe International, Inc., Whippany, N.J.

Filed Dec. 23, 1970, Ser. No. 100,979  
Int. Cl. G071 11/00

U.S. Cl. 221-17

1 Claim



A small size, high capacity merchandising machine for dispensing canned goods such as beverages in cans in which a common coin mechanism releases a locking means which is common to and which normally holds respective pivoted escapement doors in closed positions at which compartments thereon receive the lowermost cans from respective gravity feed can supplies to permit one door selectively to be pivoted to an open position at which the can therein is accessible to the customer while the remaining cans in the corresponding supply are held in position without back pressure being exerted on the supply. A simple mechanical interlock prevents concomitant opening of both doors.

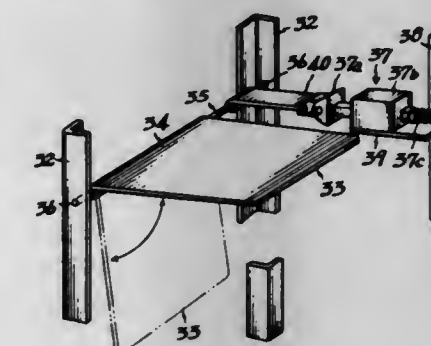
### 3,752,358 ARTICLE DISPENSING DEVICE WITH SEQUENTIALLY RELEASABLE HINGED SHELVES

Kiyomitsu Ohno, Naka 2-9-9 Kunitachi-shi, Tokyo, Japan

Filed June 25, 1971, Ser. No. 156,880  
Int. Cl. G071 11/06

U.S. Cl. 221-90

8 Claims



A shoes receiving box wherein a plurality of shelf plates is disposed with a fixed spacing between the adjacent ones in the



vertical direction in the box, and wherein every time a coin is thrown in or a push-button is depressed, bowling shoes, skates or the like respectively placed on the shelves fall down successively from the bottom to be delivered to a taking-out port provided at the lower part of the box.

3,752,359

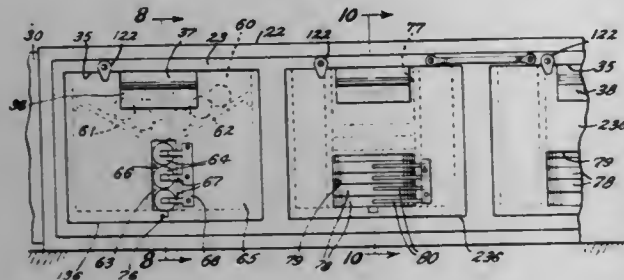
## PROGRAMMED DISPENSERS

Joseph Denman Shaw, 508 Church St., Brownsville, Pa.

Filed Feb. 28, 1972, Ser. No. 229,770

Int. Cl. B65g 1/00

U.S. Cl. 221-5



The programmed dispenser for pharmaceuticals disclosed herein employs a cabinet containing a plurality of individually coded drawers each having a pharmaceutical magazine cooperative with a dispensing slide means, and an indexed selector means adapted to periodically receive the cabinet to thereby operate a slide means and dispense one or the prescribed number of pharmaceuticals from a magazine.

3,752,360

## SELECTIVE DISPENSING APPARATUS FOR BOTTLED PRODUCTS OR THE LIKE

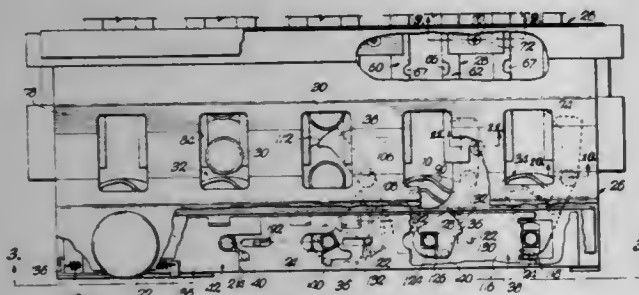
Herman R. Craven, Prairie Village, Kans.; John W. Baxendale, Kansas City, and Charley W. Hunter, Raytown, both of Mo., assignors to The Vendo Company, Kansas City, Mo.

Filed Aug. 18, 1972, Ser. No. 281,632

Int. Cl. B65g 59/06

U.S. Cl. 221-125

18 Claims



A simple, reliable, economical, primarily mechanical, normally low capacity, selective dispensing apparatus is provided for use in vending products such as bottled beverages or the like. The apparatus utilizes customer actuated mechanical means for selecting and releasing products after proper credit has been established and is adapted for single or dual price operation. Bottled products are stored by suspension of their necks on inclined pairs of parallel rails along which they are gravity fed as required to releasing stations where the lowermost bottles are normally engaged and held against release by the customer actuable product selecting and releasing means. The product selecting and releasing means are restrained by a captive link mechanism against actuation of more than one of same at one time and are also normally restrained, in one or more price dependent groups, by credit operable locking means against actuation until proper credit has been established. Coinage deposit by a customer need provide only a brief, single, electrical pulse for momentarily actuating a credit solenoid of particular price significance in order for such solenoid to unlock the locking means, thereby simplify-

ing the requirements for coin handling accessories. Once unlocked, the locking means is held in unlocked condition by latching means that is, in turn, released by actuation of any product selecting and releasing means to restore the locking means to its locked condition until credit has again been established.

3,752,361

## PANEL SUPPORTING AND LIFTING DEVICE

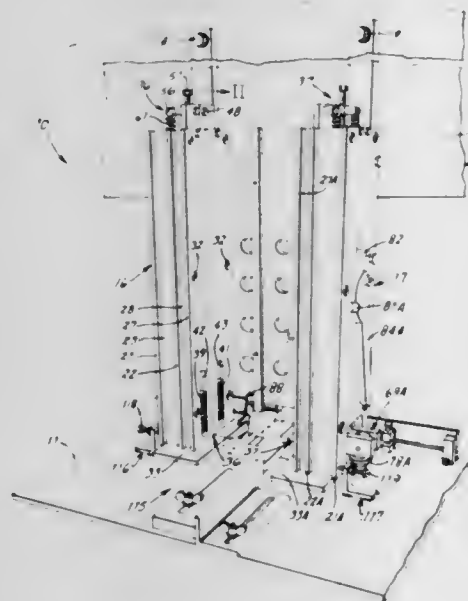
Ronald C. VanLinder, Watervliet, and Basil R. VanLinder, Kalamazoo, both of Mich., assignors to Winkel Machine Company, Inc., Kalamazoo, Mich.

Filed June 23, 1972, Ser. No. 265,505

Int. Cl. B65g 59/00

U.S. Cl. 221-251

8 Claims



A panel feeding machine for removing the bottom panel from an upstanding stack of panels. A supporting and lifting device is provided for laterally supporting the stack and for lifting at least a portion thereof. The supporting device includes a pair of upstanding and spaced guide walls separated by the stack. The supporting device is secured to a frame which is adapted to permit a lateral movement of the guide walls with respect to the frame so that stacks of different widths may be accommodated. The lifting device is mounted on each of the guide walls and is movable therewith. The lifting device includes a jaw assembly mounted for lateral movement with respect to the guide walls for gripping the stack therebetween and lifting the upper portion of the stack to remove the weight of the upper portion of the stack from the lower panels thereof. A control is provided for controlling the gripping force of the jaw assembly in response to the weight of the upper portion of the stack.

3,752,362

## LIQUID HANDLING METHOD AND APPARATUS

George A. Risener, 5675 Rosewell Road, N. E., Apt. 47 E, Atlanta, Ga.

Filed Dec. 16, 1971, Ser. No. 208,856

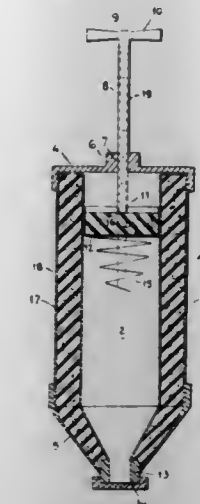
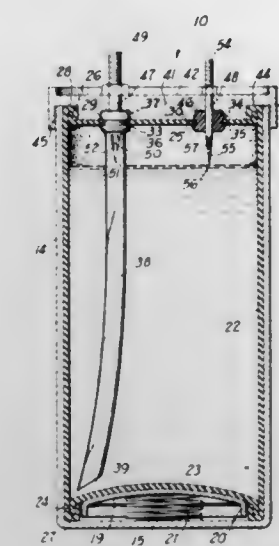
Int. Cl. B67b 7/24

U.S. Cl. 222-85

9 Claims

A liquid handling method and apparatus wherein the apparatus includes an outer container having an open top, a closed disposable inner liner containing a predetermined amount of the liquid positioned within the outer container and

having a top capable of being ruptured, and a cover for securing over the outer container, the cover having means to rupture the top of the inner liner to provide a means of withdrawing the liquid.



ture the top of the inner liner to provide a means of withdrawing the liquid.

closures and a plunger to exert an urging pressure for the dispensing of the ice cream.

3,752,363

## CONTROL FOR INJECTION MOLDING MACHINE

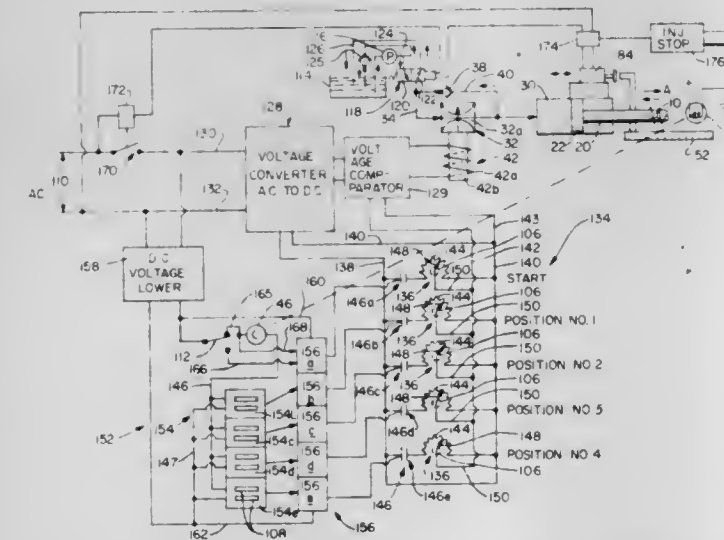
Donald Fegley, Lakewood; Sobhy T. Khalil, Mayfield Heights; Carl M. Lrick, Mentor, and Leonard P. Nypaver, Westlake, all of Ohio, assignors to Van Dorn Plastic Machinery Company, Cleveland, Ohio

Filed Nov. 12, 1971, Ser. No. 198,398

Int. Cl. B29h 5/24

U.S. Cl. 222-63

11 Claims



Variations in the longitudinal speed of movement of the screw of a plastic injection molding machine is achieved by control means which function to provide for speed changes to occur at preselected positions of the screw relative to the injection stroke thereof. The screw speeds and the positions of the screw at which speed changes occur are manually settable by corresponding pairs of dials on a control board positioned at the machine and which dials readily provide visual indication of the speed and position settings.

3,752,364

## CONTAINER FOR ICE CREAM

Robert De Vries, 2 Valeriusstraat, The Hague, Netherlands

Filed Jan. 21, 1971, Ser. No. 108,261

Claims priority, application Netherlands, Feb. 9, 1970, 7001774

Int. Cl. B67d 5/42

U.S. Cl. 222-131

1 Claim

A container for insulating, transporting and also dispensing

3,752,365

## BATH ROOM MOUTH WASH DISPENSER

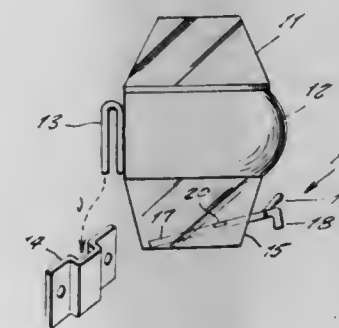
Mary E. Coleman, 20 N. Main Ave., Apt. 36, Atlantic City, N.J.

Filed Nov. 1, 1971, Ser. No. 194,198

Int. Cl. B67d 5/12

U.S. Cl. 222-181

1 Claim



A container for dispensing mouth wash in a convenient manner, the device comprising a special bottle consisting of a clear plastic cover that screws down on a solid colored central body having a clear plastic bottom member therebelow, the bottom member being provided with a tiltable dispensing spigot for discharging the mouthwash, and the bottle being attachable to a bracket mountable on a wall of a bathroom so that is handy for use to all.

3,752,366

## TWO-PIECE SUCTION PUMP

William John Lawrence, Jr., 33 Helen Pl., Clifton, N.J.

Filed Oct. 27, 1971, Ser. No. 193,102

Int. Cl. B65d 37/00; F04b 43/00

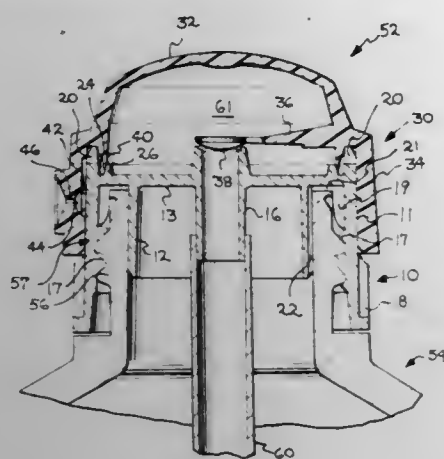
U.S. Cl. 222-207

13 Claims

An inexpensive, easily assembled two-piece liquid dispensing pump for a container. A relatively rigid cap member, having a central passageway into the container, is engaged to the finish or mouth portion of the container. A deformable member having a resilient dome is engaged to the cap member and cooperates therewith to define a fluid receiving chamber. The deformable member has (1) an integral check valve adapted to close the cap member's central passageway, (2) integrally molded fluid passages in a depending skirt, and (3) a fluid dispensing orifice integrally molded into the depending skirt and connected to the fluid passages. The pump, when in position on a container filled with liquid, is



operated by sequential depression and release of the dome of the deformable member, thereby creating a partial vacuum to response to build up of pressure in a back pressure area. A commercially available cartridge is the preferred source of



draw liquid from the container into the chamber from which it is dispensed.

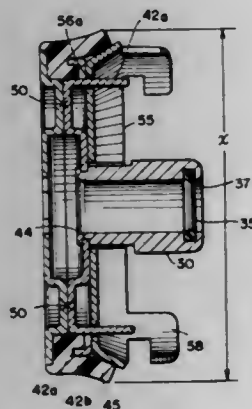
**3,752,367**  
**PLUNGER ASSEMBLY FOR HAND-OPERATED GREASE GUN**

Edwin P. Sundholm, P.O. Box 108A, R.R. No. 1, Albert City, Iowa

Filed June 26, 1972, Ser. No. 266,448  
Int. Cl. G01f 11/00

U.S. Cl. 222-256

6 Claims



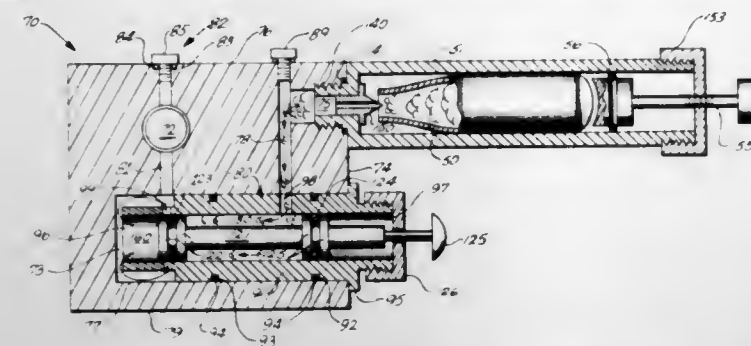
A plunger assembly for use in hand operated grease guns which have a cylindrical grease container with a rod extending axially therein and which are adapted for use with both bulk-filled and cartridge-packaged greases; said plunger assembly comprises a cylindrical sleeve with a bore therethrough carrying a sealing ring to provide a grease-tight seal with said rod, a guide assembly rigidly mounted on said sleeve which receives and secures an annular flexible sealing means with rearwardly extending sidewalls and a plunger cup slidably mounted on said rod which engages said sidewalls in operation to urge them outward by a pivotal flexing action to selectively provide a sliding, grease-tight fit around the outside of the plunger assembly.

**3,752,368**  
**AIRLESS LIQUID SPRAYING DEVICE**  
Harry L. Robertson, 210 N. Angelino Ave., Azusa, Calif.  
Filed Oct. 12, 1971, Ser. No. 188,140  
Int. Cl. G01f 11/38

U.S. Cl. 222-327

12 Claims

A liquid spraying device employs compressed gas to urge a piston to slide in a tank and pressurize the liquid contained therein. The liquid is forced through a trigger operated liquid release valve and flows through a tip for mechanical atomization. Compressed gas is admitted into the tank through a pressure control valve which opens momentarily when a connected pushbutton is depressed and closes automatically in

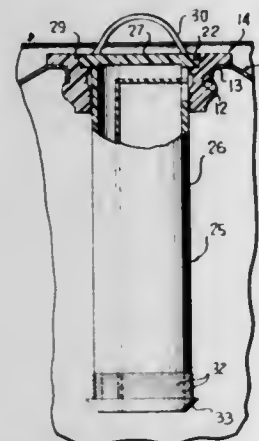


compressed gas and is supported by a holder part of the device.

**3,752,369**  
**CONTAINER SPOUT AND POURING NOZZLE**  
Michel Robert, Bihorel, France, assignor to J. J. Carnaud & Forges De Basse-Indre S.A., Paris, France  
Filed July 2, 1971, Ser. No. 159,214  
Claims priority, application France, July 6, 1970, 7024925  
Int. Cl. B67d 3/00

U.S. Cl. 222-481

12 Claims

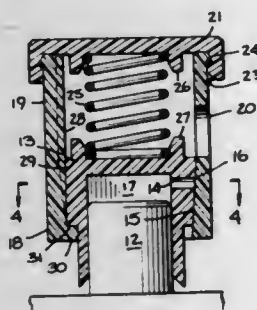


This disclosure relates to a pouring nozzle which is specially constructed for use in combination with a container spout after the container has been opened. The pouring nozzle serves to seal the opened container spout and is extendable from within a container to a locked and sealed projecting position to facilitate the dispensing of the contents of the container.

**3,752,370**  
**SHUTTER-TYPE VALVE MECHANISM**  
Richard L. Davenport, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.  
Filed Mar. 26, 1971, Ser. No. 128,295  
Int. Cl. F16k 23/00

U.S. Cl. 222-514

8 Claims



In association with a dispensing valve for controlling the outflow of the contents from a pressurized container which

has a discharge orifice in a body surface, there is provided a closure member movable relative to the surface. When the closure member is in position for occluding the orifice an arrangement causes the closure member to bear against or be pressed down on the orifice into fluid sealing relationship. In one form of the invention the closure member approaches the orifice with a wedging action while in another form it is spring biased towards the orifice. In another form an interference fit is developed between the closure member and the surface surrounding the orifice.

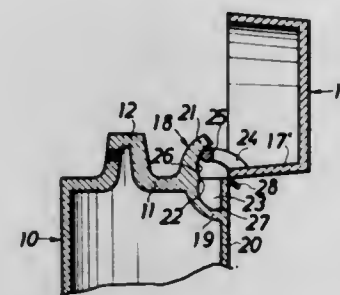
**3,752,371**  
**CONTAINER CAP CAPABLE OF BEING RESILIENTLY HELD OPEN AND CLOSED**

Rinnosuke Susuki, Tokyo; Hiroshi Hoshi, Chiba-ken; Shinichi Araki, Funabashi-shi; Shinzo Miyamoto, Soka-shi, and Masao Ishii, Yachiyo-shi, all of Japan, assignors to Lion Fat and Oil Co., Ltd., Tokyo, Japan

Filed July 23, 1971, Ser. No. 165,635  
Claims priority, application Japan, July 24, 1970, 45/74303; July 31, 1970, 45/76842  
Int. Cl. B67d 5/06

U.S. Cl. 222-182

3 Claims

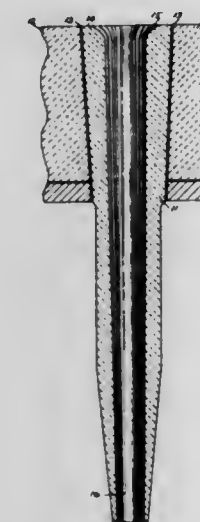


A cap for a container, said cap being coupled to said container through resilient coupling means provided to said container and to the interior of said cap. The appearance of the container is not lost by the resilient coupling means. The cap can be positively held closed or open by the elastic force provided by said resilient coupling means.

**3,752,372**  
**CLAY-GRAPHITE SPOUT**  
Francis Marion Mitchell, III, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.  
Filed Apr. 20, 1971, Ser. No. 135,672  
Int. Cl. B22d 37/00

U.S. Cl. 222-566

11 Claims



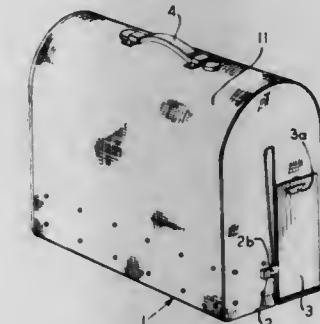
A pouring spout for pouring molten metal in a continuous casting system, the composition of said pouring spout including, among other substances, graphite, clay, refractory oxides and other refractory materials, wherein the percentages of

each substance vary within a specified range according to the purity of metal being poured. The internal configuration of the spout results in a closely controlled and consistent flow of molten metal.

**3,752,373**  
**PORTABLE WARDROBE REFRESHER**  
Sally J. Smith, 299 Lyons Ave., Newark, N.J.  
Filed Mar. 8, 1972, Ser. No. 232,704  
Int. Cl. A41h 43/00

U.S. Cl. 223-51

5 Claims

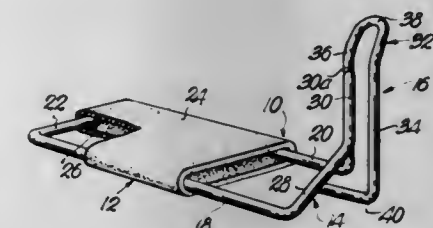


A conventional bag for hanging and transporting clothes is fitted at its lower end with a pair of superposed rectangular compartments. The bottom compartment contains steam generating means, whereas a compartment just above the bottom compartment contains a hot air blower. The aforesaid compartment is separated from the upper clothes carrying portion of the bag by a drainboard partition, at whose low point is centered a pipe which drains collected liquid into the steam compartment. Generated steam is transmitted uniformly throughout the clothes carrying portion of the bag through spaced perforations in a pair of flexible or hinged pipes which serve as part of a supporting frame when the bag is in vertically extended position. The bag is constructed to double over with the ends latched together for carrying.

**3,752,374**  
**NECKTIE KNOT-FORMING TOOL**  
George M. Pro, 9307 Lee Blvd., Leawood, Kans.  
Filed Jan. 3, 1972, Ser. No. 214,799  
Int. Cl. A47j 51/06

U.S. Cl. 223-111

8 Claims



A tie shaper in the nature of a hand tool for use as an aid in the formation of a necktie knot by gathering the necktie material into a dimple within and below the knot, has a pair of dimple-forming elements which are placed on opposite sides of the front panel of the tie and then slipped upwardly into the knot while the latter is still loose. As the elements are thereupon compressed toward each other, the tie material of the front panel is gathered and drawn into one of the elements, forming the dimple. Then the tool is removed and the dimple is held in place by hand as the knot is tightened onto the dimple.



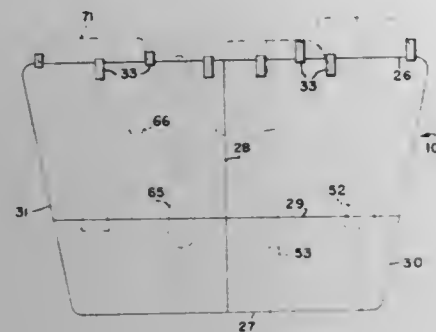
3,752,375

**VEHICLE-MOUNTED BICYCLE CARRIER**William Weigl, 11033 Greenhaven Pky., Becksville, Ohio  
Filed Feb. 16, 1971, Ser. No. 115,340

Int. Cl. B60r 9/10

U.S. Cl. 224—42.03 B

10 Claims



Carrier for supporting bicycles in stable, inverted vertical position on the exterior of a vehicle. Stability of the bicycles while inverted is achieved by utilizing the same three points of support used when riding a bicycle, namely, the seat and the two extensions of the handlebars. A plurality of bicycles may be carried in this fashion by nesting them in staggered front-to-back relationship on the carrier.

3,752,376

**AUTOMOTIVE VEHICLE SUPPORTING MEANS FOR CAMERAS**

Forest G. Shelton, 10421 Thorpe Ave., Overland, Mo.; Robert L. Woodruff, 435 Ryan Dr., Florissant, Mo., and Homer W. Shelton, 9970 Page Blvd., Overland, Mo.

Filed July 29, 1971, Ser. No. 167,233

Int. Cl. B60r 11/04

U.S. Cl. 224—42.45 B

11 Claims



A bracket for mounting camera means in an adjusted position intermediate the dashboard of an automotive vehicle and the back of the front seat thereof.

3,752,377

**METHOD AND APPARATUS FOR CONTROLLING LATERAL SPACINGS OF ELONGATED ELEMENTS**

George P. Knapp, Waban, Mass., assignor to Mount Hope Machinery Company, Taunton, Mass.

Filed Sept. 1, 1972, Ser. No. 285,838

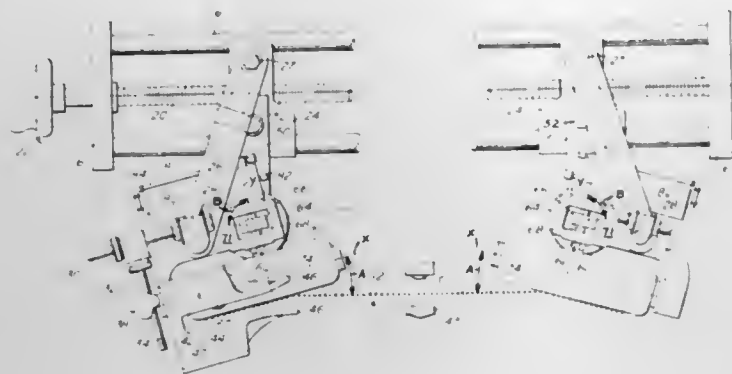
Int. Cl. B65h 25/26

U.S. Cl. 226—3

20 Claims

The spacings or relative lateral positions of elongated elements, such as tire cord or the warp threads of woven material, are controlled to obtain a uniform distribution. A pair of rolls are inclined at fixed angles to a plane in which the elements travel, to engage opposite edge portions of the web material with a wrap decreasing from the edges toward the center. The rolls are independently pivotable, on axes normal

to their axes of rotation, to adjust their angles of cant relative to the length of the material, thereby to control their lateral pull. Detectors determine the count or spacing of the elements in regions near either edge, and may also compare the count



or spacing of elements at the center of the material; alternatively, they may determine the positions of elements at either edge. The rolls are pivoted individually to adjust their cant angles as required to maintain desired spacings or relative lateral positions of the elongated elements.

3,752,378

**DEVICE FOR SUPPLYING STRIP-LIKE FABRIC BY MEANS OF ROLLERS**

Bernd Scheffel, Weissenburg/Bay, Germany, assignor to Walter Scheffel, Weissenburg/Bay, Germany

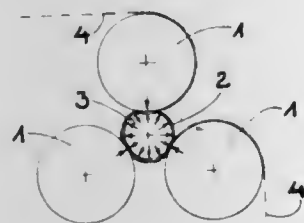
Filed Dec. 21, 1971, Ser. No. 210,362

Claims priority, application Germany, Dec. 21, 1970, P 20 62 859.5

Int. Cl. B65h 17/22

U.S. Cl. 226—183

8 Claims



A device for guiding strip-like fabrics such as warp threads in looms provided with rigid rollers, at least one of which is driven, the rigid rollers being spaced around a flexible roller which presses against the rigid rollers, with the flexible roller, for example, being a fluid-filled tube.

3,752,379

**INTERCHANGEABLE ENDLESS LOOP MAGNETIC TAPE CARTRIDGES**

Sergio Di Padova, and Pietro Musso, both of Ivrea, Italy, assignors to Ing. C. Olivetti &amp; C., S.p.A., Turin, Italy

Filed Feb. 15, 1972, Ser. No. 226,444

Claims priority, application Italy, Feb. 16, 1971, 67513 A/71

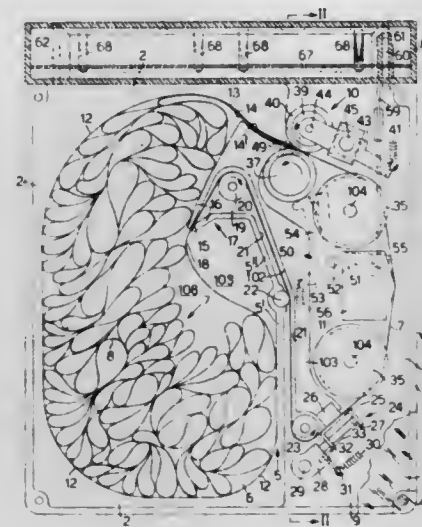
Int. Cl. B65h 17/42

U.S. Cl. 226—119

2 Claims

An interchangeable endless loop magnetic tape cartridge is provided with a first compartment for storing the bulk of the tape and a second compartment containing the driving means and magnetic head. The first compartment is provided with a curved inner surface to reduce the amount of tape rubbing against the walls of the first compartment. Access to the second compartment is provided by a finger which protrudes

into the center of the second compartment which reduces the tendency of the tape to become electrostatically attracted to adjacent convolutions and to the walls and thus reduce tape tension between the driving means and tape head.



The tape driving means include pinch rollers which extend beyond the width of the magnetic tape for improving the frictional contact therebetween.

3,752,380

**VIBRATORY WELDING APPARATUS**

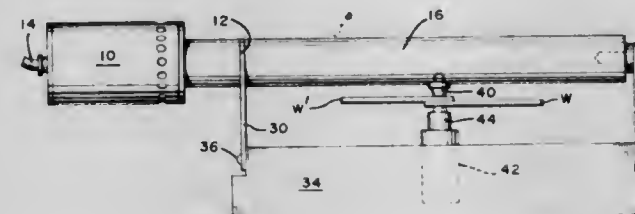
Andrew Shoh, Ridgefield, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Filed Mar. 13, 1972, Ser. No. 234,198

Int. Cl. B23k 1/06

U.S. Cl. 228—1

14 Claims



A vibratory welding apparatus specifically adapted for welding metal includes a resonator one wavelength long at the frequency of the sound transmitted therethrough and is supported from a stationary support by a set of support members which engage the resonator at two of its antinodal regions of longitudinal motion. The members are designed to yield in the direction of resonator motion but to provide rigidity in the direction normal to such motion.

3,752,381

**ULTRASONIC SOLDERING APPARATUS**

James J. Watson, Jr., Bethel, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Filed Mar. 17, 1972, Ser. No. 235,602

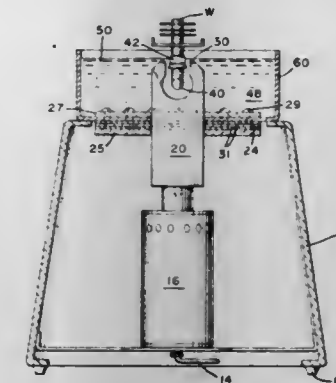
Int. Cl. B23k 1/06

U.S. Cl. 228—1

8 Claims

An ultrasonically activated molten metal bath is constructed for providing joints between the return bends of

radiators. The ultrasonic apparatus includes an electroacoustic converter fitted with a bifurcated horn which extends



through the bottom of the tank holding a quantity of molten metal.

3,752,382

**APPARATUS FOR WELDING A COVER TO A TUBULAR CERAMIC HOUSING**

Thomas J. Furnival, Logansport, Ind., assignor to General Motors Corporation, Detroit, Mich.

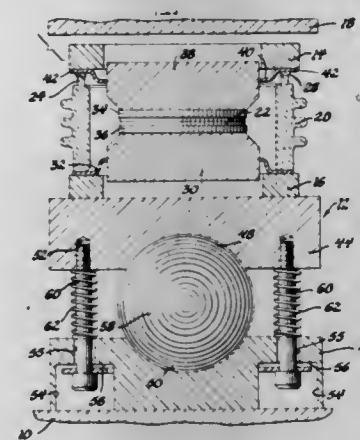
Division of Ser. No. 60,261, Aug. 3, 1970, Pat. No. 3,686,540.

This application Mar. 27, 1972, Ser. No. 238,354

Int. Cl. B23k 21/00

U.S. Cl. 228—3

2 Claims



A hermetically sealed enclosure for a semiconductor device and a method and apparatus for making same is disclosed. A tubular ceramic housing is provided with an integral die on one end. A cold weldable layer is brazed on the integral die. A first cover member is brazed onto the other end providing a hermetic seal there. A second cover member is cold welded to the layer hermetically sealing the one end. The cold welding apparatus includes a pressure equalizing assembly having a pair of spaced resiliently coupled elements with facing hemispherical recesses. One of the elements slides on a bearing ball nested within the recesses to equalize the compressive forces of the cold welding around the end of the housing.

3,752,383

**SOLDERING APPARATUS**

Melvin K. Allen, Los Angeles, and H. Peter Eschenbrucher, Diamond Bar, both of Calif., assignors to Technical Devices Company, Cleveland, Ohio

Filed Nov. 11, 1971, Ser. No. 197,990

Int. Cl. B23k 1/08

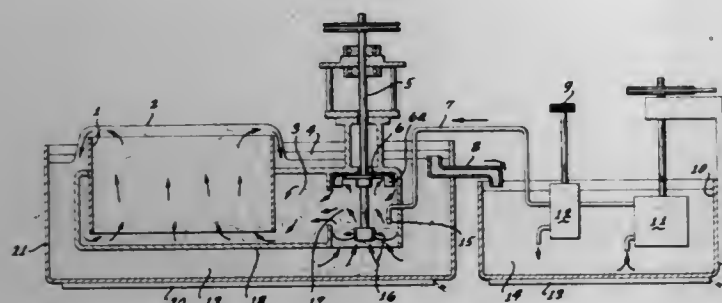
U.S. Cl. 228—37

4 Claims

Homogenization of petroleum oil in molten solder is produced in stages in an agitation chamber formed about the outlet of a solder pump of a standing wave soldering machine. In the first stage, a high pressure stream of oil is directed at the pressure faces of the pump propeller blades to produce inter-



mittent counteracting forces creating turbulence which reduces the oil to small particles and distributing them in the oppositely moving stream of molten solder. In the second stage, droplets or globules of oil remaining in the stream of oil and molten solder separate rising to the top of the agitation chamber to be drawn through an impeller agitator which



completes the reduction of the oil globules to finely divided particles which are distributed uniformly throughout the surrounding molten solder by shearing action of the agitator. The homogenized mixture of oil and molten solder flows into a pressure tank of the soldering machine to produce a standing wave of solder at a duct orifice.

3,752,384

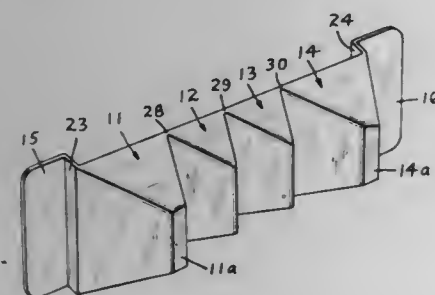
**RESILIENT PACKAGING SPACER**

Gene E. Siburn, Newburgh, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Jan. 5, 1972, Ser. No. 215,591  
Int. Cl. B65d 5/50

U.S. Cl. 229-14 C

14 Claims



A resilient packaging spacer is provided comprising a plurality of flexible joined triangular or wedge-shaped elements, positioned in the same plane, said spacer being equipped with flexible insert means for attaching the spacer through a slit in a carton, such as a paperboard container. The resilient packaging spacer is intended to space cylindrical rectangular or square-shaped articles, such as a water heater, etc., in a container. For packaging cylindrical articles, the intermediate wedge-shaped elements are shorter than the exterior or terminal elements.

3,752,385

**CARRIER FOR BOTTLES AND THE LIKE AND DIVIDER STRUCTURE THEREFOR**

Richard E. Woodgate, London, Ontario, Canada, assignor to Labatt Breweries of Canada Limited, London, Ontario, Canada

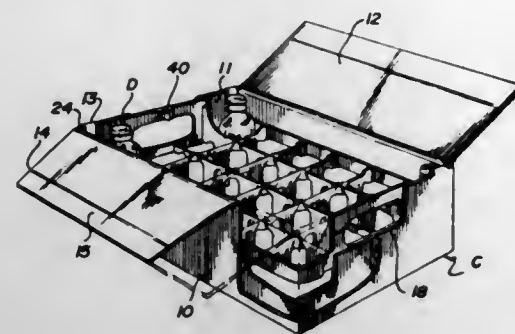
Filed Feb. 9, 1972, Ser. No. 224,776  
Int. Cl. B65d 3/24, 5/50

U.S. Cl. 229-15

12 Claims

A carrier for bottles and the like is described which has an improved divider structure. This divider structure is molded of a stiff plastics material and comprises a horizontal grid of longitudinal and lateral members integral with each other at regular points of intersection to form bottle-receiving compartments therebetween. A peripheral reinforcing strip surrounds the grid and is integrally joined to the ends of the longitudinal

and lateral members. Bottle separating members are also integrally joined to and extend vertically downward from the longitudinal and lateral members between the intersections.



The divider structure is releasably held within a paperboard tray and in use the tray with divider structure fits within an enclosing paperboard shell.

3,752,386

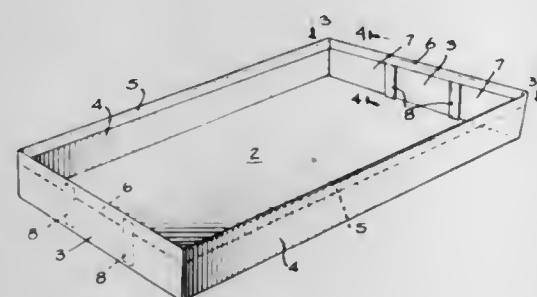
**PACKAGE CONSTRUCTION**

Rudolph A. Froehlig, College Point, N.Y., assignor to Modern Album and Finishing Co., Inc., College Point, N.Y.

Filed Sept. 15, 1971, Ser. No. 180,694  
Int. Cl. B65d 5/26

U.S. Cl. 229-32

8 Claims



A package construction in which a blank has zones of adhesive along the edges of the end flaps and pivotally mounted tabs adjacent said flaps to permit the flaps to be held between the adhesive areas so that the box will stand upright.

3,752,387

**SEALED CONTAINER**

Horst F. W. Arfert, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

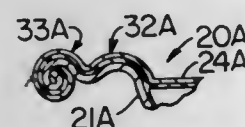
Division of Ser. No. 49,492, June 24, 1970, which is a continuation-in-part of Ser. No. 854,108, Aug. 29, 1969, abandoned.

This application July 14, 1972, Ser. No. 272,059

Int. Cl. B65d 5/64, 43/00

U.S. Cl. 229-43

8 Claims



A closure having a peripheral flange portion provided with an annular bottom surface is sealed by the application of heat and pressure to a dish-like container having a peripheral flange portion provided with a cooperating annular top surface so as to define a high quality bonded lamination comprised of the flange portions. The outer portion of the lamination is then curled to form a high strength annular bead which defines the peripheral outline of the side wall of a sealed container.

3,752,388

**PLASTIC BAG WITH INTEGRAL STRAP HANDLES**

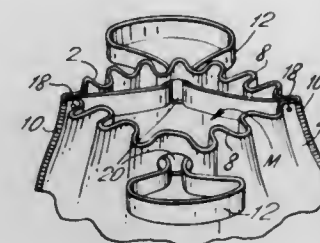
Albert A. Lynch, Rexdale, Ontario, Canada, assignor to Acme Paper Products Company Limited, Toronto, Ontario, Canada

Filed Dec. 2, 1971, Ser. No. 204,256

Int. Cl. B65d 33/10

U.S. Cl. 229-54 R

4 Claims



The instant bag is formed of two panels joined together by their side edges and at the bag bottom. Normally sandwiched between the top ends of the panels are a pair of straps which are integrally attached to the bag at and adjacent to its said side edges being otherwise detached from the panels to render them withdrawable from the bag mouth for use as handles.

3,752,389

**CENTRIFUGAL SEPARATOR WITH CONTROL MEANS**

Vilgot Raymond Nilsson, Hagersten, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

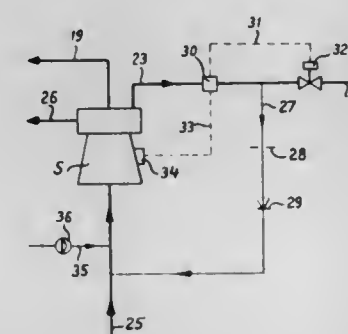
Filed Dec. 3, 1971, Ser. No. 204,529

Claims priority, application Sweden, Dec. 7, 1970, 16515/70

Int. Cl. B04b 11/00

U.S. Cl. 233-20 R

12 Claims



The rotor has a central outlet for a separated light liquid component, an intermittently opened peripheral outlet for separated sediment, and a third outlet for a separated heavy liquid component, there being a passage for conducting liquid from the third outlet to a reception place for heavy liquid component. Means are provided for controlling liquid flow to this reception place through said passage, and further means are provided for sensing when separated heavy liquid component is at a predetermined level in the rotor, said last means being operable upon such sensing to actuate the controlling means to effect liquid flow to the reception place through said passage.

3,752,390

**SWINGING BUCKET ROTOR ASSEMBLY**

Steven J. Chulay, Los Altos, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 4, 1972, Ser. No. 240,968

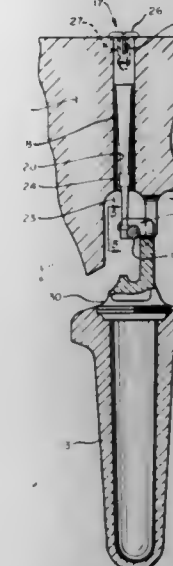
Int. Cl. B04b 9/12

U.S. Cl. 233-26

9 Claims

A swinging bucket centrifuge rotor having a plurality of machined bucket receiving cavities with a hanger disposed in

each cavity. The cavity includes surfaces which guide a bucket cap hook to facilitate engagement of the hanger by the hook



to support the bucket in the cavity and further guide the bucket as it swings.

3,752,391

**PUNCH AND PRINT DATA CARD RECORDER**

George Hamlin Leonard, and Raymond J. Enyeart, both of Varifab Inc. 1700 E. Putnam Ave., Greenwich, Conn.

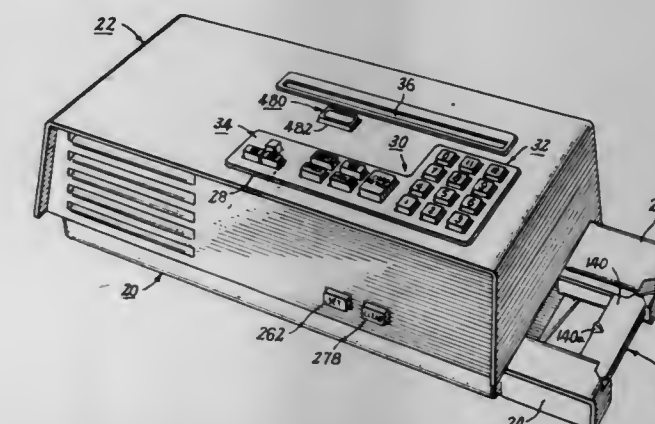
Division of Ser. No. 33,800, May 1, 1970, Pat. No. 3,682,093.

This application Sept. 13, 1971, Ser. No. 180,045

Int. Cl. G06k 1/02

U.S. Cl. 234-51

3 Claims



The disclosed data recorder includes a control cam operating to impart oscillating motions to separate punch and print actuators. The punch actuator reciprocates a punch bail to depress individual punches selected by data entry solenoids through punch interposers, thereby to perforate a data card. A step cam oscillated by the print actuator operates against print interposers coupled to the solenoids to angularly orient a print wheel, thus to imprint on the data card the data characters punched into the card. The data card is carried by a tray which is indexed through successive data entry positions in coordination with the control cam by tray stepping control apparatus. A replaceable ink cartridge supplies ink to the print wheel.

3,752,392

**BUSINESS MACHINES**

Kenneth F. Oldenburg, Arcadia, Calif., assignor to Litton Business Systems, Inc., New York, N.Y.

Division of Ser. No. 50,064, June 26, 1970. This application

Jan. 6, 1972, Ser. No. 215,876

Int. Cl. G07g 1/00

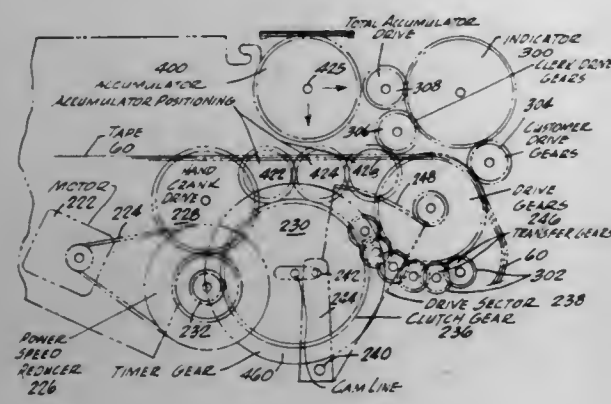
U.S. Cl. 235-7 R

5 Claims

A cash register is provided with a flexible plastic digit tape to interconnect the cash register display with the selected



depressed digit keys. The plastic digit tapes are very flexible and lightweight, and are operated to transmit force under tension to avoid binding and frictional forces. The digit tape is deflected down at the rear of the register to save space. The accumulator is moved down to engage the tape and to the rear to transfer to the display. Both the accumulator and the display assemblies have interleaved indicator wheels having dif-



ferent indications, with the wheel spacing and movement being unitarily related to the keyboard spacing. A combined ADD and TOTAL control, operating upon a cam-cam follower assembly is used to initiate the two modes of operation of the cash register to perform ADD cycles and TOTAL cycles of operation. Light duty components and simple controls, compatible with the low inertia of the digit tapes are used throughout the cash register.

3,752,393

## DIGITAL FLOW CALCULATOR

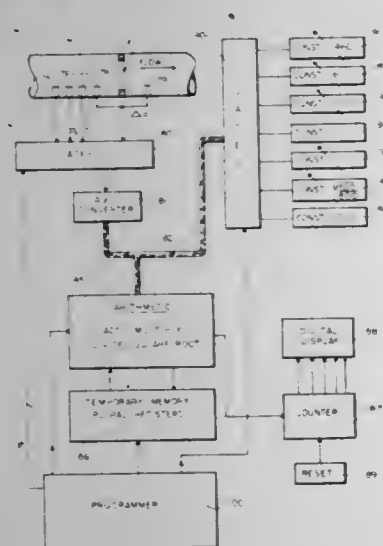
L. Max Moseley, Dallas, Tex., assignor to Teledyne Industries, Inc. (Geotech Division), Dallas, Tex.

Filed Aug. 2, 1971, Ser. No. 168,110

Int. Cl. G06F 15/32; G01F 1/00

U.S. Cl. 235—151.34

10 Claims



A pre-programmed calculator illustrated by an embodiment which repeatedly solves expressions for determining the gas flow through an orifice in a pipeline, the calculator performing its calculations using digital techniques, and the measured flow parameters, including in this example the gas temperature, pressure, specific gravity and differential pressure across the orifice, all being changed to digital form prior to such calculations. Numerical constants used in the expressions being solved are inserted into the calculator in digital form by manually presettable switches. The gas flow calculated in standard cubic feet is subsequently converted to thousands of standard cubic feet and cumulatively displayed, and the remainder after each such conversion is added to the next calculated flow value prior to its conversion so that each remainder is preserved. The expression for gas flow which is

solved by the present calculator is corrected by including a supercompressibility factor which is calculated anew during each new solution of the flow expression, and all calculations are repeated at a high rate to achieve high accuracy.

3,752,394

## MODULAR ARITHMETIC AND LOGIC UNIT

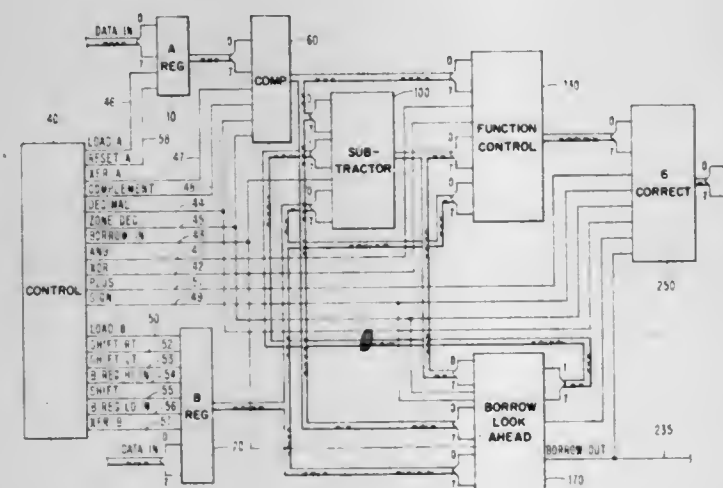
John Joseph Igel, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 31, 1972, Ser. No. 276,339

Int. Cl. G06F 7/50

U.S. Cl. 235—174

17 Claims



A modular and arithmetic logic unit (ALU) for performing logic functions of AND, OR and exclusive OR and arithmetic functions of binary and decimal subtract/add where decimal subtract/add operates with both zoned decimal and decimal data formats. A pair of registers holds the two operands. The outputs of one register feed complement circuitry and the outputs of the other register together with outputs from the complement circuitry go into a subtractor and into borrow look ahead circuitry. The subtractor feeds the borrow look ahead circuitry and function control logic. The outputs from the borrow look ahead circuitry are sent back into the subtractor and one of the outputs is borrow out. The data outputs are taken from a six correct circuit having inputs from the function control logic. Control signals appropriately control the operation of the complement circuit, subtractor, borrow look ahead circuit, function control logic and the six correct circuit.

## ERRATUM

For Class 236—47 see:  
Patent No. 3,753,184

3,752,395

## WIND MOTOR OPERATED HEATING SYSTEM

Baruir Ashikian, 505 Frechette, Sherbrooke, Quebec, Canada

Filed June 28, 1971, Ser. No. 157,428

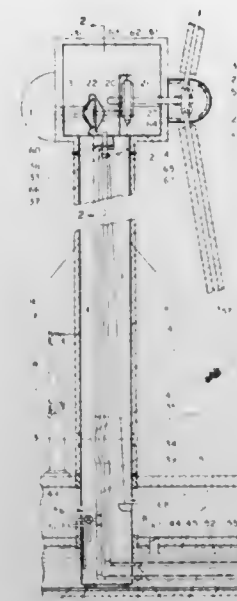
Int. Cl. F24d 5/02, 12/00

U.S. Cl. 237—46

1 Claim

A wind motor supplies mechanical energy to operate a

mechano-hydrothermal energy conversion system, the result- sheet stock and includes a pair of planar side plates disposed



3,752,396

## TRACTION MAT

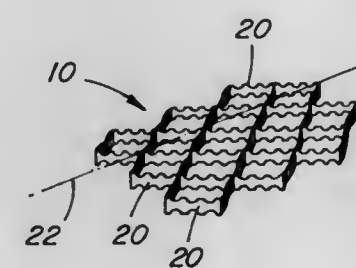
Leopold Bustin, P. O. Box 589, Dover, N.J.

Filed July 16, 1971, Ser. No. 163,370

Int. Cl. E01b 23/00; E04f 15/06

U.S. Cl. 238—14

2 Claims



A traction mat for positioning between a driving wheel of a motor vehicle and a roadway or the like which is covered with ice, so as to provide friction between the wheel of the motor vehicle and the roadway, is disclosed to comprise a plurality of generally longitudinally extending strips having a plurality of bends formed in each longitudinally extending strip, each strip extending generally longitudinally and including a plurality of spaced direction-reversing bends as well as a plurality of intermediate bends disposed between adjacent direction-reversing bends, the longitudinally extending strips being transversely spaced and longitudinally positioned such that the outside surface of each strip along its direction-reversing bends is in contact with the outside surface of the next adjacent strips along the direction-reversing bends, means for securing the adjacent longitudinally extending strips at their direction-reversing bends and a plurality of longitudinally spaced prongs formed on the upper and lower surfaces of each longitudinally extending strip to define friction elements for providing non-slip engagement between the ice of the roadway and the traction mat as well as between the wheel of the motor vehicle and the mat.

3,752,397

## RAIL ANCHOR

Emerson J. Ruble, Hinsdale, Ill., assignor to Portec, Inc., Oak Brook, Ill.

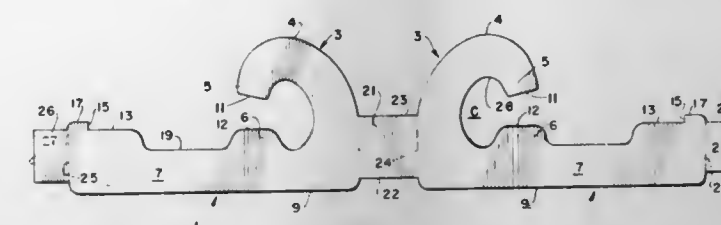
Filed Nov. 23, 1971, Ser. No. 201,368

Int. Cl. E01b 13/02

U.S. Cl. 238—327

9 Claims

A rail anchor of the twin-jaw hook type is formed from



in parallel spaced apart relationship and joined to one another by connecting webs at the end portions thereof.

3,752,398

## METHOD FOR SIMULTANEOUS FLUSH CLEANING MIXING CHAMBER

Sven Rolf Svensson, Goteborg, Sweden, assignor to Svenska Aktiebolaget Plastic Protection, Goteborg, Sweden

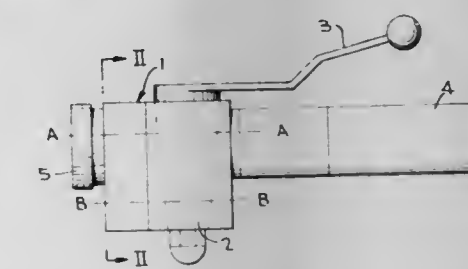
Filed Apr. 23, 1971, Ser. No. 136,666

Claims priority, application Sweden, Apr. 27, 1970, 5836/70

Int. Cl. B05b 15/02; B08b 7/04

U.S. Cl. 239—1

2 Claims



In machines for spraying plastics, there is a risk that the spray head may be blocked by curing plastics mixture if the head with its mixing chamber is not carefully cleaned as soon as a spraying cycle is completed. The present invention eliminates this risk by a method for flush cleaning the spray head by means of a cleaning liquid which is injected in the head, said injection being controlled by means of valves also controlling the mixing and spraying of the plastics.

3,752,399

## APPARATUS FOR TREATING HUMAN HAIR

Michael John Neale, and Henry Edward Gotch, both of Herriard, England, assignors to Rene Andre Louis Moulard, London, England

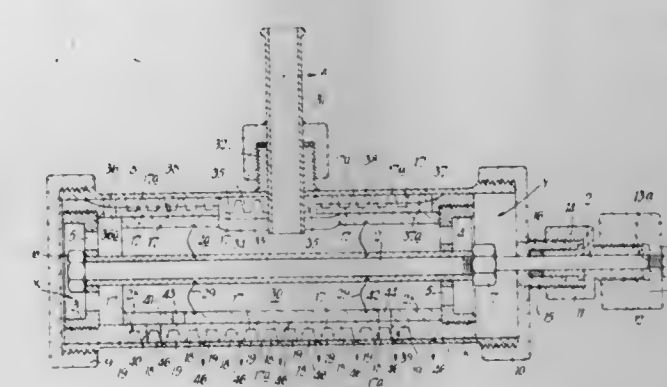
Division of Ser. No. 68,452, Aug. 31, 1970, Pat. No. 3,701,475.

This application May 15, 1972, Ser. No. 253,645

Int. Cl. B05b 1/14

U.S. Cl. 239—101

10 Claims



Means for controlling the outflow of two fluids having different physical and/or chemical characteristics, particularly hot and cold water for the treatment of hair, to provide discrete sprays of said fluids from an array of jet ports, which includes



a body member having two sets of fluid passages which are adapted to communicate respectively with sources of the two fluids under pressure;

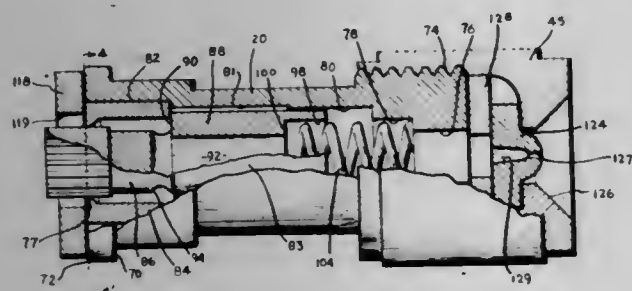
a closure member slidably mounted relative to the body member and carrying the array of jet ports which are so located that, during relative sliding movement between the closure member and body member, they simultaneously move sequentially into and out of communication with passages of the two sets alternately so that the two fluids can pass alternately through the jet ports to provide distinct and sequential impulses of the two fluids alternately.

3,752,400

**COMBINED SPRAY AND ANTI-CLOGGING MEANS**  
Oliver Jerome Calder, 1205 E. Madison, Orange, Calif.  
Continuation-in-part of Ser. No. 39,621, May 22, 1970, Pat. No. 3,645,450. This application Oct. 4, 1971, Ser. No. 186,084  
Int. Cl. B05h 15/02

U.S. Cl. 239—116

14 Claims



Spray means are described herein which comprise anti-clogging means. The anti-clogging means comprises a device which is positioned upstream of the spray tip and which has a constricted orifice that surrounds a mandrel which has a fluted end that extends past the orifice entrance. The mandrel is slidably mounted in the orifice with a spring to bias it against movement by fluid pressure. Any solids in the liquid that would clog the spray tip are abraded by the action of the mandrel. In a preferred embodiment, the orifice and mandrel assembly is used with airless spray equipment to prevent clogging of the minute orifices employed in this equipment and several interchangeable assemblies are used in combination with the several different sizes of orifices used in this spray equipment.

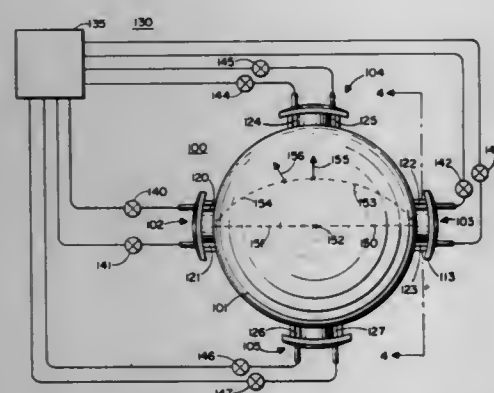
3,752,401

**CONTROL APPARATUS**

Apostolos P. Kizilos, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.  
Filed Dec. 23, 1968, Ser. No. 786,301  
Int. Cl. B64c 15/04

U.S. Cl. 239—265.35

4 Claims



A three-dimensional variable deflection thruster for varying the direction of a fluid stream about two mutually orthogonal axes, having no moving parts. A plurality of fluid streams are caused to attach to and flow around a convex three-dimen-

sional surface to impinge on one another and form a resultant fluid stream. The resultant fluid stream departs from the convex surface in a direction which can be controlled by varying the relative strengths and directions of the component fluid streams.

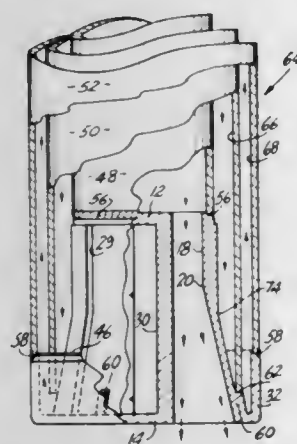
3,752,402

**FLUID INJECTION LANCE AND NOZZLE MEANS THEREFOR**

Harry Marioneaux, 2934 Rubdrix Blvd., Riverside, Calif.  
Filed Apr. 19, 1971, Ser. No. 135,269  
Int. Cl. C21c 5/46; B05b 15/00

U.S. Cl. 239—132.3

10 Claims



A nozzle attachable to a lance shank to provide an oxygen injection lance for the delivery of large quantities of oxygen to the melt in a steelmaking furnace. The nozzle is bell-shaped and has nine sectorial passageways running through it from top to bottom. The sectorial passageways are equiangularly spaced about the nozzle axis and separated by radial webs. Each of the webs has a slotted cavity, enclosed at the top and bottom, penetrating the body of the nozzle from the outside in, and all of the slotted cavities converge at the axial center of the nozzle to provide access from one to the other at this juncture. The sectorial passageways have straight-walled upper portions, but flare radially outwardly in their lower portions.

When the lance is in operation, oxygen passes downwardly through the lance shank and from there into the sectorial passageways of the nozzle. Because of their flaring lower portions, the sectorial passageways deliver the oxygen in an expanding pattern for widespread and uniform coverage of the melt in the furnace. Coolant is circulated through the slotted cavities in the radial webs of the nozzle when the injection lance is in use.

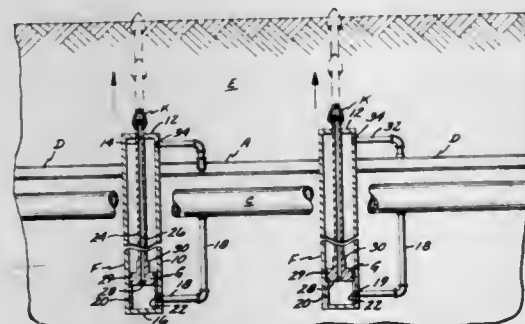
3,752,403

**IRRIGATION SYSTEM**

Anthony Van Diest, 15305 Oliva Ave., Paramount, Calif.  
Filed June 27, 1972, Ser. No. 266,700  
Int. Cl. B05b 15/10, 15/00

U.S. Cl. 239—204

6 Claims



An irrigation system that is connected to a source of water under pressure, and is buried in a field at a depth that is below the maximum depth to which the field will be plowed, and

below the frost line if the installation is made in an area subject to severe winters.

The system includes a number of spaced, vertically positioned cylinders that have vertically movable elongate members operatively associated therewith, and which members are substantially retractable into the cylinders. The upper ends of the cylinders are disposed a substantial distance below the maximum depth to which the field in which they are installed will be plowed. The members support spray heads and sets of pivotally movable protectors on the upper ends thereof.

The members, spray heads and sets of protectors may be forced either upwardly or downwardly through the ground defining the field by the pressure on the water used for irrigation purposes. After the members, spray heads and sets of protectors have been moved upwardly to a maximum extent, the spray heads are disposed a desired elevation above the surface of the field, and water discharges from the spray heads onto the upper surface of the field to irrigate the same.

When the irrigation is completed, water is discharged into the upper portions of the cylinders, with concurrent discharge of water from the lower portions thereof, and the members, spray heads and protectors being forced downwardly through the ground until the spray heads are adjacently disposed to the upper ends of the cylinders. The sets of protectors are of such shape that as they move upwardly and downwardly through the ground the force exerted by the ground on these protectors maintains the latter in an encircling position about the spray heads to prevent damage being done thereto, as well as earth and debris being forced into the spray heads to clog the same.

When the members, spray heads and sets of protectors are in the retracted positions beneath the ground surface, plowing and cultivating of the field in which they are installed may be carried out without danger of the irrigation system being damaged as a result thereof.

3,752,404

**COMPRESSED AIR SPRAY APPARATUS**

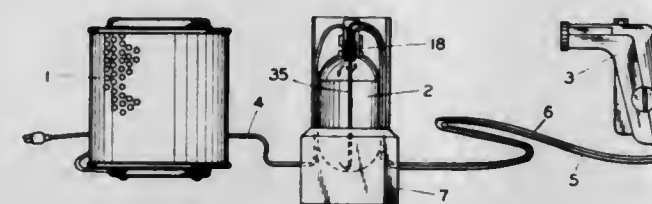
John R. Forsberg, Arlington Heights, Ill., assignor to Helene Curtis Industries, Inc., Chicago, Ill.

Filed Nov. 8, 1971, Ser. No. 196,623

Int. Cl. B05b 7/32

U.S. Cl. 239—308

8 Claims



A hair spray system employing air under pressure to propel and atomize hair spray liquid comprises a constant pressure compressor, a liquid reservoir supplied with air from the compressor and in turn supplying air and liquid to a spray gun. Multiple reservoir and guns can be connected to one compressor. The gun includes a mixing chamber floating between spring biased valves at the chamber ends with an intermediate air inlet and an end liquid inlet, the forward spring being weaker. The gun trigger pushes the rear valve thereby causing the weaker forward spring to first open and start the air flow through the forward valve, after which the rear valve opens and liquid flow starts. On cut off, the liquid flow stops before the air flow stops. An adjustable stop controls the trigger movement to vary the ratio of liquid flow to air.

The compressor is housed in an air filter housing, and the reservoir for hair spray liquid is located in a housing with an arrangement to pinch the air hose to stop flow when the housing for the reservoir is opened. The liquid reservoir involves a novel arrangement for connecting the compressor and spray gun to a replacement reservoir unit.

3,752,405

**VARIABLE FLAME SHAPE OIL BURNER**

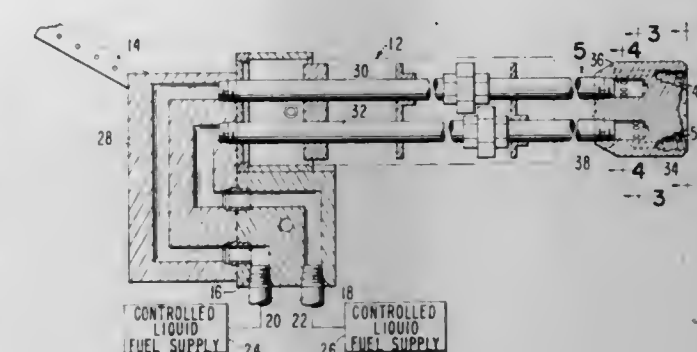
Ralph R. Vosper, San Jose; Harry W. Kirchner, Jr., Belmont, and Guilford C. Hull, Sunnyvale, all of Calif., assignors to Coen Company, Inc., Burlingame, Calif.

Filed Nov. 27, 1968, Ser. No. 779,333

Int. Cl. B05b 7/00

U.S. Cl. 239—413

3 Claims



An oil burner having two separate, individually fed oil injection systems, one of which injects one or more narrow, axially directed oil streams, and the other of which injects one or more short, wide-angle oil streams. The apparatus is so arranged that the streams injected by the two systems intersect one another to form a composite stream which combusts to form a composite flame.

3,752,406

**CONTAINERS FOR CHEMICAL LIGHT SOLUTIONS**

Philip Auguste McDermott, Upper Saddle River, and Andrew Milo Semsel, Somerville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sept. 17, 1971, Ser. No. 181,630

Int. Cl. F21v 9/16

U.S. Cl. 240—2.25

6 Claims

New enclosure material for chemiluminescent light devices which has reduced effect on the chemiluminescent reactants and results in improved storage characteristics for the devices.

3,752,407

**CHRISTMAS TREE ORNAMENT AND DECORATION DEVICE**

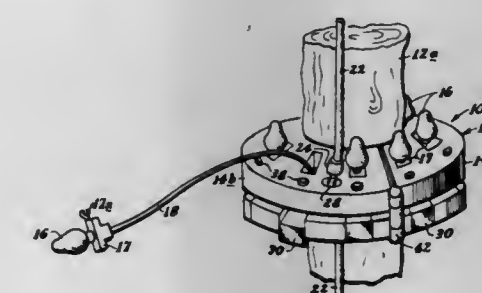
Ronald K. Baugh, 7275 Rosewell Rd. N.E., Apt. 322, Atlanta, Ga., and James E. Beeler, 6277 Commonwealth Ct., Indianapolis, Ind.

Filed Oct. 6, 1971, Ser. No. 186,917

Int. Cl. A47g 33/16

U.S. Cl. 240—10 T

1 Claim



An electric light ornament and decoration device for Christmas trees, in which a plurality of electric light bulbs are provided in a cluster or group on a body member, which is adapted to be installed interiorly of the tree, and with retractable cords for energizing the individual bulbs from the body



member which itself is energized from an associated electric source.

3,752,408

**LIGHTING DEVICES WITH AUTOMATIC REGULATION**  
Michel Tixier, Billancourt (Hauts de Seine), France, assignor to Regie Nationale Des Usines Renault, Billancourt (Hauts de Seine) and Automobiles Peugeot, Paris, France

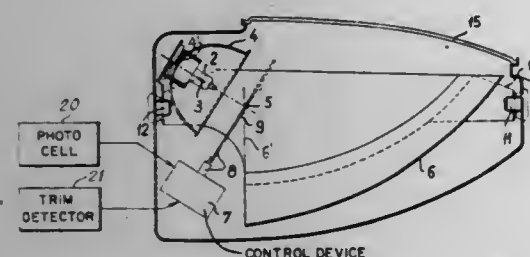
Filed Nov. 9, 1970, Ser. No. 87,739

Claims priority, application France, Nov. 21, 1969, 6940150

Int. Cl. F21v 11/18

U.S. Cl. 240—46.05

9 Claims



This lighting device for automotive vehicle, adjustable by means of a control system, comprises a filament bulb located at a first focus of an elliptic mirror of revolution four of which the second focus is coincident with the focus of one fraction of a parabolic mirror of revolution disposed on one side only of a plane containing the axis of revolution of said parabolic mirror, which forms substantially a half right angle with the axis of the elliptic mirror, at least one masking element being so controlled by an actuator responsive to said control system that, being interposed substantially in said second focus, it can reduce the surface area of the real image of said filament, this device applying more particularly to automotive headlamps.

3,752,409

**WOODEN ARTICLE AND LIKE DESTROYER**

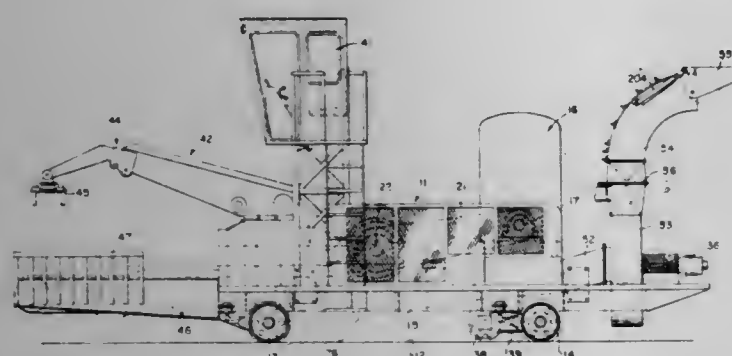
Herbert H. Lewis, Jacksonville, Fla., assignor to Jacksonville Blow Pipe Company, Jacksonville, Fla.

Filed Sept. 30, 1971, Ser. No. 185,247

Int. Cl. B02c 13/06, 18/06, 21/02

U.S. Cl. 241—60

10 Claims



Mobile apparatus for reducing discarded wooden railroad ties to relatively small fragments comprises a rail vehicle having a set of drive wheels, an engine connected to a two speed drive system for the wheels, a cutting and punching mechanism driven from the engine through a clutch, an interlock for disengaging the clutch when the vehicle is driven in the higher speed range, a conveyor for advancing ties to be reduced into the cutting mechanism, a crane for picking up ties to be reduced and depositing them on the conveyor, and a blower for discharging fragments from the cutting mechanism.

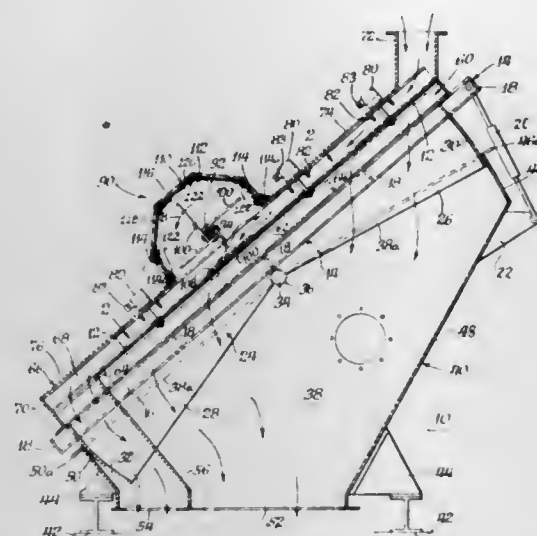
3,752,410  
**APPARATUS FOR SIZING PARTICULATE MATERIAL**  
Henry W. Dienst, Geneva, and Leslie D. Rikker, Oak Forest, both of Ill., assignors to National Engineering Company, Chicago, Ill.

Filed July 19, 1971, Ser. No. 163,749

Int. Cl. B02c 13/284

U.S. Cl. 241—69

17 Claims



Apparatus for sizing particulate material comprising an inclined screen mesh for receiving material adjacent the upper end to flow toward the lower end and means for vibrating said mesh to sift on-size particles therethrough. Lump breaker means is provided intermediate the upper and lower ends of the screen for impact breakage of agglomerated oversize lumps of said particulate material and for retarding the downward travel of said oversize material. Said lump breaker includes at least one rotating paddle extending transversely across said screen mesh and formed of flexible material, and a breaker plate above the screen mesh for protecting the screen and cooperating with the paddle to help break up large lumps of material into smaller size. The paddle is rotated in a direction to impact the oversize lumps upwardly on said screen mesh counter to the general flow direction of material downwardly toward the lower end.

3,752,411

**FORAGE HARVESTER**

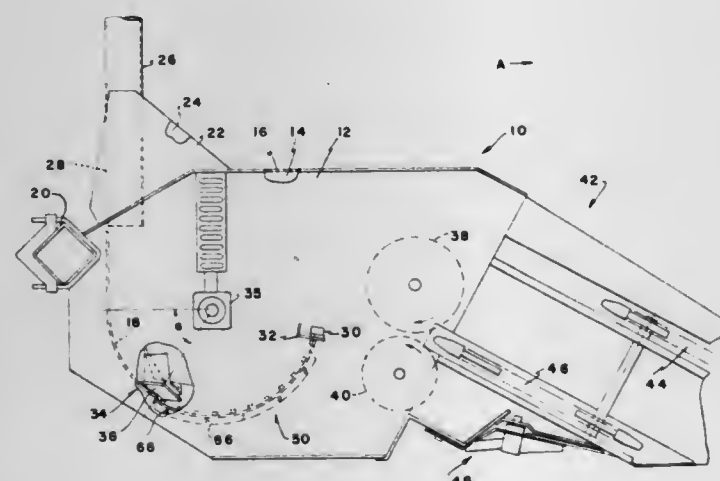
Allison W. Blanshine, Lititz, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Sept. 7, 1971, Ser. No. 178,098

Int. Cl. A01d 55/18

U.S. Cl. 241—189 R

10 Claims



A forage harvester of the type having a cylindrical type cutterhead rotatively mounted in the frame. A curved crop con-

fining member is mounted within the frame and is closely spaced to the cutterhead, the curved member being provided with a plurality of bars which extend generally parallel to the axis of rotation of the cutterhead and cooperate with the knives of the cutterhead to cut and/or abrade any grain which passes between the cutterhead and the curved member.

3,752,412

**WINDING OF CONTINUOUS WEBS ON TO REELS**

Graham Archie Bruce Byrt, Bristol, England, assignor to Masson Scott Thrissell Engineering Limited, Bristol, England

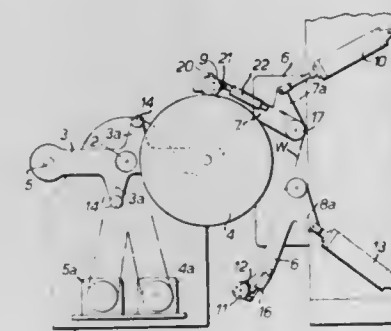
Filed Feb. 7, 1972, Ser. No. 224,133

Claims priority, application Great Britain, Feb. 5, 1971, 4,044/71

Int. Cl. B65h 19/26, 19/28

U.S. Cl. 242—56 A

5 Claims



Apparatus for transferring a continuous web of sheet material being wound onto a reel to a fresh core employs a rider roll to press the web as it is being wound and a guide roll for the web during transfer. Conveniently the reel and core are on a turnover stand and during transfer, when the reel is moved away from the rider roll, the guide roll is engaged with the web between rider roll and reel to avoid too long an unsupported run. It is also used to assist in wrapping the web around the new core and a web cutter is mounted in close association therewith. The sequence of movements of reel, core, rolls and cutter can be automatically controlled.

3,752,413

**BULK FILM REWIND APPARATUS**

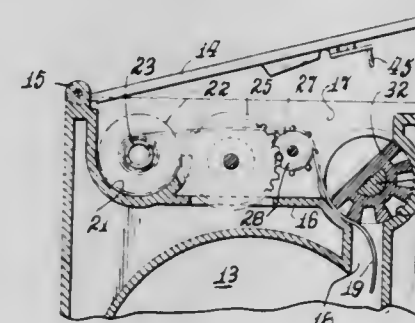
Jerome C. Caruso, Arlington Heights, Ill., assignor to Leira Corporation, Chicago, Ill.

Filed Nov. 15, 1971, Ser. No. 198,639

Int. Cl. G03b 1/00

U.S. Cl. 242—71.7

8 Claims



A bulk film rewind apparatus including a light gate structure wherein the light gate is coordinated with the apparatus cover so as to lock said cover closed when the light gate is in open position.

3,752,414

**PLASTIC PIRN SLEEVE**

Thomas Urquhart, Whitby, Ontario, Canada, assignor to DuPont of Canada Limited, Montreal, Canada

Filed Feb. 19, 1971, Ser. No. 117,013

Int. Cl. B65h 75/26, 75/10

U.S. Cl. 242—118.32

1 Claim



A plastic pirn sleeve bearing rows of circumferential fine grooves having flush ends to prevent filament entangling. A process and apparatus useful for making such sleeves are disclosed for indenting the external surface of a thermoplastic tube by heating the external surface of the tube above its softening point, rolling at least three die wheels each in a separate path along the length of the surface of the tube while the tube is supported on a mandrel and at the same time pressing the die wheels against the surface of the tube to form permanent indentations therein.

3,752,415

**MAGNETIC TAPE TRANSPORT**

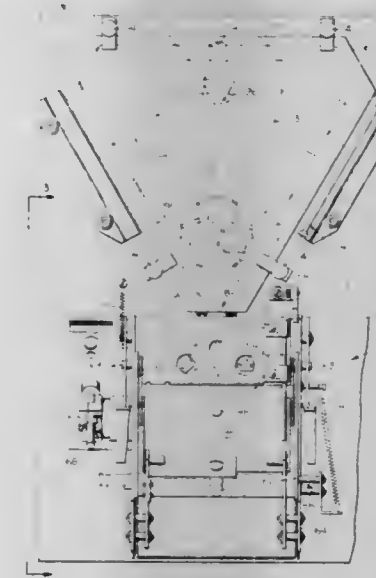
Roger R. Slegner, San Carlos, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Jan. 18, 1971, Ser. No. 107,066

Int. Cl. G11b 15/58, 23/10; B65h 19/02

U.S. Cl. 242—184

18 Claims



A magnetic tape transport has a pair of tape loop vacuum columns on either side of a capstan and a pair of flanking heads, and the columns are tapered so that with increasing loop length, an increasing cross sectional area of tape is exposed to vacuum, counteracting the drag of the heads, and no pinch roller is needed with the capstan. In fast wind mode, only one of the vacuum columns is used, and a single loop length sensing apparatus controls both reel motors, which are



biased such that the supply reel tries to make the loop longer than a desired mean length and the takeup reel tries to make the loop shorter than the mean, resulting in use of the reel motors at fullest capacity without danger of loss of control. An automatic cassette loader is also provided together with circuitry adapting the apparatus for automatic high speed recording of cassettes.

3,752,416

## AUTOMATIC WINDING REEL

Shichiro Fukatsu, Chigasaki, and Takeshi Okano, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama-City, Kanagawa-ken, Japan

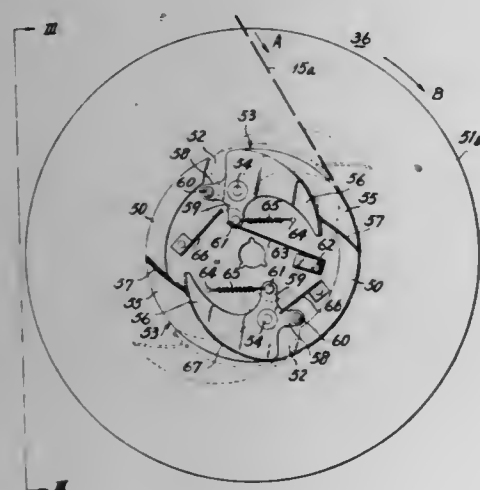
Filed Apr. 5, 1971, Ser. No. 131,033

Claims priority, application Japan, Apr. 3, 1970, 45/31555; Apr. 3, 1970, 45/31556

Int. Cl. G11b 15/66; B65h 75/28

U.S. Cl. 242—195

8 Claims



An automatic winding reel comprises a pivoting pawl mounted on a reel hub to be projected from and retracted into the reel hub. The pivoting pawl comprises a first pawl part for engaging a tape-like material and a second pawl part for guiding the tape-like material, engaged by said first pawl part, to the outer peripheral surface of the reel hub along the outer surface of the second pawl part in a smooth gradual curve. The tape-like material engaged by the pivoting pawl is wound in a gradual curve so that a permanent bend does not remain on the tape-like material.

3,752,417

## AIRCRAFT USING LIFTING FANS

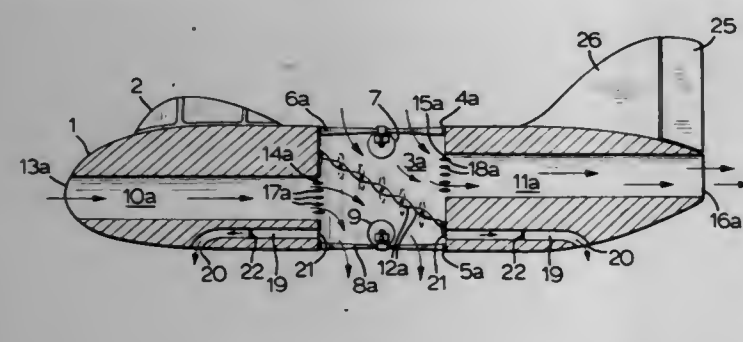
Prejean Lagace, Rural Rt. 2, Hamilton, Ontario, Canada

Filed June 23, 1972, Ser. No. 265,903

Int. Cl. B64c 29/00

U.S. Cl. 244—12 C

7 Claims



An aircraft of VTOL or STOL type is provided with at least one vertically extending duct in the fuselage containing an upper and a lower fan. Air valve means between the fans divide the duct into upper and lower regions and control the air

from the upper fan to flow downward and/or into a duct extending rearwardly from the upper region. Other air valve means control the flow of air from a front duct into the lower region.

3,752,418

## ANTI-TORQUE SYSTEM FOR TIP DRIVEN ROTOR BLADES

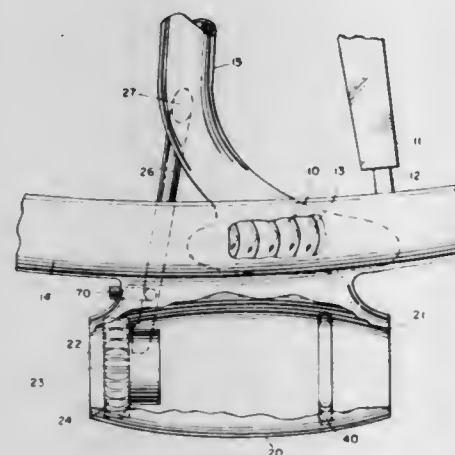
William N. Rosta, Fort Worth, Tex., assignor to The VLM Corporation, Fort Worth, Tex.

Filed May 12, 1972, Ser. No. 252,623

Int. Cl. B64c 29/00

U.S. Cl. 244—23 C

8 Claims



Disclosed is an anti-torque and yaw control system for rotary wing aircraft employing tip driven rotor blades. The rotor blades are driven by a turbine drive ring powered by high velocity fluid. The drive ring is enclosed in a shroud and fluid passing through the turbine ring is collected in a ducted fan axially aligned tangentially with the drive ring. The ducted fan is also tip driven by fluid from the main drive fluid supply. Alternative arrangements for varying the thrust of the ducted fan are shown. A jet thruster cooperating with the drive system is used for yaw control.

3,752,419

## AIRCRAFT

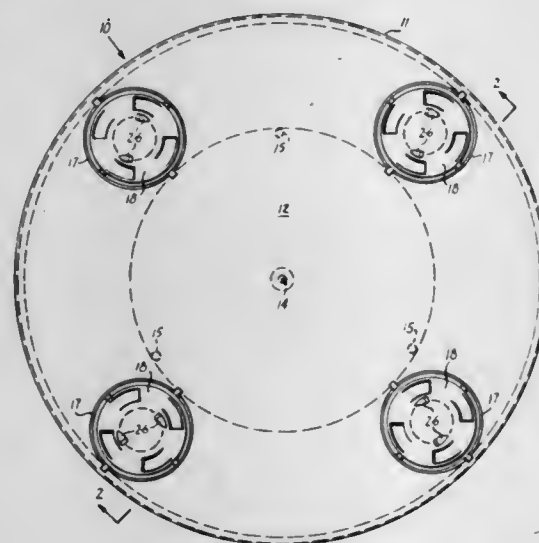
Stanley H. Richter, 2327 S. Rio Grande Ave., Orlando, Fla.

Filed July 29, 1971, Ser. No. 167,165

Int. Cl. B64c 29/04

U.S. Cl. 244—23 C

5 Claims



An aircraft including a body having a number of rotary lift elements mounted for rotation therein. Each of the lift elements is arranged with a vertical axis and is rotated by jet en-

gines mounted near the periphery thereof. A plurality of paddle wheel lift members driven by air impinging thereagainst are mounted in chutes extending from the bottom to the top of the lift members. The blades of the paddle wheel ride on a rooster tail of air from the bottom chute to create lift. A flow of air above the center line of the paddle moves in against the top of the blades above the center line to also create lift and to cause the rotation of the blades. The top side of the bottom chute creates vacuum for lift and allows bottom spiral blade to turn freely until it passes center line for additional lift power.

3,752,420

## AUGMENTED WASHOUT CIRCUIT FOR USE IN AUTOMATIC PILOTS

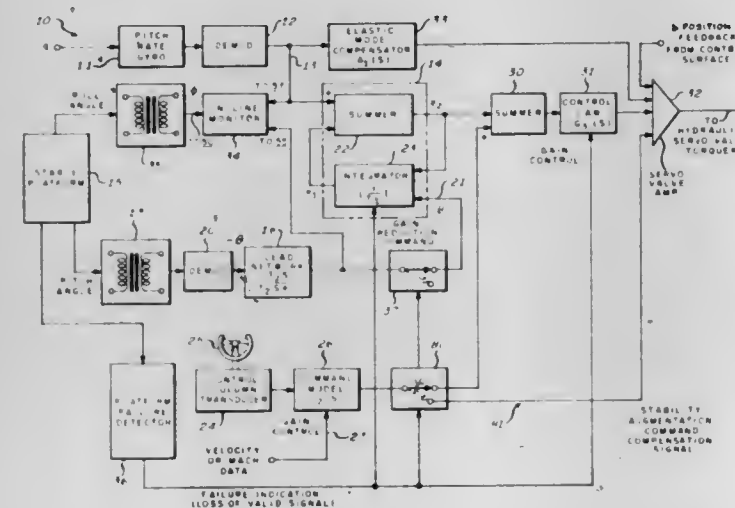
Stephen S. Osder, Scottsdale, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,554

Int. Cl. B64c 13/18

U.S. Cl. 244—77 D

14 Claims



The invention is used in automatic pilots for navigable craft and comprises a washout circuit responsive to the signals from a body mounted pitch rate sensor and to the pitch rate signals from a vertically referenced sensor. The washout circuit comprises an algebraic summation circuit with an integrator in shunt therewith. The signals from the body mounted sensor are applied to an input of the summation circuit and the signals from the vertically referenced sensor are applied to an input to the integrator in subtractive fashion. Thus, the washout circuit provides wide bandwidth pitch rate stabilizing signals while washing out the undesirable azimuth rate coupling component of the feedback signal from the body mounted pitch rate sensor.

3,752,421

## LINEAR-PIVOTAL CONVERTER

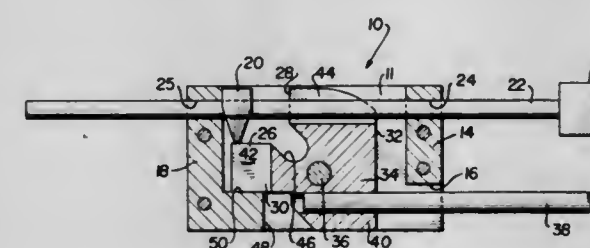
William B. Harvey, 866 College Pky., Apt. 202, Rockville, Md., and Robert S. Violett, 64B, Rt. No. 1, Clarksburg, Md.

Filed May 30, 1972, Ser. No. 257,500

Int. Cl. B64c 25/26

U.S. Cl. 244—102 SL

10 Claims



A device for converting reversible linear motion to reversible pivotal motion wherein the member undergoing pivotal motion is locked against motion at both limits thereof.

3,752,422

## JET AUGMENTED RAM AIR SCOOP

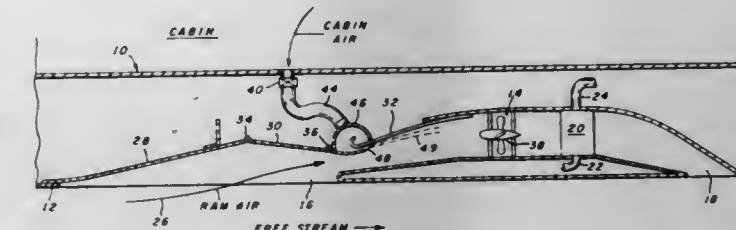
Joe N. Runnels, Bellevue, Wash., and Svend Strandbygaard, North Glenn, Colo., assignors to The Boeing Company, Seattle, Wash.

Filed June 30, 1971, Ser. No. 158,282

Int. Cl. B64d 13/06

U.S. Cl. 244—118 R

7 Claims



Ram air scoop system, particularly adapted for use in aircraft, wherein cabin air from the interior of the aircraft is fed as a high velocity jet into the scoop and passed through a heat exchanger for the cabin air-conditioning system. This has the effect of improving the aerodynamic efficiency of the scoop by increasing the velocity at the exit of the ram air system in flight, resulting in less drag. While the aircraft is on the ground and air is forced through the scoop by a fan or the like, the cabin air can be at a temperature lower than that of the ambient air, this cooler cabin air acting to increase the efficiency of the heat exchanger.

3,752,423

## LIFTING AND/OR ROTATING BODY CONSTITUTING A KITE

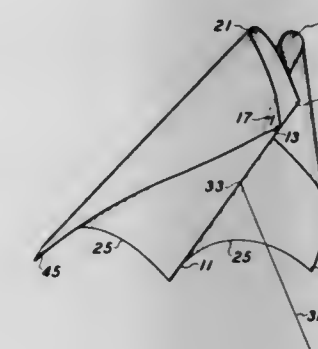
William Schaeffer, 67 Malling Dr., Rochester, N.Y.

Filed Jan. 31, 1972, Ser. No. 221,921

Int. Cl. B64c 31/06

U.S. Cl. 244—153 R

4 Claims



A small wind-borne body is made from a sheet of paper or the like folded along the center line to provide a keel, the sheet curving upwardly and outwardly from the keel, symmetrically on both sides thereof, to provide two wings. At the front end, the two wings are brought together and fastened to each other and to the central portion close to the keel. A single flying line is attached directly to the keel somewhat rearwardly of the front end. It is usually not necessary to use a bridle connected to the body at two or more points. No tail is used, in light and moderate winds. Preferably the body is made from a single sheet, but two separate sheets may be used, fastened together along the keel. With sufficient breeze, the body will lift light objects suspended from it, and also may be made to rotate somewhat, to provide an interesting and entertaining kite.



3,752,424

**AUTOMATIC ACTION TOY GLIDER-KITE STRING FLYER**

Willis R. Battles, 560 S. Helberta Ave., Redondo Beach, Calif.  
 Filed July 14, 1971, Ser. No. 162,529  
 Int. Cl. B64c 31/06

U.S. Cl. 244—155 R

6 Claims U.S. Cl. 246—249



A folding wing toy glider is suspended from and rides up a kite string, propelled by the wind acting upon the vertical surface of the down-folded wing, until the glider strikes a stop, causing the wing to fold horizontally by momentum, assisted by a rubber band or spring tension. The fluer descends the kite string under the influence of gravity until it contacts a lower stop whereupon momentum snaps the wing back to its original vertical position, assisted by the rubber band after the wing has rotated about 40 degrees. The flyer then again starts up the kite string and this cycle is repeated automatically as long as desired.

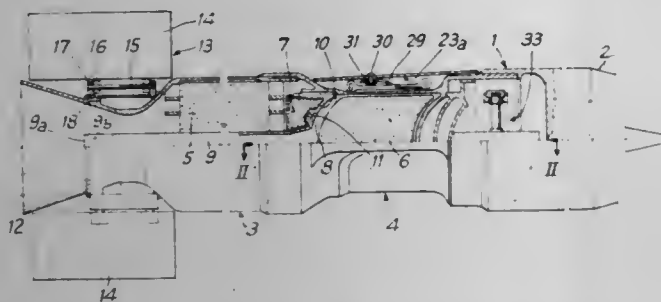
3,752,425

**SELF-PROPELLED NON-GUIDED MISSILES**

Bernard Andre Henri Detalle, L'Haye-les-Roses, France, assignor to Societe Anonyme dite: Societe Europeene De Propulsion, Puteaux (Hauts-de-Sein), France  
 Filed Oct. 27, 1971, Ser. No. 193,093  
 Claims priority, application France, Oct. 28, 1970, 7038975; Sept. 3, 1971, 7132007  
 Int. Cl. F42b 13/32; F41g 7/00

U.S. Cl. 244—3.21

6 Claims



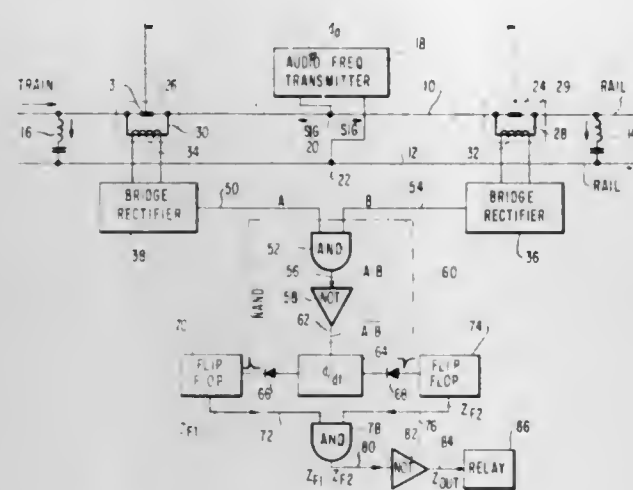
This invention relates to self-propelled non-guided missiles, of the type comprising a collapsible tail unit arranged on the external wall of the missile body close to the ejection nozzle for the propellant gases: a gyroscope is mounted in the missile body and has a shaft disposed in a plane perpendicular to the longitudinal axis of the missile, and a chamber to contain a suitable propellant fuel. In such a missile, the invention provides a lifting aerofoil that is secured to the external wall of the body and close to the plane containing the centre of gravity thereof; the gyroscope acts as a banking stabiliser to maintain a substantially constant attitude for the aerofoil and is mounted in a body which is locked by means of a locking member until the propellant fuel has been combusted.

3,752,426

**TRAIN DETECTOR**

Ajoy Kumar Pal, Downers Grove, Ill., assignor to Portec, Inc., Oak Brook, Ill.  
 Filed May 7, 1971, Ser. No. 141,270  
 Int. Cl. B611 1/02

9 Claims



A track monitoring circuit for detecting the presence of a train on a section of track by means of a pair of separated current transformers whose primary circuits are coupled to a portion of a common rail in either side of an audio frequency transmitter coupled across the track. The separation of the transformers is greater than the distance between the first and last wheels of one truck of a railway vehicle but less than the distance between the last wheel of the leading truck and the first wheel of a rear truck. The output of the transformers are converted respectively into first and second binary logic signals which are fed to first logic circuit means for providing an output signal indicative of the NOT AND function. The output of the first NOT AND logic circuit means is fed into two flip-flop circuits through a differentiator. Each flip-flop is respectively triggered by opposite edges of the output pulse of the first NOT AND logic gate. The outputs of these flip-flops are fed to a second NOT AND logic circuit means for providing an output which is adapted to activate suitable utilization or indicating means.

3,752,427

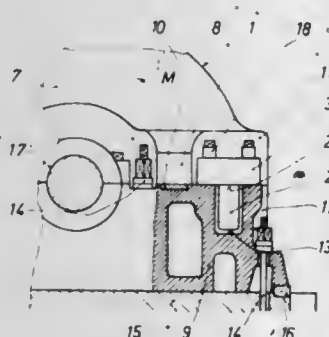
**SUPPORT ARRANGEMENT FOR A TURBOMACHINE**

Hans Bellati, Wettingen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland  
 Filed Mar. 7, 1972, Ser. No. 232,421

Claims priority, application Switzerland, Mar. 11, 1971, 3690/71  
 Int. Cl. F01d 1/00; F16f 15/00

U.S. Cl. 248—19

3 Claims



A support arrangement for a turbo-machine having its casing divided in a substantially horizontal plane into upper and lower parts on which are provided claw members having abut-

ment surfaces facing the divider plane. The claw members bear on casing supports anchored in the foundation, and tiltable discs biased by diaphragm springs are interposed between the abutment surface of a claw on the lower casing part and a stressing bar rigidly mounted on the associated casing support.

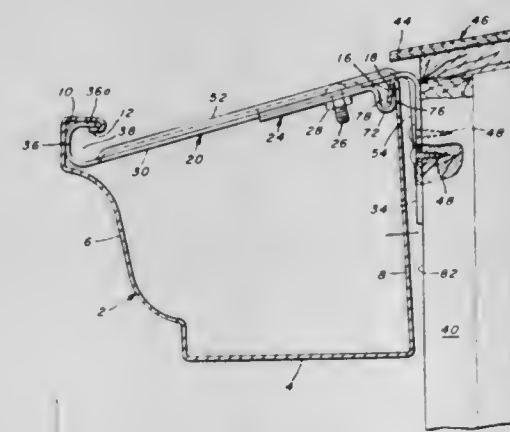
3,752,428

**GUTTER HANGER ASSEMBLY**

John W. Trostle, Allison Park, and Norman L. Martin, Coraopolis, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.  
 Filed June 10, 1971, Ser. No. 151,807  
 Int. Cl. E04d 13/06

U.S. Cl. 248—48.2

15 Claims



An adjustable gutter hanger assembly having first and second gutter hanger elements which are adjustably secured to each other and secure a gutter having its innermost vertical wall in spaced outward position with respect to the adjacent fascia or other building surface. The first gutter hanger element may have a body portion, a downwardly directed rear flange and an upwardly directed outer flange with reinforcing means being provided within the body and rear flange. The second gutter hanger element may have a reinforcing body portion and an upwardly open rearwardly disposed channel. The reinforcing means are preferably integrally formed hollow ribs.

A second embodiment wherein the first gutter hanger element has a body portion, a forwardly disposed inwardly open channel and a rearwardly disposed upwardly open channel. A second gutter hanger element secured to the first, preferably by integral fastening means. The second element has an anchoring portion and a forwardly and downwardly inclined upper flange which overlies and is closely adjacent to the upwardly open channel of the first element.

3,752,429

**THREE AXIS SIMULATOR**

Chester L. Reed, Burbank, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

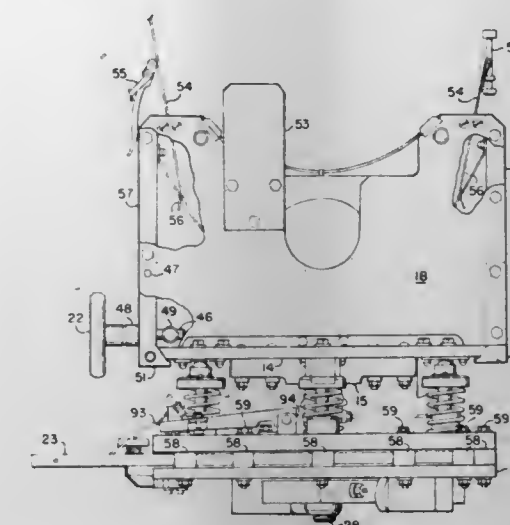
Filed July 3, 1972, Ser. No. 268,338  
 Int. Cl. F16m 13/00

U.S. Cl. 248—179

12 Claims

A test fixture is provided with selective movement capability along any one of three mutually orthogonal axes. An adjustable support means is configured to support any of a plurality of devices to be tested on the fixture such as to position the center of gravity above the intersection of the axis of movement. A lock mechanism prevents movement of the support fixture about nonselected axes. An interlock is provided

for the lock mechanism to prevent movement along the undesired ones of the mutually perpendicular orthogonal axes



3,752,430

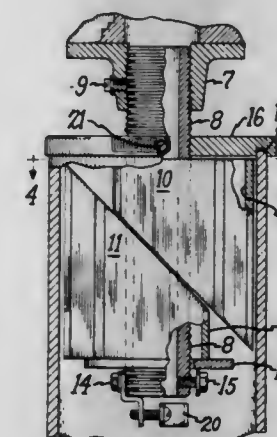
**LUMINAIRE MOUNTING DEVICE**

Lewis W. Kenyon, Flat Rock, and Robert G. Kilpatrick, Hendersonville, both of N.C., assignors to General Electric Company, Pittsfield, Mass.

Filed Apr. 24, 1972, Ser. No. 246,915  
 Int. Cl. F16m 13/00

U.S. Cl. 248—226 R

9 Claims



Device for mounting a luminaire on a hollow pole includes a pair of superposed slidable tubular members arranged in wedging engagement inside the pole. The tubular wedge members are forced into sliding wedging engagement and frictional contact with the inside of the pole by an adjusting nut resting on top of the pole and threaded on a central pipe secured at its top to the luminaire and supporting the lower wedge member at its bottom. The wedge members are formed to contact the pole at a plurality of spaced regions.

3,752,431

**APPARATUS FOR MOUNTING A TRANSDUCER TO THE TRANSOM OF A BOAT**

William E. McBride, Tulsa, Okla., assignor to Lowrance Electronics Mfg. Corp., Tulsa, Okla.

Filed Sept. 10, 1971, Ser. No. 179,425  
 Int. Cl. H04r 1/44

U.S. Cl. 248—291

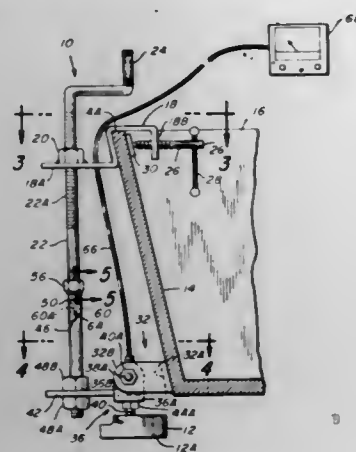
2 Claims

This invention relates to apparatus for elevational control of a sonic transducer from the transom of a vessel. The configuration comprises means for mounting a sonic transducer upon a transom of a vessel in order to gain elevational control of the



azimuth of the sonic transducer in relation to the water line and further provides a means for protecting the sonic trans-

limit the movement of the bar in a direction transverse to the axis of the bar. The tautly pulled wick is fastened to the closed end of the container by a screw. Molten wax is poured through



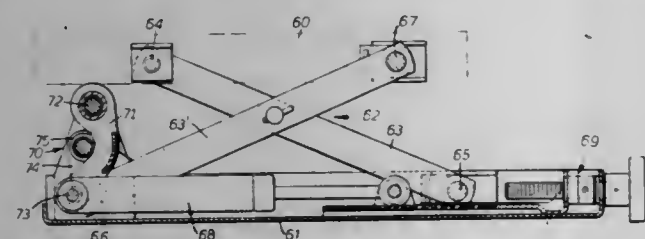
ducer and apparatus from damage by impact with objects during use.

### 3,752,432 VEHICLE SEATS

Frederick George Lowe, Northampton, England, assignor to Universal Oil Products Company, Des Plaines, Ill.  
Filed Dec. 31, 1970, Ser. No. 103,248  
Int. Cl. F16m 11/00

U.S. Cl. 248—400

3 Claims



An improved vehicle seat in which a gas spring is connected to and dampens relative movement between a base part and a seat part. A drive piston in the gas spring is movable within and allows restricted flow in a chamber containing liquid in a cylinder. A piston rod attached to the drive piston passes out one end of the cylinder while a floating piston within the cylinder serves as an opposing end wall for the liquid containing chamber and for a gas containing chamber located on the other side of the liquid containing chamber. Movement of the drive piston further into the cylinder is dampened by the restricted flow of liquid in the liquid containing chamber and further dampened by compressing the gas in the gas containing chamber.

### 3,752,433

#### TRANSLUCENT PLASTIC CANDLE MOLD

Mort R. Berman, Brooklyn, N.Y., assignor to Avalon Industries, Inc., Brooklyn, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,755

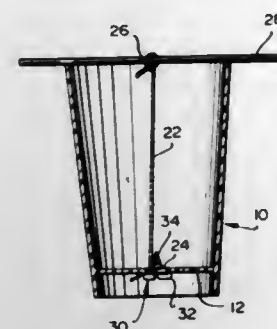
Int. Cl. B29d 31/00

U.S. Cl. 249—94

6 Claims

Apparatus for and method of making a candle having a wick fixed there within. The apparatus is comprised of a container having a closed end and an open end. The container is tapered towards the closed end thereof and has a hole formed within the closed end. The open end of the container has a first and second pair of protruding portions extending therefrom wherein the first pair is diametrically located from the second pair. A wick is passed through the hole at the closed end of the container and is attached to a solid bar, which bar extends over the open end of the container. The wick is pulled taut so that the bar is forced against the open end of the container and rests between each of the pair of protruding portions so as to

the open end of and into the container and allowed to cool so as to solidify. The wick is disengaged from the bar and the closed end of the container and the finished candle is then removed therefrom.



### 3,752,434 MOLDING OF ALL PLASTIC SHOTSHELL CASES

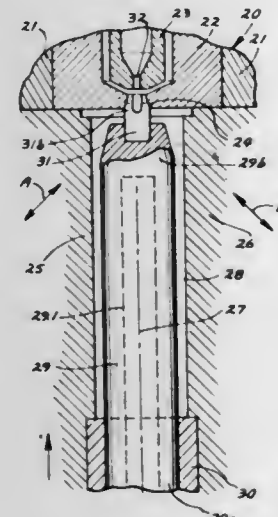
George L. Herter, Waseca, Minn., assignor to Herter's Inc., Waseca, Minn.

Filed Sept. 9, 1971, Ser. No. 178,943

Int. Cl. B22c 9/08

U.S. Cl. 249—105

1 Claim



A mold and molding method for all plastic shotshell cases to inject the plastic into the mold cavity from a sprue at the center of the mold cavity forming the closed end of the shotshell case and to simultaneously fill all portions of the mold cavity without necessitating forming a weld line, and maintaining the entire periphery of the shotshell case uniform in thickness by holding the core within the mold cavity concentrically of the movable mold parts with a rigid core pin on the end of the core and seated in the sprue, the core pin having grooves for carrying molten plastic into the cavity while the pin is seated in the sprue for holding the core concentric of the mold cavity.

### 3,752,435

#### INGOT-MOLDS COMPRISING INGOT INSULATING MEANS

Henri-Jean Daussan, Rte. Touristique, Longeville-les-Metz, France

Division of Ser. No. 40,187, May 25, 1970, Pat. No. 3,672,433.

This application Mar. 29, 1972, Ser. No. 239,118

Claims priority, application France, June 2, 1969, 6918293

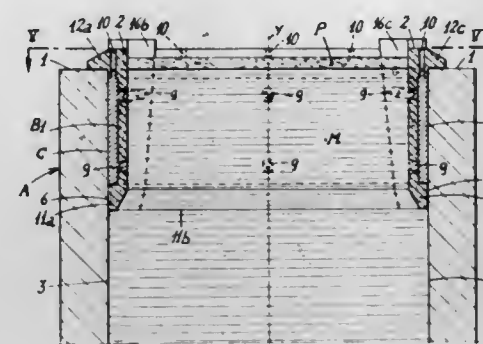
Int. Cl. B22d 7/10

U.S. Cl. 249—106

5 Claims

The invention relates to ingot-molds which are intended to be stripped from ingots very shortly after filling. The ingot-

mold comprises ingot insulating means comprising a heat-insulating lining fixed along the internal surface of the mold near the upper portion thereof; the lining has a bottom portion applied without clearance against said internal surface and above said bottom portion, a recessed portion which provides



a peripheral gap between said lining and said internal surface; the lining is further provided with lateral openings establishing a communication between said peripheral gap and the space inside the lining and with vents establishing a communication between the top portion of said peripheral gap and the atmosphere.

### 3,752,436 APPARATUS FOR MOLDING ARTICLES HAVING A NONLINEAR CHAMBER

Peter R. Deutsch, Titusville, Pa., assignor to Phillips Petroleum Company, Bartlesville, Okla.

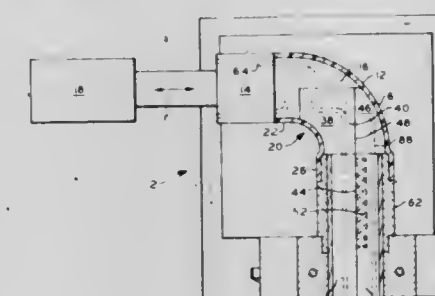
Division of Ser. No. 99,847, Dec. 21, 1970, Pat. No. 3,711,590.

This application Sept. 28, 1972, Ser. No. 292,900

Int. Cl. B22c 9/24

U.S. Cl. 249—145

8 Claims



A first molding core is positioned within a first portion of a separable mold having a nonlinear chamber. A second molding core having an end matable with the end of the first core is inserted within a second end portion of the chamber of the mold adjacent and in slidable contact with a third molding core. The first molding core is retractable from the mold and the second and third molding cores are pivotally connected to one of the mold sections for removing the molded article and the second and third molding cores from the mold section. The third molding core is slidable along the second molding core for releasing the article from the second and third molding cores.

### 3,752,437

#### MOLD CAPABLE OF BEING OPENED AND CLOSED

Glen W. Saidla, Wyomissing Hills, Pa., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 2, 1971, Ser. No. 204,287

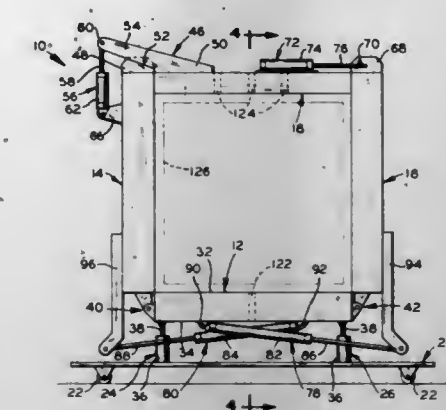
Int. Cl. B41b 11/54

U.S. Cl. 249—172

6 Claims

A mold which is capable of being closed to form a peripherally enclosed cavity within the mold and is formed from a lower wall, a pair of side walls hinged to pivot with respect to the lower wall and a top wall hinged to pivot relative to one of the side walls. Because of the pivotal movement, the

top and side walls, upon pivoting to an open position, move in a peeling manner with respect to an object formed therein,



while the supporting means for the lower wall move the latter away from the formed object in a peeling manner.

### 3,752,438

#### ONE PIECE ELBOW MOLD

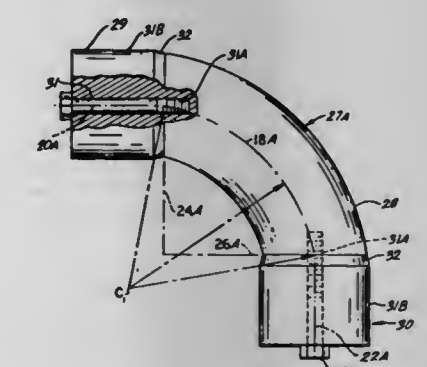
James B. Baillie, Ancaster, Ontario, Canada, assignor to Ameron, Inc., Monterey Park, Calif.

Continuation-in-part of Ser. No. 163,211, July 16, 1971, abandoned. This application Aug. 20, 1971, Ser. No. 173,393

Int. Cl. B28b 7/28

U.S. Cl. 249—184

8 Claims



A pipe elbow with an integral female socket joint portion is formed on an internal mold. The center of curvature of the curved portion of the mold is displaced slightly outwardly of a plane perpendicular to the longitudinal axis of the socket and passing through the juncture of the socket and the curved portion to permit withdrawal of the curved portion of the mold without touching the inner wall of the socket portion.

### 3,752,439

#### DAMPER ARRANGEMENT

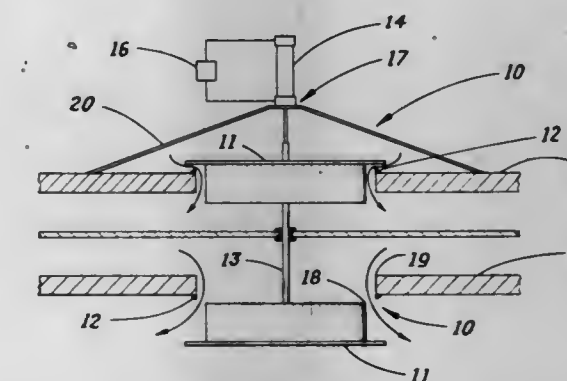
John Thomas, Louisville, Ky., assignor to American Air Filter Company, Inc., Jefferson County, Ky.

Filed Nov. 15, 1971, Ser. No. 198,748

Int. Cl. F16k 47/00

U.S. Cl. 251—121

10 Claims



A damper arrangement wherein a damper blade opens and closes a flow through orifice and wherein a baffle means is



provided which maintains an opening of constant cross section during a portion of the stroke of the damper blade to provide a buffered transition when removing a fluid system from or returning a system to full fluid flow.

3,752,440

## CARPET STRETCHER PIVOT BRIDGE

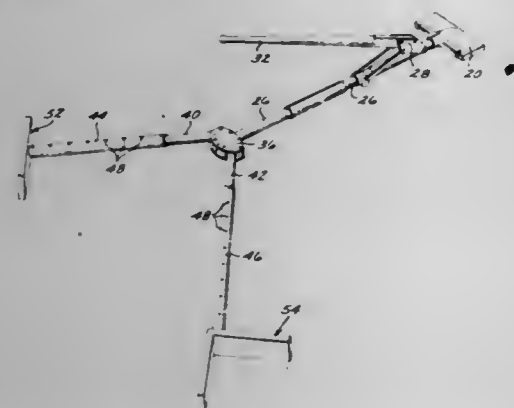
Jon C. Ream, 11911 Deona St., El Monte, Calif.

Filed Dec. 23, 1971, Ser. No. 211,295

Int. Cl. A47g 27/04

U.S. Cl. 254-62

5 Claims



A device to provide a strong, mobile, and properly aligned pivot point, from which to stretch carpet, with a carpet stretcher.

3,752,441

## VEHICLE WHEEL ELEVATING AND LEVELING DEVICE

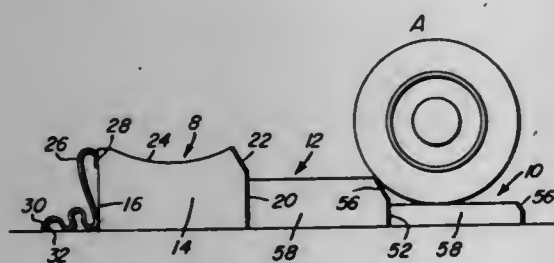
John E. Rogers, 2266 Avon Ave. S.W., Camden, Ark.

Filed Oct. 20, 1971, Ser. No. 190,829

Int. Cl. E02c 3/00

U.S. Cl. 254-88

7 Claims



A wheel elevating, leveling and chocking device useful as (1) a lift and (2) a scotch (chock) for a camper wheel. It is of elongated stepped construction in that it embodies several step-like sections which are oriented in end-to-end alignment, are telescopically united, and can be extended for ramp-like use and alternatively retracted and collapsed. The sections are hollow and block-like and are capable of being telescoped and compactly collapsed for convenient handling and storage. Each section is basically alike in that it comprises a vertically walled base portion providing a riser and a top horizontal wall or platform constituting a wheel seating tread. The thus oriented steps can be selectively individually used for ascending and descending requirements. The flanged bottom portions can be nested and stacked or extended into flush relationship at will.

3,752,442

## POWERED WINCHES

William Charles Coombs, The Cottage Wood Ln., Iver

Buckinghamshire, England

Filed Mar. 12, 1971, Ser. No. 123,835

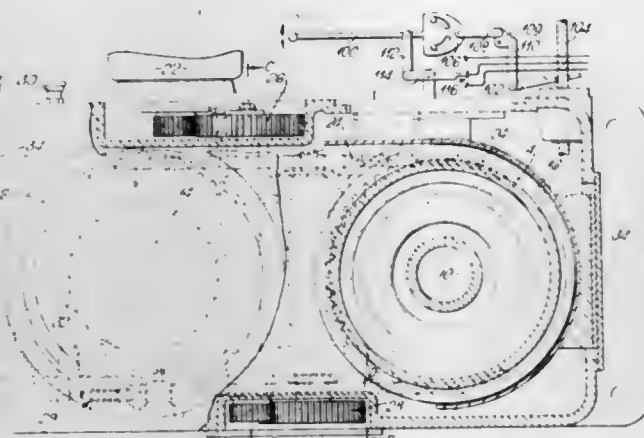
Int. Cl. B66d 1/26

U.S. Cl. 254-185 R

3 Claims

This invention relates to powered winches, preferably electrically powered, comprising in combination a housing, a plu-

rality of rotatable drums, a worm and worm wheel drive by means of which the rotatable drums are rotated from a power source, a diaphragm dividing the winch housing interior into an oil-present drive part and an oil-free cable part, and a cable tensioning means, the winch being such that in use a cable



passes through the winch after engaging said rotatable drums and said cable tensioning means, said cable tensioning means being such as to act on constantly differing adjacent portions of the cable, and said portions of the cable always being of the same length.

3,752,443

## MAGNETIC MIXER

Bernard Lichtenstein, Yorktown Heights, N.Y., assignor to

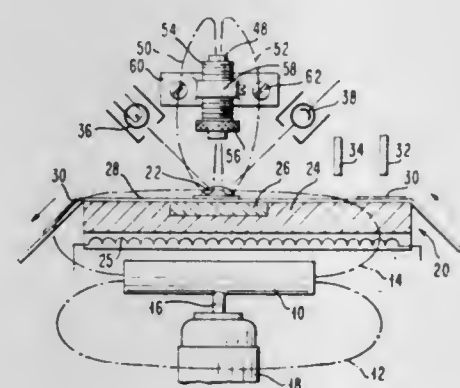
Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,196

Int. Cl. G01n 21/24; B01f 13/00

U.S. Cl. 259-1 R

13 Claims



A magnetic mixer for laboratory use which includes a permanent magnet mounted for rotation and driven on an axis centrally between its poles. A volume of combined liquids, containing in addition a multiplicity of magnetic particles, is supported centrally with reference to the magnet poles for activation of the particles in the rotating magnetic field to mix the liquids to achieve a reaction between them or merely a blending. This rotational force on the mixture has the effect of redistributing the magnetic particles away from the center of the mixture which effect, unless countered, lessens the mixing action. A second permanent magnet is provided having its poles in substantial alignment with the first mentioned axis, and having one of these last-mentioned poles spaced a distance nearer to the mixture than the other pole thereof, the magnetic field of the second magnet being substantially at right angles to the magnetic field of the first magnet. The field of the second magnet effectively counters by attraction the aforementioned redistributing movement of the magnetic particles, and the resultant particle distribution is substantially uniform throughout the combined liquids.

3,752,444

## APPARATUS FOR MIXING FLUIDS

Pierre Foucault, 12, Avenue du Vesinet, Croissy sur Seine,

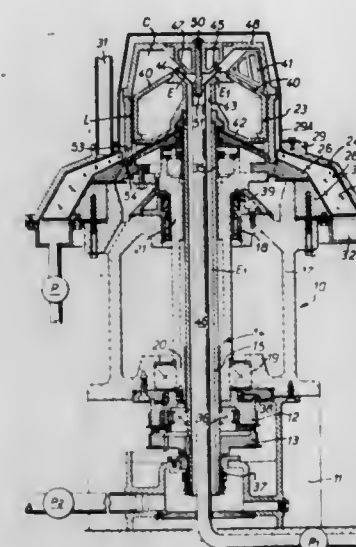
France

Filed Aug. 3, 1971, Ser. No. 168,627

Int. Cl. B01f 13/00

U.S. Cl. 259-2

12 Claims



Mixing apparatus comprises co-axial fluid supply passages opening into an expansion and mixing chamber into which the fluids pass as a mist, the chamber being formed between two members which rotate in opposite directions, one carrying blades which pass through the chamber. The chamber leads through an annular throttle passage between rotating walls to a homogenisation chamber in which a mixer rotates.

3,752,445

## SCREW LIFTER MIXER

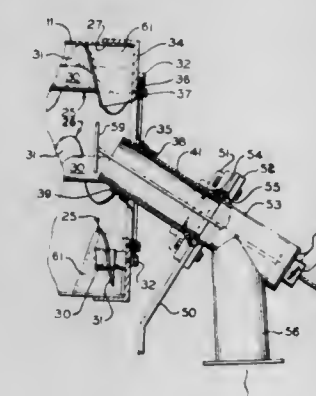
Leon J. Nowak, Clinton, N.Y., assignor to Munson Mill Machinery Co., Utica, N.Y.

Filed Oct. 19, 1971, Ser. No. 190,518

Int. Cl. B01f 9/06, 15/02; B28c 7/16

U.S. Cl. 259-3

3 Claims



A mixer for particulate material has a cylinder supported for rotation about a substantially horizontal axis, the support means being adjustable for elevating its receiving end so as to be operated as a continuous mixer. A plurality of helically flanged screw tubes extend longitudinally as lifters, having their ends secured to the end walls of the cylinder adjacent the wall periphery. As the cylinder rotates the material being mixed is picked up and released by the screw flanges so as to shift parts of the mix axially in either direction. When the receiving end is elevated the total mix is also continually shifted by the incline of the cylinder toward the discharge end. Axial openings at either end are closed by diaphragms, each secured at its center to a rotating tube maintained at a constant angle to the axis of the cylinder by a floor supported bushing.

913 O.G.-22

3,752,446

## APPARATUS FOR DISSOLVING POWDER IN WATER

Akira Watanabe, Numazu, Japan, assignor to Akatake Engineering Company Limited, Shizuokaken, Japan

Filed Feb. 2, 1972, Ser. No. 222,726

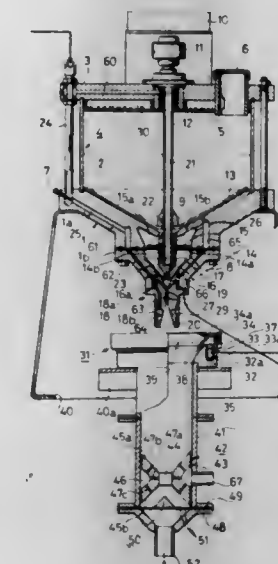
Claims priority, application Japan, Sept. 27, 1971,

46/74608

Int. Cl. B01f 5/04, 7/26, 13/10

U.S. Cl. 259-7

11 Claims



The apparatus for dissolving powder in water comprises a hopper containing the powder, a metering chamber communicated with the bottom of the hopper through a passage to receive powder, a rotary air pipe extending through the hopper into the metering chamber, an inner nozzle connected to the lower end of the rotary air pipe in the metering chamber to eject a stream of pressurized air, a stirrer mounted on the inner nozzle for uniformly admixing the powder with the stream of pressurized water, an outer nozzle coaxial with the inner nozzle and connected therewith through a discharge passage for ejecting a stream of air-powder mixture and a water spray mechanism for ejecting whirling water jet against the stream of air-powder mixture whereby to form a stream of mist like mixture containing air baffles and the powder in contact with water.

3,752,447

## MIXER APPARATUS

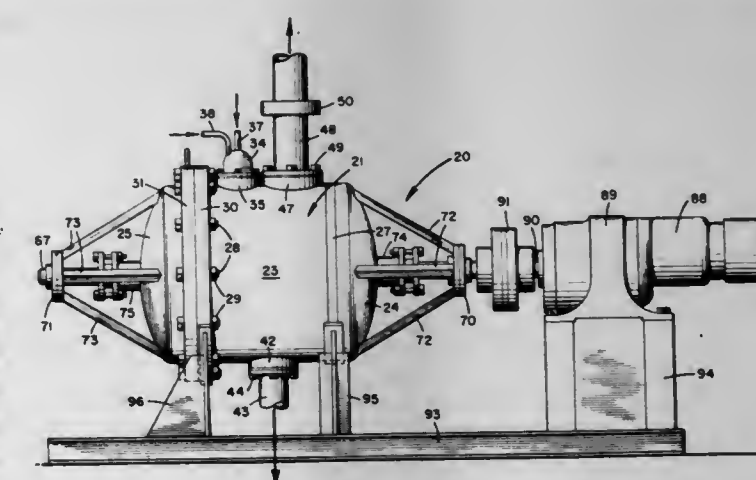
James Y. Chen, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1971, Ser. No. 172,147

Int. Cl. B01f 7/04

U.S. Cl. 259-10

9 Claims



A housing and paddle assembly adapted for use in processing and mixing highly viscous fluids is provided. The mixer employs a paddle assembly having a shaft which rotates about a horizontal axis. The assembly has at least two pairs of

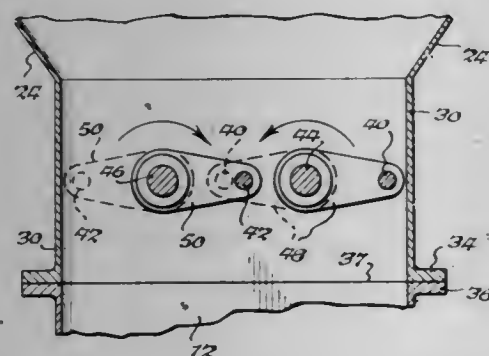


blade members. The members of each pair are symmetrically positioned about the shaft and extend axially in one half of the housing. The blade members of each pair may be slotted at diagonally opposite outside ends. In operation, the paddle assembly can sweep out substantially all of the housing interior and can produce simultaneously in a fluid cyclical vertical displacement, rolling action, horizontal displacement, and, even, fold over action.

3,752,448

## DOUGH CONDITIONING APPARATUS

Anthony F. Madonia, 19 Middlebury Ln., Buffalo, N.Y.  
Continuation-in-part of Ser. No. 83,339, Oct. 23, 1973. This application Sept. 15, 1971, Ser. No. 180,650  
Int. Cl. B01f 7/02, 15/02; A21c 1/06  
U.S. Cl. 259—186



A hopper for receiving a dough mixture directly from a mixing chamber and gravity feeding the same to a dough divider. A plurality of agitator rods mounted in the hopper condition and work the dough mixture to dispel excessive gases generated therein and render the mixture soft, elastic and of a uniform consistency and texture prior to the admission of the mixture directly into a dough divider.

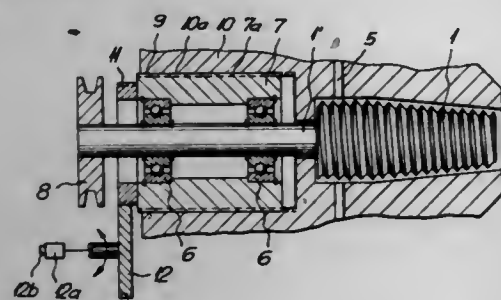
3,752,449

## APPARATUS FOR MIXING AND CONVEYING MATERIALS

Johann Schwab, Vienna; Albert Zehner, Pfaffstatten; Egon Kratochvil, Modling, all of Austria, and Friedrich Walter, Bremen, Germany, assignors to Semperit Aktiengesellschaft, Vienna, Austria, and Desma-Werke GmbH, Postfach, Achim, Germany  
Filed Dec. 4, 1970, Ser. No. 95,181  
Claims priority, application Austria, Dec. 17, 1969, A11752/69

Int. Cl. B01s 7/08

U.S. Cl. 259—191



An apparatus for mixing and conveying at least two materials, in particular a two or more component synthetic resin system comprising means defining at least one mixing compartment having an inner wall. At least one material conveying- and agitation worm means is arranged in the mixing compartment, said worm means and the inner wall of said mixing compartment surrounding said worm means at least partially possessing a conical configuration. There is also provided means for moving said worm means and mixing compartment relative to one another in axial direction. This invention also teaches a novel worm construction for use in such mixing

compartment which comprises a worm element consisting of a number of worm sections arranged in a row next to one another in the axial direction of the worm element, at least one worm section possessing threads with a different pitch than the remaining worm sections and the number of threads of all worm sections being equal.

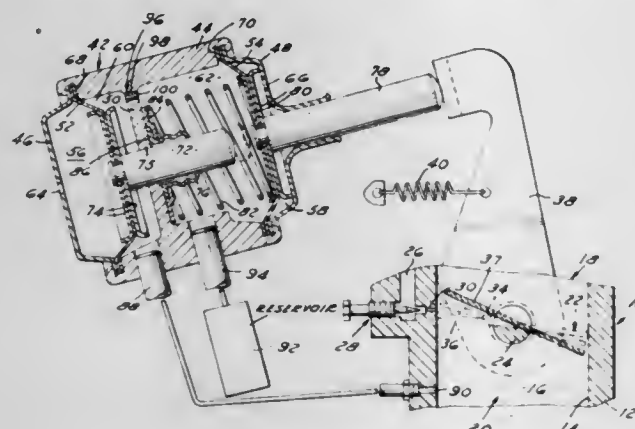
3,752,450

## VACUUM CONTROLLED CARBURETOR THROTTLE VALVE POSITIONER

William W. Charron, Orchard Lake; Robert S. Harrison, Detroit, and Harold E. Marcum, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.  
Filed July 26, 1971, Ser. No. 165,991  
Int. Cl. F02m 3/02

3 Claims U.S. Cl. 261—39 R

6 Claims



A downdraft type carburetor has an idle system discharge port that is straddled by the normal idle speed and closed throttle positions of the throttle valve so as to permit idle speed fuel and air flow in one position and no flow in the other position; a third beyond normal idle, or fast idle speed position is provided for engine startup; the three positions are controlled by a servo operatively engaging the throttle valve; the servo operation is controlled by intake manifold vacuum to initially close the throttle valve upon engine shut off, with a subsequent return of the throttle valve to its fast idle position for engine restarting, or to return the throttle valve to a normal idle position upon release of the vehicle accelerator pedal during engine operation.

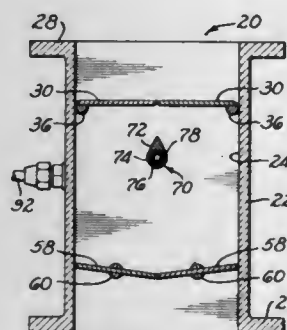
3,752,451

## FUEL METERING DEVICE FOR INTERNAL COMBUSTION ENGINE

Willard Z. Kendig, Yettem, Calif., assignor to Pollution Control Industries, Inc., Torrance, Calif.  
Continuation of Ser. No. 45,037, June 10, 1970, abandoned, Continuation-in-part of Ser. No. 865,239, Oct. 10, 1969, abandoned. This application Jan. 21, 1972, Ser. No. 212,687  
Int. Cl. F02m 9/08

U.S. Cl. 261—39 B

8 Claims



A downdraft carburetor of the air valve type having a mixing passage provided at its upstream end with two pivoted

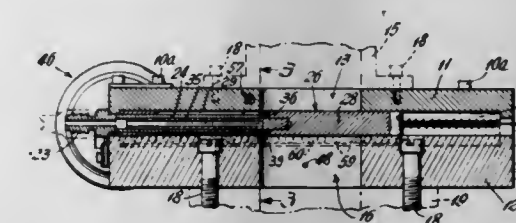
3,752,454

## FUEL INJECTING CARBURETOR

Jozsef Korponay, 22 Corona Dr., Milford, Conn.  
Filed Aug. 6, 1971, Ser. No. 169,783  
Int. Cl. F02m 9/06

U.S. Cl. 261—41 B

1 Claim



plates or air valves forming a variable venturi, and provided with two pivoted throttle plates adjacent its downstream end. A fuel spray bar in the mixing passage between the venturi plates and the throttle plates discharges fuel into the mixing passage and is supplied with fuel by a pivoted pickup arm movable in a fuel chamber over a calibrated metering ramp which cooperates with the free end of the pickup arm to form a variable fuel metering clearance therebetween. The fuel chamber may be pressurized, or the level therein may be controlled by a float. The venturi plates are biased closed by springs, one of which is a bimetallic spring coming into operation only when the engine is cold to provide a choke.

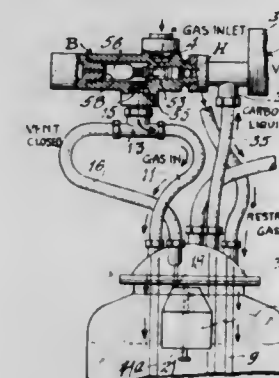
3,752,452

## GAS-OPERATED CARBONATING APPARATUS

Frank M. Iannelli, 5 Penwood Rd., Livingston, N.J.  
Filed June 30, 1971, Ser. No. 158,277  
Int. Cl. B01f 3/04

U.S. Cl. 261—52

5 Claims



Carbonating apparatus includes a single tank or chamber for carbonating, cooling, mixing and dispensing a liquid and having an inlet for liquid to be carbonated, and a valve-controlled dispensing outlet, a restricted inlet for continuous inflow of gas and another inlet for intermittent inflow of gas and controlled by a valve that is opened when the dispensing valve is opened to admit gas for dispensing the liquid and coacts with a liquid-level controlled gas vent valve that is open to vent gas from the tank and is closed when the liquid level rises to a predetermined point, and to prevent excessive escape of gas during the lowering of the liquid level and while the liquid level controlled valve is open.

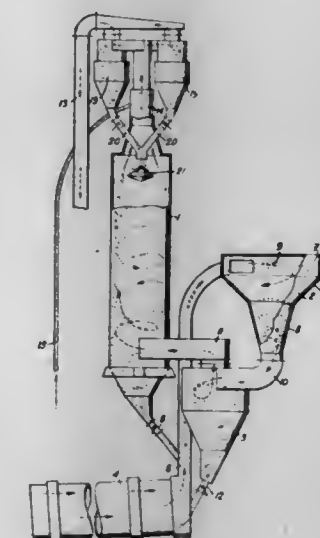
3,752,455

## ARRANGEMENT FOR BURNING OF PULVERULENT AND FINE GRAIN MATERIAL

Zdenek Zaczal, Horni Mostenice, and Petr Nemecek, Prerov-Sirava, both of Czechoslovakia, assignors to Prerovske strojirny, narodni podnik, Prerov, Czechoslovakia  
Filed Aug. 21, 1969, Ser. No. 856,522  
Int. Cl. F27b 15/00

U.S. Cl. 432—58

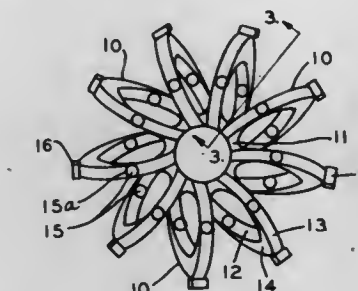
8 Claims



Richard F. Doyné, Summit, Ohio, assignor to The Ceilcote Company, Inc., Berea, Ohio  
Filed Feb. 19, 1971, Ser. No. 117,028  
Int. Cl. B01f 3/04

U.S. Cl. 261—94

19 Claims



A packing material unit for liquid-gas contact apparatus which is essentially six to 12 turns of a helix arranged about a circle and having the ends joined to form a torus. The helix comprises a filamentous material, and each loop of the helix is preferably or substantially circular. The loops carry one or more sharply defined surface interruptions in the form of abrupt nicks or projections, and preferably knobs and notches on exposed surfaces of the torus.

Pulverulent and fine grain material is burned in a burning aggregate of the cyclone type, into the upper cylindrical part of which the treated material is entrained by a stream of pre-heated air terminating tangentially into said burning aggregate, whereby particles of larger size forced by centrifugal force to the circumference of the cyclone remain in the burning zone longer than particles of smaller size, which occupy the central part of the cyclone.



3,752,456

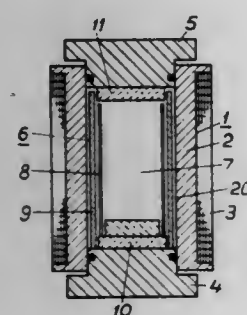
**VERTICAL TUBULAR FURNACE FOR HIGH OPERATING PRESSURES**

Hans Larker, Robertsfors, Sweden, assignor to Allmänna Svenska Elektriska Aktiebolaget, Vasteras, Sweden  
Filed Mar. 1, 1972, Ser. No. 230,898

Claims priority, application Sweden, Mar. 15, 1971, 3282/71  
Int. Cl. F27b 3/02

U.S. Cl. 263—40 R

8 Claims



A cylindrical elongated electric furnace placed in a pressure chamber for isostatic compression with its longitudinal axis substantially vertical. A heat-insulating mantle is provided for thermal isolation of the hot furnace chamber from the walls of the pressure chamber. This mantle is constructed of thin sheet metal arranged on a tubular frame and is free from insulating material of ceramic type. The sheet metal forms a plurality of cylindrical or conical layers located radially one outside the other and having gas-filled spaces between them.

3,752,457

**METHOD AND EQUIPMENT FOR CONTINUOUSLY SPINNING AND STRETCHING SYNTHETIC FILAMENTS**

Paolo Parmeggiani, Domenico Nicita, and Bruno D'Alo', all of Milan, Italy, assignors to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa, Milan, Italy

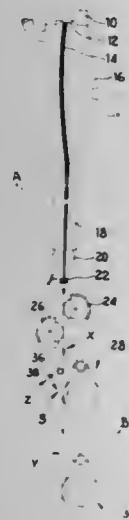
Filed Dec. 1, 1970, Ser. No. 93,973

Claims priority, application Italy, Dec. 4, 1969, 2535 A/69

Int. Cl. D01d 5/12

U.S. Cl. 264—210 F

4 Claims



A method and apparatus for continuously carrying out spinning and stretching operations on extruded synthetic filaments, wherein, between a conventional spinning apparatus and a conventional stretching apparatus for continuous treatment of the filaments, a bending and stretching action is imparted to the filaments by means of stationary bending means adapted to exert a predetermined frictional resistance on the running filaments.

3,752,458

**CONTINUOUS HEAT TREATMENT METHOD AND APPARATUS MAINLY FOR REACTIVE METALS**

Shoichi Tokuda, Kobe; Shitoshi Ohtani, Suita, and Minoru Nisigaki, Akashi, all of Japan, assignors to Kobe Steel, Ltd., Fukiai-ku, Kobe-shi, Japan

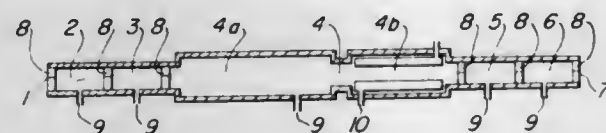
Filed Nov. 16, 1970, Ser. No. 89,566

Claims priority, application Japan, Nov. 15, 1969, 44/91661

Int. Cl. C21d 9/56

U.S. Cl. 266—3 R

2 Claims



A method of continuously heat treating reactive metals by passing the reactive metal through an heat treatment apparatus in which an inert gas is maintained at a pressure higher than atmospheric pressure and the interior of which is divided into a material inlet portion, a heat treating portion and a material outlet portion arranged in the order mentioned with a lip seal interposed between each other, the pressure distribution of the inert gas in the apparatus being such that the pressure is progressively reduced from the heat treating portion wherein it is highest, toward the material inlet portion and toward the material outlet portion stepwise; and an apparatus for practicing said method.

3,752,459

**CONTINUOUS ANNEALING FACILITIES FOR DRAWING STEEL STRIP**

Yoshiaki Kawazoko, Hiroyuki Kuroda, and Katsuhiko Hirogami, all of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

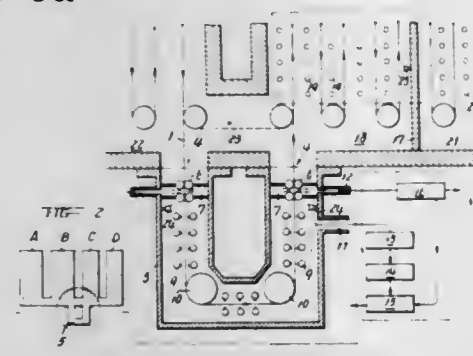
Filed Dec. 16, 1970, Ser. No. 98,734

Claims priority, application Japan, Dec. 16, 1969, 44100594

Int. Cl. C21d 1/64

U.S. Cl. 266—3 R

1 Claim



A continuous annealing facilities substantially comprising the following devices:

heating and soaking zones that the temperature of passing strip is within the range of 710° to 800° C,  
a rapid cooling chamber that the cooling rate of said strip is more than 50° C per second from 300° to 500° C  
a shelf treating zone that said strip is possible to maintain at the temperature of said 300° to 500° C for at least 10 seconds, and  
a cooling zone that the strip is cooled to room temperature.

3,752,460

**OXYGEN TRAP SCARFING APPARATUS**

Thomas James Lytle, West Orange, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 836,233, June 25, 1969, Pat. No. 3,647,570. This application Feb. 17, 1972, Ser. No. 227,147

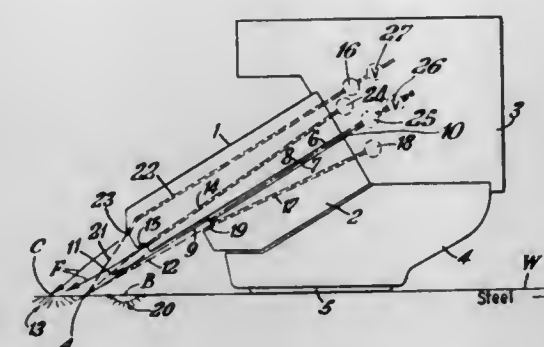
Int. Cl. B23k 7/00

U.S. Cl. 266—23 H

2 Claims

The time required for scarfing the surface of a metal body is decreased by shortening the preheating time. This is accom-

plished by directing a row of "trap" oxygen streams from ports located above the upper preheat fuel gas ports so that the oxygen streams form a plane which intersects the surface of the metal body in such way as to form a wedge shaped pocket to



confine the burning preheating gases. This results in faster puddle formation and causes the puddle to be formed at a location just ahead of the projected converging point of the fuel and oxygen gas streams, rather than in back of the converging point where it would be formed by prior art methods.

3,752,461

**PNEUMATIC SPRING DEVICES**

Jean Louis Gratzmuller, 66 Boulevard Maurice Barres, Neuilly-sur-Seine, France

Filed Nov. 9, 1971, Ser. No. 197,076

Claims priority, application France, Nov. 13, 1970, 7040607

Int. Cl. F16f 9/02

U.S. Cl. 267—113

16 Claims



A pneumatic spring device includes a cylinder assembly and a piston assembly, so arranged that a compartment is defined within the cylinder, and is filled by a gas, which, under normal conditions, is less dense than nitrogen, preferably helium, and is under high pressure (300 to 1000 bars). When the gas in the compartment is compressed by movement of the piston assembly within the cylinder, a large reserve of energy is thus made available in a small volume, and is maintained, despite variations in temperature. Control means, preferably in the form of an hydraulic jack arrangement, is provided for releasing this energy, and the piston assembly is connected to a device, particularly an electrical circuit breaker for the control thereof.

3,752,462

**ELASTOMERIC SPRING AND FRICTIONAL DAMPING SHOCK ABSORBER**

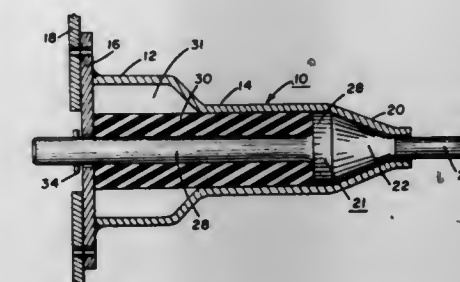
George W. Wight, Jr., Huron, Ohio, assignor to Clevite Corporation, Chicago, Ill.

Filed May 14, 1971, Ser. No. 143,544

Int. Cl. F16f 7/00

U.S. Cl. 267—140

12 Claims



An elastomeric shock absorber for interposition between an automotive chassis and bumper. The device includes an elastomeric tube arranged partly peripherally constrained and partly unconstrained in a tubular casing. A piston in the casing axially loads the elastomeric tube.

3,752,463

**AUTO HOOD REMOVER AND INSTALLER**

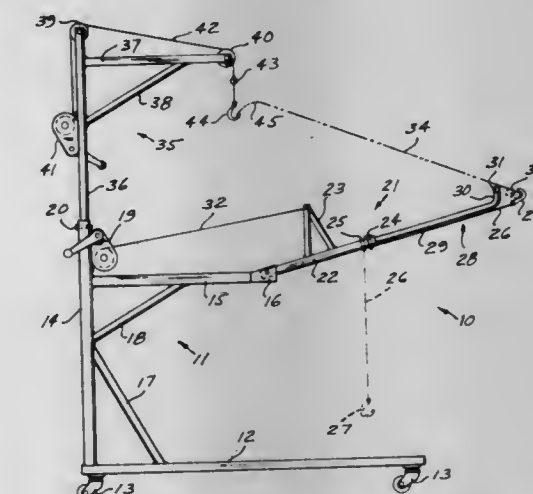
August W. Schilke, 311 Garfield, Almena, Wis.

Filed Nov. 29, 1971, Ser. No. 202,832

Int. Cl. B23q 3/00

U.S. Cl. 269—17

1 Claim



A device for auto service facilities whereby a mechanic working alone can remove and replace an auto hood. This device is a combination of articulated, adjustable winch operated members mounted on a floor-rolling frame.

3,752,464

**WORK HOLDING DEVICE**

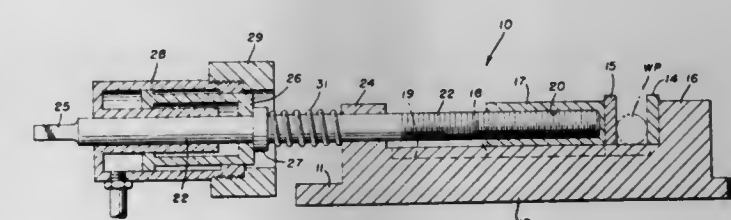
Geza M. Csatlós, Wadsworth, Ohio, assignor to Karg Machine Products, Inc., Tallmadge, Ohio

Filed Aug. 4, 1971, Ser. No. 160,764

Int. Cl. B23q 3/08

U.S. Cl. 269—32

2 Claims



Work holding device or vise with a base, fixed and movable work engaging surfaces or jaws, and dual means — fluid-pres-



sure actuated and manually actuated — for positioning the jaws relative to one to the other.

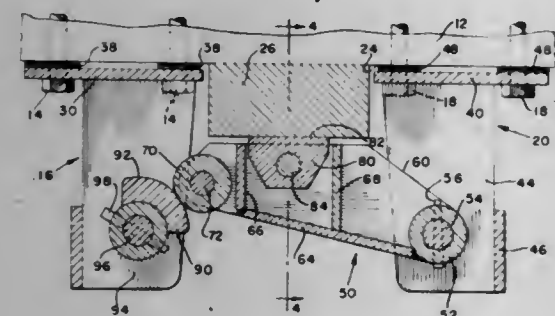
3,752,465

## CLAMPING DEVICE FOR ANODE RODS

Frederik Willem Slegmund, Bilthoven, Netherlands, assignor to N.V. Nederlandse Kraanbouw Mij, Utrecht, Netherlands  
Filed Feb. 9, 1971, Ser. No. 113,944  
Int. Cl. B25b 5/08

U.S. Cl. 269—93

4 Claims



A conductive bus-bar means includes a flat vertical clamping surface. A clamping means includes a pair of spaced support brackets carried by the bus-bar means. A movable means is pivotally supported by one of said support brackets and a roller is carried at the outer free end thereof. A clamping member is pivotally supported by the movable means and includes a flat vertical clamping surface to engage an anode rod and clamp such rod between the clamping member and the bus-bar means. A cam means is rotatably supported by the other of the support brackets and engages the roller on the movable means. Separate and independent means are provided for selectively pivoting the movable means and rotating the cam means to move the clamping means into clamping position.

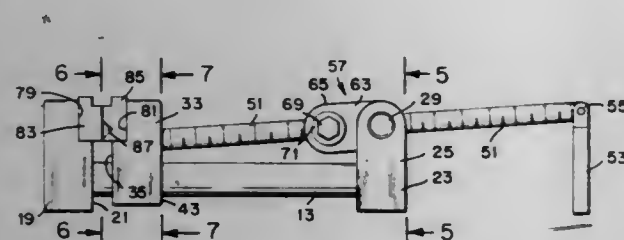
3,752,466

## QUICK-ACTING VISE

Nordahl Johnson, 4416 W. 164th St., Lawndale, Calif.  
Filed July 19, 1971, Ser. No. 163,974  
Int. Cl. B25b 1/02, 1/14

U.S. Cl. 269—201

7 Claims



A vise having a jaw moving along parallel rails between a fixed jaw and an anchor block, the movable jaw is coupled through a ball joint to an elongated threaded rod having a handle at its far end, the rod threadably engaging an apertured movable block which rotates about anchor block-held pivot pins by means of a pair of spaced links pivotally coupled at their respective ends to the pivot pins and the movable block. Quick and relatively greater movement of the movable jaw is attained by moving the handle so that the length and the movable block move in a vertical plane either toward or away from the fixed jaw, while a fine adjustment and power tightening or clamping of the vise jaws is attained by rotating the threaded rod, once the rod is moved forward and its longitudinal axis lies just below the longitudinal axis of the pivot pins.

### 3,752,467 PORTABLE ROOF TRUSS AND JOIST ASSEMBLING APPARATUS

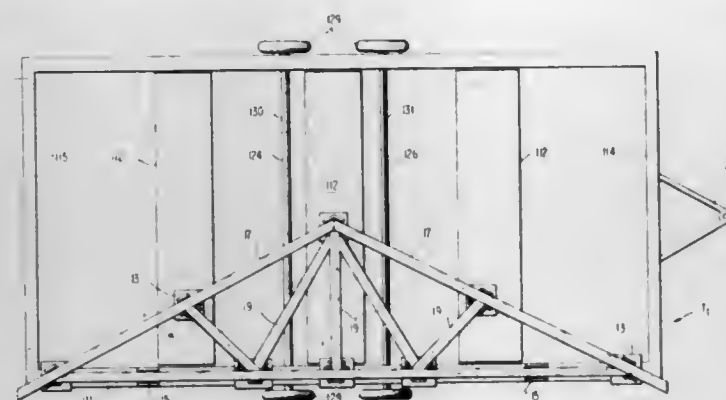
James M. Stanley, Vicksburg, Miss., assignor to Multi-Systems, Inc., Vicksburg, Miss.

Filed May 19, 1971, Ser. No. 144,794

Int. Cl. B23g 3/10; B25h 5/00; B27f 7/02

U.S. Cl. 269—321 F

3 Claims



A portable roof truss and floor joist fabricating apparatus which is a "jig-like" fabricating table on which is positioned a plurality of bracket plates for retaining the frame members in an assembled condition for fastening. The fabricating table comprises an elongated lower chord support beam as one side of the fabricating table and contains on one side thereof a plurality of mounting points to which are held a plurality of outwardly extending extension beams. On each extension beam and the lower chord support beam are mounted at least one detachable bracket plate with blocking brackets attached thereto for properly positioning each frame member. The members are fastened with toothed nailing plates or more preferably truss nails fastened through truss plates positioned on opposite sides of the frame members at the joint. In a preferred embodiment the frame members are secured by nails clinched with a ribbed clinching plate.

3,752,468

## APPARATUS TO FACILITATE INSERTION OF NEWSPAPER SUPPLEMENTS

Charles H. Hart, Nazareth, Pa., and George R. Cashau, Philipsburg, N.J., assignors to Anpa, Easton, Pa.

Continuation-in-part of Ser. No. 84,329, Oct. 27, 1970, Pat.

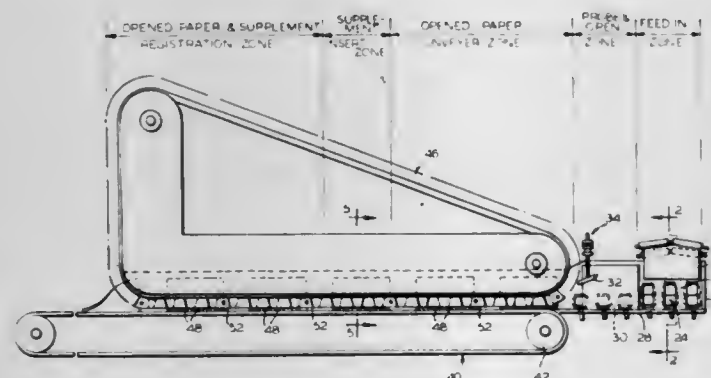
No. 3,711,084. This application Oct. 26, 1971, Ser. No.

192,094

Int. Cl. B65h 5/30

U.S. Cl. 270—57

12 Claims



Apparatus to facilitate insertion of newspaper supplements including means for separating a bundle of sheets comprising a folded newspaper. Means are included for feeding in folded newspapers, advancing the newspaper vertically along a lineal plane with baffle means supporting the newspaper; a plurality of drive rollers extending through the baffle on either side of the conveyor, so as to engage the folded sides of the newspaper and urge the newspaper downwardly and forwardly

along a conveyor support; a pointed probe longitudinally aligned along the path of travel of the newspaper so as to engage the leading edge thereof at the top and separate the sheets laterally as they are advanced; a travelling conveyor for conveying the opened newspaper into and through a supplement insertion zone including a holddown and registry mechanism for the opened newspaper and supplement, and subsequent discharge. Means are also provided to minimize possible smearing of ink as the newspaper travels through the various zones.

The apparatus is particularly adapted to separating a printed newspaper prior to stuffing with inserts such as a TV Guide, Classified Advertising, Book Review supplements, and the like.

3,752,469

## FOLDING MACHINE AND METHOD OF PRESSING A FOLD

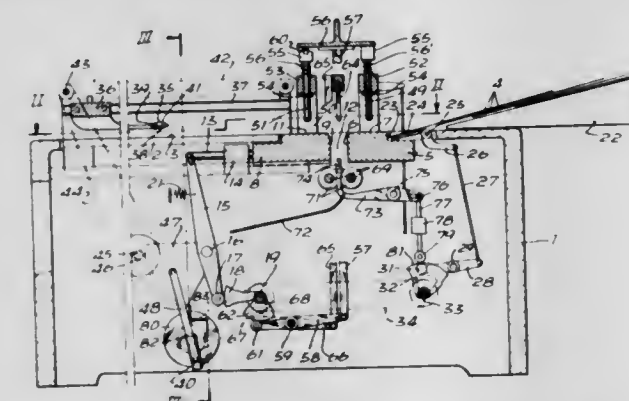
Hermann F. Kistner, Neckarweihingen, Germany, assignor to Maschinenbau Oppenweiler Binder & Co., Oppenweiler, Germany

Filed Aug. 7, 1970, Ser. No. 62,114

Int. Cl. B65h 45/00

U.S. Cl. 270—61

7 Claims



A folding machine comprising two pressure jaws and a method of pressing a fold into a flexible sheet material by means of these pressure jaws which are movable relative to each other and when separated define an intermediate slot, while the upper surfaces of these jaws at both sides of the slot form a part of a supporting surface for the sheet material. During the first part of the closing movement of the pressure jaws, the sheet material by being held in a fixed position on the jaws forms a loop in the slot which is then compressed into a fold when the jaws are completely closed.

3,752,470

## SINGLE OPERATOR SHEET FOLDER

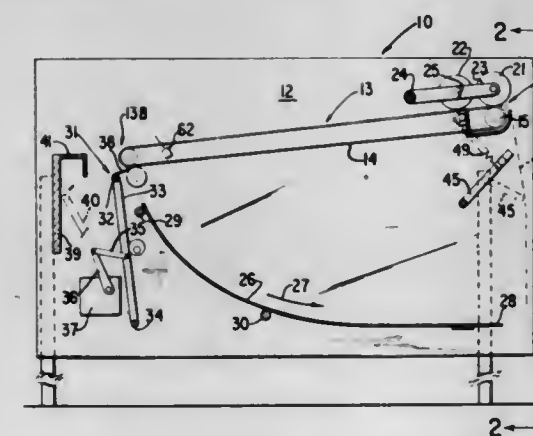
Benjamin Alvin Buss, and Donald C. Buss, both of East Moline, Ill., assignors to Ametek, Inc., New York, N.Y.

Filed Dec. 1, 1970, Ser. No. 94,094

Int. Cl. B65h 45/04

U.S. Cl. 270—80

1 Claim



A sheet-folding machine has an endless belt conveyor for moving a sheet mounted between a pair of spaced end frames.

A folder bar is pivotally mounted at the output end of the conveyor belt, and a curved operator bar is mounted below the input end of the conveyor belt so as to be pivotable between start and stop positions. The folder bar is preferably operated by an electric motor drive. A return chute is positioned below the conveyor belt and is adjustably mounted between the end frames. A control system is provided which is responsive to the movement of a sheet on the conveyor belt or which is responsive to the operator bar for actuating the folder bar in the proper direction and at the proper time in order to make folds in the sheet.

3,752,471

## PROCESSES, SYSTEMS, AND COMPOSITE SYSTEMS FOR AUTOMATING THE MANUFACTURE OF WEARING APPAREL, HEADGEAR, FOOTWEAR, COMPONENTS THEREOF AND SIMILAR PRODUCTS

George F. Hawley, Bogota, N.J., assignor to Ivanhoe Research Corporation, New York, N.Y.

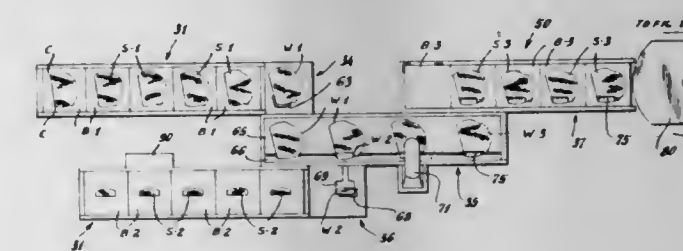
Division of Ser. No. 681,267, Nov. 7, 1967, Pat. No. 3,604,701.

This application Nov. 9, 1970, Ser. No. 87,744

Int. Cl. B65h 5/22

U.S. Cl. 271—4

15 Claims



Processes and systems for automated feed of stacked fabrics on plural work tables, in sequence, to an infeed station and processing the fabrics at a work station.

3,752,472

## CHILD'S BUILDING TOY

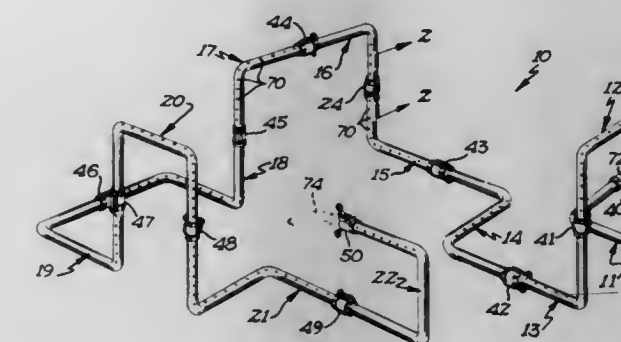
Timothy A. Snead, Minneapolis, Minn., assignor to The Minneapolis Society of Fine Arts, Minneapolis, Minn.

Filed Apr. 8, 1971, Ser. No. 132,441

Int. Cl. A63b 9/00

U.S. Cl. 272—60

8 Claims



A child's building toy of various basic building units is disclosed each of which building units is in the form of an elongated double-ended member having at least one bend. Each basic building unit further includes a connector upon each end to allow a child to interfit and interconnect the basic building units to construct and interconnect an arrangement of basic building units of his own design comprising any number of units to the maximum number available. The basic building units are hollow to allow water to flow therethrough, and at least some of the units include apertures to allow the water to issue from them as a spray upon children climbing and otherwise playing upon an interconnected arrangement of the basic building units.



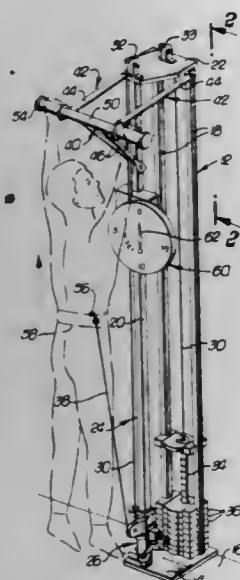
3,752,473

**WEIGHT LIFTING TYPE EXERCISER WITH INDICATOR**  
Jack LaLanne, Hollywood, Calif., assignor to The Jack LaLanne Company, Glendale, Calif.

Filed Aug. 17, 1970, Ser. No. 64,542  
Int. Cl. A63b 1/00, 21/06, 21/00

U.S. Cl. 272-62

8 Claims



An exercising apparatus for particularly exercising upper extremities of a person. The apparatus includes an upright frame and at least one weight plate vertically movable along the frame. A cable is connected at one free end to the weight plate, looped over a top end of the frame and over a guide roller adjacent a lower frame end. A chin-up bar is connected to the upper portion of the frame and extends laterally away therefrom for the performance of chin-ups while the other free end of the cable is connected to the body of the exercising person so that he must lift the weight plate during each chin-up. A counter is coupled with the apparatus for visibly indicating to the user the number of times he performs a given exercise.

3,752,474

**ARM AND LEG PUSH PULL TYPE EXERCISING DEVICE**  
Alcide R. Macabet, and Jean-Daniel Macabet, both of Boulevard de Dixmuele, Paris, France

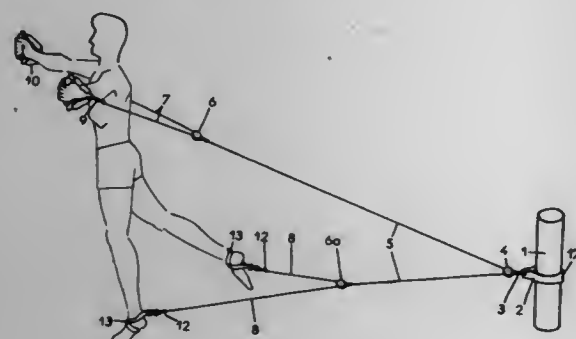
Continuation of Ser. No. 116,865, Feb. 19, 1971, which is a division of Ser. No. 705,064, Feb. 13, 1968. This application

July 20, 1972, Ser. No. 273,440

Int. Cl. A63b 21/00

U.S. Cl. 272-80

1 Claim



A portable exercise apparatus that has hand grips attached to opposite ends of a cable for reciprocation during an exercise. The hand grips are mounted on a separate cable reeved over a pulley. The apparatus also has, attached to the opposite end of the cable, straps that are attached to the feet of a user, which also are reciprocated during an exercise. The straps are attached to a separate cable reeved over a pulley.

3,752,475

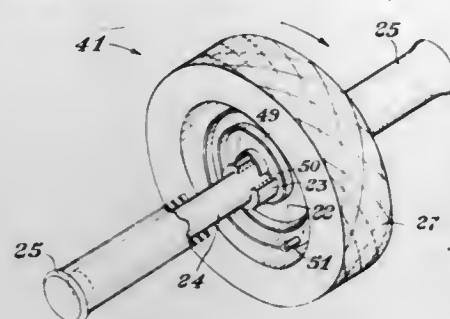
**AXLE-MOUNTED WHEEL EXERCISING DEVICE WITH SPRING RESISTANCE LOCATED CENTRALLY WITHIN THE WHEEL**

Arnold C. Ott, 2512 Abbott Road, Apt. S-8, Midland, Mich.  
Filed June 21, 1971, Ser. No. 155,057

Int. Cl. A63b 21/22

U.S. Cl. 272-83 A

7 Claims



An exercise wheel or appliance comprises, in combination with a wheel which wheel is rotatable about a generally central axis of generation therefor, spring means in operative association with the wheel and axle for increasingly resisting rotation of the wheel with and upon increasing rotation of the wheel.

3,752,476

**PROJECTILE RETURN APPARATUS**

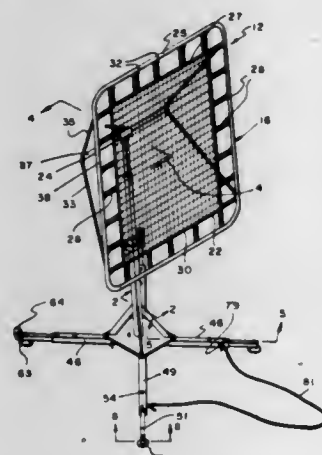
Elmo J. Mahoney, Dorrance, Kans., assignor to Mahoney, Inc., Dorrance, Kans.

Filed July 29, 1970, Ser. No. 59,096

Int. Cl. A63b 69/00

U.S. Cl. 273-1.5 A

3 Claims



A backstop return panel is spaced forwardly from a rearwardly inclined, telescopic, support post by two pair of side braces. Each pair of side braces is secured to respective opposite ends of a shaft which in turn is mounted to the support post for pivotal movement about a horizontal axis by a releasable clamp. The support post is mounted to an X-shaped base. Each foot of the base is telescopic and has mounted at its outer end a flanged suction cup with a hole at the midpoint of the flange, and a suction cup release device comprising a pivoted roller.

3,752,477

**BASKETBALL HOOP FOR TEACHING AND TRAINING CHILDREN**

Thomas R. Hoyt, 2380 Shunk Ave., Alliance, Ohio  
Filed Aug. 17, 1971, Ser. No. 172,395

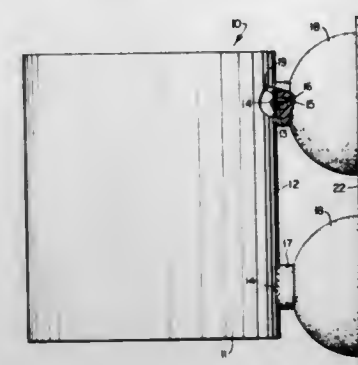
Int. Cl. A63b 63/04

U.S. Cl. 273-1.5 R

5 Claims

A basketball hoop assembly consisting of a cylindrical ring structure having a dependent arcuate wall structure provided with spaced through apertures fitted with suction cup support members the attachment stem portions of which are formed with arcuate abutment faces to matingly overlies and grippingly

engage substantial areas of the arcuate wall structure surrounding the through apertures. The gripping engagement effectively secures the ring structure and arcuate wall structure



against movement in any direction relative to the stem portions to stabilize the ring structure against impact forces of the ball in use.

3,752,478

**RACKET FRAME**

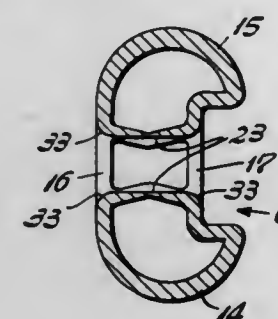
Peter R. Flak, West Springfield, Mass., assignor to Questar Corporation, Toledo, Ohio

Filed Mar. 26, 1971, Ser. No. 128,232

Int. Cl. A63b 49/12

U.S. Cl. 273-73 H

3 Claims



A tennis or the like game racket having a frame of extruded aluminum provided with a tri-hollow cross-section enabling the frame to be reduced in weight without detracting from the strength of the frame.

3,752,479

**SHUTTLECOCK OR BUTTERFLY ADJUSTABLE IN RANGE AND SPEED**

Kwang Chul Chung, 129-1, Kongduk-dong, Mapo-ku, Seoul, South Korea

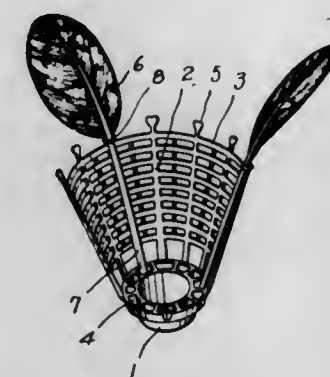
Filed June 10, 1971, Ser. No. 151,856

Claims priority, application South Korea, June 10, 1970, 6100

Int. Cl. A63b 67/18

U.S. Cl. 273-106 A

11 Claims



A shuttlecock or butterfly is provided with an arrangement in which gliding feathers are readily arrayed or rearranged, attached onto or detached from so as the shuttlecock or but-

terfly itself be adjusted in its flying range and speed. The arrangement comprises a plurality of pits formed along the upper brim of the bottom cup portion of the basket-like main hopper body, a rib-like skirt portion, a plurality of vertical frames and a plurality of knob heads formed on the top of the vertical frames, protruding upwardly from the upper end of the skirt portion. The feathers are secured onto along the inner surface of the vertical frames with the foot portion of the quill inserted in the pits formed along the upper brim of the bottom cup portion and the upper portion of the quill at the middle of the feather tied onto the knob heads formed on the top of the vertical frames by such fastening means as string, wire or adhesive tape.

3,752,480

**GAME EMPLOYING TILTABLE GAME BOARD AND MOVABLE BALL AND RINGS**

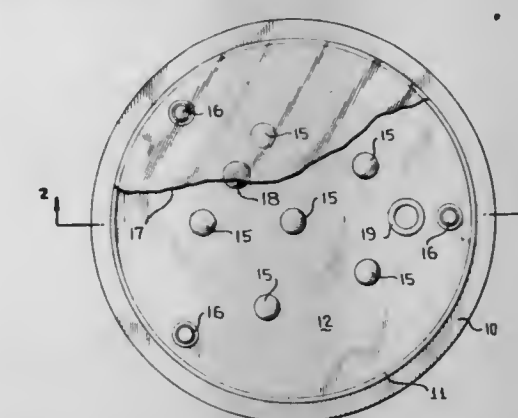
Jose Luis Pemjean Mazuela, 5 Jalan Labat Daun, Singapore 28, Singapore

Filed May 5, 1972, Ser. No. 250,787

Int. Cl. A63f 7/04, 7/16

U.S. Cl. 273-109

6 Claims



A game of skill employs a flat game board surface into which one or more marbles and one or more posts are imbedded. A ball is rolled along the surface by tilting the board. One or more rings is provided with an inner diameter smaller than the ball but approximately the same size or slightly larger than the marble. The object of the game is to first place the ring onto the ball by moving the ball so as to drive the ring against a post and thereby flip the ring over onto the ball. The ring must then be flipped onto the marble by impacting the ball against the marble.

3,752,481

**PNEUMATIC BOARD GAME APPARATUS**

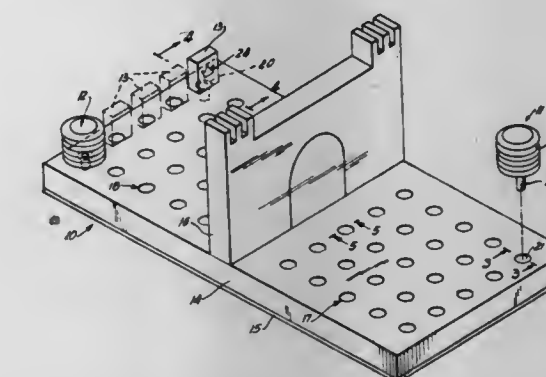
Norman Fabricant, 94-19 64th Rd., Rego Park, N.Y.

Filed Mar. 3, 1972, Ser. No. 231,644

Int. Cl. A63f 3/00

U.S. Cl. 273-131 BA

7 Claims



A toy including a playing board having two groups of holes in its top face and supporting a partition which prevents each player from seeing his opponent's group of holes. An air channel interconnects each hole of one group with only one hole of



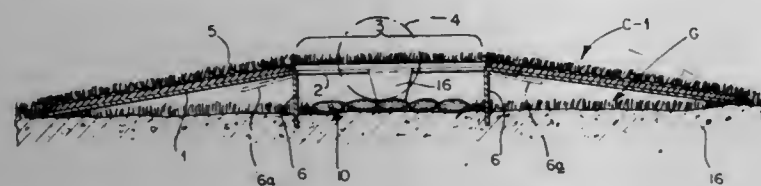
the other group. Each player is furnished with a set of playing pieces, fewer in number than the number of holes in his group, and a pump means. Each playing piece has an extension which can be slidably accommodated in any of the holes, and each pump means has a nozzle which can be accommodated in any of the holes. Thus, if a playing piece is engaged with a hole in the first group, the pump nozzle is engaged with a hole in the second group, and the engaged holes are connected by a channel, operation of the pump means causes an impulse of air to travel through the channel and the playing piece is ejected from the board. The pump means may be a bellows. The air channels may be created by forming the board of two layers, the top layer having grooves in its lower surface which are closed by a bottom layer.

3,752,482

## GOLF GAME EQUIPMENT

Ralph Cassel, Meng Rd., R.D. No. 2, Schwenksville, Pa.  
Filed Apr. 12, 1972, Ser. No. 243,338  
Int. Cl. A63b 67/02, 57/00  
U.S. Cl. 273-176 B

5 Claims



A plurality of simulated cups are placed over an area and spaced away from one another in some desired pattern. A conventional club is used to putt and chip a golf ball successively from cup to cup. A plurality of ball directors are placed respectively adjacent the cups. The directors are numbered successively and are pointed toward the next cup to receive the ball. Each cup includes a deformable, non-elastic pad in the form of fabric tubes sewed together and filled with sand to minimize the possibility of ball jump out. Each cup is formed in a frusto-conical shape and the upper surface of the cup includes a plastic layer simulating close-cropped grass.

3,752,483

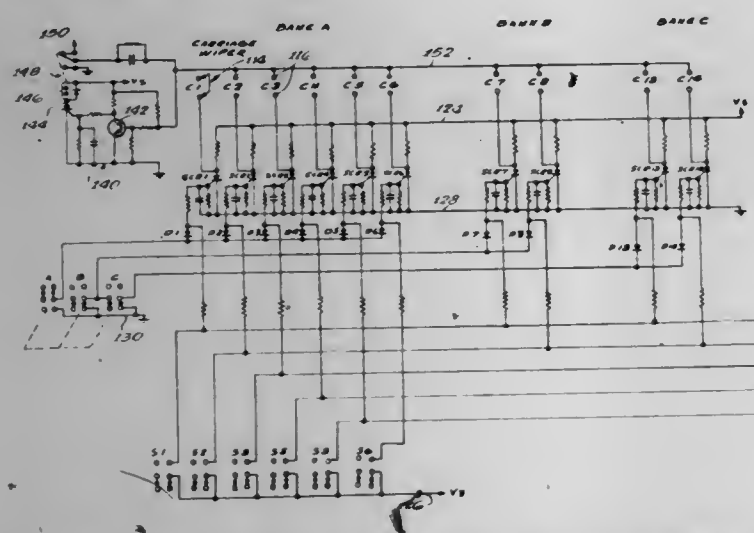
## TAPE CASSETTE CHANGER SYSTEM

William E. Olliges, Chicago; Edward L. Polanek, Glendale Heights, and Robert Gurney, Chicago, all of Ill., assignors to Universal Research Laboratories, Incorporated, Elk Grove Village, Ill.

Filed Sept. 25, 1970, Ser. No. 75,359  
Int. Cl. G11b 23/12

U.S. Cl. 274-4 F

7 Claims



A tape cassette playing system using a magazine holding a number of cassettes is provided, in which a tape playing carriage moves along tracks adjacent the magazine to hunt for a selected one or more of the number of cassettes. The system

has a memory to store information as to the selected cassettes. When a first selected cassette is found, it is automatically removed from the magazine and moved laterally into the carriage for playing. After the first cassette has been played, it is automatically returned to the magazine and the carriage hunts for another selected cassette.

3,752,484

## MAGNETIC TAPE CARTRIDGE PLAY CONTROL MEANS

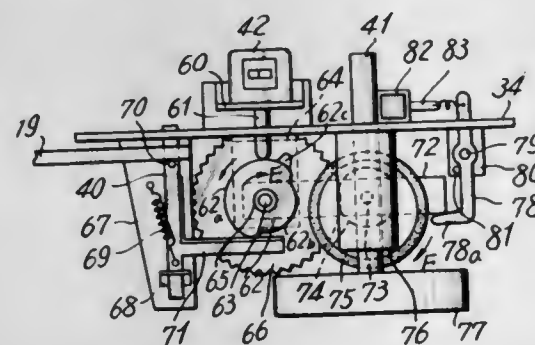
Itsuki Ban, 829 Higashi-Oizumimachi, Tokyo, Japan  
Filed Sept. 28, 1970, Ser. No. 75,876

Claims priority, application Japan, Sept. 26, 1969, 44/76237

Int. Cl. G11b 21/12, 23/12

U.S. Cl. 274-4 F

5 Claims



In a magnetic tape player utilizing a plurality of endless magnetic cartridges which is capable of playing the cartridges in such a successive manner that the next cartridge is automatically brought to the play position upon completion of the preceding cartridge held in the play position, magnetic tape cartridge play control means comprises a movable deck to which a rotatable capstan for playing the cartridge in the play position is mounted, a latch lever for retaining the deck in the reproducing position where the cartridge is engaged thereby in the play position, and an actuating member for moving the latch lever to the position establishing disengagement from the deck in response to completion of the cartridge in the play position thereby allowing the deck to be retracted from the reproducing position, whereby the next cartridge is brought to the play position in response to retraction of the deck from the reproducing position, and the play of the cartridge is initiated by return movement of the deck to the reproducing position.

3,752,485

## AUTOMATIC AND CONTINUOUS CASSETTE PLAYER

Katsuhiko Okabe, Tokorozawa, Japan, assignor to Victor Company of Japan, Ltd., Yokohama City, Japan

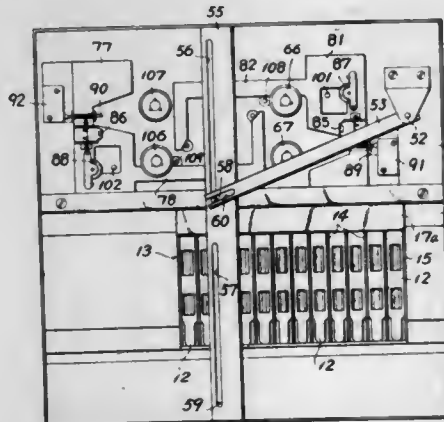
Filed Apr. 23, 1970, Ser. No. 31,153

Claims priority, application Japan, Apr. 28, 1969, 44/32924; Apr. 28, 1969, 44/39036

Int. Cl. G11b 23/12

U.S. Cl. 274-4 F

2 Claims



An apparatus for playing a plurality of cassettes automatically and continuously in sequence. The apparatus plays a cas-

sette taken out from a sequentially fed cassette case; and both forward and reverse channel tracks of a two track tape of each cassette are put to reproducing performance to play.

3,752,486

## CASSETTE-TYPE MAGNETIC TAPE RECORDING AND REPRODUCING APPARATUS

Kinya Nakamura, Saitama-ken, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan  
Division of Ser. No. 780,645, Dec. 3, 1968, Pat. No. 3,632,113.

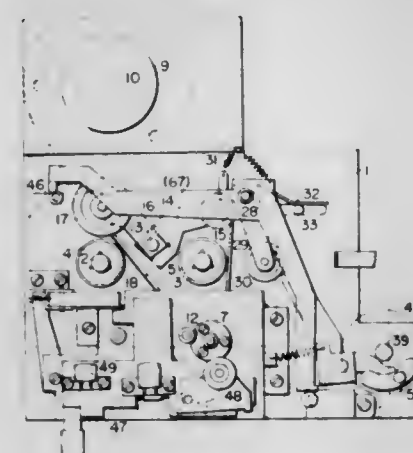
This application May 4, 1971, Ser. No. 140,233

Claims priority, application Japan, Mar. 14, 1968, 43/17084; Mar. 14, 1968, 43/17085 (Utility Model); Mar. 14, 1968, 43/20547 (Utility Model); Mar. 14, 1968, 43/20548 (Utility Model); Mar. 14, 1968, 43/20549 (Utility Model); Mar. 14, 1968, 43/20550 (Utility Model)

Int. Cl. G11b 15/04

U.S. Cl. 274-4 C

2 Claims



Apparatus to prevent inadvertent recording over a prerecorded tape in a cassette, comprising: a pivotally mounted L-shaped member having a projection for detecting the presence or absence of an opening in a cassette, which opening indicates the presence of a prerecorded tape therein; a blocking projection provided at the other end of the detecting lever and engaging a mechanical record mode actuating lever to block the movement of the record mode lever when the presence of a prerecorded tape is detected; and a record operation mode hold lever pivotally mounted for movement by the record mode lever to engage a pin on an operating mode change-over cammed member so as to hold the apparatus in the record mode when a prerecorded tape is not detected.

3,752,487

## TAPE RECORDER CONTROLLING DEVICE

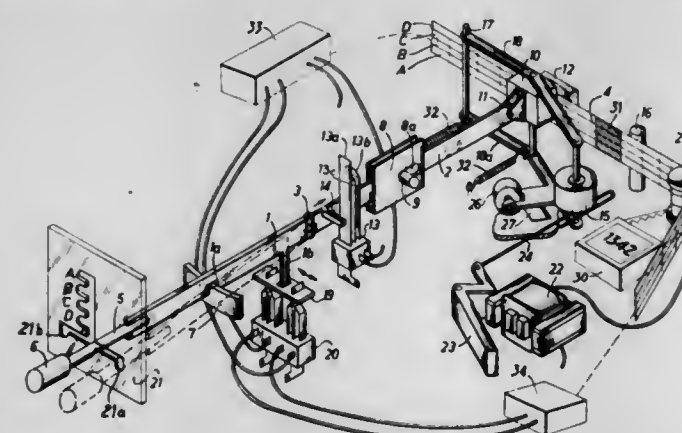
Guy Etienne de La Celle, 6, rue Marengo, Bordeaux, France  
Filed Mar. 4, 1971, Ser. No. 120,999

Claims priority, application France, Mar. 9, 1970, 7008368

Int. Cl. G11b 5/54

U.S. Cl. 274-4 A

15 Claims



A single operating member for controlling tape recorders of the type having slow forward movement of the tape for

reproducing or recording, fast forward movement of the type, and fast rewinding of the tape. The operating member comprises two portions pivotally connected to each other. One portion supports the magnetic head. In its rest position the magnetic head is spaced from the tape which may have a plurality of recording tracks. By pushing in the operating member the magnetic head is brought into engagement with the tape and a switch operatively connected to the operating member effects the movement of the tape at a slow forward speed. Fast forward and rewinding movement of the tape are effected by rotating the portion of the operating member remote from the magnetic head to one side and the other of a central rest position. In the fast forward or rewinding positions, the magnetic head can not be brought into contact with the tape. A vertical movement of the operating member enables the magnetic head to be brought into operative engagement with the various tracks of the tape. The operating member is locked in the recording or reproducing position and is released by the energization of an electromagnet by means of conductive segments on the tape.

3,752,488

## CASSETTE TAPE READ OUT DEVICES

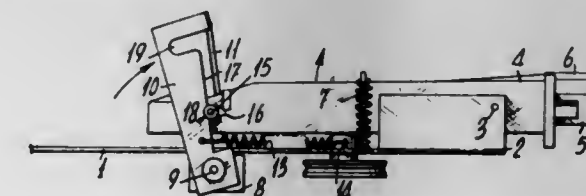
Nardino Righi, via Maniago, 2, Milan, Italy

Filed Apr. 9, 1971, Ser. No. 132,669

Claims priority, application Italy, Apr. 14, 1971, 23275 A/70  
Int. Cl. G11b 5/86

U.S. Cl. 274-4 E

3 Claims



A cassette tape read out device comprising a cartridge support frame which may be rotated by a slight downward manual pressure to the removal position for a previously inserted cartridge; the device also comprising a spring-biased hooking swinging member, serving to stop the frame in its operating positions.

3,752,489

## SELF-FLUSHING SHAFT SEAL

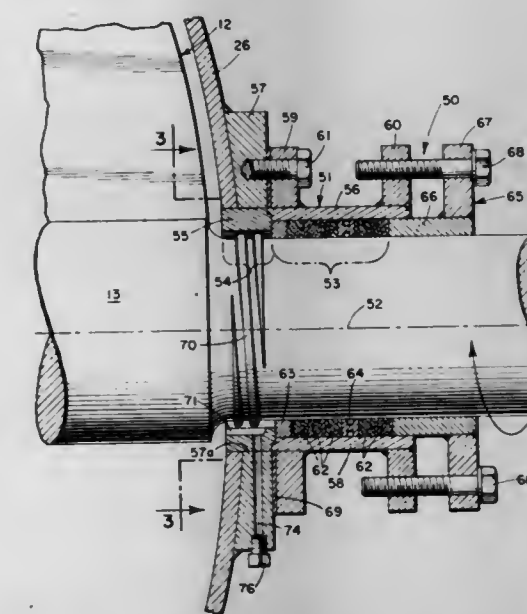
George A. Latinen, deceased, late of Springfield, Mass. (by May V. Latinen, administratrix), assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1971, Ser. No. 172,061

Int. Cl. F16j 15/54

U.S. Cl. 277-64

3 Claims



Described herein is an assembly whereby a shaft seal employing a viscoseal-type sealing screw is self flush cooling with



the same process liquid used to establish, in combination with such screw, the desired seal. The seal is functional under variable differential pressure conditions. For operating conditions when the shaft in the vicinity of the seal is not immersed in process liquid, a coating second, or back up, seal is provided to prevent loss of pressure in the region of the process liquid.

3,752,490

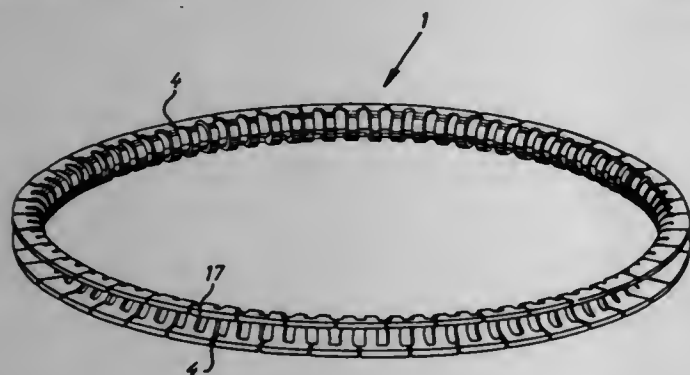
# ELASTIC PISTON RINGS AND METHOD FOR THEIR MANUFACTURE

Robert Geffroy, Neuilly-sur-Seine, France, assignor to Societe de Mecanique de Pringy, Pringy (Haute-Savoie), France  
Division of Ser. No. 653,742, July 17, 1967, Pat. No. 3,586,544. This application June 29, 1970, Ser. No. 60,167  
Claims priority, application France, July 20, 1966, 6670156; July 20, 1966, 6670157

Int. Cl. F16j 9/20

U.S. Cl. 277-140

7 Claims



An elastic piston ring, generally employed as a scraper ring and also known as an oil control ring, of spring steel of the U-section type, made from a strip of rolled steel comprising a grooved web and flanges cut-out in alternate folded portions so as to have a cross-section of U-shape, the said band being then cut into lengths which are rolled to the shape of a ring, the final lateral surfaces of the said piston ring each constituted by the successive sections of each flange being obtained by flow of the metal in an appropriate tool, by an operation known as forging, without other machining action on the said surfaces and a method for its manufacture.

3,752,491

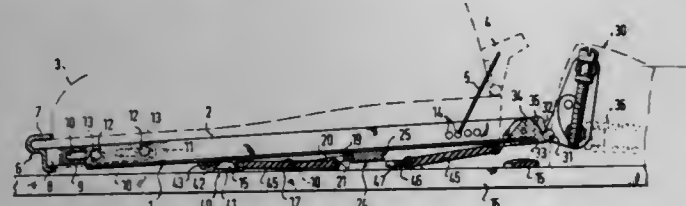
# SAFETY SKI BINDING SYSTEM

Fritz M. Fend, Regensburg, Germany, assignor to Hannes Marker, Garmisch-Partenkirchen, Germany  
Filed June 8, 1971, Ser. No. 150,974  
Claims priority, application Germany, June 23, 1970, P 20 31 018.3

Int. Cl. A63c 9/00

U.S. Cl. 280-11.35 K

7 Claims



A connection between the ski and the skiing boot is provided for by a separate soleplate. A plate-holding device engages the soleplate behind the heel of the boot. An abutment for the soleplate is mounted on the ski. The plate-holding device normally urges the soleplate against the abutment and releases the same in response to an overload acting in a vertical and/or horizontal direction. The abutment consists of a lever, which is pivoted to the ski on an axis which is transverse to the longitudinal direction of the ski. Said lever has a free end portion extending toward the rear end of the ski. A disc is

provided on the underside of the soleplate and is adapted to be approximately coaxial to the tibia of the skier and bears on the free end portion of the lever. At least two bearing blocks are secured to the ski below the soleplate and support the soleplate before and behind the disc. The plate-holding device comprises a known, spring-loaded detent member, which engages a wedge-shaped notch at the rear end of the soleplate. The apex of said notch is rearwardly and downwardly inclined.

3,752,492

# TOBOGGAN

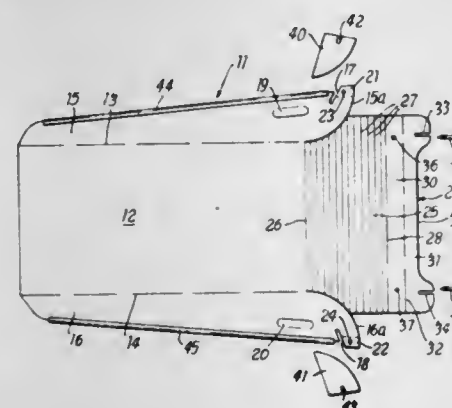
Derek Davies, 17-19 W. Ferry Rd., London E.14, England  
Filed Oct. 12, 1971, Ser. No. 188,177

Claims priority, application Great Britain, Oct. 12, 1970, 48,457/70

Int. Cl. B62b 15/00

U.S. Cl. 280-18

12 Claims



A snow toboggan formed from a sheet of foldable water resistant material, preferably a synthetic plastics material by cutting scoring and folding a blank. The toboggan comprises a flat base, two upstanding side walls joined to the base along fold lines and a front wall which is also joined to the base along a transverse fold line and which bears against the outwardly and forwardly inclined front edges of the side wall. A flap is joined along a fold line to the upper edge of the front wall along a fold line and the flap is folded rearwardly and downwardly so as to interengage with the side walls. Preferably the side walls and the flap are slotted and the interengagement of the slots retains the side walls in the upright position. Additional retaining means in the form of lugs on the side walls which are secured to the flap can also be provided.

3,752,493

# RETRACTABLE AND DETACHABLE WHEEL ASSEMBLY

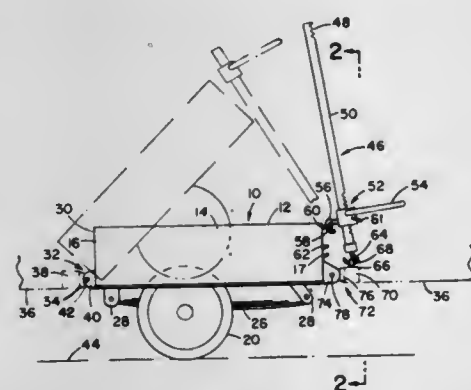
Hillman M. McWhorter, 2311-A Starmount Cir., Huntsville, Ala.

Filed Jan. 25, 1971, Ser. No. 109,189

Int. Cl. B62d 21/18

U.S. Cl. 280-43.21

4 Claims



A wheel assembly for use with transportable structures such as trailers, mobile homes and prefabricated buildings consisting of a wheel or wheels conventionally supported between

longitudinal beams of a rectangular frame and wherein one end beam of the frame is detachably and rotatably mounted to the structure it supports and the opposite end beam is detachably connected to the frame of the structure through a jack which is operable to lower the wheel assembly to carry the structure during transit and to raise the wheel assembly causing the structure to be lowered on a fixed support at its destination.

3,752,494

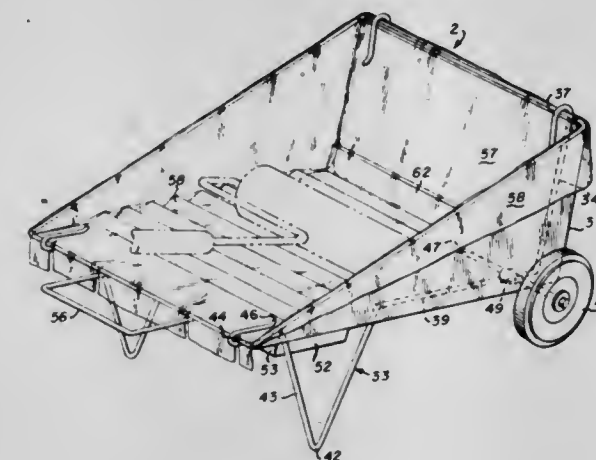
# PAINT CART ASSEMBLY AND METHOD OF FABRICATION

Kirkley J. Dunn, 1473 Merry Ln., San Jose, Calif.  
Filed July 12, 1971, Ser. No. 161,592

Int. Cl. B62b 1/20

U.S. Cl. 280-47.26

8 Claims



Presented is a paint cart assembly and a method of fabrication of the paint cart which reduces the initial cost of fabrication and assembly and when assembled, provides a disposable liner which precludes the necessity for cleanup of the paint cart after use.

3,752,495

# IRRIGATION CARRIAGE

Warren N. Ross, 2123 N. First St., Hermiston, Oreg.  
Division of Ser. No. 836,739, June 26, 1969, abandoned. This application Feb. 25, 1971, Ser. No. 119,023

Int. Cl. B60p 3/30; B60b 35/10

U.S. Cl. 280-80 R

2 Claims



An irrigation line move has a pipe supported by carriages with flexible, tapered trusses below the pipe extending between the carriages with the central portions of the trusses rotatable on and slidable along the pipe. Control boxes over the carriages mount switches which are actuated by bars attached to the pipe to stop the carriages when excessive misalignment is approached. A center pivot water supply device has a flushing exit, and a slip ring connector for electrical power to electric motor drives of the carriages. The carriages have adjustable wheel supports to provide toe-in.

3,752,496

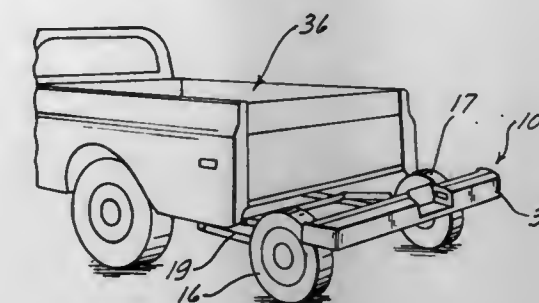
# AXLE ASSEMBLY FOR VEHICLES

Clarence A. Meinecke, Jr., P.O. Box 162, Gowrie, Iowa  
Filed Aug. 9, 1971, Ser. No. 170,160

Int. Cl. B60s 9/18

U.S. Cl. 280-81 R

3 Claims



An axle assembly attachable to a vehicle such as a pickup truck to supplement the load-carrying capacity of the vehicle and to stabilize the ride. The assembly extends from the rear of the vehicle and includes a pair of wheels adjustably mounted to a supporting frame. The wheels may be raised out of ground engagement or lowered to provide varying degrees of load support by action of a jacking means carried by the supporting frame and capable of rotating a torque-transmitting member connected to the axle through motion-dampers. A vehicle bumper is removably attached to the rear of the assembly, and the entire assembly is pinned to mounting brackets secured to a vehicle frame.

3,752,497

# INSTALLATION FOR STABILIZING THE VEHICLE BODY AGAINST CURVE-TILTING

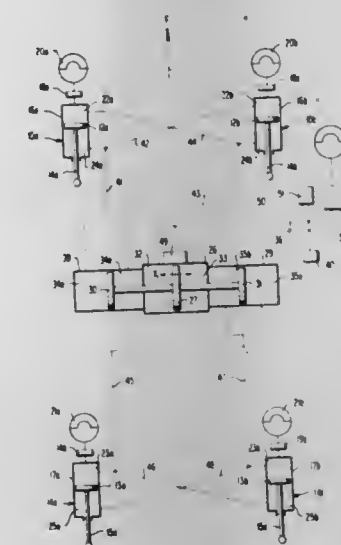
Kurt Enke, Kirchheim/Teck; Klaus Bauer, Stuttgart-Heumaden, and Udo Saftien, Waiblingen, all of Germany, assignors to Daimler-Benz AG, Stuttgart, Germany  
Filed Sept. 28, 1971, Ser. No. 184,569

Claims priority, application Germany, Oct. 1, 1970, P 20 48 323.3

Int. Cl. B60g 17/04

U.S. Cl. 280-112 A

20 Claims



An installation for stabilizing the vehicle body against curve-tilting, in which an erecting force is exerted on the side of the vehicle body disposed on the outside of the curve, whereby a pressure medium is supplied in dependence on the curve drive of the vehicle directly to the pistons of cylinder-piston units connected between the wheels and the vehicle body in such a manner that the cylinder-piston unit associated with the wheel on the inside of the curve is shortened in the sense of a lowering of the vehicle body and the cylinder-piston unit associated with the wheel on the outside of the curve is lengthened in the sense of a lifting of the vehicle body.



3,752,498

**OLEO-PNEUMATIC SUSPENSION ASSEMBLY**

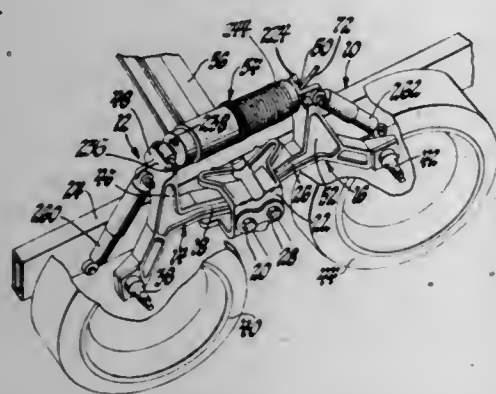
James M. Shea; Claude A. Thorsby, and Kenneth L. Westercamp, all of Saginaw, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 7, 1971, Ser. No. 187,415

Int. Cl. B60g 17/04

U.S. Cl. 280—124 F

5 Claims



In preferred form, a vehicle suspension device including a gas spring formed in part by an oil-filled, variable volume oil reservoir for a shock absorber. The device includes a hollow piston that reciprocates into and out of a shock absorber pressure cylinder in response to normal road movements. A spool divides the hollow piston into an oil charging chamber and an oil pressure chamber and the oil pressure chamber is connected to an external source of oil pressure which is selectively communicated with the inner cylinder to change the position of the spool axially therein thereby to change the amount of oil within the oil filled reservoir of the shock absorber to change the gas spring pressure in accordance with changes of vehicle loading thereby to maintain a predetermined height relationship between the sprung and unsprung mass of the vehicle.

3,752,499

**FLUID-MECHANICAL SUSPENSION SYSTEM**

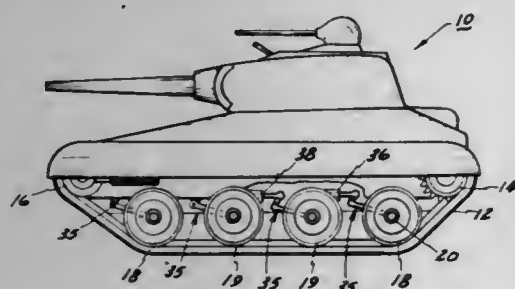
Jack M. Brandstadter, 1904 Cresthill, Royal Oak, Mich.

Filed Apr. 26, 1971, Ser. No. 137,508

Int. Cl. B60g 17/08

U.S. Cl. 280—124 F

19 Claims



A fluid-mechanical suspension system for a multi-wheeled vehicle providing for each individual wheel to be capable of upward deflection over an obstacle without imparting a similar motion to the vehicle as a whole. Each wheel of the vehicle is carried by a support arm pivotally mounted on the vehicle by way of a spindle journaled in an appropriate bearing to permit a defined amount of vertical displacement of the wheel with respect to the vehicle. A fluid cylinder having a reciprocable piston is actuated by a connecting rod pivotally connected to a crank arm projecting radially from the support arm spindle, such that the volume of the fluid in the cylinder is decreased by an upward vertical displacement of the wheel with respect to the vehicle and increased by a downward vertical displacement of the wheel. Each fluid cylinder is connected to a common source of system pressure, such as a control accumulator, such that each fluid cylinder and its associated mechanical transmission provides a positive rate of

change in the vertical force with a corresponding change in wheel displacement. The support arm and the crank arm are angularly mounted on the spindle relatively to each other and to the horizontal, and their effective lengths are such that they form a non-linear variable ratio mechanical transmission or coupling means between the road wheel and the fluid cylinder.

A second embodiment of the present invention is disclosed as employing a rotary displacement mechanism in place of the fluid cylinder.

In one example of the present invention the fluid-mechanical suspension system is in the form of a plurality of wheels mounted on both sides of a vehicle with the fluid cylinders associated with each wheel being interconnected with one another and a central common accumulator such that the pressure of the fluid in any one of the cylinders is a function of the volume of fluid in the accumulator. The fluid cylinders associated with the corner wheels of the vehicle are preferably provided with a valving mechanism that is operable upon a predetermined pressure differential between the accumulator and its associated fluid cylinder to limit the rate of fluid communication between the fluid cylinder and the common accumulator providing for a dampening of vertical movements of the corner wheels with respect to the vehicle. Means are provided for selectively controlling the height of the vehicle.

3,752,500

**OCCUPANT RESTRAINT SYSTEM**

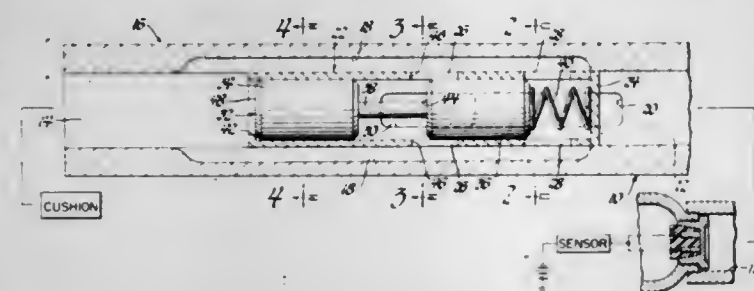
Clyde C. Culver, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 1, 1971, Ser. No. 119,483

Int. Cl. B60r 21/10

U.S. Cl. 280—150 AB

4 Claims



An occupant restraint system includes a vessel sealed by a rupturable diaphragm and providing a source of pressure fluid. The outlet of the vessel communicates with an inflatable cushion. A variable area orifice device controls the pressure fluid flow between the vessel and the cushion in accordance with the intensity of the acceleration pulse applied to the vehicle. The device includes an elongated cylinder having a first pair of diametrically opposite grooves in the wall thereof providing first passages communicating with the cushion, and a second pair of diametrically opposite grooves in the wall thereof providing second passages located circumferentially intermediate the first passages and communicating with the vessel. A sleeve fits within the cylinder and includes axially spaced first and second pairs of diametrically opposite openings from the interior thereof to the first passages and a third pair of diametrically opposite openings from the second passages to the interior thereof and located circumferentially intermediate the first pair of openings. A spool valve is movable within the sleeve and has one land engaging a fixed stop under a compression spring seating against the other land to locate the valve in unactuated position. In this position the first and third pairs of openings open to the space between the adjacent ends of the lands. The adjacent end of the other land partially closes the first pair of openings to provide a variable area orifice between the interior of the sleeve and the first passages communicating with the cushion. The second pair of openings open to the remote end of the one land, and the first passages open to the remote end of the one land. When an acceleration pulse of predetermined amplitude and time is received by the vehicle, the diaphragm is ruptured and the

pressure fluid released for flow into the second passages and thence through the third pair of openings to the interior of the sleeve between the lands. The fluid then flows outwardly of the sleeve through the variable area orifice to first passages for flow to the cushion. The acceleration pulse is likewise applied to the valve spool and the other land moves axially of the sleeve to set the area of the orifice. The area of the orifice is dependent on the intensity of the pulse. The second pair of openings provides for flow of the pressure fluid from the first passages to the remote end of the other land so that the pressure on the adjacent and remote ends of both lands is equal.

3,752,501

**STEERING WHEEL INFLATABLE CUSHION DEVICE**

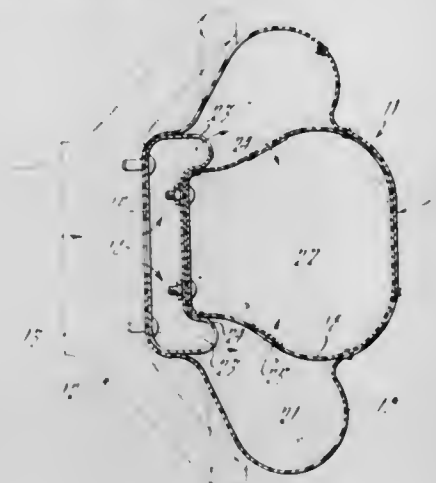
Roger P. Daniel, Dearborn, and Alex Rhodes, Detroit, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 20, 1971, Ser. No. 190,846

Int. Cl. B60r 21/10

U.S. Cl. 280—150 AB

14 Claims



An inflatable cushion device for protective interposition between a vehicle operator and the rim and hub of a vehicle steering wheel assembly. The cushion is compartmented to provide, when inflated, peripheral ring compartmentation in juxtaposition to the steering wheel rim and center compartmentation in overlying juxtaposition to the steering wheel hub. The peripheral ring compartmentation when pressurized provides greater resistance to collapse than the center compartmentation, whereby the peripheral ring compartmentation is adapted to guide the vehicle operator upon contact of the latter with the cushion toward the center compartmentation thereby to maintain the vehicle operator in substantially centered cushioned relationship to the steering wheel assembly under vehicle impact conditions.

3,752,502

**PULL TRAILER AND LOAD LIFT MEANS**

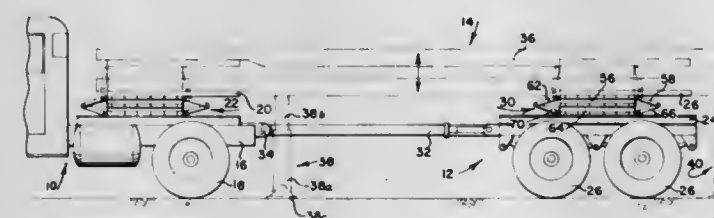
Carl W. Ehler, Deerfield Beach, Fla., assignor to Oehler Steel Company, Akron, Ohio

Filed Jan. 28, 1971, Ser. No. 110,486

Int. Cl. B62d 53/00

U.S. Cl. 280—440

5 Claims



A load supporting and lifting means for a pallet load carrying tractor-trailer assembly. The load bearing plates are supported at the upper ends of an inflatable air bag with a lower end of the bag being supported on the truck or trailer frame.

3,752,503

**MEANS FOR RELEASABLY BINDING AN ALBUM COVER AND ALBUM PAGES TOGETHER**

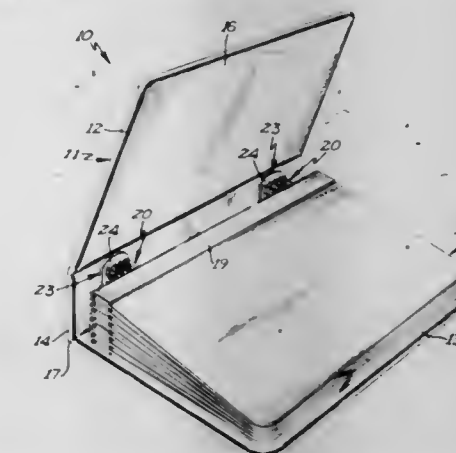
William W. Holes, and Roger A. Wenstrom, both of St. Cloud, Minn., assignors to William W. Holes, St. Cloud, Minn.

Filed June 10, 1971, Ser. No. 151,832

Int. Cl. B42d 3/00

U.S. Cl. 281—17

3 Claims



An album comprises a front cover, rear cover, a back member connected to the front and rear covers, a plurality of album pages each having hinge elements thereon, and a pair of hinge supporting members on the inner surface of the back member. Each of the album pages has means thereon which define a pair of hinge elements that releasably engage the hinge supporting members. The hinge supporting members are each comprised of a base having a plurality of hinge engaging elements integrally formed therewith and projecting outwardly from one surface thereof. The hinge engaging elements of each supporting member have an enlarged end, thus permitting the hinge elements of each page to be inserted between a plurality of the hinge retaining elements so as to releasably lock the album pages to the hinge supporting members. The album pages are swingable relative to the hinge supporting members, thus permitting the album to be opened into completely flat condition. The album pages may be readily removed from the hinge supporting members or may be added thereto, as desired.

3,752,504

**SHEET HOLDER**

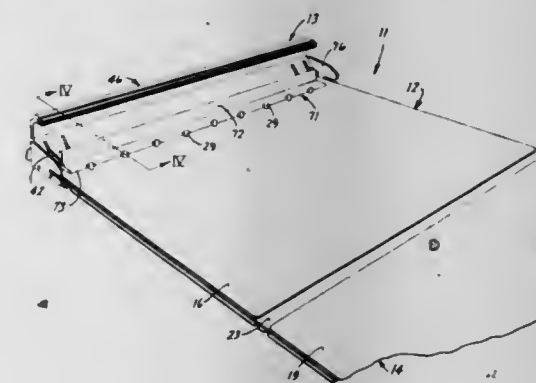
Allen L. Dixon, Portage, Mich., assignor to Master-Craft Corporation, Kalamazoo, Mich.

Filed Sept. 20, 1971, Ser. No. 181,798

Int. Cl. B41l 3/04

U.S. Cl. 282—29 B

10 Claims



An improved sheet holder having a substantially rigid base plate and a clamping member hingedly connected to the base



plate along one edge thereof for clamping engagement with one edge of a sheet for securely maintaining same in position adjacent the upper surface of the base plate. A substantially channel-shaped hinge member is fixedly secured to the base plate and extends into substantially parallel slots formed in the clamping member for permitting relative pivotal movement therebetween. A leaf spring is disposed between the legs of the hinge member and is positioned to resiliently urge the clamping member toward an open or closed position. The hinge assembly, including the spring, is substantially hidden by the clamping member, even when in the open position.

3,752,505

# SPIGOT MEMBER FOR BELL AND SPIGOT JOINT IN IRRIGATION PIPE

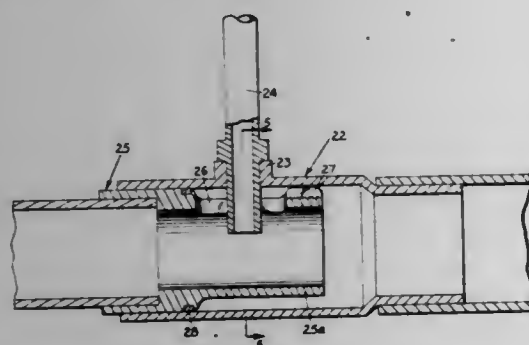
John C. Stout, Portland, Oreg., assignor to Irrigation Accessories Co., Portland, Oreg.

Filed Dec. 20, 1971, Ser. No. 209,598

Int. Cl. F16I 41/00; A01g 25/02

U.S. Cl. 285-5

1 Claim



The spigot member of the bell and spigot assembly has an end portion of reduced external and internal diameter which extends into the bell from a water seal connection with the bell member, and is so arranged as to provide annular clearance space between the spigot and surrounding bell wall in order to prevent grit particles lodging between spigot and bell and hindering free relative longitudinal movement of spigot and bell with respect to each other, or causing excessive wear from such movement. The tip end of the reduced portion of the spigot has elements in sliding engagement with the interior wall of the bell for maintaining spigot and bell in axial alignment and for maintaining said annular clearance space.

3,752,506

# SEALED FITTING FOR REINFORCED HOSE

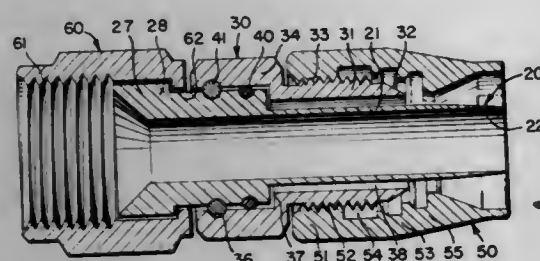
Robert E. Fouts, 14611 Hawthorne Blvd., Lawndale, Calif.

Filed Sept. 18, 1972, Ser. No. 289,793

Int. Cl. F16I 39/02

U.S. Cl. 285-149

6 Claims



A fitting assembly for use with a hose having an inner fluid sealing tube and an outer tubular reinforcement, the fitting assembly being of the so-called lip-seal, detachable and reusable type. The fitting assembly includes a nipple, the forward end portion of which may be inserted into the hose inner tube, a sleeve which is concentrically positioned about the nipple so as to define an annular space therewith in which a portion of the inner tube of the hose is forced during assembly, and a socket which is threadably received on the sleeve and which

defines a second annular space between the sleeve and the internal surface of the socket, the socket also including means for gripping the end of the hose during assembly so that axial movement of the socket relative to the sleeve forces a portion of the hose inner tube and the outer reinforcement into the second annular space. When fully assembled, the nipple may be rotated relative to the sleeve, hose, and socket so that if the nipple is attached to an elbow connection and the opposite end of the hose cannot be rotated, the elbow may be rotated without affecting the seal. The embodiments disclosed are particularly adapted for use with types of hose, such as Mil. Spec. H 58089, which are relatively flexible.

3,752,507

# SWIVEL

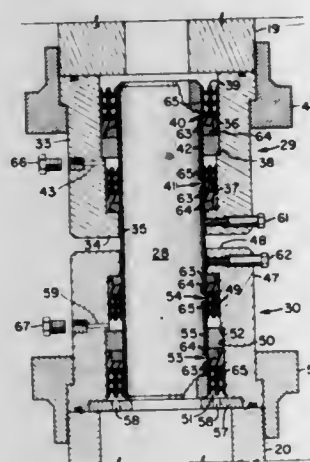
William C. Maurer; James F. Miller, and Ira D. Hickman, all of Houston, Tex., assignors to Esso Production Research Company, Houston, Tex.

Filed Oct. 1, 1971, Ser. No. 185,625

Int. Cl. F16I 17/02

U.S. Cl. 285-12

8 Claims



Two relatively rotatable, fluid conducting members of a swivel are interconnected by an improved assembly which includes a washpipe, mounting sleeves for connecting opposite ends of the washpipe to the fluid conducting members, and a tandem packing arrangement in at least one of the sleeves. A port formed in the sleeve containing the tandem packing arrangement communicates with the axial space separating the packings. Means are also provided for selectively locking each sleeve to the washpipe so that the packing in either sleeve can be made to function as a static seal or a dynamic seal depending on the position of the locking means. The improved washpipe assembly in one embodiment permits the swivel to be operated through two stages, and in another embodiment, through three stages before the packing must be replaced.

3,752,508

# BOWL GUARD CONNECTOR

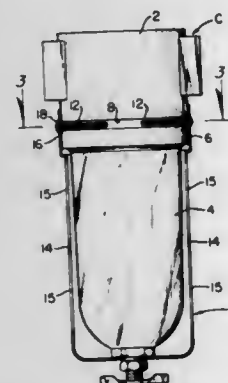
Delbert G. Faust, Denver, Colo., assignor to C. A. Norgren Co., Littleton, Colo.

Filed Feb. 22, 1972, Ser. No. 227,989

Int. Cl. F16I 37/00

U.S. Cl. 285-307

9 Claims



A connector for joining a bowl guard to the housing of a fluid control component which is very simple to use and which

permits the use of easily fabricated parts is disclosed. The fluid control component includes a housing with a depending flange to which a plastic or glass bowl is attached, the flange having a peripheral groove therein. The bowl guard has a peripheral lip with a groove that is alignable with the groove of the housing to form an annular recess when the lip of the bowl guard is placed over the flange of the housing in telescopic relationship. A flexible resilient elongated connector, such as a coil spring, having a cross-sectional area substantially corresponding to that of the annular recess is insertable through a notch in the lip into the annular recess and the protrusions of the coil spring are engageable with transverse ribs in the housing groove to hold the connector upon rotation of the bowl guard with respect to the housing. The groove of the bowl guard moves longitudinally therealong until the connector is enclosed within the annular recess after approximately one revolution of the bowl guard to prevent separation of the bowl guard from the housing due to shear forces.

3,752,509

# METAL-TO-METAL TUBE SEAL

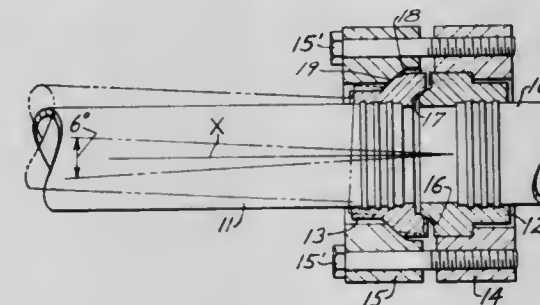
Warren J. Stafford, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 20, 1971, Ser. No. 209,944

Int. Cl. F16I 17/00

U.S. Cl. 285-334.4

14 Claims



Two axially aligned tubes have clamped, annular sealing members mounted thereon to define convex and spherical surfaces maintained in line sealing contact.

3,752,510

# STRUCTURE FOR CONNECTING A FLEXIBLE TUBE TO A SYRINGE

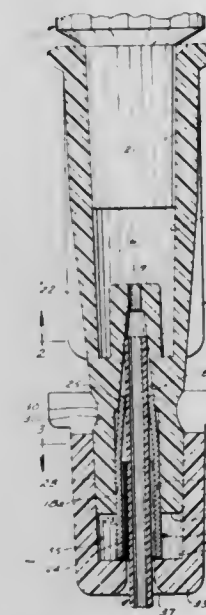
Edward F. Windischman, Daytona Beach, Fla.; John M. Chambers, Manchester, Mo., and Howard E. Werner, Deland, Fla., assignors to Sherwood Medical Industries, Inc., St. Louis, Mo.

Filed Oct. 7, 1971, Ser. No. 187,471

Int. Cl. F16I 25/00

U.S. Cl. 285-334.4

8 Claims



A connector structure for connecting a flexible tube end to a syringe having a luer tip including a plastic hub having a bore

therethrough and connected to the tip, a retainer in the hub bore for retaining the tube end therein, and a plastic bushing arranged to constrict the retainer about the tube end to effect sealed frictional retention of the tube in the hub. A construction is disclosed in which the retainer and tube end are urged into a tapered bore portion of the hub bore by the bushing, and another construction in which the bushing constricts a hub portion about the retainer and tube.

3,752,511

# CONTAINER COUPLER

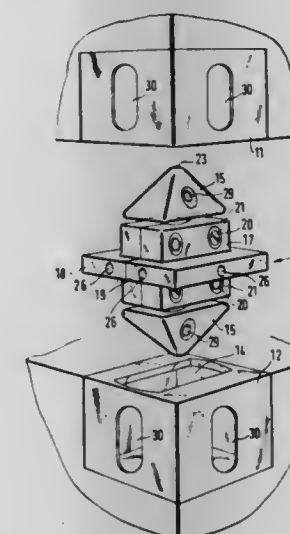
Stanley Racy, Valley Stream, N.Y., assignor to Line Fast Corporation, Farmingdale, N.Y.

Filed June 4, 1971, Ser. No. 150,058

Int. Cl. F16b 7/00

U.S. Cl. 287-2

5 Claims



This invention pertains to a container coupler having a housing which acts as a spacing means and in which is journaled for rotation a locking element. The locking element is provided with tapered elongated heads at each end thereof for engagement within the standard corner fitting of a freight container. The locking element is provided with offset bosses intermediate the ends thereof which are manipulatable to lock and unlock the container coupler.

3,752,512

# SINGLE-THICKNESS SEAT HANGER

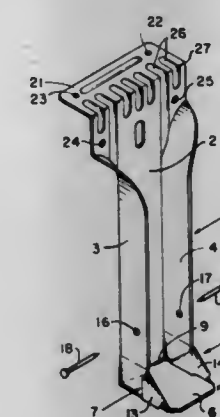
Tyrell T. Gilb, San Leandro, Calif., assignor to Simpson Company, San Leandro, Calif.

Filed Jan. 24, 1972, Ser. No. 220,041

Int. Cl. F16b 5/00

U.S. Cl. 287-20.94

1 Claim



A metal hanger for use in wood frame construction adapted for attachment to a support such as a carrying beam for receiving a joist member. The hanger consists of a back, a pair of sides, a seat and a uniquely folded connecting area connecting the sides and the seat. The seat consists of a single thickness of material and the distance between the bottom of



the joist and the bottom of the hanger constitutes no more than a single thickness of said material.

3,752,513

## SELF-CENTERING SHAFT LOCKING KEY

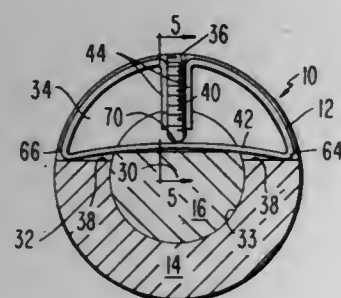
Dewey M. Sims, Jr., Westland, and Franklin H. Price, Jr., Troy, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 26, 1971, Ser. No. 175,172

Int. Cl. F16d 1/06

U.S. Cl. 287—52.08

13 Claims



A locking device serving as a key for securing an annular member or hub against axial movement on a shaft and for repetitively self-returning the hub to an angular preset condition and thereafter holding the same against rotation relative to the shaft. The hub has a tapped radial hole through the center of which a transverse slot extends and in which the locking key is received. A set screw is threadably advanced in the tapped hole to apply increasing pressure on the midportion of the locking key so that spaced parts of the key will contact the slot floor and a flat surface on the shaft creating moments of force which act in offset relation to the shaft's axis with the result that relative rotation of the shaft and hub will occur until a preset angular or home position is reached at which time the slot floor and the flat of the shaft extend parallel to one another.

3,752,514

## SOCKET RETAINING MEANS

Knut Christian Schoeps, Nacka, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

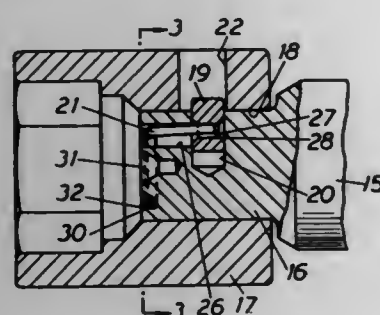
Filed Sept. 11, 1970, Ser. No. 71,466

Claims priority, application Sweden, Sept. 26, 1969, 13248/69

Int. Cl. F16d 1/06

U.S. Cl. 287—53 R

10 Claims



A socket retaining means for removably retaining a socket wrench on the outer polygonal or splined end of a drive shaft includes a releaseable engagement between the socket wrench and means on or forming part of a retaining member. The retaining member is a wire spring with a ring shank riding by clamping action in a ring groove on the tip of the drive shaft and having a rearwardly directed retaining shank applying itself or a detent releasably against the socket wrench.

3,752,515

## RESILIENT KEEPER RING

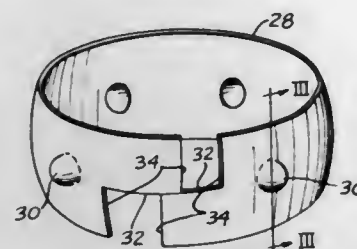
Seibert S. Oaks, Everett, and Ethamore F. Claar, Imler, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Sept. 15, 1971, Ser. No. 180,710

Int. Cl. F16d 1/06

U.S. Cl. 287—52 R

3 Claims



The specification discloses a resilient keeper ring, especially for mounting in the grooved shank of a rotatable tool for retaining the tool in a support block therefor in which the resilient ring is in the form of a split band with the ends of the band in overlapping relation so that the bands can be handled in an automatic feeding device without becoming interlocked with each other.

3,752,516

## KNOT TYING JIG

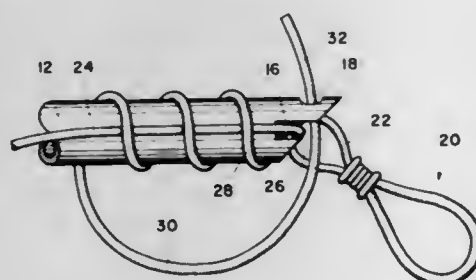
Paul R. Mumma, 2920 Hastings Rd., Cuyahoga Falls, Ohio

Filed Dec. 7, 1971, Ser. No. 205,513

Int. Cl. D03j 3/00

U.S. Cl. 289—17

5 Claims



A jig to aid in tying a knot in a line or cord, for example for knotting a fishing line onto a connector means or a hook. The jig is a hollow tubular member with the ends cut at 45° angles and provided with a notch in the cut end and a hole adjacent the notch. In use, the line is laid along the side of the jig, passed through the eye of the fish hook or connector which preferably is laid in the notch, wrapped in several loops, usually three, around the jig and has the end of the line threaded through the hole. When the jig is cleared by slipping the loops off of it, the end of the line is pulled through the convolutions and the ends of the line can then be drawn tight to complete the knot.

3,752,517

## TYING DEVICE

Ralph H. Warmack, Boulder, Colo., assignor to Ball Brothers Research Corp., Boulder, Colo.

Filed Dec. 20, 1971, Ser. No. 209,836

Int. Cl. D03j 3/00

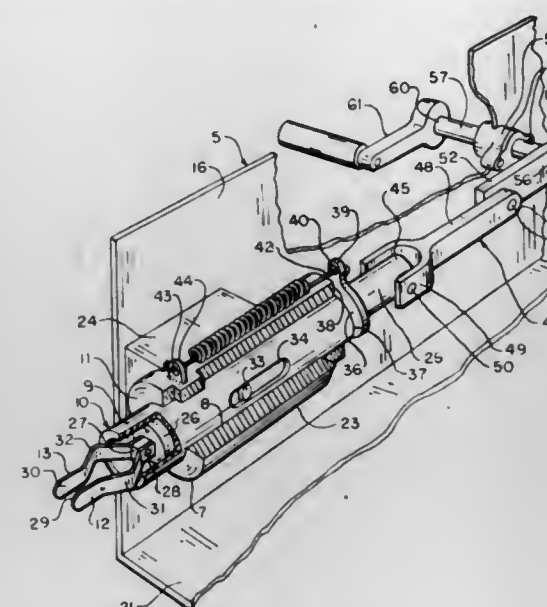
U.S. Cl. 289—17

17 Claims

A tying device is disclosed for forming a knot in an article. The tying device includes a forming collar about which a portion of the article to be tied can be wrapped and one end then inserted between a pair of gripping arms that are movable between open and closed positions with respect to one another. The gripping arms are retracted to a position within the collar carrying the gripped portion of the article therewith and the collar is then retracted within a support to dislodge the portion of the article wrapped around the collar therefrom.

and thus form a knot. The collar and gripping arms are then extended to permit the tied article to be removed from the

bination) is constructed with its pivoted and axially extendible and retractable, hooked, latch element normally resiliently urged, by a relatively small spring, transversely toward its unlatched position, and is constructed for forced movement into latched position, upon axial retraction of the latch element from its axially extended, unlatched position, by camming means that preferably comprise a camming surface extending along the back of the hooked latch element and bearing, as



device, the device then being ready to receive and tie a new article.

3,752,518

## DOOR BOLT

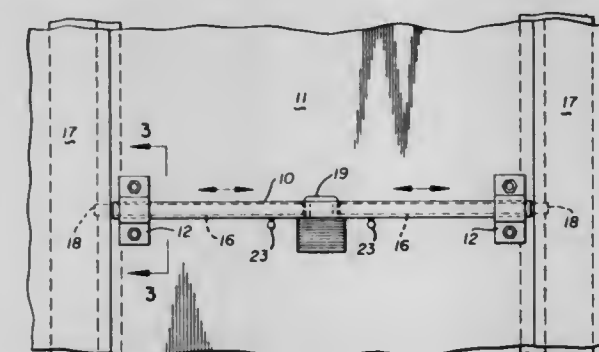
Fred J. Cannell, 2818 Idlewood Ave., Youngstown, Ohio

Filed Sept. 22, 1971, Ser. No. 182,701

Int. Cl. E05c 9/04

U.S. Cl. 292—42

3 Claims



A door bolt for attachment to the inner side of a door to be secured thereby includes a tubular body member having a pair of bars positioned therein for axial movement thereof. Mounting brackets secure the tubular body member to the door and the bars are moveable out of the ends of the tubular member into openings formed in the door casing. Openings formed in the center section of the tubular body member receive the hasp of a padlock between the inner opposed ends of the bars to hold the same in spaced relation with the outer ends engaging the openings in the door casing. A padlock body is applied to the hasp. Openings in the bars inwardly of the ends thereof enable the padlock hasp to be positioned there through when the bars are in innermost engaging position and be held in such position by said hasp and padlock body.

3,752,519

## MECHANICAL LATCH

Randy J. Nordell, 735 S. 9th E. St., and Harold C. Kimball, 777 E. S. Temple 9-B, both of Salt Lake City, Utah

Filed Dec. 2, 1971, Ser. No. 204,138

Int. Cl. E05c 5/04

U.S. Cl. 292—111

15 Claims

A mechanical latch of the type widely utilized to retain, in closed position, an automotive truck cab that is pivoted to be swung open and closed above the truck engine (especially such a cab of the tractor unit of a transport truck-trailer com-

such latch element is retracted, against a confronting portion of a housing within and from which the latch element operates. As normally constructed for hydraulic actuation, the relatively powerful spring that returns the power piston and effects latching following longitudinal extension of the latch element to its unlatched position bears against a seating ring that is freely rotatable and independent of, rather than integral with, the clevis element against which such power piston operates and in which the latch element is pivoted.

3,752,520

## CONTAINER DOOR LATCH

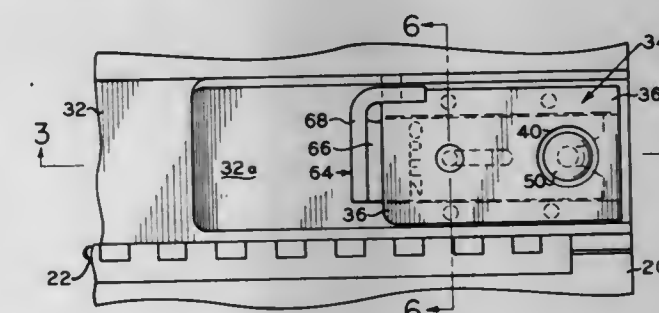
Walter F. Sprick, and Oscar W. Meller, both of Akron, Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Oct. 27, 1971, Ser. No. 201,590

Int. Cl. E05c 1/04

U.S. Cl. 292—148

10 Claims



A latch for securing a pair of members in fixed relation relative to one another. One of the members carries a stud which has a frusto-conical head portion and an annular groove. The other member carries a sliding latch plate which has a U-shaped notch at one end. The latch plate is slidably received in a housing and is movable between a closed position in which the U-shaped notch of the latch member engages the annular groove of the stud and an open position in which the latch member is clear of the stud.

3,752,521

## PROTECTIVE VEHICLE TRIM STRIP

Adolph Lafebre, 12314 Wicks Ave., Sun Valley, Calif.

Filed Apr. 1, 1971, Ser. No. 130,333

Int. Cl. B60r 19/08

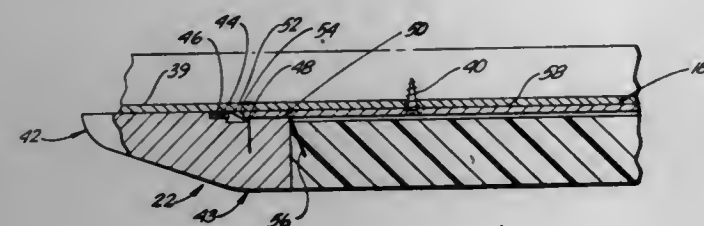
U.S. Cl. 293—1

28 Claims

A vehicle trim and protective molding comprising a partially closed channel strip for receiving and retaining a



protruding, resilient strip of material such as weather resistant vinyl. The channel is fastened to the surface to be protected by securing means extending between the base of the channel and the surface. End pieces each having a reduced portion at its interior end are engaged at opposite ends of each channel



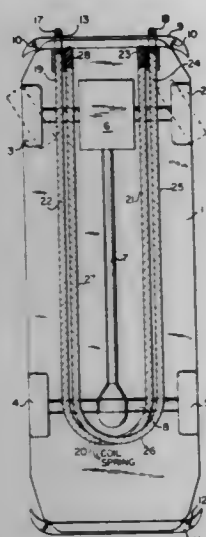
in a telescoping relationship. The end pieces are provided in various configurations for the front and rear of the strip and are physically secured to the channel by catch and detent arrangements or by riveting. On strips to be mounted on doors, the front end piece is mitered to provide clearance when the door is opened and closed.

**3,752,522**  
**AUTOMOTIVE VEHICLE IMPACT ENERGY REDUCING BUMPER**

Eugene M. Speer, 401 Jennie Jewel Dr., Orlando, Fla.  
Filed Nov. 17, 1971, Ser. No. 199,420  
Int. Cl. B60r 19/06

U.S. Cl. 293-60

14 Claims



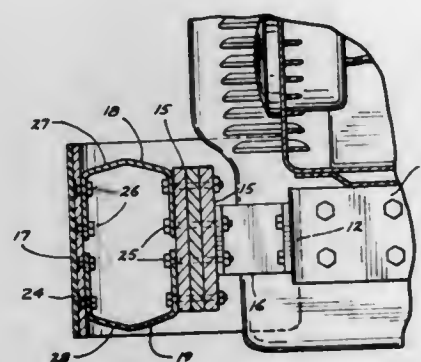
The impact of a longitudinal collision with respect to a wheeled vehicle is at least partially dissipated by the impact object striking projections extending longitudinally beyond the conventional resiliently mounted bumpers so as to drive the impact members longitudinally inwardly for in turn driving energy absorbing means longitudinally generally in a horizontal plane. Particularly, the impact energy absorbing means include at least one coil spring carried within a tube extending from the one end of the vehicle to the opposite end, wherein some embodiments it extends at right angles or is reversely bent to again extend to a terminal end at the one end of the vehicle, so that the impact energy is dissipated in driving the coil spring from the one end to the opposite end, and transversely or in a return path to the one end according to the various embodiments. Fluid expansible chamber shock absorbers may be interposed within the energy absorbing means, the energy absorbing means may redirect the blow in the opposite longitudinal direction back against the impact object, transversely at the opposite end of the vehicle to swing the vehicle away from the impact object, or against an internal resiliently mounted bumper at the opposite end of the vehicle from the impact object.

**3,752,523**  
**IMPACT ABSORBING VEHICLE BUMPER**

Henry C. Bierbrauer, 7440 Oxford, Minneapolis, Minn.  
Filed Dec. 27, 1971, Ser. No. 212,388  
Int. Cl. B60r 19/04

U.S. Cl. 293-89

2 Claims



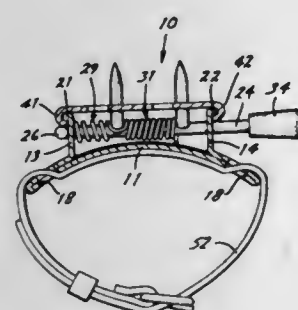
A vehicle bumper having an inner cross beam mounted on the vehicle frame and an outer bumper bar extending parallel to the beam in horizontally spaced relation thereto with the bumper bar end portions angling inwardly beyond the beam in protective positions outside of the vehicle fenders, the bumper bar being mounted on the beam by a plurality of U-shaped metal brackets having their legs respectively bolted to the beam and bar so that the bight portions of the brackets will buckle and absorb the impact of a collision force directed inwardly against the bumper bar. The brackets are independently mounted in pairs spaced apart longitudinally of the bumper bar.

**3,752,524**  
**GRIPPING DEVICE**

Otto Reick, Jr., 119 Phelps, Decatur, Mich.  
Filed Mar. 27, 1972, Ser. No. 238,349  
Int. Cl. B65g 7/12

U.S. Cl. 294-25

8 Claims



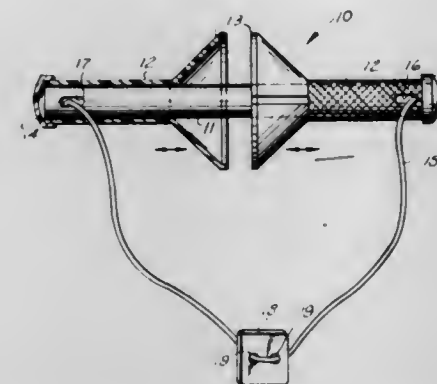
A gripping device having housing means adapted to be attached to the body of a user. Prong means are mounted on the housing means and include support means for supporting the prong means for movement from a retracted stored position in the housing to an extended position of use. Manually operated ejection means are provided which are coupled to the support means for causing the prong means to be ejected from the stored position to the extended position of use wherein the prong means become exposed to grip objects or substances that are normally difficult to grip. The prong means, when in the stored position, are confined and free from snagging on the user's wearing apparel.

**3,752,525**  
**DEER DRAGGING AND TAGGING DEVICE**

Chester H. Hanna, 331 S. 2nd St., Bellwood, Pa., and Richard A. Igou, 502 Pottsgrove Rd., Altoona, Pa.  
Filed Jan. 5, 1972, Ser. No. 215,483  
Int. Cl. B65g 7/12

U.S. Cl. 294-74

1 Claim



A combination device for tagging and dragging a deer. This device consists primarily of an elongated inner sleeve which will contain a pencil, a deer tag and a pin for holding the tag to the deer's ear. The elongated sleeve is slideable within a pair of flared sleeves with a line and a choker attached.

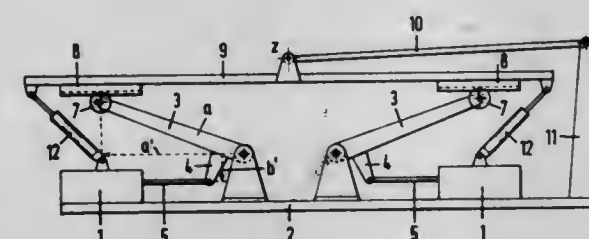
**3,752,526**  
**VEHICLE BED**

Gerrit Johan Van Der Burgt, Hofflandstraat 35; Johannes T. Hart, Vuurdoornlaan 39, both of Pijnacker, and Jacob Schrier, Iependael 188, Rotterdam, all of Netherlands  
Filed June 15, 1971, Ser. No. 153,190  
Claims priority, application Netherlands, June 16, 1970, 70/08762

U.S. Cl. 296-19

Int. Cl. A61g 3/00

11 Claims



A vehicle bed comprises a platform for carrying a lying person, e.g. a patient, a maximum shock insulation being contemplated, which is obtained by a mass-spring system for the platform having a very low natural frequency of approximately 0.5 Hz, the platform being fixed against horizontal displacement by fixing means which act in the centre of gravity of the carrier platform loaded with a person.

**3,752,527**  
**MULTI-LEVER ONE MAN CART ADAPTED TO BE MOVED UP AND DOWN STAIRS**

Richard H. Ferneau, Columbus, and Elroy E. Bourgraf, Greenfield, both of Ohio, assignors to Burt Weil, Cincinnati, Ohio

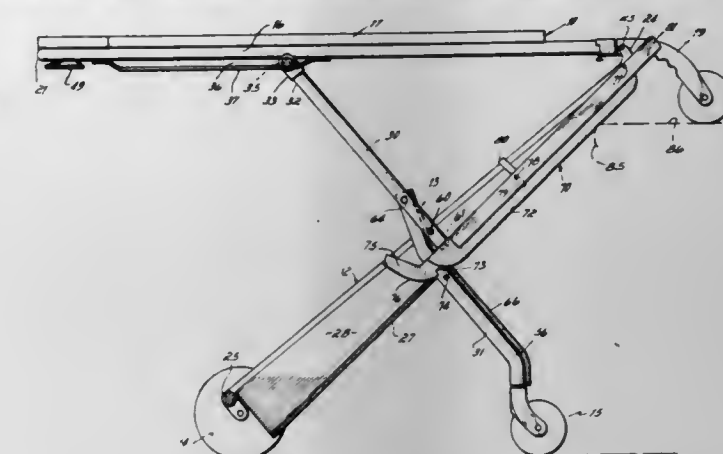
Filed Nov. 18, 1971, Ser. No. 200,138  
Int. Cl. A61g 1/02; B62b 3/02

U.S. Cl. 296-20

15 Claims

A cart for transporting articles of merchandise or human bodies comprising a bed supported on four legs having an X-frame configuration, the legs being capable of being angulated with respect to each other to change the level of the bed, one pair of legs being formed in two sections, the lowermost sec-

tion being pivotable with respect to the upper section to permit it to swing into substantial alignment with the fixed legs to enable an operator to thrust the cart into a vehicle while



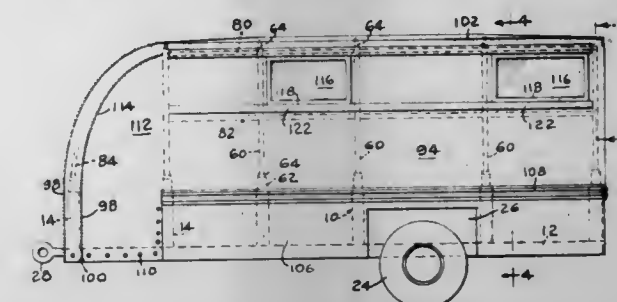
standing at one end of the cart and to enable the operator to move the cart up and down steps while standing at the other end of the cart.

**3,752,528**  
**CAMPER**

Joseph K. Barker, Rt. 2, Abingdon, Va.  
Filed July 21, 1971, Ser. No. 164,737  
Int. Cl. B60p 3/34

U.S. Cl. 296-23 R

11 Claims



A flexible cover structure is arranged over and around a supporting frame including a plurality of parallel vertical posts at each side of the vehicle and which are normally vertical and hinged in a common plane to swing downwardly into the body of the structure to lower the top and minimize the height of the structure as a whole.

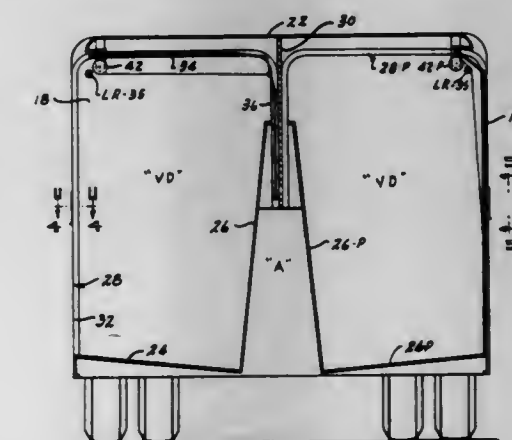
**3,752,529**  
**BEVERAGE TRUCK**

Theodore Karl Remke, Groose Pointe, Mich., and Russell V. Muller, Park Hills, Ky., assignors to Remke Incorporated, Roseville, Mich.

Filed Feb. 26, 1971, Ser. No. 119,093  
Int. Cl. B60p 1/00

U.S. Cl. 296-24 R

13 Claims



This invention relates to a vehicular beverage truck body similar to those now in use, wherein the flexible doors for each



of the several longitudinal compartments are of greater length than the body height and thus extend into the roof top during its closed usage, however when the doors are opened, they are guided by track members on opposite sides of each of the several independent compartments in such a manner as to be positioned in spaced generally parallel relationship to a vertically disposed central longitudinal wall which extends substantially throughout the full length of said body.

3,752,530

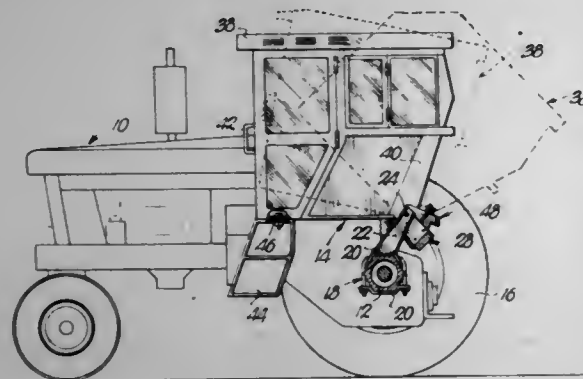
### SPRING-LOADED TILTING BRACKETS FOR IMPLEMENT CABS

Charley Voth, Hesston, Kans., assignor to Full Vision, Inc., Newton, Kans.

Filed Oct. 26, 1971, Ser. No. 192,494  
Int. Cl. B62d 33/06

U.S. Cl. 296—35 R

6 Claims



An operator cab swingable between a normal, lowered position and a raised, tilted position has a double-acting compression spring associated with each hinge of the cab which transmits sufficient lifting force to the cab to enable one man to swing the heavy cab between such positions and also functions to cushion the descent of the cab as the center of gravity thereof shifts from one side to the opposite side of its axis.

3,752,531

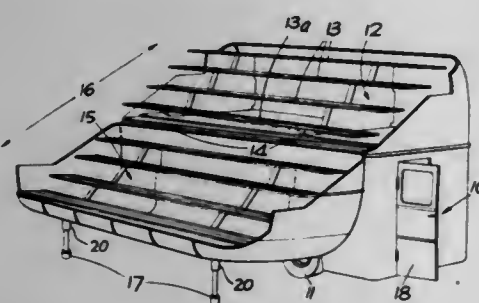
### MOBILE GRANDSTAND

Robert Idris Jones, Kings Leap Castle St., Winchelsea, England

Filed Dec. 30, 1970, Ser. No. 102,867  
Int. Cl. B60n 1/00

U.S. Cl. 296—64

4 Claims



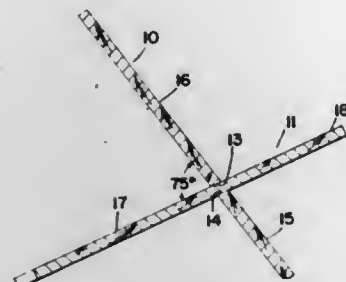
A vehicle for use as a mobile grandstand, having two seating members connected to a wheeled chassis, in which the seating members each comprise a plurality of rows of seats arranged with one row behind and above another row, and the seating members may be disposed either in a travelling position, in which they are positioned one above the other, and a seating position in which the seats are so disposed that they form in effect a single tier.

### CHAIR CONSISTING OF PARTS ADAPTED FOR QUICK ASSEMBLY AND DISASSEMBLY

Marilyn S. Yarus, 17600 S. Park Blvd., Shaker Heights, Ohio  
Filed May 20, 1971, Ser. No. 145,230  
Int. Cl. A47c 7/00, 4/00

U.S. Cl. 297—440

1 Claim



A chair consisting of only two relatively thin flat parts, which can be quickly and easily assembled without the use of tools or fastening elements, or drilling of holes in the sides of the parts. Means are provided for assembly of the parts without tilting or rocking of the parts relatively to each and enabling the parts to be automatically and properly positioned in relation to each other. The parts are of uniform thicknesses wherein said parts are superimposed for packing and shipping in a relatively flat container.

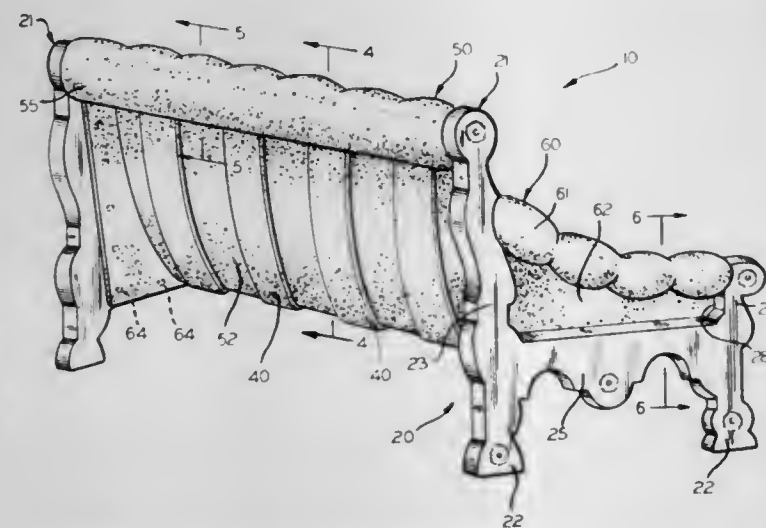
3,752,533

### UPHOLSTERED SEAT

Evalin S. Gilbert, 2121 N. Bay Shore Dr., Miami, Fla.  
Filed Apr. 5, 1972, Ser. No. 241,292  
Int. Cl. A47c 1/12, 5/00

U.S. Cl. 297—445

8 Claims



A frame has a pair of side frame members and a lower front frame member and an elevated rear frame member. Each one of a plurality of straps is secured to the rear frame member and to the front frame member so as to hang somewhat loosely therebetween. A pad, which is carried by the straps, defines a generally-horizontal seating portion adjacent its front and a back rest portion adjacent its rear.

3,752,534

### COAL CUTTING USING MORE TEETH FOR SUMPING THAN SHEARING

Lester G. Rollins, 650 Forest Ln., and Glenn S. McDowell, 601 Wiley Ave., both of Franklin, Pa.

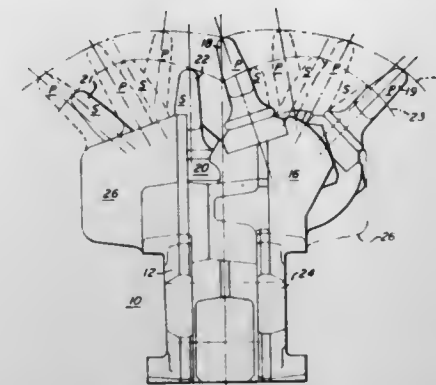
Filed June 29, 1971, Ser. No. 158,037  
Int. Cl. E21c 25/34

U.S. Cl. 299—10

4 Claims

A method for cutting a deep kerf in a vein of frangible mineral whereby a cutter bar is sumped into a mineral vein at

a rate to cut by all bits in a sequential plurality of bit patterns and then the cutter bar is traversed to shear at a rate such that sensing mechanism to subject a control member to vacuum and selectively subject said control member to atmosphere for



only a portion of the bits in a sequential plurality of bit patterns are cutting to extend the kerf.

3,752,535

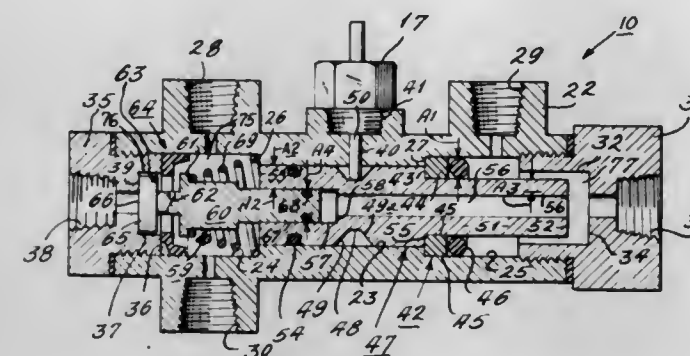
### CONTROL VALVE AND SYSTEM

Eugene E. Wallace, Kirkwood, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Apr. 17, 1972, Ser. No. 244,764  
Int. Cl. B60t 8/26

U.S. Cl. 303—6 C

19 Claims



A control valve is provided with a proportioning valve movable therein for performing proportioning operations on one of separate fluid pressure supplied thereto, and said proportioning valve is provided with an effective area for subjection to the supplied fluid pressures, said proportioning valve being operable to perform its proportioning operation effecting a reduced application through said control valve of one of the supplied fluid pressures only in the event of the failure of the other of the supplied fluid pressures acting on said area. A warning device may also be provided in the control valve including means for comparing the magnitudes of the supplied fluid pressure and actuated between a normal position and one of opposed translated positions upon the failure of the other supplied fluid pressure. The invention also contemplates a fluid pressure system having a dual master cylinder therein for generating the supplied fluid pressures and connected through the control valve to a pair of brakes, one of said brakes being energized only in response to the one supplied or applied fluid pressure respectively acting thereon and the other of said brakes being energized in response to both the one and other supplied fluid pressures acting thereon.

3,752,536

### ANTI-SKID MECHANISM

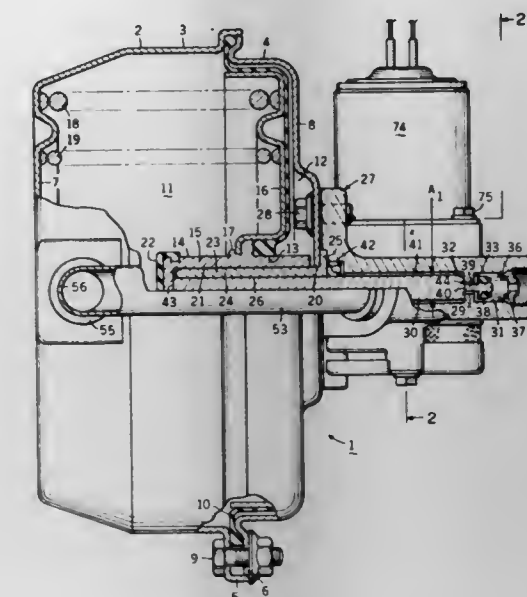
John A. Machek, Creve Coeur, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Nov. 17, 1971, Ser. No. 199,431  
Int. Cl. B60t 8/06

U.S. Cl. 303—21 F

30 Claims

An anti-lock device for a vehicle brake system is provided with a control valve actuated in response to signals from a



3,752,537

### PRESSURE MODULATOR ASSEMBLY

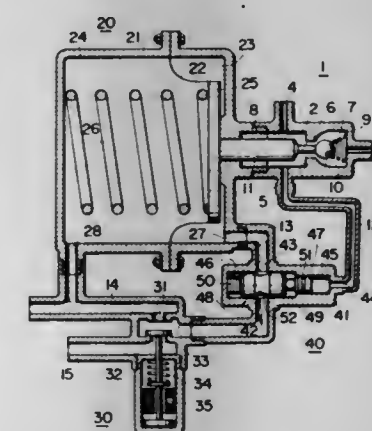
Takeshi Ochiai, Aichi-ken, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha

Filed Nov. 9, 1970, Ser. No. 87,782  
Claims priority, application Japan, Nov. 8, 1969, 44/89442;  
Jan. 29, 1970, 45/8544

U.S. Cl. 303—21 F

Int. Cl. B60t 8/12

7 Claims



The assembly modulates the pressure of a working fluid, such as the brake fluid of an automotive vehicle, by the pressure of a control fluid, and includes an operating mechanism having a deflectable diaphragm, a working fluid pressure modulating mechanism operable by the diaphragm and including a pressure modulating piston controlling flow of working fluid through a working fluid line, and means biasing the diaphragm to a position in which the pressure modulating mechanism provides for substantially unrestricted flow to the working fluid line. A control fluid line is connected to the operating mechanism to apply, to the diaphragm, a control fluid pressure in opposition to the biasing means to operate the pressure modulating mechanism to restrict flow to the working fluid line. A throttle valve mechanism is included in the control fluid line to control the rate of control fluid relative to the operating mechanism, and the throttle valve mechanism is subjected to the pressure of the working fluid to vary the rate of flow of the control fluid as a function of the pressure of the working fluid. Application of the control fluid



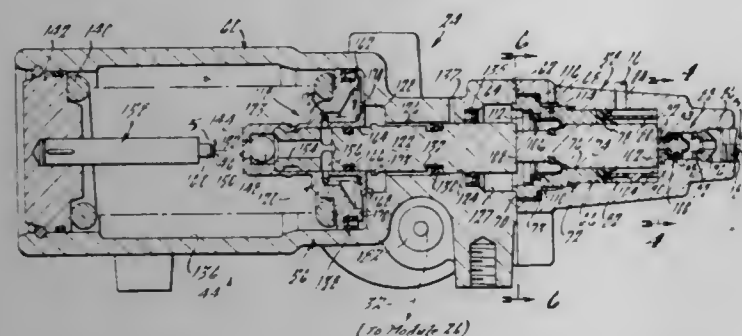
pressure is controlled by a valve operated by an anti-skid mechanism. The rate of flow of the control fluid may be varied as a direct function of the working fluid pressure, as an inverse function of the working fluid pressure, or as a combination of the direct and inverse functions of the working fluid pressure.

3,752,538

**MODULATING VALVE FOR SKID CONTROL SYSTEM**  
Leonard T. Tribe, Ann Arbor, and Peter Every, Livonia, both of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Filed July 22, 1971, Ser. No. 165,179  
Int. Cl. B60t 8/04

U.S. Cl. 303—21 F



A hydraulically actuated modulating valve actuable to modulate the fluid pressure in a brake system in response to a skid control signal and operable from a source of hydraulic pressure as provided by a power steering pump or the like. A spring holds the modulating valve and a plunger of an expansion chamber in a normal braking position and the hydraulic pressure of the power steering pump is employed to permit movement to a skid control position. The actuator is in a series circuit with the power steering pump and the control valve generates back pressure to move the actuator to its skid control position. A valve carried by the actuator is opened to provide a bypass circuit when the actuator moves to a predetermined position.

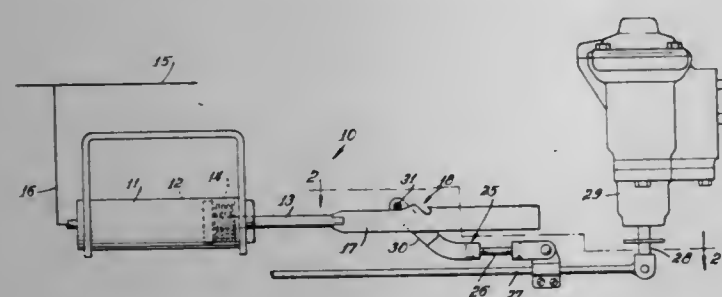
3,752,539

**REMOTELY OPERATED AIR BRAKE BLEEDING APPARATUS**

Clark D. Sill, 217 N. Grand, Marshall, Mich.  
Filed July 3, 1972, Ser. No. 268,499  
Int. Cl. B60t 15/60

U.S. Cl. 303—68

9 Claims



A remotely operated bleeding device for use with air brake systems provided on trains, and particularly for use with freight cars. The device comprises an air cylinder connected to the main brake air pressure pipe. The cylinder has a piston and piston rod, and a helical compression spring arranged to bias the piston toward the end of the cylinder at which air pressure is introduced. The spring and piston arrangement is such that application of air pressure to the air cylinder greater than about 20 psi compresses the spring and forces the piston to remain at the opposite side of the cylinder. The piston remains

so during normal operation of the train and braking system. The piston rod is provided with a latch bar either connected thereto or integral therewith, and a latch bar engaging member cooperating therewith, and operatively connected to the bleeder valve of the car. The slow release of air pressure causes the latch bar to engage the operating member and to bleed the brake cylinder. Means is provided for disabling the bleeder device when emergency braking is applied to the cars, or when the brake air line is broken as the result of an accident.

3,752,540

**PRESS-TOOL SETS**

Donald Frederick Bosworth, Hendon, London, N.W. 9, England, assignor to Desoutter Brothers Limited, London, England

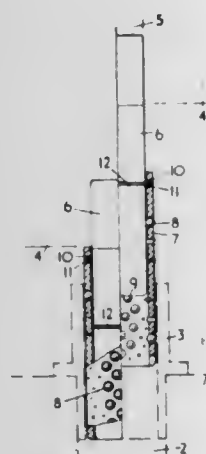
Filed Mar. 11, 1969, Ser. No. 806,134

Claims priority, application Great Britain, Mar. 27, 1968, 14,819/68

Int. Cl. F16c 1/26

U.S. Cl. 308—4 C

1 Claim



A press-tool set comprising a base and a punch holder with two or more pillars upon one of said members and corresponding bores in the other member and having a linear ball bearing upon each pillar and a circumferential groove in the surface of the cage of the linear ball bearing and either upon the surface of the pillar or upon the bore and a resilient means within one of the grooves, which may be an O-ring which cooperates with the other groove to resist relative longitudinal movement between the cage and the pillar to prevent it moving out of the correct working position as the pillar is withdrawn and reinserted into the bore.

3,752,541

**LINEAR BEARINGS**

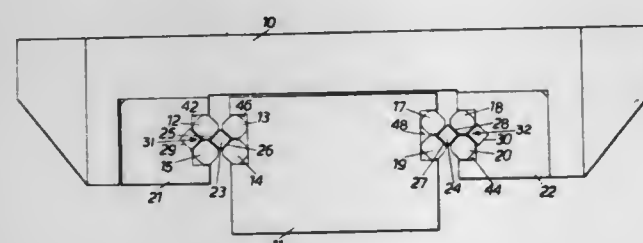
Malcolm John McVey, The Foundry, Queens Rd., High Wycombe, England

Filed Aug. 3, 1971, Ser. No. 168,544

Int. Cl. F16c 29/06

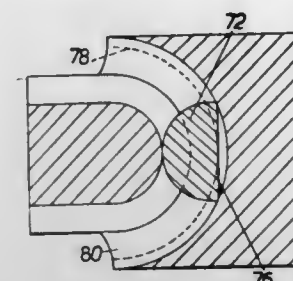
U.S. Cl. 308—6 C

11 Claims



A rectilinear rolling bearing in which four rods each formed with at least one longitudinal flat are arranged in a group with

their longitudinal axes parallel and so spaced and orientated that the flats define a guideway for rollers contained therein. There may be a passageway parallel with the bearing and



diverters at each end of the bearing through which the rollers circulate. Successive rollers may be placed with their axes at right-angles to each other and alternate rollers may be replaced by balls of the same diameter.

3,752,542

**HYDROSTATIC THRUST BEARING**

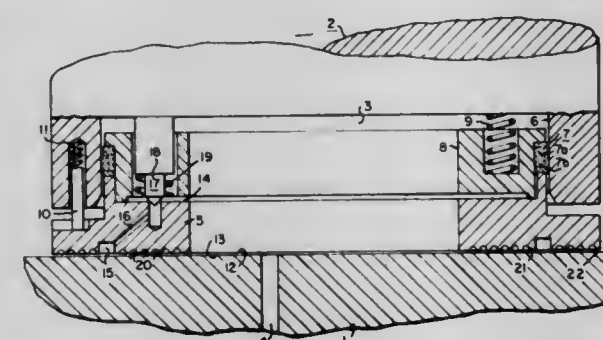
Charles E. Kraus, Austin, Tex., assignor to Excelsomatic, Inc., Rochester, N.Y.

Filed Apr. 19, 1972, Ser. No. 245,473

Int. Cl. F16c 17/16

U.S. Cl. 308—9

5 Claims



A hydrostatic thrust bearing for supporting a load member on a support member is described wherein one of the members has a cavity into which pressurized fluid is admitted and which has a seal ring disposed therein movably relative to the other member, the adjacent surfaces of the seal ring and the other member forming a limited leakage fluid path. At least one of these surfaces has an annular control recess formed therein to which pressurized fluid is admitted when the load of the load member and, accordingly, the pressure of the fluid in the cavity decreases thereby to lift the seal ring and increase the cross-section of the limited leakage fluid path.

3,752,543

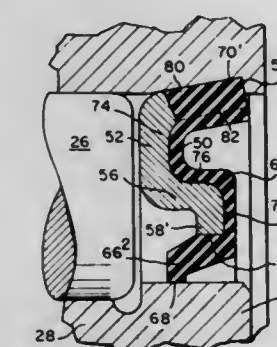
**ROLLER HAVING RETAINING END PLATE AND SEAL**  
Heinrich K. Schmidt, Levittown, Pa., assignor to Roller Bearing Company of America, West Trenton, N.J.

Filed Feb. 16, 1972, Ser. No. 226,725

Int. Cl. F16c 33/78

U.S. Cl. 308—187.2

4 Claims



A full complement bearing roller having an improved retaining end plate and seal, suitable for a carriage roller, a

mast roller, a cam roller, a track roller and the like. The outer race is combined with a roller and the outer race or the inner race has an annular groove facing toward the space between the outer and inner races. The retaining end plate is provided with a series of spring lugs which engage in the annular groove, locking the end plate against the ends of the rollers and taking the thrust of the rollers. The end plate also has joined to it as by vulcanizing a rubber-like seal which engages the opposite radial member (inner or outer race) from the lugs. In the preferred embodiment the seal also fills the space between the lugs so as to complete the protection.

3,752,544

**SEALED BEARING WITH AXIALLY UNDULATING SEAL LIP**

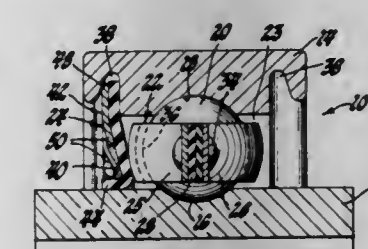
Charles N. Hay, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 15, 1972, Ser. No. 253,047

Int. Cl. F16c 33/78

U.S. Cl. 308—187.2

2 Claims



A sealed ball bearing for sealing the annular space between the inner and outer races includes a flexible elastomeric washer that is held in place by a retaining ring mounted in a groove on the outer race. The retaining ring has a plurality of radially inwardly directed spring fingers which urge local segments of the washer axially into contact with the ribbon separator of the bearing thereby causing the washer to assume an axially undulating contact pattern with the inner race. When the bearing is rotated, the separator acts in a camming fashion to axially displace the local segments to establish a traveling wave motion in the washer which prevents contaminant buildup.

3,752,545

**ARTICLE STORAGE AND DISPLAY APPARATUS**

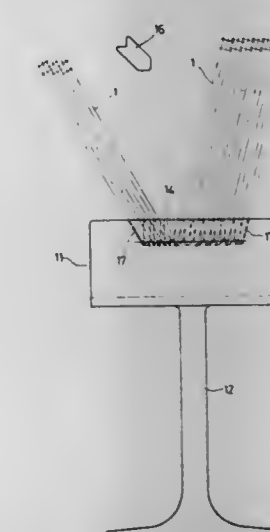
Eduard Hansjorg Schweizer, Schillstrasse 25, Wesel, Germany  
Filed May 22, 1972, Ser. No. 255,264

Claims priority, application Switzerland, June 24, 1971, 9229/71

Int. Cl. A47b 81/06

U.S. Cl. 312—13

5 Claims



An apparatus for storing containers with tape cartridges or the like comprising at least one substantially quadrangular, for



instance rectangular, trough equipped internally thereof with protruding boundary and support means for a number of rows of tape cartridge containers. A cover member is hingedly connected at one edge of the trough. A locking mechanism enables fixing the cover member in its closed position. At least the base surfaces of the trough and cover member are formed of transparent material.

3,752,546

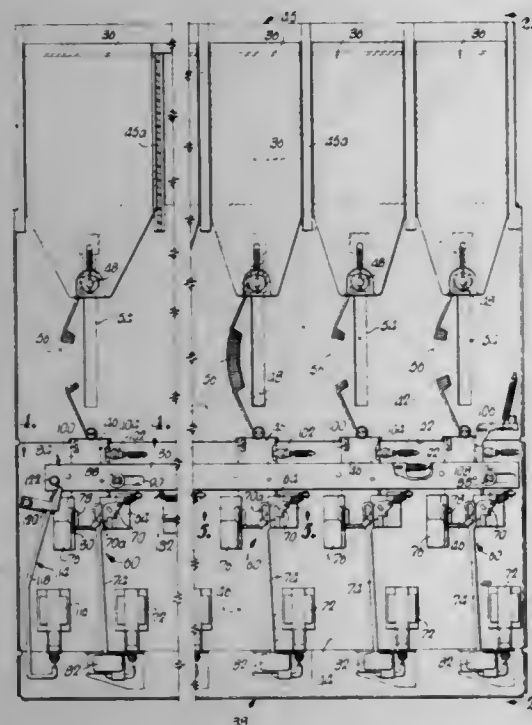
# SELECTIVE DISPENSING APPARATUS HAVING DOOR INTERLOCK STRUCTURE

Wilbert O. O'Neal, Independence, Mo., assignor to The Vendo Company, Kansas City, Mo.

Filed Mar. 30, 1972, Ser. No. 239,541  
Int. Cl. A47f 1/00

U.S. Cl. 312-35

11 Claims



An electromechanical control system for the product selection doors of a multiple-section, product-display vending machine locks the doors closed until a proper coinage deposit has been made, whereupon a selected door may be opened to remove a product from the machine. After opening, the door is automatically held against accidental closing, although manual closing of the open door is permitted after the purchased product is removed. If the open door is not manually closed, a timer associated with the system causes automatic closing of the door after a predetermined period of time has elapsed. The product conveyor of the machine may not be advanced while the door remains open, and any attempt to actuate the conveyor initiates automatic closing of the door.

3,752,547

# STACKABLE DRAWER AND COVER

Robert L. Propst, Ann Arbor, and James O. Kelley, Spring Lake, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

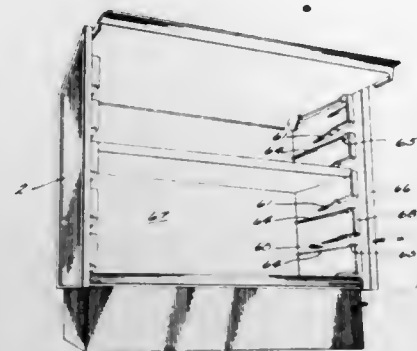
Filed Mar. 26, 1971, Ser. No. 128,250  
Int. Cl. A47b 77/00, 87/00

U.S. Cl. 312-107

8 Claims

A drawer includes a stacking recess around its top perimeter into which another similar drawer can be placed in order to stack the drawers one on top of the other. The drawer includes a cover which is thinner in cross section than the depth of the stacking recess in order that the cover can be positioned on the drawer without interfering the stacking of one drawer on top of another. The cover includes outwardly biased, resilient ribs which extend below the stacking recess when the cover is in place and which press against the drawer walls to insure a tight fit.

The drawer is supported in a structure having opposite sides with inwardly projecting guide flanges for embracing glide flanges projecting outwardly from the drawer. The stacking



recess is formed in the drawer glide flanges and the cover rests on the glide flanges such that it is also embraced by the guide flanges of the support and cannot be removed from the drawer when the drawer is closed.

3,752,548  
MOLDING

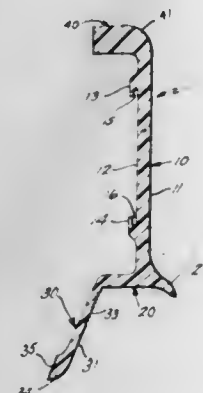
Paul J. Betts, Muskegon, Mich., assignor to Browne Morse Co., Muskegon, Mich.

Continuation-in-part of Ser. No. 83,860, Oct. 26, 1970. This application June 7, 1971, Ser. No. 150,581

Int. Cl. A47b 96/18; A47f 9/00

U.S. Cl. 312-140.4

19 Claims



This is a molding or splashback for counter tops which is extruded of a suitable plastic and includes a panel, a foot at the base of the panel, and a flexible anchor flange depending downwardly from the rear of the foot for insertion between a closely spaced wall and counter top. A toe projects forwardly and slightly downwardly from the front of the foot for engaging the counter top surface. A shoulder depends rearwardly from the top of the panel for abutting engagement with a wall.

In one embodiment, the panel is recessed to define an outwardly opening channel. An electrical outlet panel, having spaced electrical outlets, fits into the channel.

In another embodiment, the panel includes apertures through which outlets project. A channel-shaped member carrying outlets and wiring snaps into position on the back of the panel with its outlets projecting through the panel apertures.

Finally, an adapter clip can be secured to a wall adjacent the floor to facilitate using the molding as a floor-board molding. A portion of the anchor flange is trimmed away and is embraced by an upwardly projecting base flange on the adapter clip.

3,752,549

# FOOD HOLDING CABINET

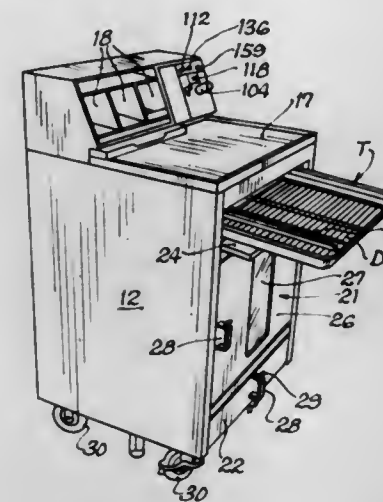
Chester J. Binks, La Grange; Donald F. Helfer, River Grove; Ronald M. Herbert, Hanover Park, and Steve Kroll, Schaumburg, all of Ill., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

Filed Nov. 15, 1971, Ser. No. 198,650

Int. Cl. A47b 77/08, 91/00

U.S. Cl. 312-236

20 Claims



A food holding cabinet for containing and spacedly supporting a vertical stack of trays. Trays are supported in spaced relation and are electromechanically elevated from a bottom tray receiving position to an uppermost tray position. An elevator is actuated to carry a tray upwardly to an uppermost available tray position. When it reaches that position, its direction of movement is automatically reversed, the tray is released, and the elevator returns to the bottom tray receiving position. Automatic close control over the humidity and temperature in the cabinet is achieved. Moisture is automatically added by vaporizing water if the humidity is too low and moisture is dumped by opening the cabinet to the ambient atmosphere if the humidity reaches too high a level. The cabinet is configured to minimize loss of heat and humidity when a cabinet door is opened to introduce or remove a tray.

3,752,550

# HAMPER CART

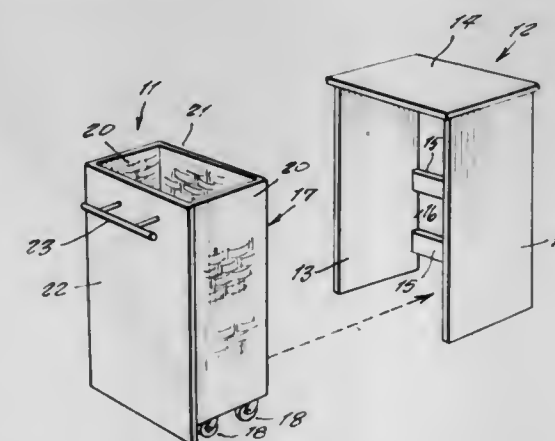
Lois Niemeyer, P.O. Box 76, Humboldt, Ill.

Filed May 19, 1972, Ser. No. 255,171

Int. Cl. A47b 83/00, 95/02, 81/00

U.S. Cl. 312-237

1 Claim



A cart for laundry fits into a housing so to form with it an item of furniture such as a night table or a vanity; the cart consisting of a hamper basket mounted on caster wheels, and the housing including opposite side walls and a top wall so to enclose a space into which the cart is pushed, the front wall of the cart hamper thus forming the front wall of the night table or vanity.

3,752,551

# AUTOMOBILE TAPE CARTRIDGE DISPENSING CASE

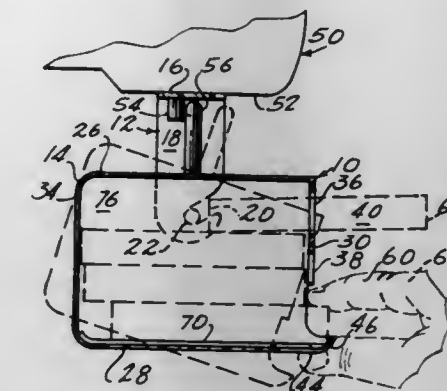
Jim W. Clark, 2960 Lula Ln., Kennesaw, Ga.

Filed Oct. 27, 1970, Ser. No. 84,279

Int. Cl. A47b 43/00

U.S. Cl. 312-245

10 Claims



A plastic case arranged to hold a number of magnetic tape cartridges or cassettes for storing same in the automobile when not in use and to allow easy removal by hand when changing from one tape cartridge to another. A box-like case is made from sheet plastic material and is installed underneath the dash panel of an automobile by means of a U-shaped bracket made of plastic with notches on opposite ends into which is fitted a respective projecting plastic pin from opposite ends of the case. The case has a fixed U-shaped plastic handle on the top which serves as a carrying handle when the case is removed from the automobile support bracket and the handle also serves as a stop member to position the case against a projecting pin on the automobile installation bracket so that the front of the case faces properly to the automobile occupants to allow easy selection of the tape cartridge wanted and to permit easy removal thereof as well as insertion of other tape cartridges. The front of the case has tape cartridge slots at the top in a front faced plate and a curved shelf projecting from the bottom beneath bottom dispensing slots from which a tape cartridge is removed. A typical case would hold two stacks of four-tape cartridges each for a total of eight cartridges but cases can be made to hold larger or smaller numbers.

3,752,552

# FOLDING CABINET OF MOLDED CONSTRUCTION

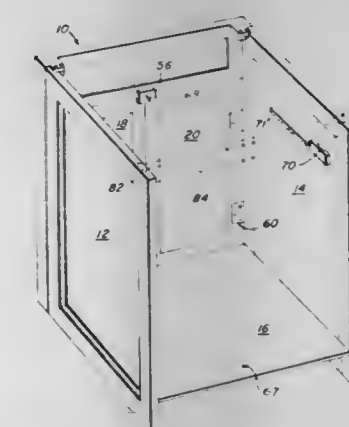
Kenneth A. MacDonald, 251 York St., Canton, Mass.

Filed June 28, 1971, Ser. No. 157,231

Int. Cl. B65d 87/00; B65; A47b 43/00; A43b 47/04

U.S. Cl. 312-258

12 Claims



A foldable base or wall cabinet is fabricated from articulated molded plastic components assembled for quick and easy erection with a minimum number of parts. A front panel formed with integral hinge portions is provided with a pair of articulated side panels also formed with integral hinge portions which cooperate with the front panel portion and are



adapted to be folded over against one another when in a collapsed position. A shelf with integral hinge pins pivotally engages the front and side panels by sockets formed between the side panels and the front panel, the shelf being foldable against the front panel when collapsed. Integral locking connections are provided for locking the cabinet in an erected position and various components are interchangeable to reduce the number of molds.

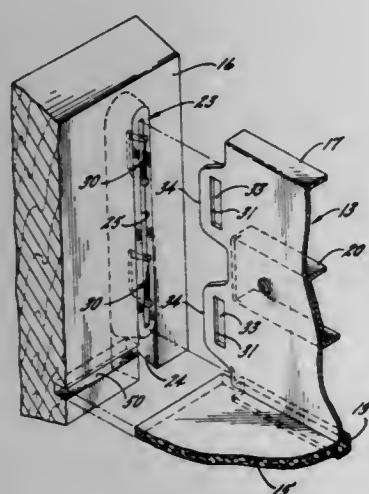
3,752,553

**DRAWER WITH SNAP-ON FRONT PANEL**

Richard L. Bildahl, and R. Chandrasekaran, both of Rockford, Ill., assignors to Amerock Corporation, Rockford, Ill.  
Filed July 29, 1971, Ser. No. 167,248  
Int. Cl. A47b 88/00

U.S. Cl. 312—330

8 Claims



Elongated plastic clips are fitted into dovetail slots in the front panel of the drawer and receive the forward ends of the side panels with a snap fit to lock the panels rigidly together. The bottom panel fits into a groove in the front panel and prevents endwise removal of the slips from the slots.

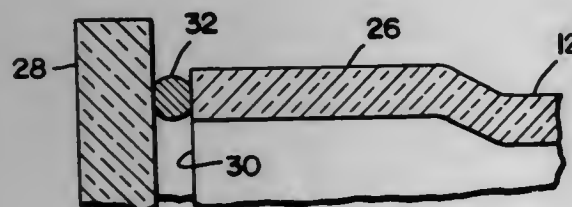
3,752,554

**METHOD OF MAKING A LASER TUBE SEAL**

John B. Thatcher, 1295 Forgewood Dr., Sunnyvale, Calif.  
Filed June 4, 1970, Ser. No. 43,321  
Int. Cl. H01j 9/18

U.S. Cl. 316—19

5 Claims



A method for applying members such as windows and resonator mirrors to ends of a laser tube in which the member is first rough aligned and sealed to the tube. After the installation of the laser tube in its permanent supporting structure, the member is fine aligned with respect to the tube and fixed in that position for the subsequent operation and lasing of the laser.

3,752,555  
**APPARATUS FOR MAKING MULTIPLE POINT HOLOGRAMS**

Erhard Paul Artur Klotz, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

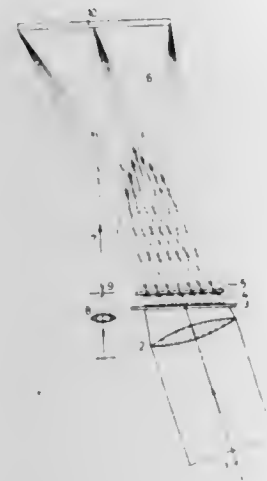
Filed July 23, 1971, Ser. No. 165,570

Claims priority, application Germany, July 24, 1970, P 20 36 904.4

Int. Cl. G02b 27/00

U.S. Cl. 350—3.5

2 Claims



A method and an apparatus for producing point holograms by means of an array of pinhole diaphragms is described. By illuminating the array of pinhole diaphragms through an array of zone plates disadvantages associated with known methods may be avoided.

3,752,556

**REAL TIME MOVING SCENE HOLOGRAPHIC CAMERA SYSTEM**

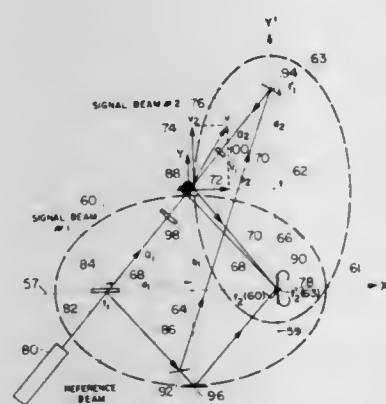
Robert L. Kurtz, 10206 Todd Mill Rd., Huntsville, Ala.

Filed June 2, 1971, Ser. No. 149,283

Int. Cl. G02b 27/00

U.S. Cl. 350—3.5

3 Claims



A holographic motion picture camera system producing resolution of front surface detail. The system utilizes a beam of coherent light and means for dividing the beam into a reference beam for direct transmission to a conventional movie camera and two reflection signal beams for transmission to the movie camera by reflection from the front side of a moving scene. The system is arranged so that critical parts of the system are positioned on the foci of a pair of interrelated, mathematically derived ellipses. The camera has the theoretical capability of producing motion-picture holograms of projectiles moving at speeds as high as  $9 \times 10^5$  cm/sec (about 21,450 mph).

3,752,557

**SYSTEM OF HOLOGRAM REPRODUCTION**

Yves Belvaux, Paris, France, assignor to CSF-Compagnie Generale De Telegraphie Sans Fil, Paris, France

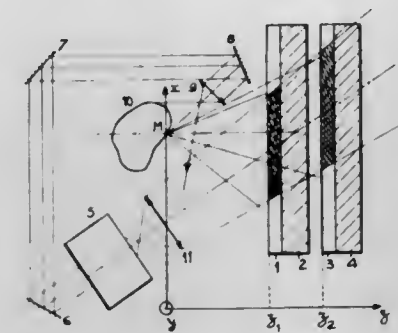
Filed May 31, 1967, Ser. No. 642,490

Claims priority, application France, June 10, 1966, 6665035

Int. Cl. G02b 27/00

U.S. Cl. 350—3.5

6 Claims



An optical method for copying holograms from an original. The photographic support on which a copy is to be made, is positioned behind the original hologram and the whole is exposed to the monochromatic coherent light; the original and the copying supports need not be in contact and the copy is not a reproduction of the original hologram but has the same image forming capabilities as the latter. The exposed copy is processed according to conventional photographic techniques.

3,752,558

**DOCUMENT SCANNER**

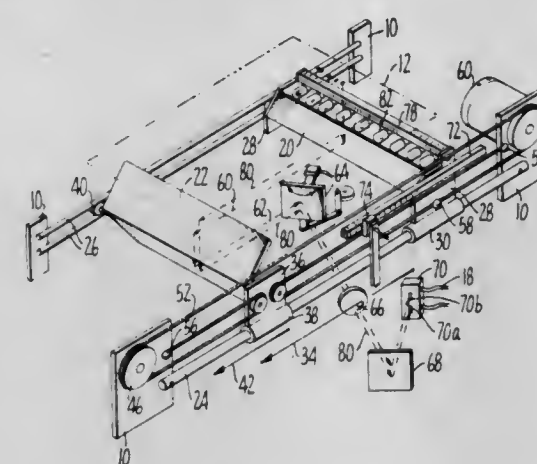
Lester John Lloyd, Orinda, Calif., assignor to Decision Consultants, Oakland, Calif.

Filed June 28, 1971, Ser. No. 157,348

Int. Cl. G02b 17/00

U.S. Cl. 350—6

7 Claims



A 90° reflector scans a flat document to reflect an image of part of the document into a plane parallel to the document. Then a 180° reflector reflects the image back toward a detection station. A transport made of a cable and pulleys moves the 180° reflector at one-half the speed of the 90° reflector so that the optical distance between the detection station and the document remains constant throughout the scan.

3,752,559

**RITCHIEY-CHRETIEN TELESCOPE**

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Seymour Rosin, Massapequa Park, and Max Amon, Farmingdale, both of N.Y.

Filed Oct. 29, 1971, Ser. No. 193,814

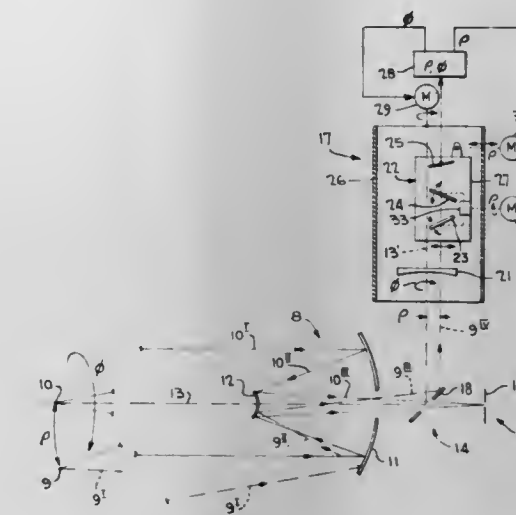
Int. Cl. G02b 17/00

U.S. Cl. 350—55

10 Claims

A Ritchey-Chretien telescope responsive to images located off the telescope optical axis includes transparent flat plate

means positioned in the ray path of the image. The flat plate means has a tilt angle relative to the ray path to compensate substantially for astigmatism introduced by the Ritchey-Chretien telescope. The tilt angle of the plate means is directly proportional to the off axis angle of the image. The plate means



preferably comprises two flat plates having opposite inclination angles relative to the ray path. A detector responsive to the optical image as transmitted through the flat plate means is positioned approximately on the sagittal focus of the telescope.

3,752,560

**MICROSCOPES INCORPORATING INCIDENT-LIGHT DARK GROUND ILLUMINATION SYSTEMS**

Alick Thompson Lunn, York, England, assignor to Vickers Limited, London, England

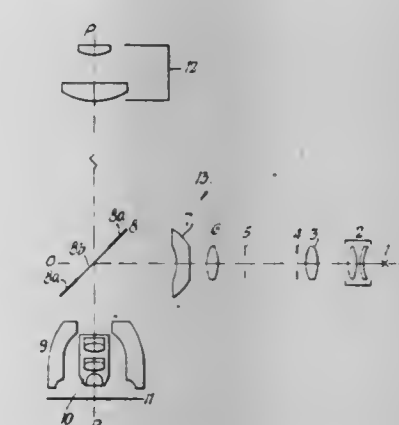
Filed Dec. 28, 1971, Ser. No. 213,134

Claims priority, application Great Britain, Jan. 1, 1971, 150/71

Int. Cl. G02b 21/08

U.S. Cl. 350—91

14 Claims



An incident-light dark ground illumination system for a microscope includes an optical element having at one side an inlet region through which an axially directed light beam is admitted so as to be reflected by a first reflecting surface, at an opposite side of the element, towards a second reflecting surface which surrounds the inlet region and reflects the light back again so that it leaves the element as an output beam surrounding the first reflecting surface. A reflector device having a transparent central area, for transmitting light from an objective to an eyepiece of the microscope, and a non-transmitting peripheral reflecting area surrounding the central area, receives the output beam obliquely so as to produce therefrom an annular reflected beam for delivery to an annular input face of an apertured microscope condenser.



3,752,561

**TORSIONED LIGHT CONDUCTING MEANS FOR THE ILLUMINATION OF AN IMAGE FIELD WITH MODULATED LIGHT**

Arthur Klemt, Olching, Germany, assignor to Arthur Klemt Kommanditgesellschaft

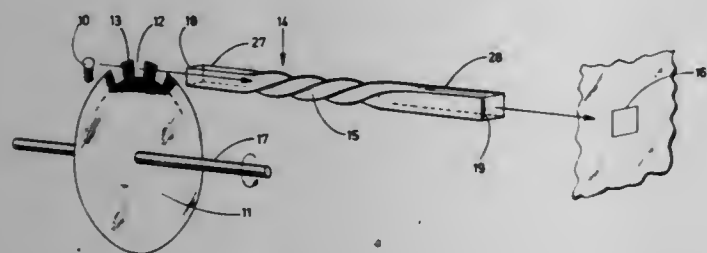
Filed Aug. 12, 1971, Ser. No. 171,173

Claims priority, application Germany, Aug. 19, 1970, P 20 41 211.7

Int. Cl. G02b 5/14

U.S. Cl. 350—96 R

9 Claims



Apparatus for uniformly illuminating an image area with modulated light is disclosed in accordance with the teachings of the present invention. Light of constant intensity is emitted from a light source and periodically interrupted by movable aperture means interposed in the light path extending between the light source and the image area. Elongated light conducting means including a helical portion formed about the longitudinal axis thereof receives the modulated light. The modulated light is subjected to multiple reflections while traversing the helical portion to cause a complete mixing of the received light. The mixed light is transmitted to the image area and admits of an intensity determined by the amount of light transmitted through the movable aperture means. A moving shadow is, therefore, not introduced across the surface of the image area.

3,752,562

**OPTICAL SCALE READING DEVICE IN MEASURING INSTRUMENT**

Masao Sato, Yokohama, and Hideaki Iwaida, Kawasaki-shi, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

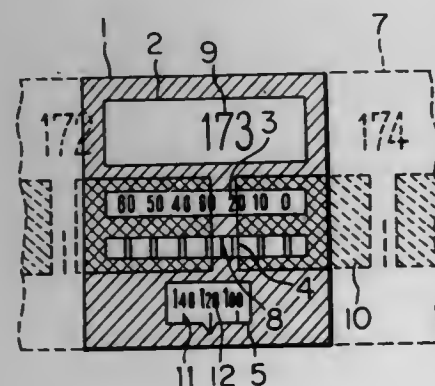
Filed Apr. 10, 1972, Ser. No. 242,524

Claims priority, application Japan, Apr. 9, 1971, 46/26156

Int. Cl. G02b 27/32

U.S. Cl. 350—113

1 Claim



An optical scale reading device employed in distance measuring device or in angle measuring device is disclosed, in which extra portions not to be read are darkened so that necessary reading can be attained quickly and without fail.

3,752,563

**MAGNETIC FILM STRIPE DOMAIN DIFFRACTION**  
Ernest J. Torok; David S. Lo, and David I. Norman, all of St. Paul, Minn., assignors to Sperry Rand Corporation, New York, N.Y.

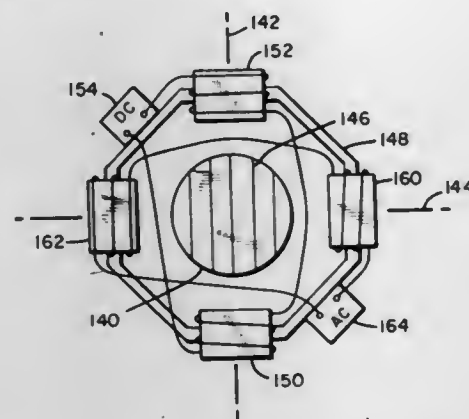
Continuation of Ser. No. 13,547, Feb. 24, 1970, abandoned.

This application Sept. 1, 1971, Ser. No. 177,081

Int. Cl. G02I 1/22

U.S. Cl. 350—151

17 Claims



A magneto-optic light deflection system that utilizes the stripe domains in a magnetic film as a diffraction grating. The angle of deflection of the light from the plane of the film is varied in two dimensions by varying the separation and orientation of the stripe domains. The wall separation is varied by varying the intensity of a DC field in the plane of the film parallel to the stripe domains, or by varying the intensity of a DC field normal to the plane of the film. The orientation of the stripe domains is varied by varying the direction of the DC field in the film plane. Hysteresis is overcome by an AC tickle field perpendicular to the stripe domains.

3,752,564

**OPTICAL DATA PROCESSING USING PARABOLOIDAL MIRROR SEGMENTS**

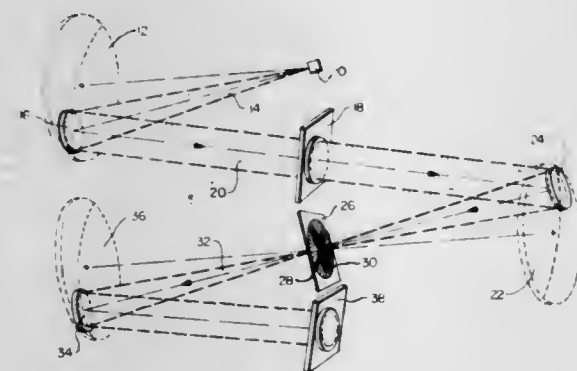
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Akram S. Husain-Abdi, Greenbelt, Md.

Filed Feb. 22, 1972, Ser. No. 228,190

Int. Cl. G02b 27/38

U.S. Cl. 350—162 SF

5 Claims



An optical data processing system using paraboloidal reflecting surfaces is disclosed. In the preferred embodiment the paraboloidal reflecting surfaces are segments of a paraboloidal mirror. A source of coherent light is in the focal plane of the first paraboloidal mirror segment which collimates the beam and reflects it toward a second paraboloidal mirror surface. The information to be analyzed, on a transparency for example, is placed in the collimated beam. The beam is reflected from the second paraboloidal mirror segment and focused on a Fourier transform plane. A photon detector could be placed in the Fourier transform plane or suitable spatial filters can be placed thereat, with the filtered beam then being reflected from a third paraboloidal mirror segment to be focused on a reconstruction plane.

3,752,565

**ZOOM LENS APPARATUS**

Motoi Nagashima, Tokyo, Japan, assignor to Shima Kogaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1972, Ser. No. 227,530

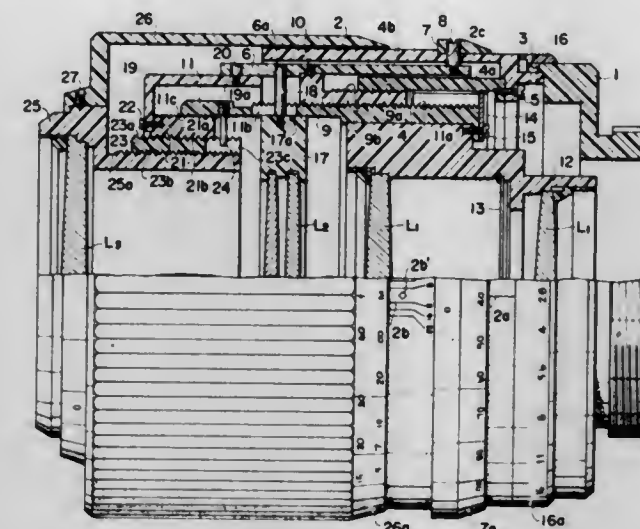
Int. Cl. G02b 7/02

U.S. Cl. 350—255

5 Claims

U.S. Cl. 351—47

1 Claim



A zoom lens apparatus comprising an actuating ring adapted to be rotated integrally with a zooming ring, and a first, a second and a third lens group which are caused to move in the direction of the optical axis independently of each other as said actuating ring is rotated, and being operative so that the focal distance may be progressively altered continuously without causing any aberration and/or marginal blurring throughout the range from the extreme wide angle to the telephoto position by the mere rotation of said single actuating ring.

**ERRATUM**For Class 350—160 see:  
Patent No. 3,753,151

3,752,566

**PD RULE**

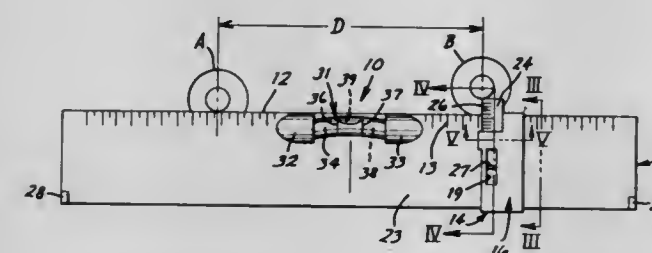
Thomas E. Mathews, 3 1/2 N. Main St., Three Rivers, Mich.

Filed July 9, 1971, Ser. No. 161,138

Int. Cl. A61b 3/10; G01c 9/20

U.S. Cl. 351—5

7 Claims



A pupillary distance measuring device having an elongated rule of finite length with at least one straight edge thereon. A pupillary distance measuring scale is provided adjacent the straight edge and extends longitudinally thereof. Gauge means is provided on the elongated rule and extends transversely of the straight edge for measuring an anatomically high eye. Thus, the practitioner can place the straight edge of the elongated rule in close proximity to the eyes of a patient, whose head is in an upright position, and in a horizontally aligned condition so that the gauge means will indicate the magnitude of an anatomically high eye.

3,752,567

**EYEGLASSES HAVING INTERCHANGEABLE COLORED LENSES**

Kent Broadhurst, 24 Cornelia St., New York, N.Y.

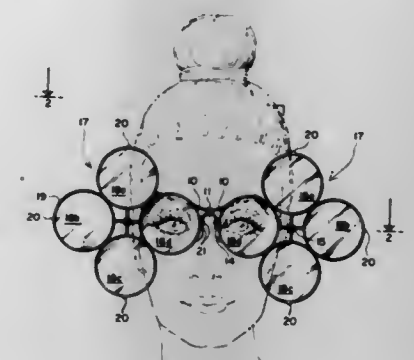
Filed July 1, 1971, Ser. No. 158,817

Int. Cl. G02c 9/04, 7/08, 5/08

5 Claims

U.S. Cl. 351—47

1 Claim



Eyeglass frames having a plurality of circular, multi-colored lenses pivotably mounted thereon so that different colored lenses may be rotatably interchanged in front of the eyes of the wearer of the glasses. The lenses are mounted in a frame which has a small, rounded projection protruding from the edge thereof, adjacent each lens which snaps into a pair of projections provided on the nose bridge of the eyeglass frames in order to lock the lenses into position. The eyeglass frames are pivotably connected above the nose bridge of the eyeglasses in order to allow easy folding of the eyeglasses into a planar configuration.

3,752,568

**COLOR MOTION-PICTURE PROJECTION SYSTEM**  
Pierre Perreau, Paris, France, assignor to Schlumberger Instruments Et Systemes, Paris, France

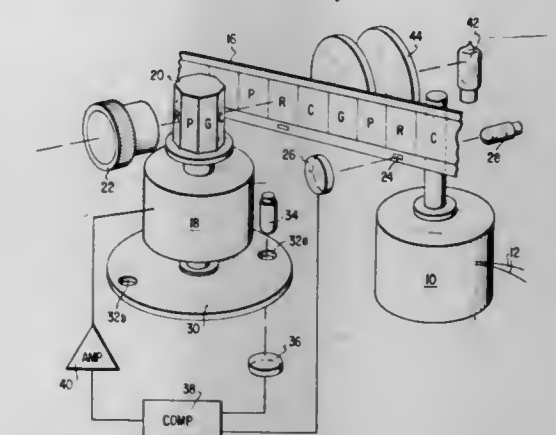
Filed Oct. 28, 1971, Ser. No. 193,407

Claims priority, application France, Oct. 28, 1970, 38827

Int. Cl. G03b 33/00

U.S. Cl. 352—66

1 Claim



Color motion-picture projection system of the additive synthesis type.

For each multicolor image of the original film, the black and white film used has a given number of selected single-color images following one another in a uniform order of color. A synchronizing mark is placed at each image of a given color. The projector has a single lens, a capstan to drive the black and white film continuously, a multiple face prism provided with colored coatings driven by a motor. The rotation of the capstan is servo-controlled to that of the prism. The projection is stable and the images are projected by means of a suitable colored light.

Compared with a direct multicolor film projection system, cost is considerably reduced and projection is of comparable quality.



### 3,752,569 PROJECTOR MECHANISM

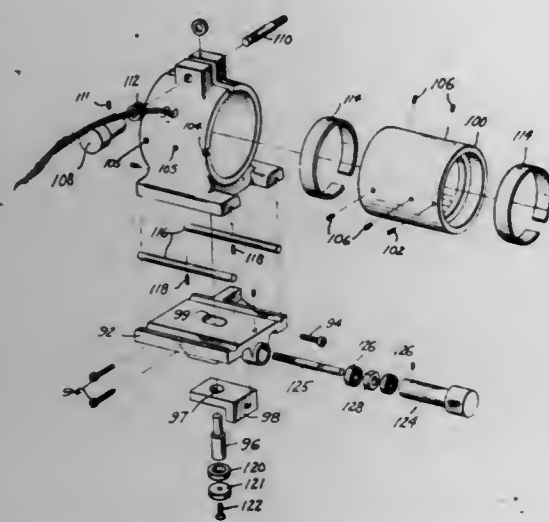
Edward J. Nelson, and Ilo M. Brown, both of Omaha, Nebr.,  
assignors to Ballantyne of Omaha, Inc., Omaha, Nebr.

Filed Oct. 29, 1971, Ser. No. 193,917

Int. Cl. G03b 3/00

U.S. Cl. 352-139

4 Claims



Motion picture projector mechanism having means a support for the film for movement through the projector mechanism in both a forward and a reverse direction, the support including spaced-apart guides for retaining the film curved in cross-section (convex relative to the light source) over a substantial length to rigidify the film for both forward and reverse movement. The support includes a film gate and film trap that can be removed as an assembly, eliminating the necessity of adjustment to keep the film gate in perfect alignment to the film trap. The film gate can readily be removed from the assembly for cleaning, with provision being made to adjust the film shoe tension while the projector mechanism is operative. The lens holder mechanism is designed to accept different diameter lenses so as to provide for cinemascopic and wide screen viewing and provides prefocusing of such lenses. It is mounted on a double V-slide and has a microlens focus adjustment.

### 3,752,570 FILM FOOTAGE INDICATOR

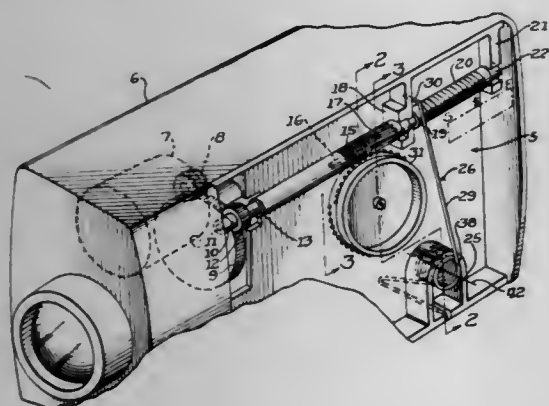
Richard K. Carlson, Tokyo, Japan, and Henry J. Koeber, Deerfield, Ill., assignors to Bell & Howell Company, Chicago, Ill.

Continuation of Ser. No. 854,479, Sept. 2, 1969, Pat. No. 3,650,611. This application Sept. 3, 1971, Ser. No. 177,731

Int. Cl. G03b 1/60

U.S. Cl. 352-172

3 Claims



A film footage indicator for movie cameras including a power source operable to drive a driving worm gear when the film is being advanced, a driven worm gear having a single row of teeth helically offset on the periphery thereof which are engageable with and driven by the driving worm gear, a pinion

gear rigidly mounted on a shaft which is coaxial with but rotatable relative to the driving worm gear and in mesh with and rotated by the driven worm gear teeth, an indicator worm gear rotatable by the pinion gear, a spring indicator flexibly operable to engage the indicator worm gear by inserting a film cartridge into the camera and flexibly operable to be advanced by the rotating indicator worm gear and a marked window in the camera housing located in alignment with the advancement of the spring indicator for indicating the amount of exposed film. Upon removal of the cartridge from the camera, the spring element indicator will automatically disengage from the indicator worm gear and return to the initial (start) position.

### ERRATA

For Classes 353-19 and 353-38 see:  
Patent Nos. 3,752,574 and 3,752,575

### 3,752,571 ELECTROPHOTOGRAPHIC COPYING APPARATUS

Isao Yamaguchi, 1-28 Saigo-dori, Moriguchi-shi, and Hitoshi Katayama, D-308, 801 Hoshida, Katano-shi, both of Japan

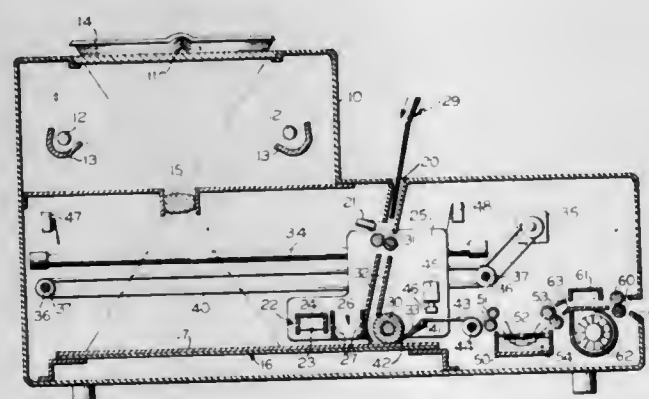
Filed Aug. 28, 1972, Ser. No. 284,276

Claims priority, application Japan, Sept. 1, 1971, 46/67699

Int. Cl. G03g 15/00, 15/18

U.S. Cl. 355-3

9 Claims



A copying apparatus for producing a visible image of an original on a copy sheet which has a conductive base and a dielectric surface. During the movement of a carriage across a photoconductive base plate, charging means imposes a uniform electrostatic charge on the photoconductive surface of the base plate, projecting means successively projects a partial light image onto the uniformly charged photoconductive surface of said base plate through framing means to form an electrostatic latent image of an original on the base plate, and charge transfer means transfers the electrostatic latent image from the photoconductive surface of the base plate to the dielectric surface of the copy sheet. The electrostatic latent image transferred onto the dielectric surfaces of said copy sheet is converted into a visible image by developing means.

### 3,752,572 APPARATUS FOR MAKING ELECTROGRAPHS

Yoshiyuki Watanabe, Tokyo, and Koichi Kinoshita, Narashino, both of Japan, assignors to Katsuragawa Denki Kabushika Kaisha, Tokyo-to, Japan

Division of Ser. No. 481,365, Aug. 20, 1965, Pat. No. 3,536,483. This application Apr. 2, 1970, Ser. No. 25,009

Claims priority, application Japan, Oct. 20, 1964, 39/59570

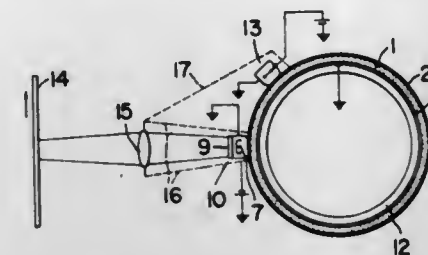
Int. Cl. G03g 15/00

U.S. Cl. 355-3

10 Claims

An electrographic apparatus in which a relative movement is established between a photosensitive element exhibiting persistent internal polarization and a corona discharge device while an optical system creates a light image through the

corona discharge device, opposite polarity field charges are created in the photosensitive element in succession, and the light image is formed in the element during the second field



charge whereby a latent image is created electrostatically in the photosensitive element corresponding to the projected light image.

### 3,752,573 ELECTROSTATIC COPYING MACHINE

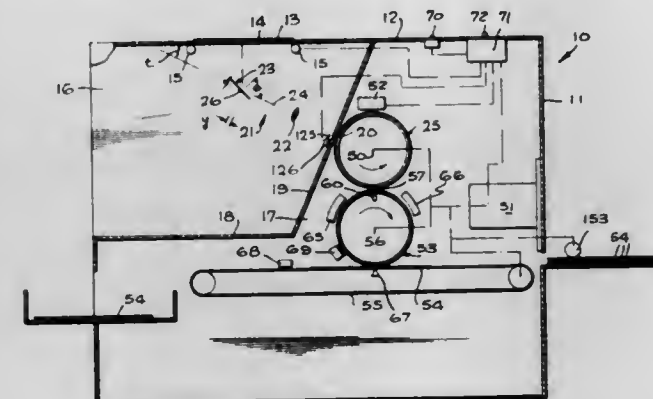
Wendell S. Miller, 1341 Comstock Ave., Los Angeles, Calif.

Filed Apr. 29, 1971, Ser. No. 138,449

Int. Cl. G03g 15/22

U.S. Cl. 355-11

16 Claims



A copying machine for making large numbers of xerographic copies by first forming an electrostatic image of the subject matter to be copied on a first carrier unit, and then making a series of electrostatic images from that first image on a second unit, and printing a series of copies of the subject matter on successive copy sheets by the second unit. Retention of the initial image on the first electrostatically chargeable unit enables removal of the original sheet to be copied from the machine while the reproductions thereof are still being produced. A mechanism is also provided to maintain constant the optical path length of a tilting mirror photoreproduction device with flat platten during the tilting of the mirror.

### 3,752,574 AUDIO-VISUAL APPARATUS

Saburo Kato, Tokyo, and Saburo Hokari, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

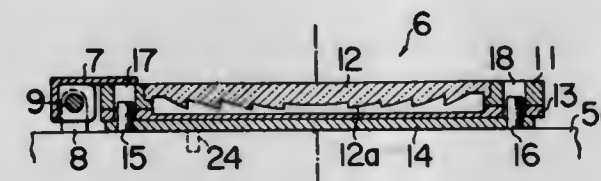
Filed Aug. 25, 1971, Ser. No. 174,701

Claims priority, application Japan, Sept. 8, 1970, 45/89253; Sept. 8, 1970, 45/89254; Oct. 30, 1970, 45/108091

Int. Cl. G03b 31/06, 1/48, 21/14

U.S. Cl. 353-19

6 Claims



An audio-visual apparatus simultaneously reproduces a sound magnetically recorded on a teaching material or audio-

visual sheet and projects onto a screen a writing or picture printed or otherwise superposed on the sheet. The apparatus includes a magnetic sound reproducer having a record mounting surface adapted to support an audio-visual sheet with its magnetic record surface facing downwardly. A head, including a light source, a projecting lens and a reflector is positioned above the sound reproducing means, and directs light rays, reflected from the upper surface of the audio-visual sheet through the projection lens, to a screen. A Fresnel lens is pivotally mounted for pivoting toward the mounting surface to press against the audio-visual sheet carrying audio and visual recorded information, to maintain the sheet in a predetermined position on the sound reproducer. The audio-visual sheet includes a base formed with holes for correctly positioning the sheet on the support surface, a reflector surface provided on one surface of the base and a magnetic recording surface provided on the other surface of the base. A transparent layer is formed on the reflector surface and may carry the graphic material to be projected.

### 3,752,575 OVERHEAD PROJECTOR

Hisanori Ataka, Kawasaki-shi, Japan, assignor to Ricoh Co. Ltd., Tokyo, Japan

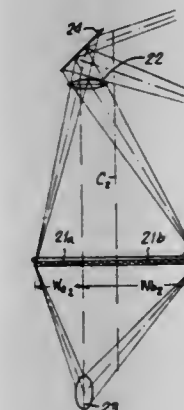
Continuation-in-part of Ser. No. 47,102, June 17, 1970, abandoned. This application Oct. 16, 1972, Ser. No. 297,747

Claims priority, application Japan, June 17, 1969, 44/57230

Int. Cl. G03b 21/14, 21/28

U.S. Cl. 353-38

3 Claims



An improved overhead projector capable of employing a smaller sized reflecting mirror, thereby making the projector compact in size, wherein a Fresnel condenser lens system, which serves as the stage or is disposed adjacent to a stage, comprises at least two Fresnel lenses having different widths and/or different focal lengths so that the light beams refracted by the different Fresnel lenses may be made incident at different angles upon the projection lens and thus upon the surface of the reflecting mirror, particularly the upper half portion, thereby permitting the reflecting mirror to be shortened. Individual light sources may be used for respective Fresnel lenses so that they may be moved closer together further decreasing the size of the projector.

### 3,752,576 TRANSPORT FOR PARTICULATE MATERIAL

Dennis P. Gerbasi, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 838,816, July 3, 1969. This application May 27, 1971, Ser. No. 147,567

Int. Cl. G03g 15/00

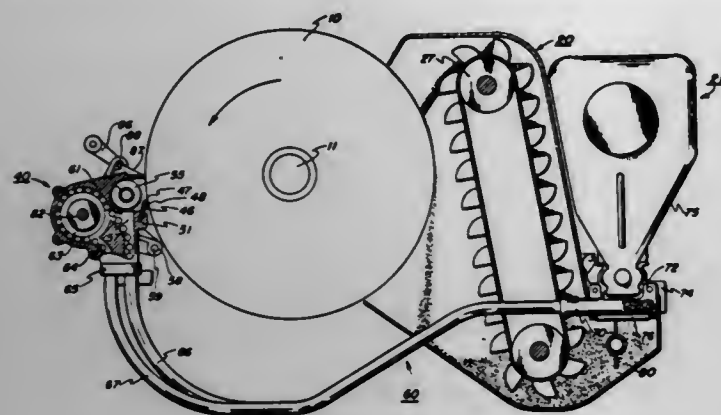
U.S. Cl. 355-15

9 Claims

Apparatus for use in an automatic xerographic reproducing apparatus for cleaning residual toner material from the



photoconductive surface after the image has been transferred to a final support material and for returning the residual toner



to a xerographic developing station for reuse in the xerographic process.

3,752,577

### LIGHT-CORRECTION SYSTEM FOR PRINTERS OF COLOUR CINEMATOGRAPHIC FILMS

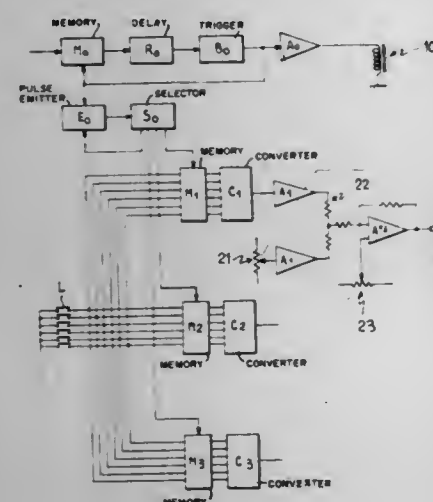
Roger Grossetete, Yerres, and Jean Pierre Blaublomme, Paris, both of France, assignors to Etablissements Andre Debré, Paris, France

Filed Nov. 15, 1971, Ser. No. 198,590

Claims priority, application France, Dec. 16, 1970, 7045353  
Int. Cl. G03b 27/76

U.S. Cl. 355—36

4 Claims



A light-correction system for cinematographic colour film printers which operate on the additive three-colour principle. Electric pulses, originating in binary form from a reader of a perforated programming tape on which information relating to desired corrections is stored, are converted for each of the three primary colours by a digital-analogue arrangement into a representative electric voltage, and the opening of each of three corresponding flux modulators is controlled by a respective electric motor which is supplied with the respective voltage through a position-control potentiometric assembly. Each of the flux modulators includes a cam for converting rotation of the corresponding motor into angular displacement of a pivoting member mounted for rotation on an operating shaft of an aperture shutter of the respective modulator.

3,752,578

### MICROFILM TRANSPORT AND ENLARGER FOR MAKING PRINTS AND PLATES

Donald R. Allan, 650 Second St., Menlo Park, Calif.

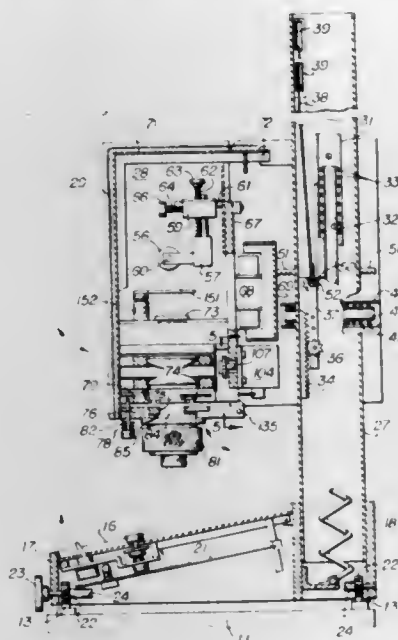
Filed Apr. 27, 1972, Ser. No. 248,029  
Int. Cl. G03b 27/56

U.S. Cl. 355—63

11 Claims

Microfilm is a source for exposure of sensitized paper or plate stock in an electrostatic copier, or other equipment,

wherein light exposes light-sensitive material. The device has a base which may be mounted on the copier and a tower above the base carrying a housing. The film transport is motor driven from a supply reel to a take-up reel supported by the housing which has a film support hinged for access to the film for adjustment of the apparatus and to remove film. The transport has a light and photocell control of the winding motor so that



marks on the film accurately position a selected frame relative to the optical axis of the lens and different channels or marks may be used selectively for control purposes. The transport and lens are mounted for movement along two horizontal axes and a vertical axis relative to the copier. The head contains an exposure lamp which is also adjustable in position. Vertical movement of the head relative to the tower governs the amount of enlargement of the microfilm frames.

3,752,579

### LIGHT EXPOSURE APPARATUS AND METHOD

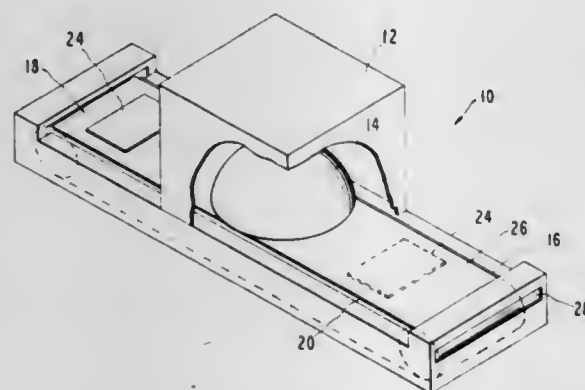
Charles Herman Keller, and Patrick Oliver Wilson, both of Sunnyvale, Calif., assignors to Pek, Inc., Sunnyvale, Calif.

Filed June 14, 1971, Ser. No. 152,510

Int. Cl. G03b 27/04

U.S. Cl. 355—97

14 Claims



A light exposure apparatus and method is provided herein wherein a workpiece to be exposed is transported through an area illuminated by collimated light. The collimated light is provided by a point source of high intensity light and a parabolic reflector.

### ERRATUM

For Class 355—10 see:  
Patent No. 3,753,174

### 3,752,580 STEREO INSTRUMENT HAVING DIFFERENTIALLY VARIED LEFT AND RIGHT PARALLAX ERROR SIGNALS FOR PRODUCING SCANNING PATTERN DISPLACEMENTS

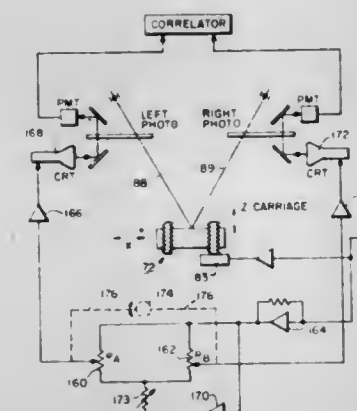
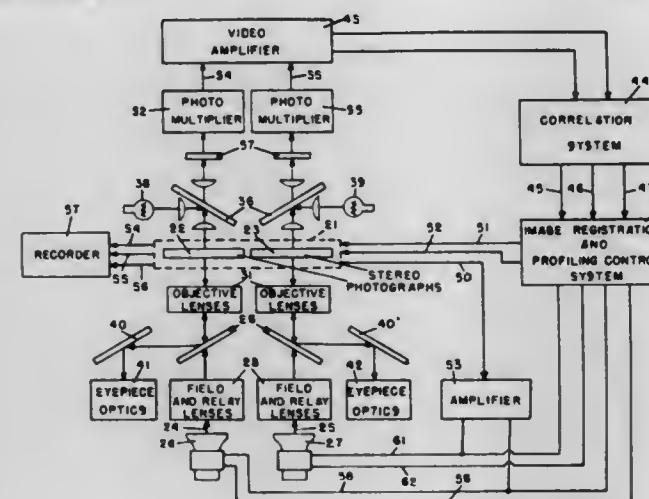
John W. Hardy, Lexington, Mass., assignor to Ittek Corporation, Lexington, Mass.

Filed Oct. 20, 1971, Ser. No. 190,862

Int. Cl. G01c 11/12

U.S. Cl. 356—2

7 Claims



An automatic stereoplottting system employing both a high speed primary servo-system for inducing substantially instantaneous primary relative displacements between scanning patterns to eliminate detected parallax, and a more massive and slower reacting auxiliary servo system for inducing relative displacements between left and right stereo photographs being scanned. The auxiliary displacements of the photographs replace the initial primary displacements of the scanning patterns and a readout mechanism records measured elevations by continuously indicating the algebraic summations of both the primary and auxiliary displacements. A distribution circuit is provided for distributing the displacements of the scanning patterns between the scanning systems for the left and right stereo photographs so as to eliminate the parallax from each photograph in proportion to the actual image displacement on each photograph.

This invention is an improvement on the Automatic Stereoplottting Apparatus described in U.S. Pat. No. 3,677,645, filed Mar. 1, 1970.

3,752,581  
RANGEFINDER

Frank Geoffrey Everest, Stevenage, Hertfordshire, and Thomas Patrick Veasey, Hitchin, Hertfordshire, both of England, assignors to British Aircraft Corporation Limited, London, England

Filed Oct. 5, 1971, Ser. No. 186,629

Claims priority, application Great Britain, Oct. 14, 1970, 48,764/70

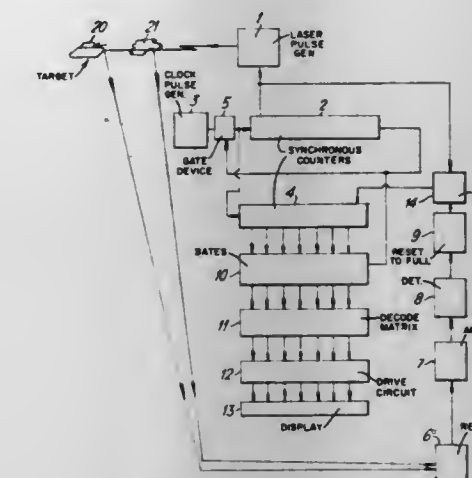
Int. Cl. G01c 3/08

U.S. Cl. 356—5

8 Claims

A rangefinder which includes a transmitter for transmitting a pulse of electromagnetic energy towards a target, and a

receiver for receiving reflections of that pulse, in which means is provided for ensuring that although reflections may be received from light reflecting media located between the



transmitter and the target, only the last received reflection, which is from the target, is used to provide the indication of the range of the target.

3,752,582

### OPTICAL RANGE AND RANGE-RATE SENSOR

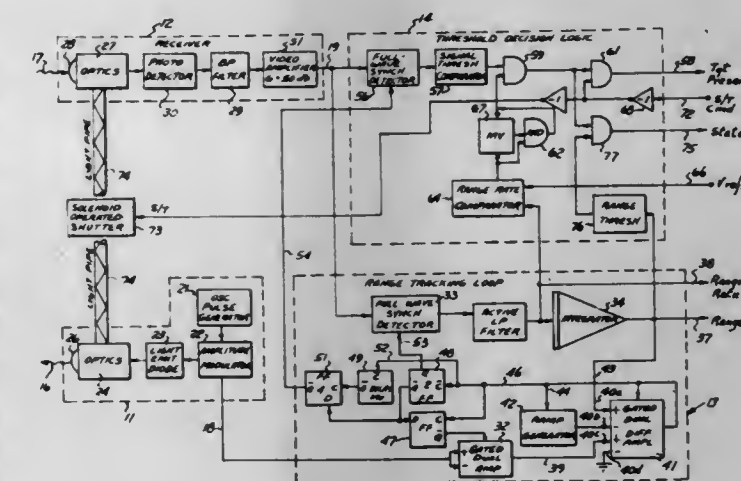
William C. Troll, Rochester, and Richard L. Fowler, Royal Oak, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Jan. 27, 1971, Ser. No. 110,222

Int. Cl. G01c 3/08

U.S. Cl. 356—5

15 Claims



An optical system for measuring the range and range-rate between two objects is described. An optical sensor system transmits modulated optical energy and receives energy reflected from an object. The optical sensor system includes a narrow band correlation type receiver and a transmitter which uses a single tone frequency to amplitude modulate a non-coherent continuous wave output. Range is measured as a function of the modulation envelope phase delay of the received signal with respect to the reference transmitted signal by a range tracking loop. A synchronous detector generates a range tracking error signal which is filtered and used to control a time delay of the reference signal input to the synchronous detector. The tracking loop causes the delay introduced into the reference signal to approximate the received signal modulation envelope delay, so a signal proportional to the reference signal delay is used as the range output signal. Range rate is derived by differentiating the range signal.

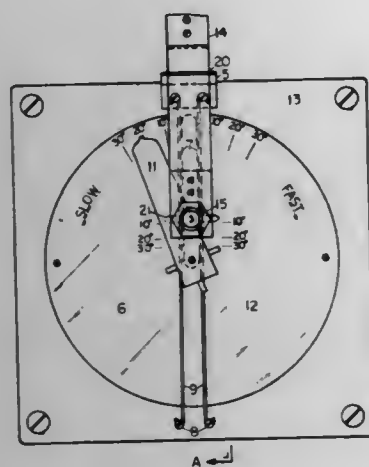


3,752,583

## MODIFIED SYNCHROSCOPE

Joseph Moschetta, 535 Dixie Dr., Penn Hills, Pa.  
Filed Sept. 9, 1971, Ser. No. 178,863  
Int. Cl. G01r 25/00

U.S. Cl. 356—23



An electrical synchroscope, modified to accommodate a light source and a light sensitive device, both mounted on a vertically adjustable mechanism and facing each other through a slot in the dial of the synchroscope so that as the instrument pointer rotates it can block the light rays from the light sensitive device at different indicated points on the dial, this in turn initiating an externally operated electrical circuit.

3,752,584

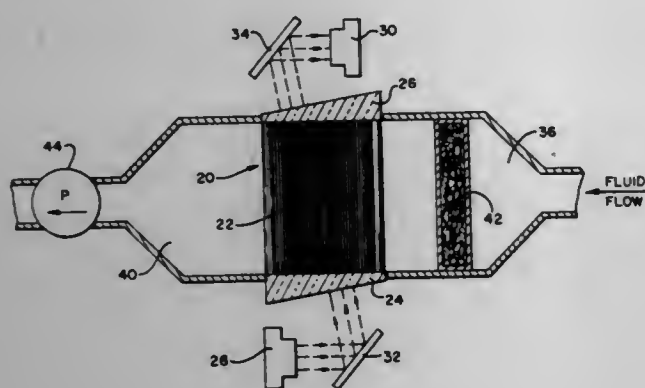
## ATTENUATED TOTAL REFLECTION SPECTROSCOPIC DEVICE

Elliot R. Schildkraut, Cambridge, Mass., assignor to Block Engineering, Inc., Cambridge, Mass.

Filed Mar. 7, 1972, Ser. No. 232,560  
Int. Cl. G01j 3/42

U.S. Cl. 356—74

12 Claims



A spectroscopic device and method of using attenuated total reflection techniques for analysis of samples of particulate solids in a fluid. A beam of radiation is passed through an optical cell comprising a plurality of elongated, totally internally reflecting elements, e.g., fiber optics, arranged as a mechanical filter. When fluid containing the particles is passed transversely across the cell, the latter are trapped in the filter whereupon radiation passing through the elements is selectively absorbed, thus providing an optical output having an absorption spectrum which may be utilized to identify the sample.

3,752,585

## SPECTROMETER SYSTEM CONTAINING AN INTERCHANGEABLE ENCODING CASSETTE

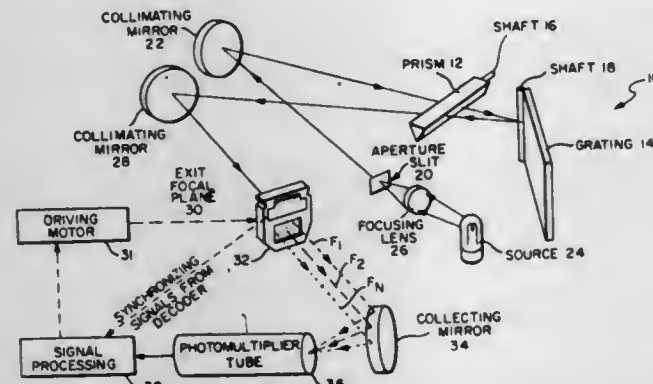
William G. Elliott, Lincoln, Mass., assignor to SpectraMetrics, Incorporated, Burlington, Mass.

Continuation-in-part of Ser. Nos. 106,500, Jan. 14, 1971, Pat. No. 3,658,424, and Ser. No. 106,561, Jan. 14, 1971, Pat. No. 3,658,423, each is a continuation of Ser. No. 710,881, March 6, 1968, abandoned. This application Apr. 17, 1972, Ser. No. 244,665

Int. Cl. G01j 3/02

U.S. Cl. 356—98

13 Claims



An interchangeable encoding cassette and a spectrometer system employing such cassette, which cassette device encodes the spectral energy of radiation at the exit focal plane of a spectrometer, the spectral energy represented by horizontal and vertical components. The cassette device comprises a rotating encoding disc, a stationary aperture plate, a frame element, and a shaft secured to the encoding disc for rotation therewith. The frame includes bearings on which the shaft is mounted and includes a reference pin. The spectrometer includes a pair of locator mounts, each of which has a precision V groove adapted to receive the shoulders of the bearing element of the cassette, one of such locators having an adjustable track adapted to receive the pin element, whereby the shaft serves as a primary reference and the cassette device is adjusted into the desired precision position by the position of the reference pin in the restraining track.

3,752,586

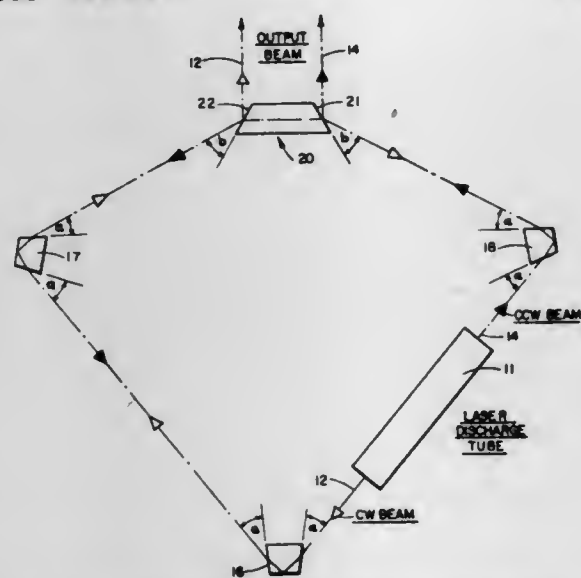
## MINIMIZING FREQUENCY LOCKING IN RING LASER GYROSCOPES

Thomas J. Hutchings, Orange, and Joseph Winocur, Newport Beach, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 637,832, May 11, 1967, abandoned. This application Aug. 4, 1969, Ser. No. 849,262  
Int. Cl. H01s 3/05, 3/10

U.S. Cl. 356—106 LR

10 Claims



A ring laser gyroscope utilizes a pair of oppositely rotating beams which are given a difference frequency in accordance

with the rotation rate of their optical paths. A plurality of frequency modulated bias signals are imposed upon the beams, the modulation indices of these frequency modulation signals being chosen to minimize the effects of frequency locking at low rotation rates.

3,752,587

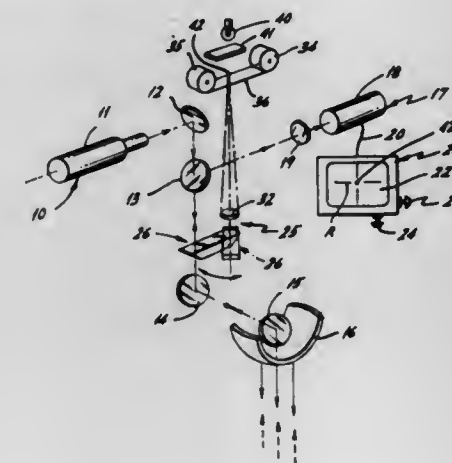
## APPARATUS FOR BORESIGHTING A LASER BEAM EMITTER DEVICE

James G. Myers, Fullerton; Francis J. Berg, Costa Mesa, and Bernard R. Martus, Huntington Beach, all of Calif., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed Sept. 9, 1971, Ser. No. 178,857  
Int. Cl. G01b 11/26

U.S. Cl. 356—153

12 Claims



A system for boresighting or aligning the optical axes of a combined infrared laser beam emitter and a low light level television telescope. An optical switch is located in the system where the axes of the telescope and the laser beam are combined, and is effective to divert at least a portion of the laser beam to a lens that focuses the beam on an opaque surface that is capable of being perforated by the laser energy. The opaque surface is backlit, so that after perforation by the laser a bright point of light can be seen in the telescope. If the axes of the laser beam and telescope are aligned, the bright spot will appear at the reticle center of the telescope. If not aligned, the axes are adjusted to produce alignment, or boresighting. The opaque surface is formed on a strip, and an automatic advancing device is operable to advance the strip to present a fresh opaque test surface, upon each boresighting operation.

3,752,588

## LASER FOOTBALL FIRST DOWN MEASURING DEVICE

James D. Chapman, 2430 Butt Ave., Lima, Ohio  
Filed July 14, 1971, Ser. No. 162,471  
Int. Cl. G01b 11/26

U.S. Cl. 356—152

8 Claims



An optical laser measuring device more particularly for measuring the required distance necessary for a first down in

the sport of football. The forward pole marker includes a laser unit pivotably mounted to the marker for sweeping the football field with a visible signal. Means for perpendicularly aligning the laser unit is provided on the pole marker and insulation for protecting the laser unit from shock can be optionally added.

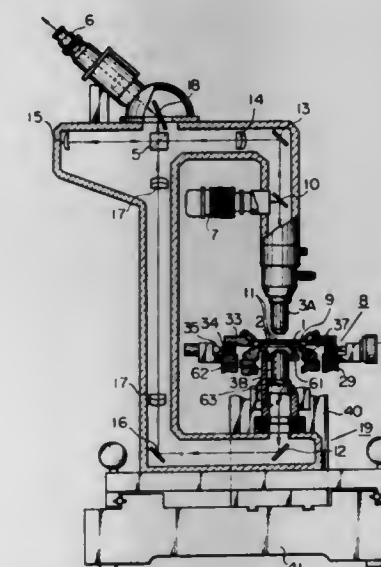
3,752,589

## METHOD AND APPARATUS FOR POSITIONING PATTERNS OF A PHOTOGRAPHIC MASK ON THE SURFACE OF A WAFER ON THE BASIS OF BACKSIDE PATTERNS OF THE WAFER

Masaaki Kobayashi, 2808 Sago, Kawasaki-shi, Japan  
Continuation-in-part of Ser. No. 835,336, June 23, 1969, abandoned. This application Oct. 26, 1971, Ser. No. 192,395  
Int. Cl. G01b 11/26

U.S. Cl. 356—172

12 Claims



In the fabrication of a semiconductor device, an operation for positioning patterns of a photographic mask on the surface of a wafer with reference to metal-placed patterns on the underside of the wafer is remarkably improved by means of a microscopical method utilizing at least one pair of object lenses facing each other so that corresponding images of the basic patterns of the wafer and images of patterns of the photographic mask are taken separately, whereupon these images are then optically superimposed and observed. The metal-plated patterns are illuminated at an angle of incidence greater than zero in order to prevent reflective disturbance due to the support device for the wafer and the position of the photographic mask relative to the wafer is accurately adjusted while observing the above-mentioned combined images.

3,752,590

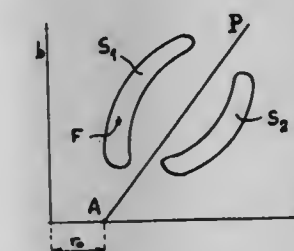
## AUTOMATIC RECOGNITION OF COLORS

Pierre Frappe, Lyon, France, assignor to Verdal S.A., Lyon, France

Filed Nov. 9, 1971, Ser. No. 196,889  
Claims priority, application France, Nov. 30, 1970, 7043976  
Int. Cl. G01j 3/46, 3/42

U.S. Cl. 356—176

8 Claims



The invention refers to a method for the automatic recognition of coloring dyes, for instance in a drawing, by illuminating



the sample by a beam of light of known characteristics and by analyzing the light reflected in a number of primary colors or wave lengths, recognition of the dye from which the light is reflected being based on the position of the point which represents the responses of the photo-sensitive analyzing means corresponding to each primary color in a system of coordinates having a number of axes equal to the number of said primary colors. According to the invention the real locus (surface or volume) of all possible representative points is determined for each dye, lines or surfaces are drawn to pass between these loci, these lines or surfaces are each represented analogically by electronic circuits receiving as inlet signals the responses of the photo-sensitive means to emit a zero outlet signal for a point which would be situated on this line or surface and the position of the representative point of an unknown dye is deduced from the signs of the outlet of these circuits.

Alternatively the dyes are considered by pairs in a number of two-dimensional coordinate systems.

3,752,591

# SEXTANT WITH DIGITAL READOUT AND NIGHT VIEWING CAPABILITY

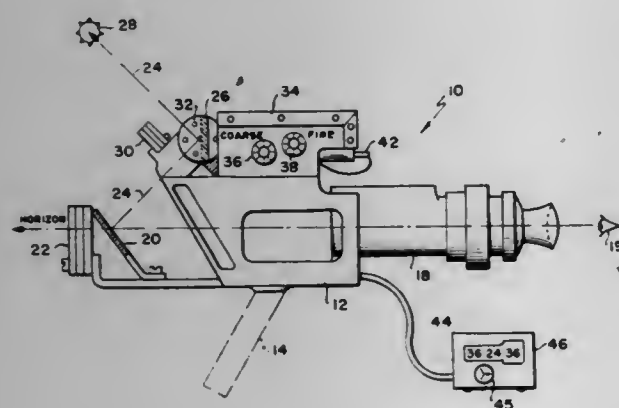
Sidney Feldman, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 4, 1971, Ser. No. 168,931

Int. Cl. G01c 1/08; G02b 23/12

U.S. Cl. 356—247

3 Claims



A navigation instrument for measuring the altitude of celestial bodies above the horizon adaptable to use with ordinary iron sights, a standard telescope for daylight viewing, and an electronic image enhancing telescope for night viewing of the horizon. Digital readout of the altitude of the celestial bodies is available on the instrument as well as electrically telemetering this information to a remote site where it may be recorded along with the time of observation.

3,752,592

# METHOD AND APPARATUS FOR COMPACTING THE PLACEMENT MATERIAL IN ROAD BUILDING

Alois Paar, Dusseldorf, and Fritz Konig, Wuppertal-Vohwinkel, both of Germany, assignors to Losenhausen Maschinenbau AG, Dusseldorf-Grafenberg, Germany

Filed Apr. 29, 1971, Ser. No. 105,821

Claims priority, application Germany, May 2, 1970, P 20 21 457.7

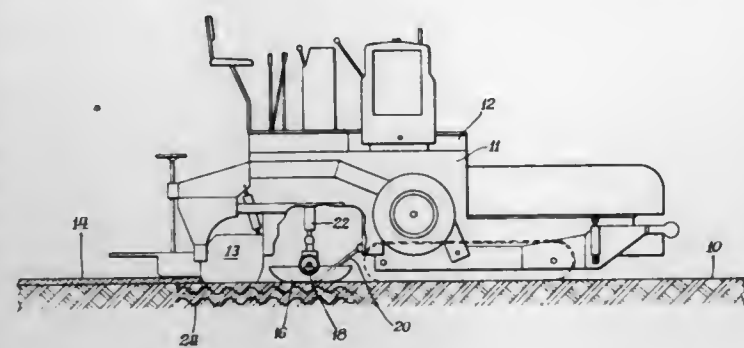
Int. Cl. E01c 7/26

U.S. Cl. 404—102

6 Claims

A machine applies a layer of paving material to a subgrade to form a road. Immediately in front of the transverse line

along which the material is deposited, the subgrade is vibrated in a manner such that the vibrations extend rearwardly and



under the paving material being deposited on the subgrade to compact and cohere that material and adhere it to the subgrade.

3,752,593

# PLASTIC PIPE REAMER AND METHOD

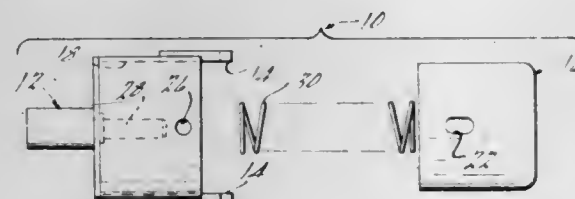
Harold W. Fitzgerald, 4574 Elizabeth Lake Rd., Pontiac, Mich., and Warren T. Gunther, 2738 Merelus, Pontiac, Mich.

Filed Sept. 27, 1971, Ser. No. 183,756

Int. Cl. B23b 35/00, 41/06

U.S. Cl. 408—1

5 Claims



A pipe reamer apparatus particularly for use with plastic pipe and a method of reaming plastic pipe fittings such as elbows or the like.

3,752,594

# TURRET TYPE UNIVERSAL MILLING, DRILLING AND BORING MACHINE

Sven-Erik Svanstrom, Vasteras, Sweden, assignor to SMT Machine Company AB, Vasteras, Sweden

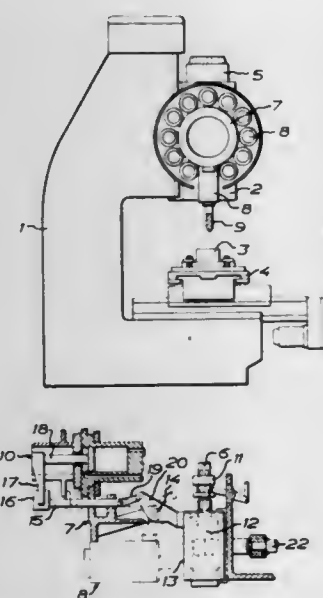
Filed Nov. 19, 1971, Ser. No. 200,333

Claims priority, application Sweden, Dec. 7, 1970, 16491/70

Int. Cl. B23b 39/20; B23q 3/157

U.S. Cl. 408—35

5 Claims



A universal milling, drilling and boring machine for a plurality of rotary tools includes a headstock having a drive. The

headstock comprises a drum rotatably mounted thereto and equipped with a number of spindle units for the rotary tools which units are rotatably mounted on the drum and which in normal position are oriented at least substantially parallel with the axis of rotation of the drum. The headstock has an operating unit which is adapted to swing the spindle unit opposite the drive into operative position in the headstock, in which position the drive is connectable to the spindle unit.

3,752,595

# ADAPTER FOR DRILL SPEEDER

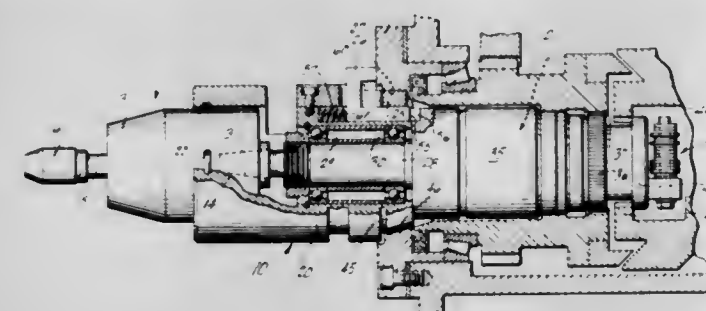
Robert T. Woythal, West Allis, and James L. Kirschnik, Brookfield, both of Wis., assignors to Kearney & Trecker Corporation, West Allis, Wis.

Filed Mar. 31, 1971, Ser. No. 129,854

Int. Cl. B23b 47/14

U.S. Cl. 408—124

12 Claims



A special adapter for receiving a drill speeder to enable the drill speeder to be handled by an automatic tool changer for insertion into and removal from a rotary spindle of a machine tool. The adapter provides for coupling the spindle of the machine tool to drive the drill speeder while retaining the outer housing of the drill speeder stationary without intervention by the machine tool operator.

3,752,596

# HYDROSTATIC SUPPORT FOR LONGITUDINALLY DRIVEN MACHINE POST

Manfred Weyand, Meerbusch, and Manfred Picker, Buttgen, both of Germany, assignors to Schiess Aktiengesellschaft, Dusseldorf-Oberkassel, Germany

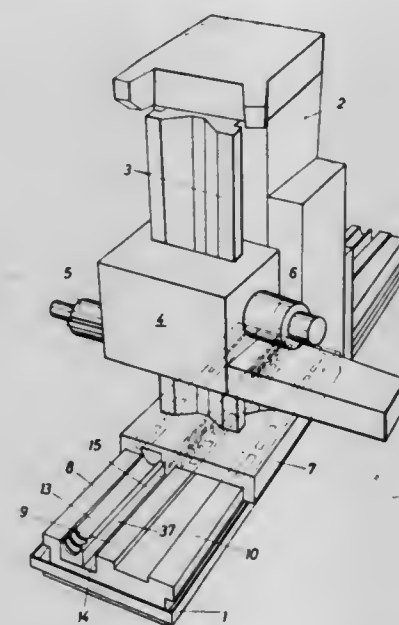
Filed Apr. 10, 1972, Ser. No. 242,452

Claims priority, application Germany, Apr. 10, 1971, P 21 17 701.5

Int. Cl. B23c 9/00; B23b 47/00

U.S. Cl. 408—234

1 Claim



A machine tool with an upright post which is displaceable on a stationary machine tool bed in the longitudinal direction

thereof by a worm rotatably journaled in said post and meshing with a worm gear rack connected to the machine tool bed. The foot portion of the post has supporting surfaces by means of which it is horizontally slidably and vertically movably supported on the bed, which supporting surfaces are provided with groups of pressure fluid receiving pockets, the pockets of each group being arranged one behind the other in the longitudinal direction of the bed while being open toward the bed. The foot portion of the post is also provided with two oppositely located lateral guiding surfaces one of which engages one lateral surface of the worm gear rack for laterally guiding the post. This one lateral guiding surface has one pressure fluid receiving pocket which through passages in the worm gear rack communicates with the flanks of the respective teeth of the worm gear rack which are being engaged by the worm.

3,752,597

# FLOW PATH DEFLECTOR FOR AXIAL FLOW REVERSING GAS TURBINE

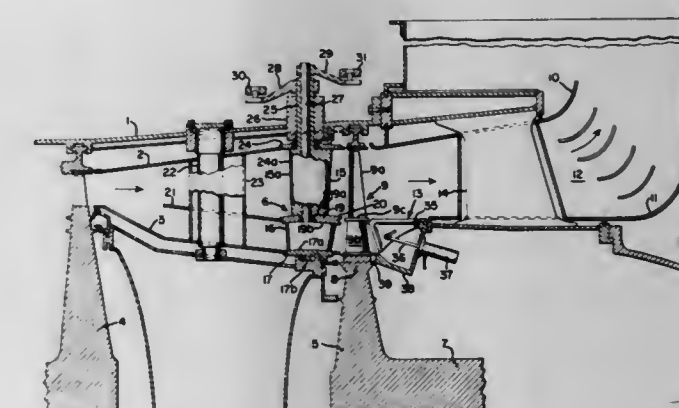
George H. Heinold, Scotia, and Thomas R. Huber, Mechanicville, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,840

Int. Cl. F01d 17/14; F02c 3/00

U.S. Cl. 415—152

4 Claims



A reversing gas turbine with two coaxial rows of oppositely curved rotor blade portions and having two rows of separately adjustable stator blades controlling flow of motive fluid alternately to the forward or reversing rotor blades. A flow path deflector at the outlet of the reversing blades seals the outlet therefrom when the rotor turns in the forward direction, and is pivotable to deflect reversing fluid flow into the exhaust path when the turbine reverses.

3,752,598

# SEGMENTED DUCT SEAL

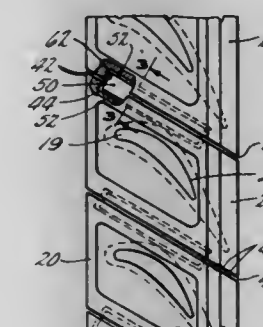
David A. Bowers, Madison, and Frank L. Detolla, Rockville, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 17, 1971, Ser. No. 199,552

Int. Cl. F01d 5/20

U.S. Cl. 415—173

5 Claims



Confronting faces of a segmented duct of circular cross-section are provided with mutually opposing grooves running



transverse to the front plane of the duct, the grooves each having a tapered surface, the tapered surfaces of opposing grooves being in mutually facing relationship with each other. A thin flat rectangular plate bridges the gap between the tapered surfaces, having one of its longitudinal edges resting on each surface. A net force on the plate created for example by a pressure differential across the plate results in a seal between the tapered surfaces and each plate edge, thereby preventing the radial leakage of fluid through the gap between the segments.

3,752,599

**BUCKET VIBRATION DAMPING DEVICE**

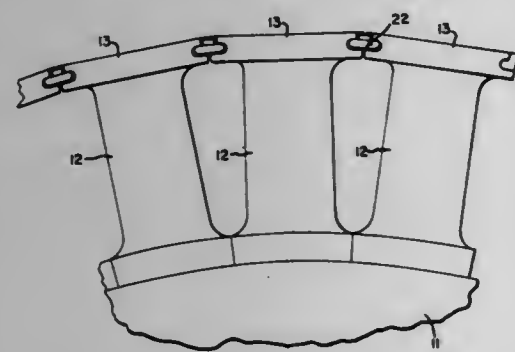
Edwin L. Pace, South Ashburnham, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 29, 1971, Ser. No. 128,761

Int. Cl. F01d 5/16

U.S. Cl. 416—190

1 Claim



A bucket vibration damping device for a turbomachine including a composite button disposed between relatively vibratory, closely adjacent blade parts in a cutout having opposite portions formed in the closely adjacent opposing edge surfaces of the blade parts. When the turbo machine is operating, centrifugal forces thrust the button radially outward within the cutout so that the button will frictionally engage the adjacent blade parts to minimize relative vibrational movement. The geometry of the button is such that it tends to provide equal frictional forces on each blade part.

3,752,600

**ROOT PADS FOR COMPOSITE BLADES**

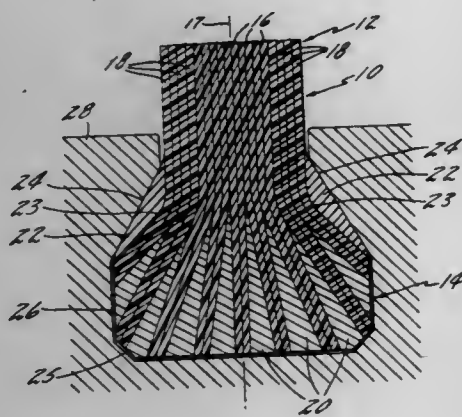
Thomas C. Walsh, New Britain, and David Street, East Granby, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 9, 1971, Ser. No. 206,426

Int. Cl. F01d 5/30

U.S. Cl. 416—219

2 Claims



A composite filament reinforced rotor blade having a splayed root construction is provided with a pad on each side of the blade in the area of transition between the airfoil portion and root portion of the blade. The pad is designed to be

wedged between the blade and its corresponding disc slot during rotor operation and to transmit blade centrifugal forces from the blade to the disc in such a manner so as to produce a compressive force on the surface of the blade in the transition area for preventing delamination of the filaments within the blade. In one embodiment of this invention, the pads on either side of the blade are connected by a flexible band closely fitting along the underside of the root portion to prevent metallic wedge-shaped inserts, which are sometimes used in the root, from being expelled therefrom.

3,752,601

**HIGH PRESSURE LIQUID PUMP**

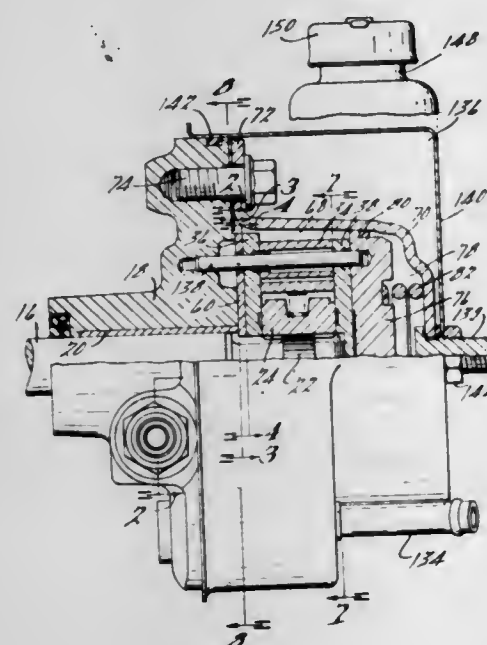
Jack Karagozian, Farmington, and William E. Rudnicki, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Sept. 22, 1971, Ser. No. 182,599

Int. Cl. F04b 49/08

U.S. Cl. 417—300

2 Claims



A liquid pump adapted especially for use in a power steering system in an automotive vehicle comprising a pump rotor mounted for rotation within a cam ring, port plates and upper and lower seal plates arranged in axially stacked relationship and cooperating with a surrounding housing to define a pressure cavity on one side of the upper seal plate which is in fluid communication with the discharge port and the port plates, and an integral flow control and pressure relief valve assembly located in the housing independently of the pump rotor and cam ring in fluid communication with the discharge ports thereby providing a pump assembly of reduced axial dimensions and a pump flow and pressure control that has improved reliability.

3,752,602

**OIL PUMP FOR HEATING INSTALLATIONS**

Gunnar Lyshøj Hansen, and Jorgen Rono-Clausen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Aug. 11, 1971, Ser. No. 170,773

Claims priority, application Germany, June 26, 1971, P 21 31 857.0

Int. Cl. F04b 49/00

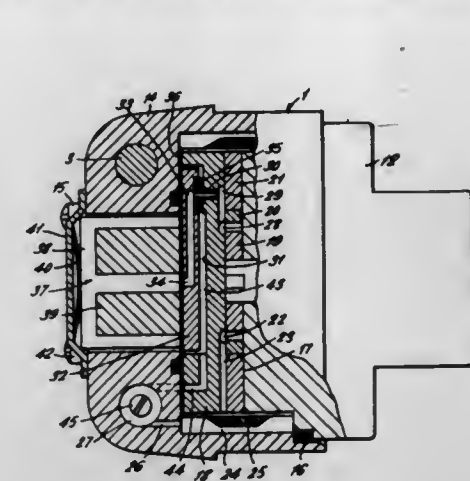
U.S. Cl. 417—310

4 Claims

The invention relates to an oil pump assembly comprising a casing in which pumping elements are disposed and in which fluid intake and exhaust passages are formed. A bypass passage with valve means therein is between the intake and exhaust passages. An electromagnet is mounted in the casing and the armature thereof is associated with and operates the

valve means. The electromagnet is controlled jointly with the motor which drives the pump assembly in a manner such that the valve means are closed when pump assembly is operating and open when the pump assembly is turned off. The opening of the valve means in this manner permits pressurized fluid to

attached to the piston rod, and the O-ring and piston move longitudinally toward and away from the disc to close and open the valve, respectively. When the O-ring is away from



be bypassed to the intake passage such that the usual pressure regulating and cut-off valve connected to the exhaust or pressure outlet side will close instantaneously upon the motor being turned off by reason of the instantaneous reduction of pressure caused by the instantaneous bypassing of the pressurized fluid.

3,752,603

**MOTOR DRIVEN CENTRIFUGAL PUMP**

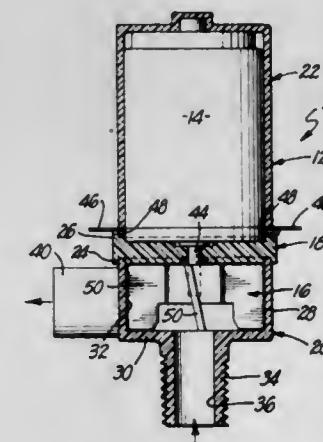
Robert E. Bunch, LaVerne, Calif., assignor to Zenith Manufacturing Inc., El Monte, Calif.

Filed Dec. 9, 1971, Ser. No. 206,256

Int. Cl. F04b 17/00

U.S. Cl. 417—424

4 Claims



A motor driven centrifugal pump characterized by a unique housing, motor and impeller which provide the pump with a simple low-cost construction, compact size, quiet operation and other features that adapt the pump for use in a trailer, camper or the like for pumping water from a storage tank to a tap or other outlet.

3,752,604

**PUMP VALVE ASSEMBLY**

Chester Dorn, Spencer, Iowa, assignor to Superior Manufacturing Company, Spencer, Iowa

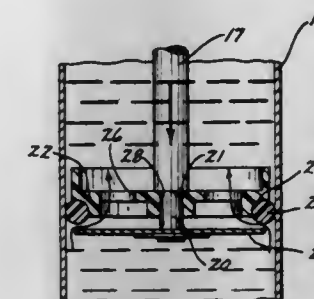
Filed July 19, 1971, Ser. No. 163,633

Int. Cl. F04b 7/04

U.S. Cl. 417—511

6 Claims

A barrel pump valve assembly including a piston slidably carried by a piston rod. An O-ring seal for contacting the pump cylinder wall is supported between the piston and a disc



the disc, fluid can pass between the disc and O-ring and through openings in the piston, and when the O-ring is in contact with the disc, the valve is closed.

3,752,605

**ROTARY GAS COMPRESSOR**

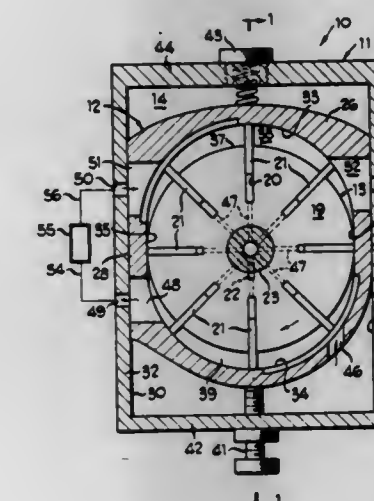
Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 17, 1971, Ser. No. 199,551

Int. Cl. F01c 1/30, 21/16; F04c 25/00

U.S. Cl. 418—8

4 Claims



A rotary gas compressor including a single vaned rotor positioned within a stator housing shaped to provide high and low pressure chambers, the housing and rotor being relatively movable to vary the sizes of the chambers. In one example, this construction can provide two-stage operation allowing the compressor to attain a high over-all pressure ratio. In a second example, the gas compressor is effective to provide high and low pressures to separate evaporators of a refrigeration system.

3,752,606

**LIQUID INJECTION SYSTEM FOR GLOBOID-WORM COMPRESSOR**

Bernard Zimmern, 27, rue Delaborde, Neuilly-sur-Seine, France

Filed Dec. 14, 1971, Ser. No. 207,804

Int. Cl. F01c 1/08; F04c 17/04, 27/02

U.S. Cl. 418—97

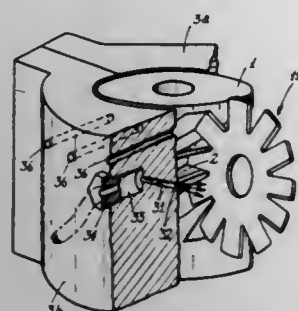
8 Claims

The invention relates to a system for injecting a liquid to ensure cooling, lubrication and leak-tightness in a globoid-worm compressor. In known systems the liquid is injected substantially parallel to the axis of the worm on the low pressure side of the compressor and in the vicinity of the pinions which



cooperate with the worm. According to the invention, the liquid injection system comprises ducts formed in the casing of the compressor and opening in the vicinity of the pinions in

elements lie in interpenetrating bores in the pump body and adjacent faces of the bearings are flat and are sealingly and adhesively secured together.



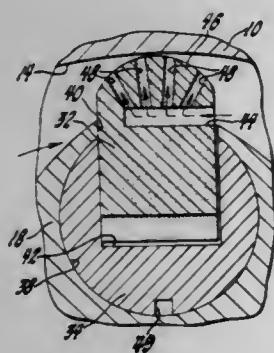
**3,752,609**  
**VANE PUMP WITH FLUID-BIASED END WALLS**  
Albin J. Niemiec, Sterling Heights, and Raymond B. Pettibone, Troy, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

Filed Feb. 17, 1972, Ser. No. 227,227  
Int. Cl. F01c 19/08; F03c 3/00; F04c 15/00.  
U.S. Cl. 418-133 4 Claims

the zone where the width of the crests of the worm threads is a minimum. Preferably the duct is oriented transversely to the plane of the pinions.

**3,752,607**  
**ROTARY MACHINE APEX SEAL**  
John Bilobran, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

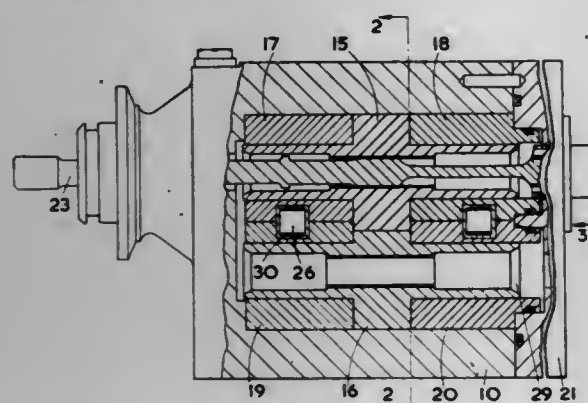
Filed Mar. 6, 1972, Ser. No. 232,160  
Int. Cl. F01c 19/04 4 Claims  
U.S. Cl. 418-124



A rotary machine apex seal having passages for directing gas pressure to impinge upon the machine's internal peripheral wall to provide a cushion of gas between the apex seal and this wall.

**3,752,608**  
**BEARING FOR PUMPS**  
Martin Knowles, Bromsgrove, and Harold Lucas Tulloch, Solihull, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Nov. 23, 1971, Ser. No. 201,438  
Claims priority, application Great Britain, Nov. 28, 1970, 56,649/70  
Int. Cl. F01c 19/08 10 Claims  
U.S. Cl. 418-131



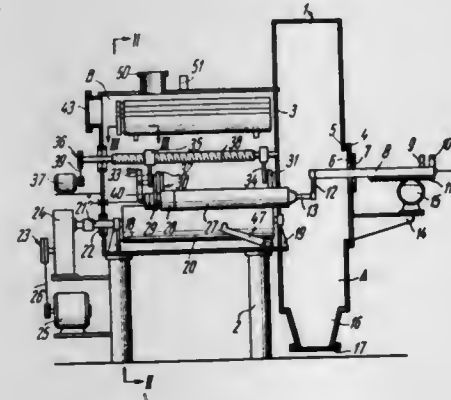
A bearing arrangement for a gear pump has pairs of bearing elements on either side of a pair of meshed gears. The bearing

A balanced vane pump has a body supporting the drive-shaft and clamping together the pumping cartridge. The cartridge includes an ovoid cam ring and a slotted rotor carrying radially slidable vanes. Flexible cheek plates are clamped against the cam ring and pressed toward the rotor and vanes by outlet pressure applied over limited areas defined by pressure pockets surrounding the outlet ports in the cheek plates.

**3,752,610**  
**DEVICE FOR PRODUCING FINE POWDER OF LIQUID METAL**

Sergei Georgievich Glazunov, Leninsky prospekt, 41, kv. 62; Leonid Alexandrovich Khrustsevich, ulitsa Kolesovoi, kv. 3, and Yuri Fedorovich Altunin, ulitsa Dybenko, 22, korpus 6, kv. 511, all of Moscow, U.S.S.R.

Filed Mar. 1, 1972, Ser. No. 230,589  
Claims priority, application U.S.S.R., Dec. 18, 1969, 1386012  
Int. Cl. B29c 23/00 5 Claims  
U.S. Cl. 425-6

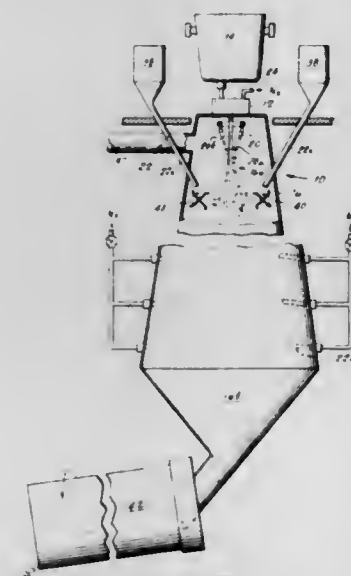


A device is disclosed for producing fine powder of liquid metal comprising an air-tight chamber which accommodates a nonconsumable and a consumable electrode with the latter being located on two horizontal rolls parallel to each other and connected so as to ensure their synchronous rotation with a rotary gear, the consumable electrode being held tight to the

rolls by two rollers one of which is in mesh with the electrode and is connected to a longitudinal feed gear to maintain constant spacing between the consumable and non-consumable electrode.

**3,752,611**  
**APPARATUS FOR PRODUCING METAL POWDER**  
William A. Reed, West Richfield; William K. Kinzer, Northfield Center; John J. Swanson, Lakewood, and Robert E. Kusner, Brecksville, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Division of Ser. No. 834,368, June 18, 1969, Pat. No. 3,655,837. This application Aug. 26, 1971, Ser. No. 175,407  
Int. Cl. B22d 23/08 6 Claims  
U.S. Cl. 425-7



Apparatus and process for producing a powder from molten metal by forming a flowing stream of metal from a ladle through a regulating tundish and into an atomizing chamber having an atomizing zone and a collecting zone. An atomizing gas is directed through an annular nozzle or series of annularly disposed gas jets against the stream of molten metal to form metal particles, the gas exiting from the nozzle or jets at supersonic velocity. Matter is injected against the particles prior to atomization and/or between the atomizing and collecting zones of the chamber to cause particle agglomeration to produce particles of irregular shape and to cool the particles. The injected matter may be an inert gas or fine particles of metal powder. The particles settle in the collecting zone where they are subsequently cooled and transported for further processing.

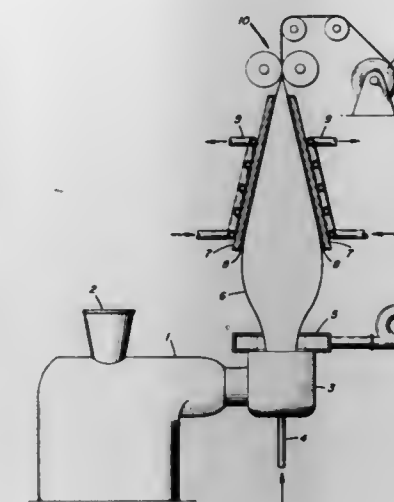
**3,752,612**  
**APPARATUS FOR THE CONTINUOUS PRODUCTION OF TUBULAR FILM FROM THERMOPLASTIC SYNTHETIC RESINS**

Antony Van Duuren, Velp (Gld.), Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed May 18, 1971, Ser. No. 144,101  
Claims priority, application Netherlands, June 3, 1970, 7008028  
Int. Cl. B29c 1/04; B29d 7/14 1 Claim  
U.S. Cl. 425-66

An apparatus for the production of wrinkle-free tubular films from thermoplastic synthetic resins is disclosed. The ap-

paratus comprises an extruder, at least one guide surface, and haul-off rolls. The guide surface is covered with a layer of synthetic resin containing at least 0.5% glass fiber. The

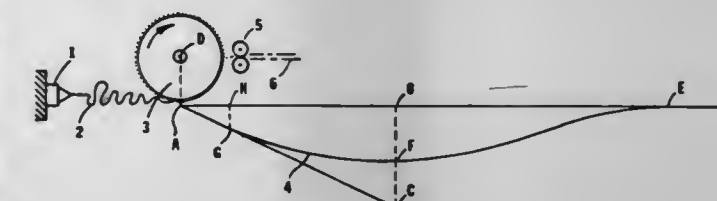


presence of the glass fiber in the synthetic resin produces a somewhat granular surface which minimizes or eliminates wrinkling in the extruded film.

**3,752,613**  
**APPARATUS FOR PRODUCING SPRAY SPUN NONWOVEN SHEETS**

Clifford M. Vogt, Madison, and Joseph C. Polise, Morris Plains, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 96,040, Dec. 8, 1970, Pat. No. 3,689,342.  
This application May 24, 1972, Ser. No. 256,505  
Int. Cl. B29d 7/00; B29c 13/00 3 Claims  
U.S. Cl. 425-80



Spray-spun nonwoven sheets having improved physical properties are produced by spray spinning a fiber-forming polymer tangentially onto the surface of a sheet collection device. The randomness of the spray-spinning process provides a uniform sheet having both long and short filaments.

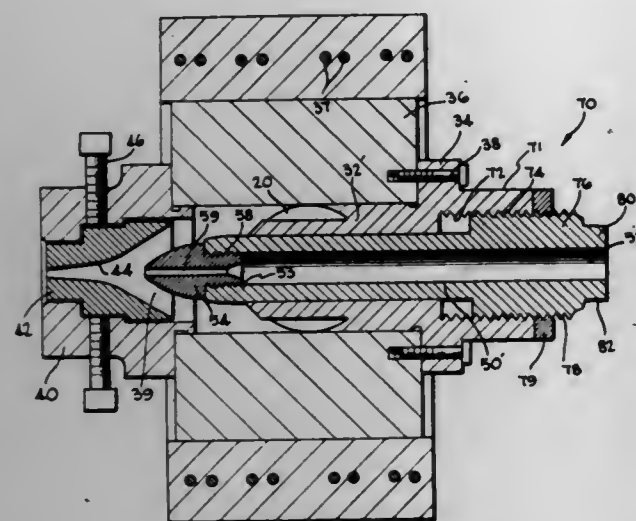
**3,752,614**  
**ADJUSTABLE EXTRUSION HEAD**  
Sherman L. Bremer, Tempe, Ariz., assignor to Bremertron KL Corporation, Tempe, Ariz.

Filed Feb. 2, 1971, Ser. No. 111,911  
Int. Cl. B29c 27/14 4 Claims  
U.S. Cl. 425-113

An extrusion head for forming insulated wire includes a fixed threaded hollow mandrel and a threaded hollow pin disposed internally of and in mating engagement with the mandrel for supporting a male die member in axial alignment with a female die member mounted within the head. The



threaded portions of the mandrel and the pin are so engaged that rotation of the pin within the mandrel advances or



retracts the male die member with respect to the female die member while maintaining the alignment therebetween.

3,752,615

INJECTION MOLD/INJECTION BLOW MOLD SYSTEM

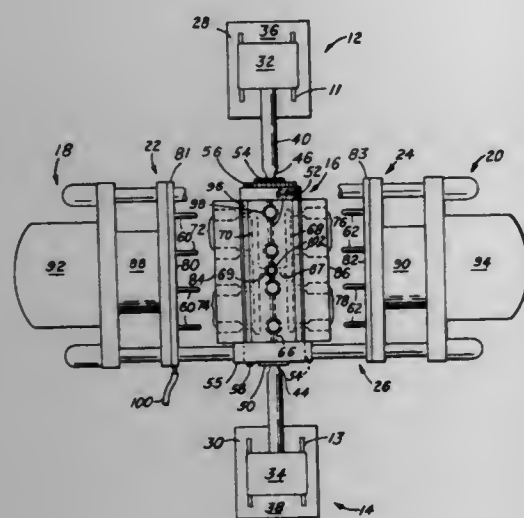
Dick T. Van Manen, 25 Holiday Harbour, Canandaigua, N.Y.

Filed June 15, 1971, Ser. No. 153,262

Int. Cl. B29d 23/03

U.S. Cl. 425-130

10 Claims

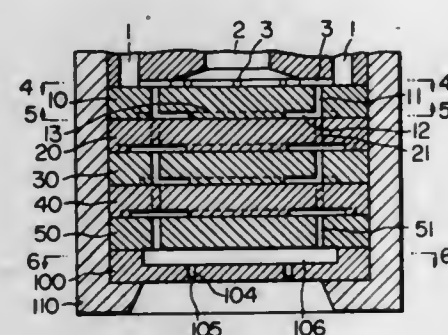


An injection mold/injection blow mold having a rotary manifold fed axially from either one, or optionally, two, axially movable injectors located at the respective ends of the manifold, through rotary, axial-slip joints, and having one or more clamps which reciprocate at an angle to the axis of the manifold to co-act in forming molded products of material dispensed through the manifold; sets of mold cavities in the manifold and corresponding sets of cores on each clamp are provided, and both one-direction-rotating and oscillating manifold motion are disclosed, the whole making possible simultaneous two-color and combined-color molding in low-radius, high speed manifold operation.

3,752,616  
MIX-SPINNING APPARATUS  
Masao Matsui, Takatsuki, and Masahiro Yamabe, Neyagawa, both of Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan  
Division of Ser. No. 783,508, Dec. 13, 1968, Pat. No. 3,613,173. This application May 13, 1971, Ser. No. 143,217  
Claims priority, application Japan, Dec. 20, 1967, 42/82022; Feb. 27, 1968, 43/12426  
Int. Cl. D01d 3/00

U.S. Cl. 425-131

6 Claims



A spinning apparatus capable of manufacturing a multi-layer filament from at least two-spinning materials by using a layer-multiplying mixer consisting of a three-dimensional passage network which include at least two network elements arranged in successive stages, the network element being composed of repeated unit passages arranged on a plane, whereby the spinning materials are joined and separated in different phase in multi-stages.

3,752,617

APPARATUS FOR EXTRUDING PRODUCTS OF PLURAL COMPONENTS OF VARIED PROPORTIONS WITH SCRAP RECLAMATION

Norbert W. Burlis, University City, Mo., and Joseph H. Corbett, Fort Edward, N.Y., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

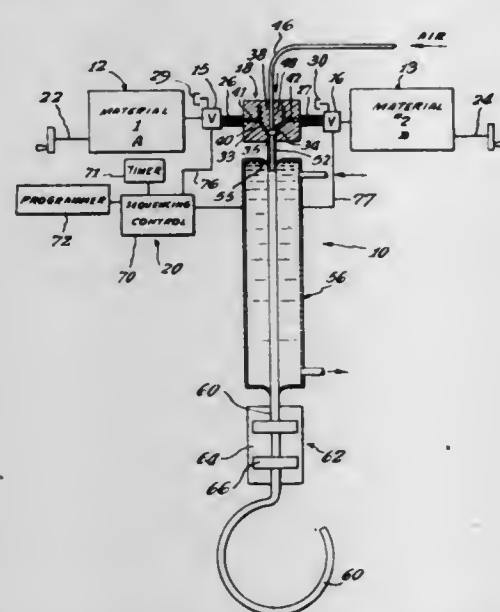
Continuation of Ser. No. 865,615, Oct. 13, 1969, abandoned.

This application Mar. 3, 1972, Ser. No. 231,608

Int. Cl. B29 3/01, 3/12

U.S. Cl. 425-131

1 Claim



A method and apparatus for producing tubing having different characteristics, e.g. physical, chemical and the like, along its axial length including two or more extruders that feed different plastic materials to a mixing and extruding die with a sequencing control for decreasing or interrupting the flow from one extruder and simultaneously increasing the flow from one other extruder and after a predetermined time interval reversing this operation to produce a tube having repeating

different characteristics which tube may thereafter be cut into sections including portions containing each characteristic. In one embodiment a composite extrusion is employed with a control for increasing the flow of one plastic to one of the dies and for simultaneously and proportionally decreasing the flow to the other of the dies to produce a tube having gradually changing physical properties along its axial length while maintaining a uniform cross-section tube.

3,752,618

APPARATUS FOR CONTINUOUS SAUSAGE MANUFACTURE

Stephen T. Moreland, 789 Anita Ave., Grosse Pointe Woods, Mich.

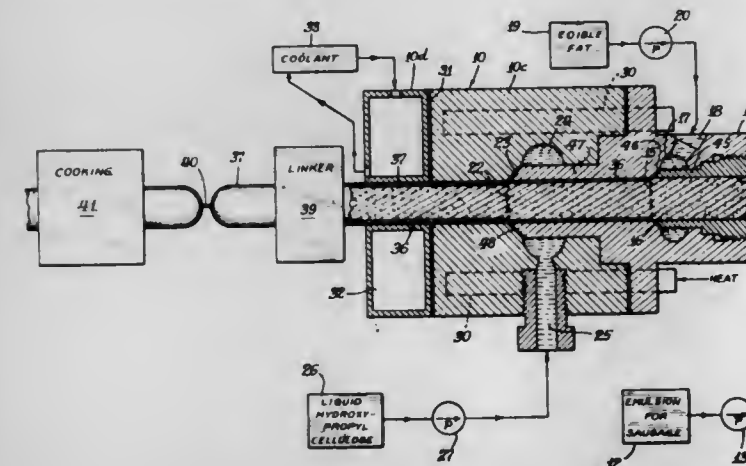
Division of Ser. No. 46,975, June 17, 1970, Pat. No. 3,698,916.

This application Mar. 31, 1972, Ser. No. 239,915

Int. Cl. A22c 11/02

U.S. Cl. 425-133

7 Claims



A sausage emulsion is pumped through a passageway. At a first location along the passageway a water barrier material is introduced about the periphery of the emulsion. At a point downstream from that location a heat liquified casing forming material is introduced about the water barrier and solidified by cooling. Thereafter, the filled casing is handled conventionally.

3,752,619

PRODUCTION OF A CONTINUOUS MOLDED PLASTIC STRIP

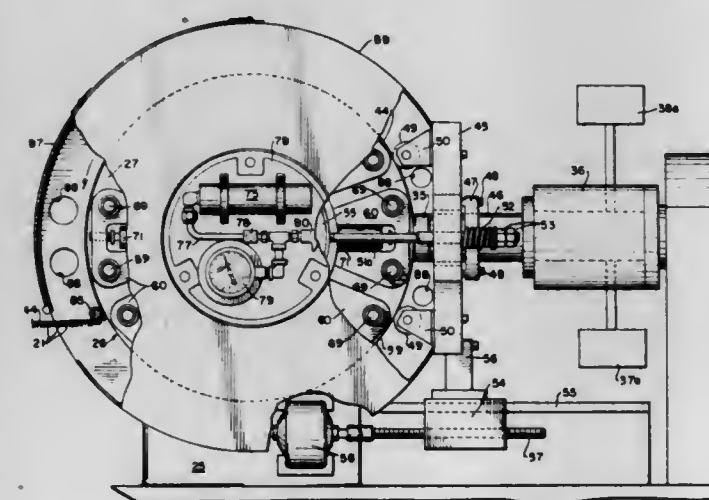
Marvin Menzin, Waltham; John H. Blanz, Concord; Andrew C. Harvey, Boston, and Sang Soon Rhee, Burlington, all of Mass., assignors to American Velcro Inc., New York, N.Y.

Division of Ser. No. 824,597, May 14, 1969, abandoned. This application Nov. 11, 1971, Ser. No. 198,002

Int. Cl. B29f 1/14

U.S. Cl. 425-134

21 Claims



A continuous molded plastic strip is produced using mold plates which have cavities therein for molding upstanding

members or pile-like formations when moldable plastic material is applied under suitable pressure. Thereafter, plastic material is applied to the exposed ends of the pile-like formations while still in the cavities and a strip constituting a base member is formed having the pile-like protuberances integrally attached.

In addition to the apparatus a special method is proposed for producing the upstanding formations or members integrally attached to the base member.

Certain related products are also proposed including a special form of hook member.

3,752,620

APPARATUS FOR PRESSING OBJECTS OUT OF THERMOPLASTIC MATERIAL, AND PARTICULARLY PHONOGRAPHIC DISKS

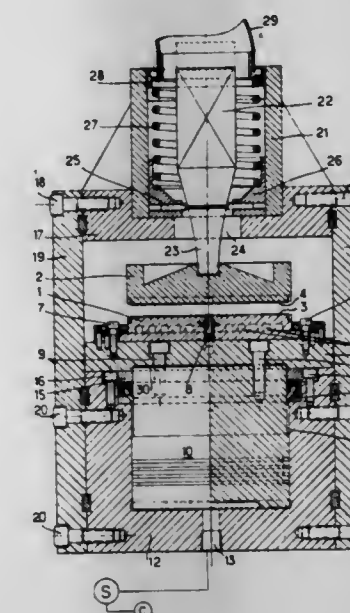
Robert A. Renoux, Les Cles de la Foret, 80, avenue, Lefebvre Poissy, France

Filed Oct. 18, 1971, Ser. No. 189,965

Int. Cl. B29c 3/06; B06b 3/00

U.S. Cl. 425-174.2

8 Claims



A press frame supports upper and lower plates having opposed surfaces with a pattern on each. The upper plate is secured to an ultrasonic vibration means, upward movement of which is resisted by resiliently flexible means. The lower plate is connected to a pressure fluid actuated device for urging, at a low or a high pressure, the lower plate against the upper plate when a plastic material is therebetween, thereby forming an impression in said material.

3,752,621

REMOVEABLE BLOW NEEDLE MECHANISM

Richard K. Shelby, Hinsdale, Ill., assignor to Monsanto Company, St. Louis, Mo.

Filed May 6, 1971, Ser. No. 140,665

Int. Cl. B29d 23/03

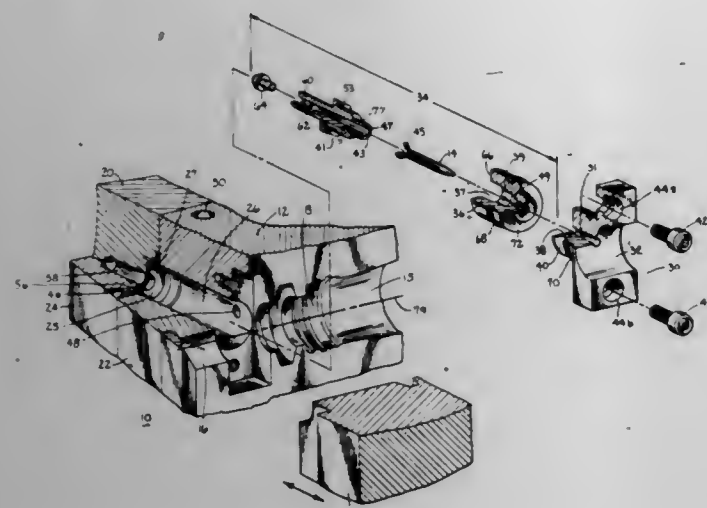
U.S. Cl. 425-192

8 Claims

Means are provided which permit rapidly extracting the needle assembly of a partible blow mold toward the mold axis through the bore of the mold section in which it is operable. These means include a stop member positioned in the bore for delimiting the advancing stroke of the needle assembly, such



member being detachably fastened through the face of the mold section. Improved means for automatically admitting



pressurized fluid to the hollow interior of the blow needle after penetration of the parison by the needle may also be provided.

3,752,622

# DEVICE FOR MOULDING SINTERING BLANKS

Sergio Viadana, Cremona, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivera, Torino, Italy

Filed Sept. 21, 1971, Ser. No. 182,352

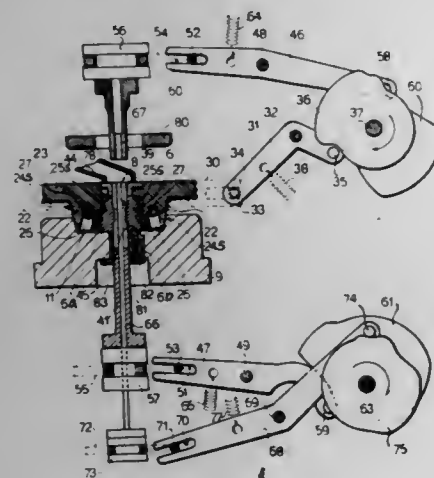
Claims priority, application Italy, Sept. 22, 1970, 70185

A/70

Int. Cl. B29c 7/00, 3/00

U.S. Cl. 425—78

10 Claims



A device for moulding blanks with undercut parts to be sintered by compaction of powdered material. A two part die forms the chamber in which the blank is moulded. A pair of opposed punches pass through the die to compact the powdered material. The two parts of the die are held firmly in contact with one another during the stroke of the punches by an annular collar with inclined surface engaging oppositely inclined surfaces on the die. After the material has been compacted, the two parts of the die are separated in such a direction as not to interfere with the undercut portions of the blanks. After the die has opened, one of the punches retracts while the other continues its stroke to move the blank from between the two parts of the die.

## 3,752,623 APPARATUS FOR PRODUCTION OF POLYAMIDE MOLDINGS

Richard Sinn, Ludwigshafen, and Rolf Schellenberg, Mannheim, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

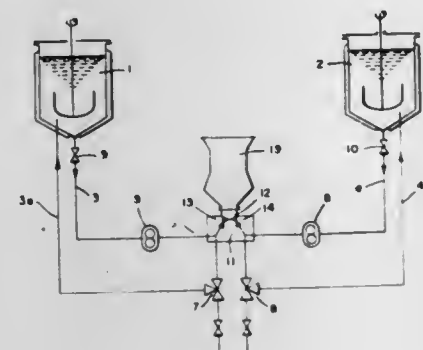
Continuation of Ser. No. 803,299, Feb. 28, 1969, abandoned.

This application July 14, 1971, Ser. No. 163,406

Int. Cl. B29b 1/04, 5/02; C08g 20/12

U.S. Cl. 425—206

6 Claims



An apparatus for the production of moldings by activated anionic polymerization of lactams in which a lactam melt containing a catalyst and a lactam melt containing an activator are separately preheated to polymerization temperature in two melt reservoirs and supplied to a control unit including a pair of valves and a vertically oriented mixing chamber, mixed therein, and forced upwardly into the mold to be filled wherein valve seats for the respective valves are in the wall of said mixing chamber.

3,752,624

## APPARATUS FOR THE PRODUCTION OF SOLIDIFIED TRIOXAN

Pierre Decitre, Bethune, France, assignor to Houilleres du Bassin du Nord & du Pas-de-Calais, Nord, France

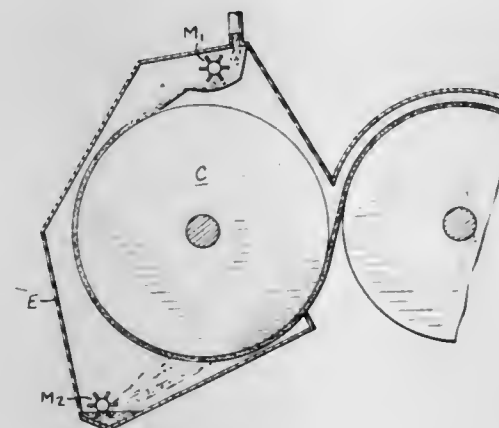
Division of Ser. No. 675,835, Oct. 17, 1967, Pat. No.

3,590,110. This application May 14, 1971, Ser. No. 143,647

Int. Cl. B29d 7/00

U.S. Cl. 425—224

6 Claims



Apparatus for the preparation of solidified trioxan includes a cooled rotatable polished metal cylinder. A jacket partially surrounds the curved surface of the cylinder; and the jacket is preferably double-walled for circulating a heating medium therethrough. An application is positioned to apply liquid trioxan to the surface of the cylinder where it solidifies and is subsequently removed therefrom.

3,752,625

## ROTARY PARAXIAL-CAVITY RECIPROCABLE-CORE INJECTION MOLD/INJECTION BLOW MOLD SYSTEM

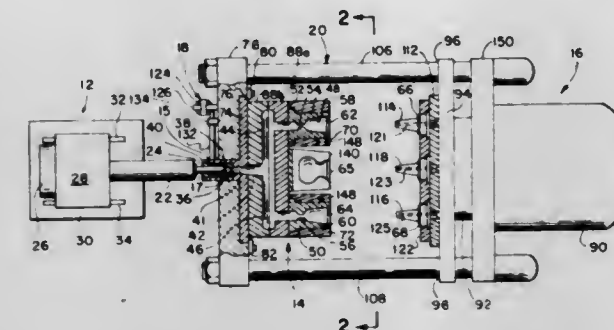
Dick T. Van Manen, 25 Holiday Harbour, Canandaigua, N.Y.

Continuation-in-part of Ser. No. 153,262, June 15, 1971. This application Aug. 2, 1971, Ser. No. 168,284

Int. Cl. B29d 23/03

U.S. Cl. 425—249

10 Claims



An injection mold/blow mold system having a rotative cavity-system and a reciprocating core system; the cavity-system includes a rotary manifold fed through an axial sprue in one face of the manifold, the sprue connects through sub-sprues with injection molding cavities paraxially positioned in the opposite face of the manifold. Injection blow molding cavities are positioned between the injection molding cavities, all cavities being equidistant from the axis of the manifold; the core-system reciprocates parallel with the axis of rotation of the manifold to and from the cavity bearing face.

3,752,626

## VIBRATORY CORE FOR CONCRETE PIPE MAKING MACHINE

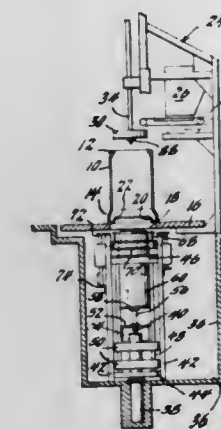
Ferinand A. Trautner, Newton Upper Falls, Mass., and Le Roy E. Kent, Merville, Iowa, assignors to Viropac, Inc., Sioux City, Iowa

Continuation-in-part of Ser. No. 638,010, May 12, 1967, abandoned. This application Oct. 17, 1969, Ser. No. 867,344

Int. Cl. B28b 21/28

U.S. Cl. 425—262

24 Claims



A novel vibrating core apparatus for use with a concrete pipe making machine. The novel apparatus includes a core, vertically movable into and out of a pipe form, a series of vibrators attached along the interior side wall of the core, an upwardly movable system operative by fluid pressure for raising and lowering the core, and an interlocking connection between a standard packerhead, which distributes cementitious material about the interior of the pipe form, and the upper portion of the core. The packerhead is designed to rotate while forming the pipe; the core does not rotate and the connecting means between the two is easily attached and disengaged from the packerhead.

3,752,627

## DEVICE FOR MANUFACTURING A HOLLOW ARTICLE OF PLASTIC MATERIAL

Jacques Bourgeois, Lyon, and Hubert Blanchard, Le Havre, both of France, assignors to Sidel Societe Anonyme, Le Havre, France

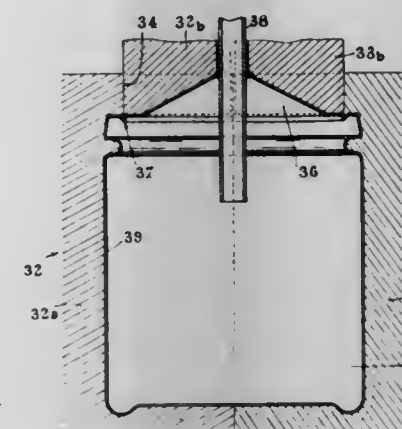
Filed Oct. 22, 1970, Ser. No. 83,002

Claims priority, application France, June 18, 1969, 6920327; Oct. 24, 1969, 6936695

Int. Cl. B29d 23/03

U.S. Cl. 425—298

3 Claims



The invention relates to manufacturing a hollow article of plastic material having at least one orifice, in a mould having an inner cavity. A hollow closed body of plastic material in a deformable state is first formed in the inner mould cavity. Then, compressed air is injected into the hollow closed body, while forming in the walls of said body a closed line of lesser resistance corresponding to the orifice lip of the article to be manufactured. Finally, that portion of the inner mould cavity which corresponds to the article orifice is temporarily increased in volume, whereby the wall of the hollow body is cut along the line of lesser resistance by the compressed air acting on that portion of the body wall which lies within the closed line of lesser resistance.

3,752,628

## APPARATUS FOR MOLDING PLASTIC CONTAINERS

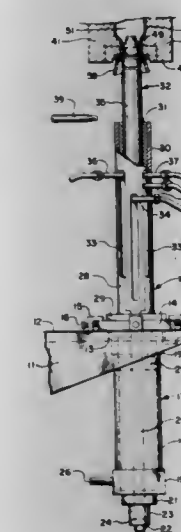
Robert X. Hafele, and Elmer L. Robertson, both of Overland Park, Kans., assignors to Ethyl Development Corporation, Kansas City, Mo.

Filed Apr. 5, 1971, Ser. No. 130,911

Int. Cl. B29d 23/03

U.S. Cl. 425—302 B

9 Claims



An apparatus for blow molding hollow, thermoplastic containers having cylindrical neck openings. A blow pin assembly is provided which includes a cylindrical, retractable blow pin having an annular shoulder with a sharp edge adjacent its outer end which engages an anvil surface carried by the blow



mold to sever the neck waste from the plastic container. An annular groove is provided adjacent the cutting edge of the blow pin, which groove is filled by the heat-softened plastic material and, after cooling, provides a firm connection between the blow pin and the neck waste to assure that the neck waste material is severed and carried away from the plastic article upon retraction of the blow pin.

3,752,629

## MOLD TRIM DEVICE

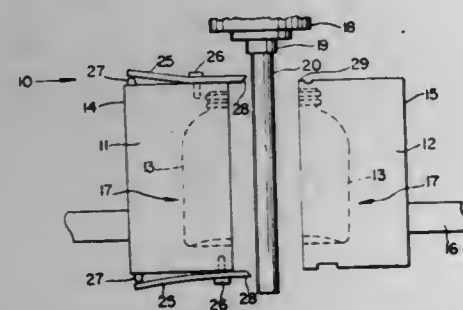
John Henry Gordon, Phoenixville, Pa., assignor to Beloit Corporation, Beloit, Wis.

Filed Feb. 29, 1972, Ser. No. 230,442

Int. Cl. B29d 23/03

U.S. Cl. 425—305 B

6 Claims



A parison cutting device mounted on a mold. A knife blade mounted on one mold half extends out beyond the face of that mold half and reacts resiliently against a surface on the other mold half to cut by a shearing action a parison extending into the mold between the knife blade and the reaction surface as the mold halves close against each other to form the single mold cavity. The blade angle may be selected to provide either a sealed or an opened parison.

3,752,630

## APPARATUS FOR CONTINUOUS PRODUCTION OF THERMOPLASTIC SYNTHETIC RESIN TUBE WITH HEAT-SHRINKING PROPERTY

Haruo Takagi, 9, Saiwaicho-dori, 5-chome, Naniwa-ku, Osaka, and Yasuo Yamagishi, 660 Shenke-cho, Sakai, both of Japan

Continuation of Ser. No. 840,942, July 11, 1969, abandoned.

This application Jan. 5, 1972, Ser. No. 215,687

Int. Cl. B29d 23/04

U.S. Cl. 425—325

1 Claim



This invention provides the improved method and apparatus of producing continuously thermoplastic synthetic resin tube with a heat-shrinking property, whereby a fresh thermoplastic synthetic resin tube extruded from an extruder is expanded by fitting same over a conical-topped cylindrical member of larger diameter while in a half-solidified state and wound onto a bobbin through take-up rolls after cooled down with suitable cooling devices. This type of tube is increasingly used as a film-covering or sealing material for dry cells, bamboo rods, bottle-caps, etc. because of it shrinking to the original diameter by heating.

3,752,631

## FOAM SCRAP RECOVERY AND APPARATUS

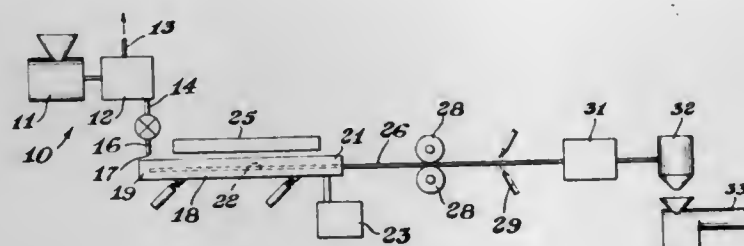
John M. Corbett, and James L. Fookes, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 22, 1971, Ser. No. 126,486

Int. Cl. B29b 1/00

U.S. Cl. 425—324

5 Claims



Thermoplastic foam scrap is recovered as extrudable granules by grinding the scrap, passing it over a vibrating cooled trough, applying radiant heat to the scrap, cooling and grinding to provide an extrudable pellet or particle.

3,752,632

## PRESS FOR FORMING GRANULAR MATERIAL

Theodorus Jacobus Heesen, Bostel, Netherlands, assignor to Simon-Heesen N.V., Bostel, Netherlands

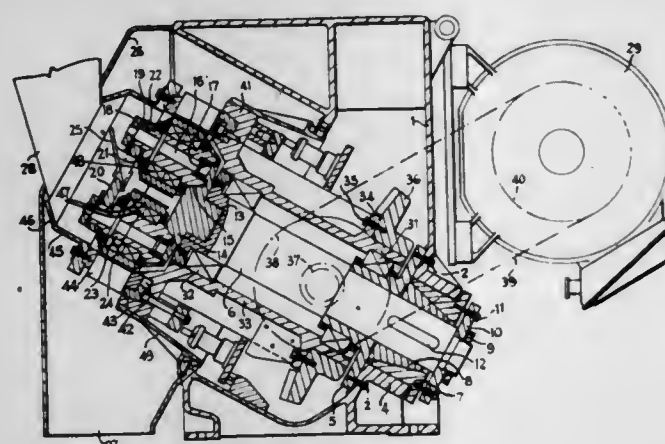
Filed Oct. 14, 1971, Ser. No. 189,241

Claims priority, application Netherlands, Oct. 30, 1970, 7015940

Int. Cl. B29f 3/012

U.S. Cl. 425—331

5 Claims



A press for the preparation of granular cattle feed or similar material and of the kind comprising an annular radially perforated die and a drum mounted co-axially with the die and provided with a central feeding port, the die and drum being mounted for rotation around a stationary support fitted with a number of pressure rollers, each freely rotatable on a stationary shaft and in contact with the interior of the die, characterized in that the angle of the axis of rotation of the die and the drum relative to a horizontal plane is approximately between 20° and 40°.

3,752,633

## SEAL MANUFACTURING MACHINE

George Lundberg, Pompton Lakes, N.J., assignor to E. J. Brooks Company Incorporated, Newark, N.J.

Filed July 7, 1971, Ser. No. 160,418

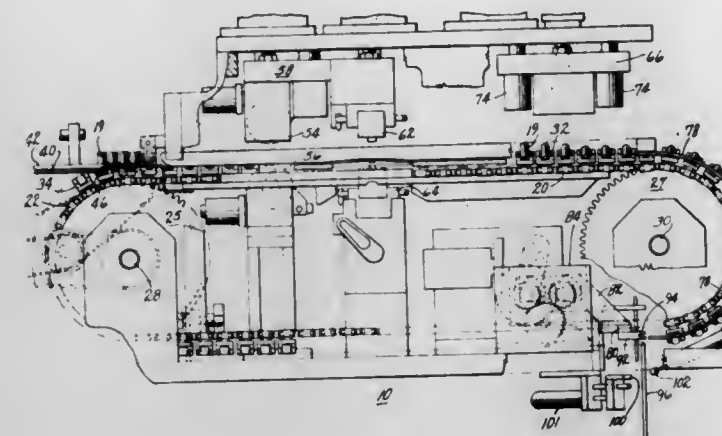
Int. Cl. B29c 3/04

U.S. Cl. 425—343

5 Claims

A machine for performing secondary operations on previously molded plastic seal blanks. Conveyor means is provided for carrying the blanks in side by side aligned relation through

a number of work stations, one of which provides heated dies for closing a socket cup to non-removably receive a stud pro-



jecting from the other end of the seal. Means is provided at the end of the conveyor for receiving completed seals in groups of a predetermined number for packaging.

3,752,635

## APPARATUS FOR MAKING PLASTIC FILM

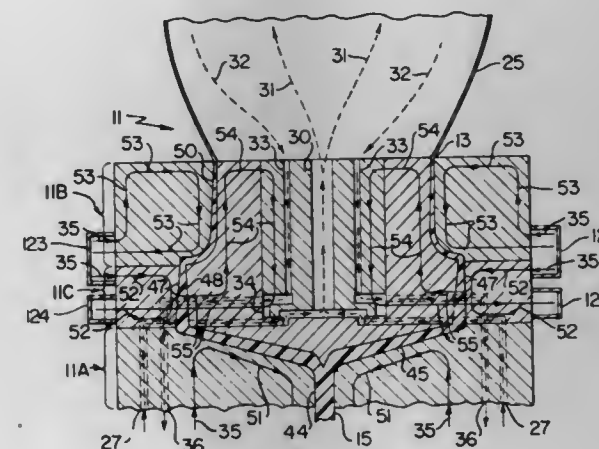
Donald R. Hinrichs, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Mar. 22, 1971, Ser. No. 126,831

Int. Cl. B29c 1/00

U.S. Cl. 425—461

17 Claims



Plastic film is made using a heat transfer liquid circulated through the film extrusion die to control (by either heating or cooling, as required) the temperature of the plastic melt flowing through such die. A plastic bubble emerging at the outlet of the die is inflated and ventilated by continuously circulated gas which is controlled in temperature as it enters and leaves the bubble so that it does not adversely affect the temperature of the melt in the die.

3,752,634

## BURNER

Tadami Imatake, Takasago; Hideo Nishikawa, Akashi; Akihito Kawaguchi, Kako, and Koichi Washimi, Iwaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Kuraha Chemical Industry Company Limited

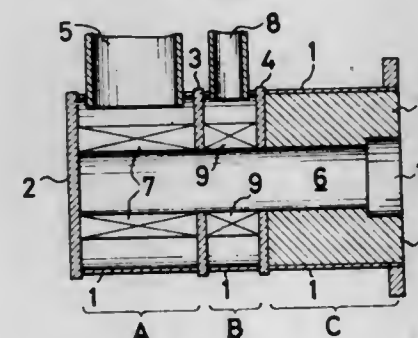
Filed Aug. 16, 1971, Ser. No. 172,066

Claims priority, application Japan, Aug. 18, 1970, 45/71899; Aug. 18, 1970, 45/81764

Int. Cl. F23d 15/02

U.S. Cl. 431—353

5 Claims



The present invention relates to a burner, in which burning air given the power of rotation and a fuel given the power of rotation are mixed and the resulting mixture is burnt, characterized in that a step part for mixing air and fuel and igniting the mixture is formed of a ceramic material to improve the effect of flame maintenance. In addition with the above mentioned description, according to the present invention, a burner, which is equipped with a straight air nozzle for supplying a linear air flow along the axial center of the burner and in which the ignition face is stabilized is provided.

3,752,636

## PHOTOFLASH LAMP

Heinz Warninck, Aumuhle bei Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

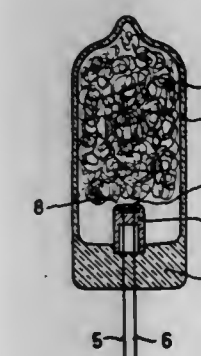
Filed Nov. 10, 1971, Ser. No. 197,395

Claims priority, application Germany, Nov. 27, 1970, P 20 58 441.2

Int. Cl. F21k 5/02

U.S. Cl. 431—95

1 Claim



A photoflash lamp having an envelope includes a finely divided actinically combustible material and two current conducting wires which support an ignition mass within the envelope. The mass, which is ignitable by passing a current through it, consists of an intimate mixture of a composition which burns upon heating and a powder of a satisfactorily conducting metal. The mass has a resistance in the order of 10<sup>4</sup>Ω. In one form of the invention, the mass includes copper, silver or graphite as a satisfactorily conducting material.



3,752,637

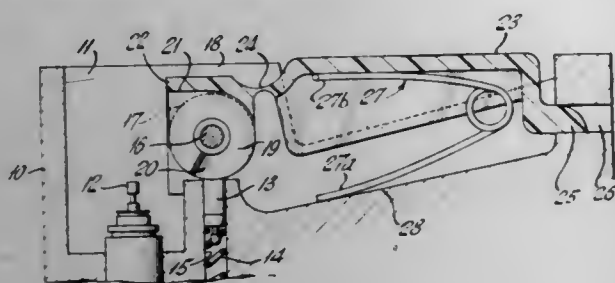
**UNITARY FINGERPIECE AND IGNITION ACTUATOR**  
David Norman, Sutton, and Keith Soane, Mickleham, both of England, assignors to Ronson Corporation, Woodbridge, N.J.

Continuation of Ser. No. 872,003, Oct. 29, 1969, abandoned.  
This application Sept. 13, 1971, Ser. No. 180,071

Int. Cl. F23q 1/02

U.S. Cl. 431—274

7 Claims



A spark producing mechanism in which a hinge connects a fingerpiece and a sparkwheel actuator or it can connect a fingerpiece and a conventional snuffer cap such that an inexpensive, one piece action is formed to ignite fuel emanating from the burner valve of a cigarette lighter or the like.

## ERRATUM

For Class 431—353 see:  
Patent No. 3,752,634

3,752,638

**BOTTOM OF A SHAFT FURNACE, A SHAFT FURNACE PROVIDED WITH SUCH A BOTTOM AND A METHOD FOR COOLING SUCH A BOTTOM**

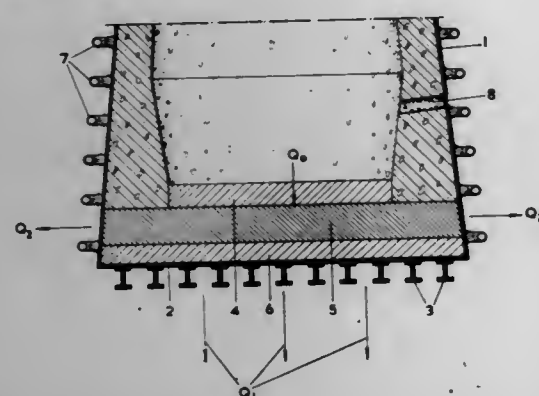
Jacobus Van Laar, Santpoort; Bastiaan Martinus Hoogenboom, Heemskerk, both of Netherlands, and Karl Wilhelm Friedrich Etzel, Frankfurt am Main, Germany, assignors to Koninklijke Nederlandsche Hoogovens En, Netherlands  
Filed Dec. 17, 1971, Ser. No. 209,089

Claims priority, application Netherlands, Dec. 18, 1970, 7018539

Int. Cl. F27b 1/24

U.S. Cl. 432—4

15 Claims



A shaft furnace, e. g., blast furnace for iron manufacture, having liquid cooling of its periphery and air cooling of its bottom which contains a horizontal layer of refractory material with a heat conduction coefficient  $\lambda$  (cal/m/h/°C) which under operating conditions is higher than 20, includes the improvement that said layer is enclosed between upper and lower layers of refractory of much lower heat conducting coefficient  $\lambda$ . With the bottom surface cooled to below about 150° C, the thicknesses of said upper and lower layers, depending on their said coefficients, are preferably such that only 20 to 60 percent, more preferably 25 to 40 percent, of the heat discharge through the intermediate layer is transmitted to the lower layer; the periphery of the bottom being kept at about 50° C. The intermediate layer may consist of graphite with a  $\lambda$ -value of 60 to 100; the lower, of refractory e. g., carbon bricks, of a

$\lambda$ -value of 2 to 5; and the upper layer of refractory, e. g., semi-graphite, may have a  $\lambda$ -value of 20 to 30.

In particular embodiments the three layers, from top to bottom may have  $\lambda$ -values of about 25, 80 and 4, and thicknesses about 60, 120 and 60 cm, and the upper layer may be shielded by a top layer, e. g., of magnesite of a thickness of about 35 cm.

3,752,639

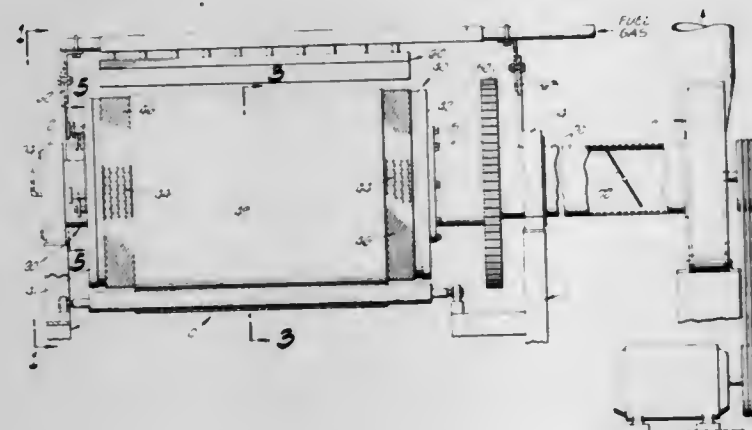
**WEB TREATING APPARATUS**

George F. Thagard, Jr., 10024 Pangbarn, Downey, Calif.  
Filed June 22, 1971, Ser. No. 155,506

Int. Cl. F27b 9/28

U.S. Cl. 432—59

12 Claims



Web treating apparatus comprises an elongated tubular core fixedly mounted between supports, the core being closed at one end and having longitudinally extending perforations, the interior of the core constituting a vacuum manifold. A drum of circular cross-section and having a perforated circumferential wall is rotatably mounted coaxially with the core. The drum is adapted to receive a continuous web wrapped about a predetermined arcuate segment of its circumferential wall. High intensity heat generators are spaced radially outwardly of the drum and are disposed above at least a substantial portion of the predetermined arcuate segment. Vacuum exhaust means draw heated air through the web and the drum and into the vacuum manifold, and means disposed within the drum direct the flow of heated air exclusively and substantially uniformly through the portion of the web which is wrapped about the predetermined arcuate segment of the circumferential wall of the drum.

3,752,640

**BAKING BATTERY**

Frank Schneider, 309 Wellington St., Sault Sainte Marie, Ontario, Canada

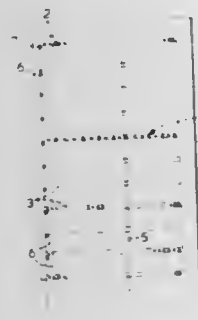
Filed July 9, 1971, Ser. No. 161,065

Claims priority, application Canada, July 9, 1970, 087,771

Int. Cl. A21b 3/00

U.S. Cl. 432—56

2 Claims



The invention relates to a battery of substantially closed and insulated baking ovens each having a normally closed hinged

door which is hinged inwardly when a wheeled rack is located adjacent the battery and the baking trays on the rack are pushed into engagement with the doors and into the ovens.

substantially cylindrical steel shell. The furnace chamber is spaced from the bottom of the shell and supported upon insulation material. The furnace chamber wall is spaced from the

3,752,641

**FURNACE FOR BLOW MOULDING METHOD AND APPARATUS**

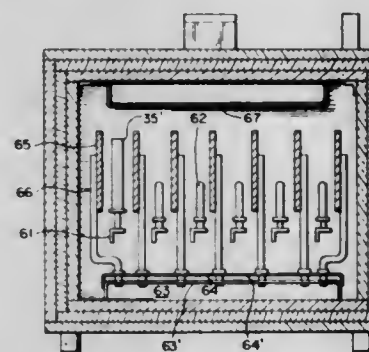
Lawrence A. Moore, King of Prussia, Pa., assignor to Beloit Corporation, Beloit, Wis.

Division of Ser. No. 3,003, Jan. 15, 1970, abandoned. This application July 28, 1972, Ser. No. 276,056

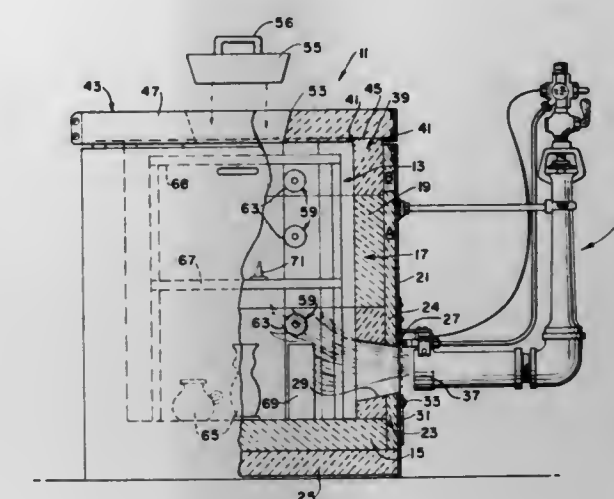
Int. Cl. F27b 9/24

U.S. Cl. 432—57

13 Claims



An improved oven for heating elongated articles such as parisons just prior to blow molding. Air is heated externally of the oven and blown uniformly therethrough as the elongated articles travel continuously back and forth through the oven.



steel shell, the space being filled by a refractory castable for securing the furnace chamber and providing compensation for expansion and contraction due to rapid heating and cooling.

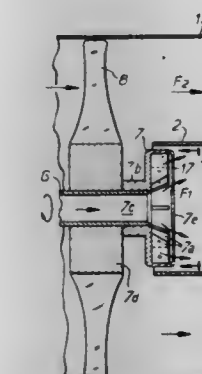
3,752,644

**HOT AIR GENERATOR USING A GASEOUS FUEL**  
Louis Henri Pierre Arnal, La Celle-Saint-Cloud, France, assignor to Societe Anonyme Sefacal, Paris, France  
Filed Dec. 23, 1971, Ser. No. 211,391

Int. Cl. F231 5/02

U.S. Cl. 432—222

11 Claims



3,752,642

**APPARATUS FOR BRAZING**

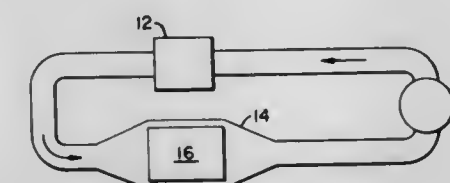
James R. Early, Hawthorne; William M. Eyring, Redondo Beach; Donald W. McGrath, and Toshio Takenaka, both of Torrance, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 805,502, March 10, 1969, Pat. No. 3,685,139. This application Nov. 15, 1971, Ser. No. 198,906

Int. Cl. F27b 3/22

U.S. Cl. 432—66

22 Claims



The brazing of materials by means of a flow of heated gas.

3,752,643

**PORTABLE GAS FIRED ART POTTERY KILN AND METHOD**

Worden Robinson, 715 18th St., Washington, D.C.  
Filed Dec. 27, 1971, Ser. No. 212,445

Int. Cl. F27b 3/02

U.S. Cl. 432—120

7 Claims

A gas fired pottery kiln having a furnace chamber defined by a floor and an upwardly extending wall suspended within a

A hot air generator using a gaseous fuel. The generator comprising a tubular body carrying air to be heated, a mixing tube carrying gaseous fuel and primary air to a burner located at the downstream end of the mixing tube. Radially fins or blades are disposed in the burner constituting a centrifugal fan. A combustion chamber is generally coaxially arranged in the tubular body generally downstream of the centrifugal fan means. The downstream wall of the burner formed by a heat grid permitting the passage of the fuel mixture for forming a flame on its surface.



# CHEMICAL

3,752,645

## WATER SWOLLEN CELLULOSE AND BLENDS DYED WITH INSOLUBLE, NON-VATTABLE ANTHRAQUINONE DYES IN A GLYCOL ETHER SOLUTION

Thomas Michael McGuire, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 30, 1971, Ser. No. 167,830

Int. Cl. C09b 5/62; D06p 3/82

U.S. Cl. 8—21 C 10 Claims

Water swellable cellulosic fibers, for example, cotton, or blends or mixtures thereof with synthetic fibers, for example, polyester fibers, uniformly dyed to blue to green shades with essentially water insoluble, non-vattable, 1-aroylamino-5,8-di(N-substituted)aminoanthraquinone dyes, for example, 1-benzoylamino-5,8-bis(p-toluidino)anthraquinone, said dyed fibers being fast to washing, drycleaning and sublimation and exhibiting a reflectance color value (S') after scour of at least about 2.

3,752,646

## WATER SWOLLEN CELLULOSE AND BLENDS DYED WITH INSOLUBLE, NON-VATTABLE ANTHRAQUINONE DYED IN A GLYCOL ETHER SOLUTION

John Blackwell, Kennett Square, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 30, 1971, Ser. No. 167,831

Int. Cl. C09b 5/62; D06p 3/82

U.S. Cl. 8—21 C 7 Claims

Water swellable cellulosic fibers, for example, cotton, or blends or mixtures thereof with synthetic fibers, for example, polyester fibers, uniformly dyed to violet to green shades with essentially water insoluble, non-vattable, 1-aroylamino-4-arylaminoanthraquinone dyes, for example, 1-(p-nitrobenzoyl)amino-4-(p-n-butylanilino)anthraquinone, said dyed fibers having excellent fastness to washing, drycleaning, crocking and sublimation and exhibiting a reflectance color value (S') after scour of at least about 2.

3,752,647

## WATER SWOLLEN CELLULOSE AND BLENDS DYED WITH INSOLUBLE, NON-VATTABLE ANTHRAQUINONE DYES IN A GLYCOL ETHER SOLUTION

Robert George Mentzer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 30, 1971, Ser. No. 167,829

Int. Cl. C09b 5/62; D06p 3/82

U.S. Cl. 8—21 C 9 Claims

Water swellable cellulosic fibers, for example, cotton, or blends or mixtures thereof with synthetic fibers, for example, polyester fibers, uniformly dyed to blue shades with essentially water insoluble N,N',N''-substituted-1,4,5-(or 8-)-triaminoanthraquinone dyes, for example, 1-benzamido-4,5-bis(p-toluidino)anthraquinone, said dyed fibers being fast to light, washing, drycleaning, crocking and sublimation.

3,752,648

## PROCESS FOR IMPROVING ACRYLIC FIBER ARTICLES

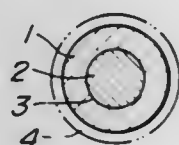
Yoshihisa Shichijo, Tokyo, Hiroyuki Yamaguchi, Kyoto, Katsuyoshi Tsuji, Osaka, and Kenji Maki, Kyoto, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of abandoned application Ser. No. 665,838, Sept. 6, 1967. This application Nov. 25, 1970, Ser. No. 92,901

Claims priority, application Japan, Sept. 10, 1966, 41/59,462; May 17, 1967, 42/30,884

Int. Cl. D06m 3/26

U.S. Cl. 8—130.1 7 Claims



An acrylic fiber article is treated with a solvent for said fiber in a manner such that the swelling and dissolving actions of said solvent act on a portion of the cross section of the individual fibers and then treating the resultant article with a treating agent consisting of said solvent, of which the concentration, temperature and treating time have been adjusted so as to dissolve or disperse only those layers of the fibers on which the solvent has acted to remove said layers therefrom.

3,752,649

## DYE LEVELLING ON AND OLIGOMER REMOVAL FROM POLYESTER FIBERS AND CELLULOSE OR POLYAMIDE BLENDS WITH FATTY ACID DIESTER OF BUTANEDIOL-ETHYLENE OXIDE CONDENSATE

Otto Smerz, Kelkheim, Taunus, Gerhard Weckler, Sulzbach, Taunus, Alfred Scharf, Frankfurt am Main, and Werner Linke, Sulzbach, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

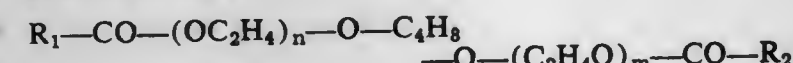
No Drawing. Filed Nov. 17, 1971, Ser. No. 199,748

Claims priority, application Germany, Nov. 18, 1970, P 20 56 694.3

Int. Cl. D06p 5/04

U.S. Cl. 8—169 9 Claims

Process for the manufacture of level dyeings on fibrous materials of linear polyesters and mixtures thereof with cellulose- or nitrogen-containing fibers, wherein the dyeings are carried out in the presence of compounds of the general formula



in which  $R_1-CO-$  and  $R_2-CO-$  are radicals of straight chain or branched alkane- or alkene-monocarboxylic acids having 12 to 22 carbon atoms, and  $n$  and  $m$  each represent numbers from 4 to 12, or dyeings produced without using this auxiliary agent are aftertreated therewith and/or this auxiliary agent is added after the dyeing in the following reducing cleaning process.

AUGUST 14, 1973

CHEMICAL

631

3,752,650

## DURABLE PRESS TREATMENT OF CELLULOSIC TEXTILES EMPLOYING A POLY-HYDROXY MONOCARBOXYLIC ACID CATALYST

Kurt Joss, Bergli, Weesen, St. Gall, and Ernst Ruedi, Wartegg, Ennenda, Glarus, Switzerland, assignors to Burlington Industries, Inc., Greensboro, N.C.

No Drawing. Continuation of abandoned application Ser. No. 613,435, Feb. 2, 1967. This application Oct. 15, 1970, Ser. No. 81,160

Claims priority, application Switzerland, Feb. 7, 1966, 1,655/66; June 1, 1966, 7,981/66

Int. Cl. D06m 13/12, 13/34

U.S. Cl. 8—183 6 Claims

A process for providing a durable press finish on a cellulosic textile using, as the catalyst, a mono- or poly-hydroxymonocarboxylic acid which has at least one hydroxy group in the  $\gamma$ - or  $\delta$ -position and forms a nonvolatile lactone upon removal of water, a dicarboxylic acid which forms an inner anhydride or an  $\alpha$ -hydroxy monocarboxylic acid which forms a lactide on removal of water. This makes it possible to avoid undesired premature curing of the textile since the catalyst is converted to an essentially inert form on drying, the catalyst being reformed when curing is desired.

3,752,651

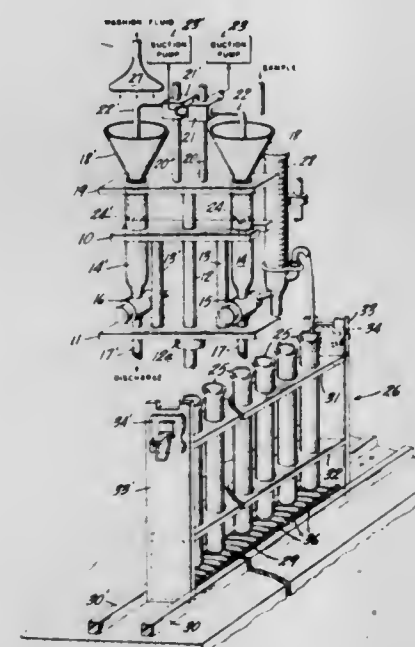
## METHOD AND APPARATUS FOR EXTRACTION OF SOLVENT EXTRACTS

Ian E. Bush, Oyster Bay, N.Y., assignor to Cybertek, Inc., New York, N.Y.

Filed Apr. 15, 1971, Ser. No. 134,314

Int. Cl. B01d 11/00; G01n 1/14

U.S. Cl. 23—230 R 11 Claims



Apparatus and method for the extraction of solvent extracts are disclosed. First, a plurality of test tubes mounted on a movable rack are filled sequentially with a prespecified volume of liquid sample from a two-stage sample dispenser. One stage of the dispenser dispenses a sample while the other stage automatically and concurrently is cleaned; then the stages are reversed for the next specimen and the rack is moved on incremental distance to place an empty test tube under the cleaned dispenser. A prespecified volume of extracting solvent is then added to each sample by a second dispenser and the tubes are sealed by a multi-stopper apparatus. After agitation and settling, the solvent layers in each test tube are removed simultaneously by a ganged suction apparatus. For final reduction and extraction, the rack is placed in a ganged

multiple-rotary evaporator apparatus wherein the sample is heated, rotated, and evaporated to form a residue. In another embodiment, wherein solid samples or drying agents are utilized, the sample is filtered prior to final reduction by a ganged multifilter apparatus.

3,752,652

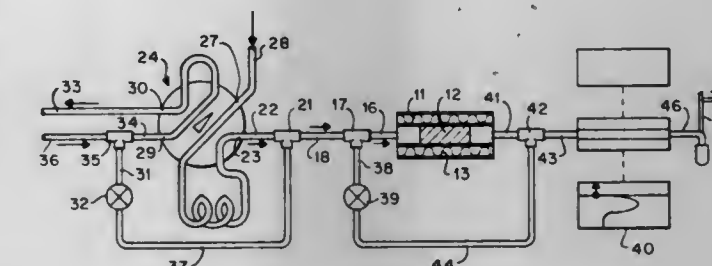
## METHOD AND APPARATUS FOR MEASUREMENT OF MINUTE QUANTITIES OF OXYGEN

Walter Ferdinand de Vleeschauwer, Sluiskil, Netherlands, assignor to S.A. Texaco Belgium N.V.

Filed Feb. 11, 1972, Ser. No. 225,486

Int. Cl. G01n 27/16, 27/18

U.S. Cl. 23—232 E 10 Claims



Method or system for measuring minute quantities of oxygen in a mixture with inert gas. A sample is passed over a reduced hydrogenation catalyst to react the oxygen with adsorbed hydrogen. Then hydrogen is passed over the catalyst while measuring the quantity of hydrogen used in reducing and saturating the catalyst once more. The quantity of oxygen in the sample is then determined by the stoichiometric relation between hydrogen and oxygen.

3,752,653

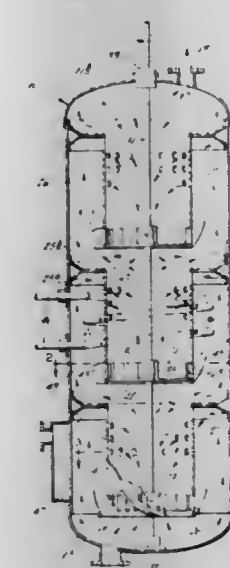
## CONTINUOUS-FLOW AGITATED REACTOR

Arthur Phineas Weber, New York, N.Y., assignor to The Bethlehem Corporation, Bethlehem, Pa.

Filed Nov. 12, 1971, Ser. No. 198,301

Int. Cl. B01j 1/00; C08f 1/98

U.S. Cl. 23—283 9 Claims



A hollow elongated shell having an inlet and an outlet at opposite ends has a series of agitating assemblies mounted at axially-spaced locations in the shell. Each agitating assembly includes a hollow draft tube having



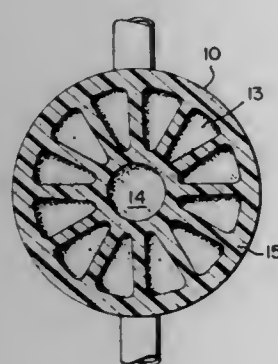
inlet port means at one end communicating with the corresponding end of an annular flow passage between the draft tube and shell and outlet port means at the opposite end communicating with the other end of the passage. An impeller is mounted for rotation in the draft tube adjacent the outlet port means to flow the process ingredients axially through the draft tube and outwardly through the outlet ports where the ingredients are mixed with ingredients flowing into the other end of the passage. Baffle means is associated with the outlet ports to redirect the flow of the reacted ingredients after they exit the outlet ports and to break up any swirl caused by the impeller. The impeller and baffle means cooperate to provide hydraulic and mechanical shear forces on the ingredients to improve reaction in the apparatus.

3,752,654

# ABSORPTION UNIT FOR THE ABSORPTION OF CARBON DIOXIDE

Dag O. A. Johannisson and Ake G. R. Wictorin, Lidingo, Sweden, assignors to Aga Aktiebolag, Lidingo, Sweden  
Filed Feb. 10, 1972, Ser. No. 225,035  
Claims priority, application Sweden, Feb. 15, 1971, 1,859/71

Int. Cl. B01d 53/04; B01j 1/14; A62b 7/10  
U.S. Cl. 23—284 6 Claims



In an absorption unit for the absorption of carbon dioxide, especially for a breathing apparatus having a substantially closed gas system the space inside the unit is divided in a plurality of chambers, each one of which is filled with a carbon dioxide absorbing substance and bounded by walls of a porous material permitting the gas to pass from an inlet of the unit, through the walls and the substance to an outlet of the unit.

3,752,655

# SINTERED HARD METAL PRODUCT

Lars Henry Ramqvist, Nynashamn, Sweden, assignor to Rederiaktiebolaget Nordstjernan, Nynashamn, Sweden  
No Drawing. Continuation of abandoned application Ser. No. 7,970, Feb. 2, 1970. This application June 11, 1971, Ser. No. 152,448

Claims priority, application Sweden, Feb. 7, 1969, 1,660/69

Int. Cl. B22f 1/00, 3/12

U.S. Cl. 29—182.5

31 Claims

An improved sintered hard metal composition is provided comprised essentially of refractory metal compound grains or particles coated with a refractory carbide layer to impart wettability to refractory metal compound grains which are difficult to wet with such binder metals as the iron group metals. The wettable refractory carbide coating is formed by depositing a layer of the corresponding refractory metal upon the grains from a halide of the metal, which layer is thereafter carburized; or the carbide coating may be produced simultaneously on the surface of

the grains from an atmosphere comprising halide vapor in the presence of a carburizing agent, in which hydrogen may or may not be present. The coated refractory metal compound grains may optionally be mixed with wettable refractory metal carbide grains in producing sintered hard metal compositions.

3,752,656

# METHOD OF FORMING OF THE WET FINES AND COAL SILTS AND AN EQUIPMENT SUITABLE FOR APPLYING THE METHOD

Marian Rutkowski and Jadwiga Wleckowska, Wroclaw, Poland, assignors to Politechnika Wroclawska, Wroclaw, Poland

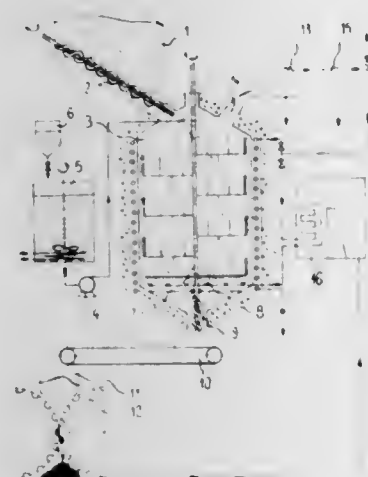
Filed Feb. 10, 1971, Ser. No. 114,248

Claims priority, application Poland, Mar. 2, 1970, P 139,125

Int. Cl. C10I 5/22; B30b 11/00

U.S. Cl. 44—2

2 Claims



Coal fines or coal silt materials comprising water are admixed with a binding agent and mechanically mixed while subjecting superheated steam against the direction of the coal mixture movement.

3,752,657

# NONIONIC SURFACTANT AS A DEMULSIFIER FOR AMINE CONTAINING FUEL DETERGENTS

Wallace L. Richardson, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 811,648, Mar. 28, 1969. This application Apr. 26, 1971, Ser. No. 137,707

Int. Cl. C10I 1/18, 1/22

U.S. Cl. 44—72

5 Claims

Distillate fuels having hydrocarbon polyamine fuel detergents in combination with a polyalkylene modified methylene bridged poly(alkylphenol) have improved water tolerance.

3,752,658

# INTEGRATED FLUID COKING-GASIFICATION PROCESS

Don E. Blaser, Dover, N.J., assignor to Esso Research and Engineering Company

Filed Jan. 6, 1971, Ser. No. 104,281

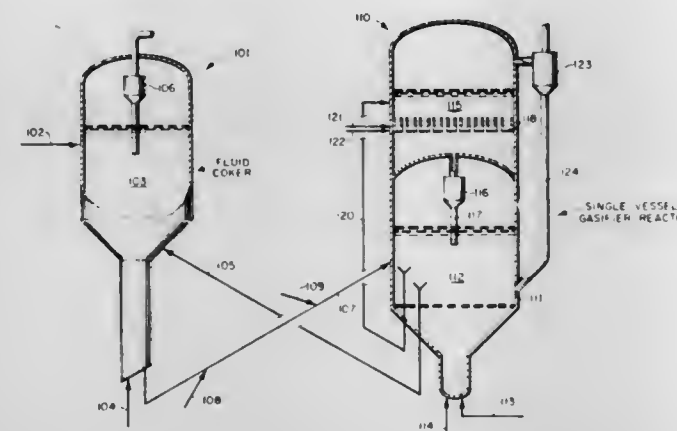
Int. Cl. C10g 9/28; C10j 3/00, 3/20

U.S. Cl. 48—206

6 Claims

A process for producing fuel gas whereby coke from a conventional fluid coker is reacted with an oxygen-containing gas in a low temperature zone located in the lower portion of a single vessel reactor to produce fuel gas, and then reacting the flue gas along with steam and

air or oxygen with coke which has been transferred from the low temperature zone to a high temperature zone



located in the upper portion of the single vessel reactor to produce fuel gas.

3,752,659

# (ALKYLTHIO)ALKYL MERCAPTANS AS GAS ODORANTS

Willie W. Crouch and Ralph P. Williams, Bartlesville, Okla., assignors to Phillips Petroleum Company  
No Drawing. Filed Dec. 10, 1971, Ser. No. 206,863

Int. Cl. C10I 3/00

U.S. Cl. 48—197 FM

12 Claims

A gas odorant comprising an (alkylthio)alkyl mercaptan, suitable as a warning agent for gaseous hydrocarbon fuels. In one embodiment the (alkylthio)alkyl mercaptan enhances the effect of conventional odorant mixtures.

3,752,660

# CHLOROPHENOXYACETYL OXAZOLIDONE HERBICIDES AND PREPARATION THEREOF

Edwin D. Little, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application Aug. 27, 1968, Ser. No. 755,743. Divided and this application Mar. 15, 1971, Ser. No. 124,606

Int. Cl. A01n 9/22

U.S. Cl. 71—88

1 Claim

3-(chlorophenoxyacetyl)-2-oxazolidones are prepared by reacting a 2-oxazolidone with a chlorinated phenoxyacetyl chloride. When the oxazolidone is unsubstituted in the 5-position, presence of an acid acceptor is helpful to improve yield. The products are useful as herbicides.

3,752,661

# DINITROPHENYL AZIDES AS HERBICIDES AND THEIR PREPARATION

Michael J. Orlett, Portsmouth, Ohio, assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of abandoned application Ser. No. 760,687, Sept. 18, 1968. This application May 25, 1970, Ser. No. 40,398

Int. Cl. A01n 9/20, 13/00

U.S. Cl. 71—125

9 Claims

2,6-dinitrophenyl azides, useful as herbicides and as microbiocides are disclosed as is a process utilizing them as intermediates in the preparation of dinitroaniline-type herbicides.

3,752,662

# RECOVERY OF METAL FROM GLASS CLOTH FILTERS AND THE LIKE

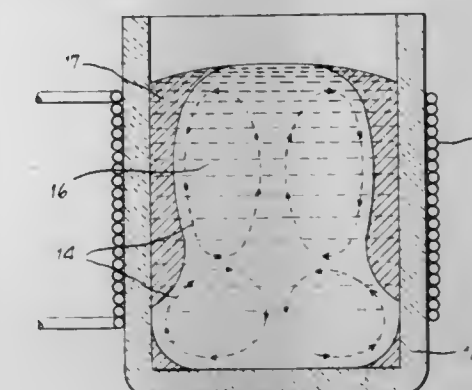
Han Spoel, St. Cesaire, Quebec, Canada, assignor to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Jan. 8, 1971, Ser. No. 104,962

Int. Cl. C22d 7/02

U.S. Cl. 75—10 R

10 Claims



For recovery of aluminum metal from glass cloth that has been used to filter the metal and has become at least partially coated therewith, the coated glass cloth is introduced to a heel of molten aluminum in an induction furnace, together with an amount of salt flux at least equal in weight to the nonmetallic content (including the glass cloth) of the coated cloth while the heel is continuously heated and circulated by electrical induction. The metal coating the cloth melts and coalesces with the heel, while the glass cloth is broken up by the circulation of the metal heel and becomes mixed with the flux. When the operation is completed and current supply to the furnace is shut off, the flux and other nonmetallics including the partially disintegrated glass cloth separate from the metal of the heel as a discrete and readily removable layer. The metal from the cloth, having become mixed with and augmented the heel, is recovered by withdrawing from the furnace at least part of the molten heel.

3,752,663

# CONTINUOUS PRODUCTION OF LIQUID STEEL USING ARC FURNACES

Howard Knox Wornor, North Balwyn, Victoria, and Ronald Siddons, Cardiff Heights, Newcastle, New South Wales, Australia, assignors to Conzinc Rhotinto of Australia Limited, Melbourne, Victoria, Australia

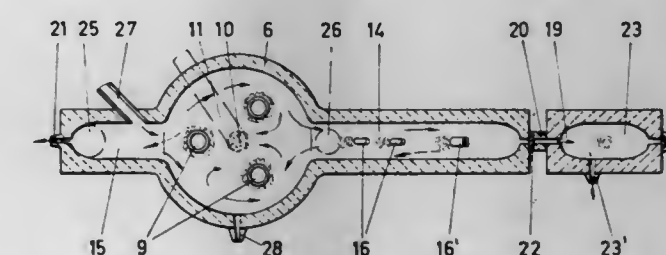
Continuation of abandoned application Ser. No. 684,814, Nov. 21, 1967. This application Sept. 23, 1970, Ser. No. 74,834

Claims priority, application Australia, Nov. 28, 1966, 14,483/66

Int. Cl. C21c 5/52; H05b 7/18

U.S. Cl. 75—12

16 Claims



A continuous smelting-refining process comprising feeding pre-heated and pre-reduced oxidic ores in agglomerated or particulate form into an electric furnace, the smelting and refining being effected substantially in a horizontal plane in a single integrated arc furnace having



an arc melting-smelting zone, an elongated refining zone, and a slag separation zone, the said zones being separate but in communication; feeding the oxidic ores continuously into the melting-smelting zone; maintaining the molten material in the melting-smelting zone in a state of turbulence; effecting electrical induction stirring of the molten material in the melting-smelting zone in order to maintain said material in a state of circulation, flowing unrefined metal from the melting-smelting zone to the refining zone, subjecting the unrefined metal in the refining zone to lancing with oxygen-containing gas, flowing the slag countercurrent to the flow of metal in at least a part of the refining zone and then flowing said slag into the slag separation zone, maintaining relatively quiescent conditions in the slag separation zone withdrawing refined metal from the refining zone, and withdrawing slag from the slag separation zone. Optionally, the slag may be caused to flow concurrent to the flow of metal in one refining zone and to flow countercurrent to the flow of metal in another refining zone, and then flow from said refining zones into the slag separation zone or zones.

### 3,752,664 METALLIC SOUND CONDUCTOR OR SOUND RADIATOR

Samuel Steinemann, Liestal, Switzerland, assignor to Institut Dr. Ing. Reinhard Straumann AG, Waldenburg, Switzerland

Filed Oct. 27, 1970, Ser. No. 84,308  
Claims priority, application Switzerland, July 13, 1970, 10,571/70

Int. Cl. C22c 1/00

U.S. Cl. 75—134 N 6 Claims

A metallic sound transmitter or sound radiator combines the low attenuation of a polycrystalline material with the malleability of a metal. The attenuation coefficient is seen to be determined by sound scattering in polycrystalline metals as a consequence of elastic anisotropy which in turn is determined by an electronic property in an alloy, so that a low coefficient can be obtained by providing alloys of predetermined composition which have the appropriate electron per atom ratio.

### 3,752,665 SYNTHESIS OF SUPERCONDUCTING COM- POUNDS BY EXPLOSIVE COMPACTION OF POWDERS

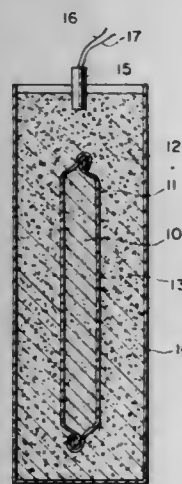
Upendra Roy, Guenther H. Otto, and Orvil Y. Reece, Huntsville, Ala., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed July 8, 1971, Ser. No. 160,860

Int. Cl. B22f 3/08

U.S. Cl. 75—135

7 Claims



Superconducting intermetallic compounds such as Nb<sub>3</sub>Sn are prepared by disposing a finely divided, stoichiometric

mixture of elemental metal powders in a container, surrounding the container with an explosive and detonating the explosive. The resulting explosive shock wave provides the necessary reaction conditions for compound formation.

### 3,752,666 ELECTROSTATIC IMAGING PROCESS USING CARRIER BEADS CONTAINING CONDUCTIVE PARTICLES

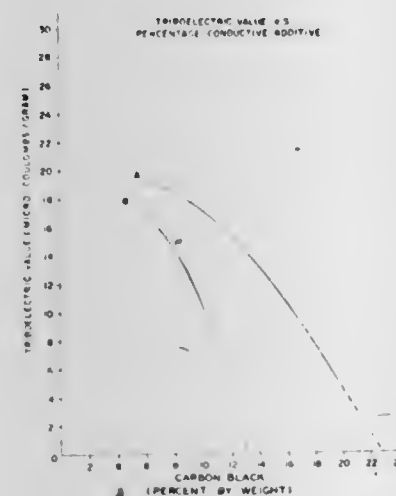
Robert J. Hagenbach, Rochester, and Robert W. Madrid, Macedon, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Original application Oct. 11, 1966, Ser. No. 585,817, now Patent No. 3,533,835, dated Oct. 13, 1970. Divided and this application June 9, 1970, Ser. No. 44,676

Int. Cl. G03g 5/02, 13/08

U.S. Cl. 96—1

14 Claims



Electrostatic latent images are developed with an electrostatic developer mixture comprising finely-divided toner particles electrostatically clinging to the surface of grossly larger carrier particles, each of the carrier particles comprising a matrix material adjacent to at least the external surface of the carrier particle, the matrix containing solid finely-divided electrically conductive particulate material.

### 3,752,667 METHOD FOR DIRECTLY RECORDING LIGHT PATTERNS

Anthony D'Onofrio, West Hartford, Conn., assignor to Litton Business Systems, Inc., New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 722,925, Apr. 22, 1968. This application Oct. 1, 1971, Ser. No. 185,863

Int. Cl. G03g 17/00

U.S. Cl. 96—1 E

9 Claims

A method for directly producing visible reproductions of light patterns in heat sensitive record sheet material. The record sheet material is placed contiguous to a photoconductive plate and is dielectrically heated to recording temperature opposite areas of the photoconductive plate exposed to light pattern intensities of predetermined magnitude by potential gradients resulting from the channeling of high frequency electric fields through the record sheet material by the light produced conductivity patterns in the photoconductive plate. Positives or negatives of light patterns may be produced by controlling light pattern intensities.

### 3,752,668 ORGANIC PHOTOCONDUCTIVE MEMBERS COM- PRISING DICYANOMETHYLENE SUBSTITUTED FLUORENE SENSITIZERS

Evan S. Baltazzi, Brookfield, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 679,246, Oct. 30, 1967. This application June 5, 1969, Ser. No. 830,879

Int. Cl. G03g 5/06, 13/22

U.S. Cl. 96—1.5

15 Claims

Organic photoconductive systems which employ organic polymers containing aromatic or heterocyclic nuclei are combined with amounts of  $\pi$  acid type additives for the purpose of extending the spectral response to the visible portion of the spectrum. The sensitizing compounds are dicyanomethylene substituted fluorenes which are added in an amount expressed in moles of sensitizer per 100 moles of the organic photoconductor calculated as the monomer. The amount of sensitizer to be added may range from 0.1 to about 100 moles per 100 moles of organic photoconductor based on the molecular weight of the monomer.

### 3,752,669 METHOD OF PRODUCING POSITIVE IMAGES FROM EPOXY COMPOSITIONS AND COMPOSI- TIONS THEREFOR

Oscar Robert Abolafia, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Dec. 17, 1971, Ser. No. 209,356

Int. Cl. G03c 1/72, 5/00

U.S. Cl. 96—36.2

11 Claims

An epoxy composition suitable for use as a positive photoresist and permanent dielectric is disclosed which includes an epoxy resin, a tertiary amine curing agent, and a halogenated hydrocarbon sensitizer. Also disclosed is a method of producing positive images from said composition which includes exposing the coated epoxy to actinic radiation, curing the coating to a critical point at which the exposed areas remain soluble in a solvent developer while the unexposed areas are substantially insoluble, and subsequently developing out the exposed area in the solvent developer. The use of this composition and method in printed circuit manufacturing is also described.

### 3,752,670 PHOTOGRAPHIC FILM ELEMENT AND METHOD FOR OBTAINING PHOTOGRAPHIC RECORDS OF WATER-SUBMERGED OBJECTS

Daniel George Needler and James Leo Graham, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Dec. 29, 1971, Ser. No. 213,813

Int. Cl. G03c 1/14, 7/00

U.S. Cl. 96—74

23 Claims

A color photographic element comprising a blue-sensitized silver halide emulsion layer having a maximum light absorption within about 480–500 nm. and having substantially no absorption above about 510 nm., containing a benzo- or naphtho-thia, oxa- or selenacarbocyanine salt as a blue spectral sensitizer dye, an inner green-sensitized emulsion layer responsive to light within about 525–590 nm. and an intermediate filter layer that filters light in the range of about 400–520 nm.; and also a method for improving photographic recordal of objects submerged in water by using such photographic elements.

### 3,752,671

#### MATERIAL CONTAINING PHOTSENSITIVE HALO AZIDO NAPHTHALENES

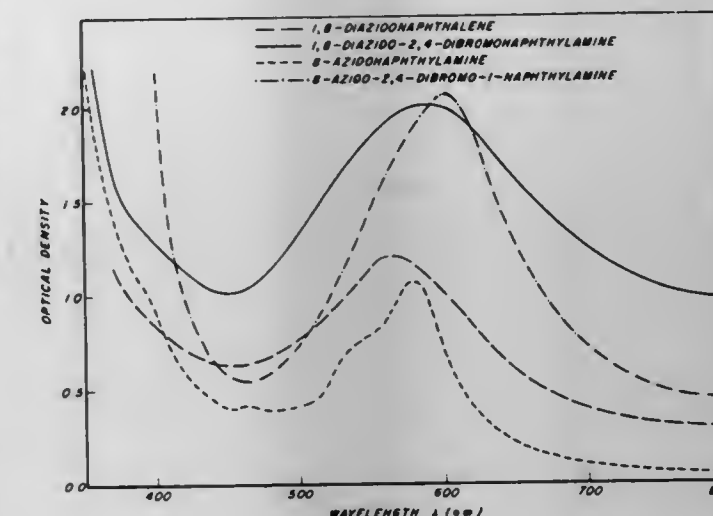
Balwant Singh, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Original application May 26, 1971, Ser. No. 147,117, now Patent No. 3,699,130. Divided and this application Aug. 2, 1972, Ser. No. 277,454

Int. Cl. G03c 1/52

U.S. Cl. 96—91 N

5 Claims



Novel halo azido naphthalenes and dry photoimaging processes and compositions employing said naphthalenes are disclosed.

### 3,752,672 METHOD OF INCORPORATING INGREDIENTS IN HYDROPHILIC COLLOIDS

Alfons Jozef De Pauw, Edegem, and Jan Albert Carpentier, Walem, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Continuation of abandoned application Ser. No. 766,937, Oct. 11, 1968. This application July 8, 1971, Ser. No. 160,959

Claims priority, application Great Britain, Oct. 11, 1967, 46,459/67

Int. Cl. G03c 1/10

U.S. Cl. 96—100

21 Claims

A color-coupling or mask-forming component is incorporated into a hydrophilic colloid composition as a stable solution therein by means of a low boiling water immiscible organic solvent in which the component is dissolved and dispersed in the colloid composition or in a preparatory aqueous liquid subsequently admixed with the colloid composition, the organic solvent being then removed by evaporation whereby the component is contained in said colloid or the preparatory aqueous liquid in the form of a stable solution. The mask-forming or color-coupling component carries at least one sulfo or carboxyl group which is in salt form or is converted into salt form in situ by carrying out the dispersion step in the presence of an amount of alkali sufficient to neutralize such acid groups. A minor amount of a water-miscible organic solvent can also be provided to facilitate the dissolution of the component in the water immiscible solvent and both solvents can be removed by the evaporation. The colloid composition can be a light-sensitive silver halide emulsion directly or can be added after its preparation to a light-sensitive silver halide emulsion.



3,752,673

**SILVER HALIDE EMULSION CONTAINING A MERCYANINE DYE**

Henri Depoorter, Mortsel, and Theofiel Hubert Ghys, Kontich, Belgium, assignors to Gevaert-AGFA N.V., Mortsel, Belgium

No Drawing. Filed Jan. 20, 1971, Ser. No. 108,162

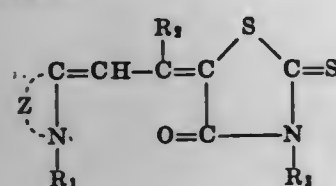
Claims priority, application Great Britain, Jan. 20, 1970, 2,770/70

Int. Cl. G03c 1/22

U.S. Cl. 96—140

6 Claims

Novel mercyanine dyes are provided which correspond to the general formula:



wherein:

Z stands for the atoms necessary to close a pyrroline, a tetrazole, a thiazoline or a selenazoline nucleus, R<sub>1</sub> stands for an aliphatic group or an aryl group substituted by sulphato, phosphono, sulphamoyl or sulphonyl-carbamoyl,

R<sub>2</sub> stands for hydrogen, an aliphatic group or an aryl group, and

R<sub>3</sub> stands for an aliphatic group or an aryl group carrying at least one sulpho group or carboxyl group,

the acidic groups being in the free acid form or the salt form. These mercyanine dyes can be used for the spectral sensitization of light-sensitive silver halide emulsions. They do not enhance the fog and leave practically no residual stain after processing and therefore are particularly suitable for the sensitization of Lippmann-emulsions, emulsions of the "lith"-type and emulsions used in stabilisation processing.

3,752,674

**SILVER HALIDE EMULSION FOGGED WITH A BORON HYDRIDE AND A GOLD COMPOUND**

William Arthur Pritchett, Jr., Rochester, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 22, 1971, Ser. No. 155,629

Int. Cl. G03c 1/28

U.S. Cl. 96—108

12 Claims

Direct-positive photographic elements of high speed and maximum density are prepared by incorporating in the silver halide emulsion at least one boron hydride containing from 6 to 12 boron atoms in which the skeletal framework forms a polyhedron or a fragment thereof, and which may contain heteroskeletal atoms selected from the group consisting of carbon, sulfur and nitrogen, and a gold compound.

3,752,675

**INCORPORATION OF NON-WHEAT GRAIN OR TUBER FLOURS OR STARCHES IN WHEAT FLOUR BASED BREAD, BAKED OR FRIED DOUGH GOODS**

Cho C. Tsen and William J. Hoover, Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,238

Int. Cl. A21d 2/16, 13/04

U.S. Cl. 99—91

20 Claims

A method of permitting non-wheat grain or tuber flours or starches to be incorporated in wheat flour based bread,

baked or fried goods doughs at levels which would deleteriously affect the quality of products prepared from the supplemented dough by introduction of 0.1% to 3% of an additive selected from the group of sodium salts of acyl lactates of C<sub>14</sub>—C<sub>22</sub> fatty acids, and the condensation product of from 10—95 parts by weight of ethylene oxide and correspondingly from 90—5 parts by weight of a partial glycerol ester by a C<sub>10</sub>—C<sub>24</sub> fatty acid containing at least 10 weight percent monoglyceride content with diglycerides, triglycerides and glycerine the balance. The supplement may be added at levels as high as 40% wheat flour weight by use of 0.5% of the additive. A protein source material may also be added to supplement the protein content of a product prepared from the supplemented dough so long as the additive is present therein.

3,752,676

**PHOTOSENSE DETECTING AND REMOVING STUCK CHIPS FROM A CARRIER OF A CHIP FRYING MACHINE**

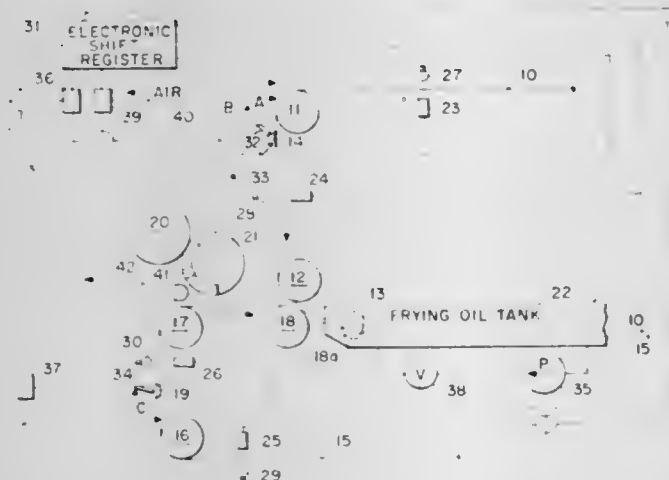
John E. Callahan, Columbia, Mo., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 15, 1971, Ser. No. 198,621

Int. Cl. A23i 1/00

U.S. Cl. 99—100 P

6 Claims



A method of detecting and removing chips, e.g. potato chips, made from an edible dough after being fried in a hot oil bath in those few instances where the chips remain stuck to their individual carrier members and are not readily removable by conventional means. The method contemplates the provision of an electric photo sensor to detect a stuck chip through the blockage of openings in the carrier member and signalling an electronic shift register. One or more nozzles for discharging oil at high pressure are positioned over the path of travel of the carrier members beyond the electric photo sensor. A solenoid valve is operated by the shift register in timed sequence with the movement of the stuck chip in order to discharge oil from the nozzle against the stuck chip during passage beneath the nozzle. The stuck chip is stripped from the carrier member in this fashion. A second electric photo sensor detects whether the stuck chip has been stripped off. If not, a signal is transmitted to the electronic shift register which then prevents deposit of a raw dough piece on any chip carrier in which either member of the pair has a stuck chip clinging thereto. This prevents the deposit and build up of stuck chips on any given carrier member until removed on successive cycles of the machine.

3,752,677

**GREEN PEA SOUP MIX AND METHOD FOR MAKING THE SAME**

Holt Andrews, Demarest, and Sirvart K. Bedrosian, Westwood, N.J., assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,322

Int. Cl. A23i 1/40

U.S. Cl. 99—124

4 Claims

A dry green pea soup mix of improved flavor and color stability and reconstitutable in less than one minute by the addition of boiling water is disclosed. The preferred mix comprises an agglomerated blend of, by weight, about 72% green pea flakes, about 12% corn syrup solids, about 5.5% green pea powder, about 4.5% spice mix, about 3.0% smoked yeast, about 1.5% starch and about 0.5% each of sugar, monosodium glutamate, and vegetable protein.

The green pea flakes are formed by cooking green split peas in aqueous slurry and by addition of vegetable oil and starch. The slurry is dried and is broken into flakes which are blended with green pea powder, corn syrup solids, flavoring and the balance of the ingredients while maintaining the integrity of the flakes. The blend is then agglomerated, dried and sized through a screen.

3,752,678

**GEL-COATED FROZEN CONFECTION**

Timothy John Jenkinson, St. Albans, and Tegwyn Pierce Williams, Great Doddington, near Wellingborough, England, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Apr. 8, 1971, Ser. No. 132,546

Claims priority, application Great Britain, Apr. 20, 1970, 18,807/70

Int. Cl. A23g 5/00; A23i 1/04

U.S. Cl. 99—136

7 Claims

A frozen foodstuff, particularly ice cream, is coated with an aqueous thixotropic gel based on a water soluble polysaccharide. The thixotropic gel may be an algininate gel containing alkali metal ions and calcium or aluminium ions, or may be a gel based on Xanthan gum.

3,752,679

**REFRACTORY LAMINATE BASED ON NEGATIVE SOLS OR SILICATES AND POLYMERIC LATTICES CONTAINING CATIONIC SURFACTANTS**

Earl P. Moore, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 49,913, June 25, 1970. This application June 1, 1971, Ser. No. 148,963

Int. Cl. C04b 35/14

U.S. Cl. 106—38.35

11 Claims

A rapid process for forming a refractory laminate on the surface of a support structure which comprises dipping the structure in a bath comprising a sol of negatively charged colloidal particles of an inorganic substance and/or a solution of an alkaline ionic silicate to form a coating on the surface, contacting the coated surface with a setting agent, an organic polymeric latex containing a cationic surfactant to firmly set the colloidal silica or silicate. This procedure is repeated until a laminate of the desired thickness is built up on the surface. In order to increase the rate of laminate build-up particulate refractory material can be included in the bath and/or the coated surface can be stuccoed between dips. Interaction between the negatively charged colloidal particles or silicate and the cationic surfactant setting agent results in destabilization of the latex, polymerization of the silica or silicate and aggregation of silica-polymer particles and thereby the immobilization of the coatings. This technique makes it possible to successively apply and set coatings to build refractory laminates in very short times without intermediate drying and without sloughing of coats. The

process is particularly suited for making expendable, refractory shell molds for precision investment casting of metals by the so-called "lost-wax" technique.

3,752,680

**REFRACTORY LAMINATE BASED ON POSITIVE SOLS AND POLYMER LATTICES CONTAINING ANIONIC SURFACTANTS**

Earl P. Moore, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 49,912, June 25, 1970. This application June 1, 1971, Ser. No. 148,962

Int. Cl. C04b 35/14

U.S. Cl. 106—38.35

10 Claims

A rapid process for forming a refractory laminate on the surface of a support structure which comprises dipping the structure into a bath comprising a sol of positively charged colloidal particles of an inorganic substance to form a coating on the surface, contacting the coated surface with a polymer latex containing an anionic surfactant to firmly set the coating, and removing excess polymer latex from the coated surface. This procedure is repeated until a laminate of the desired thickness is built up on the surface. This technique makes it possible to successively apply and set coatings in very short times without intermediate drying and without sloughing of coats. The process is particularly suited for making expendable refractory shell molds for precision investment casting of metals by the so-called "lost-wax" technique.

3,752,681

**REFRACTORY LAMINATE BASED ON POSITIVE SOLS AND MONOFUNCTIONAL ORGANIC ACIDS AND SALTS**

Earl P. Moore, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 49,914, June 25, 1970. This application June 1, 1971, Ser. No. 148,957

Int. Cl. C04b 35/14

U.S. Cl. 106—38.35

13 Claims

A rapid process for forming a refractory laminate on the surface of a support structure which comprises dipping the structure into a bath comprising a sol of positively charged colloidal particles to form a coating on the surface, contacting the coated surface with a solution or dispersion of a monofunctional organic acid or salt to firmly set the coating, and removing excess setting agent solution or dispersion from the coated surface. This procedure is repeated until a laminate of the desired thickness is built up on the surface. This technique makes it possible to successively apply and set coatings in very short times without intermediate drying and without sloughing of coats. The process is particularly suited for making expendable refractory shell molds for precision investment casting of metals by the so-called "lost-wax" technique.

3,752,682

**ZIRCON-PYROPHYLLITE UNFIRED REFRACTORY BRICKS AND METHOD FOR THE MANUFACTURE OF THE SAME**

Naoyuki Nameishi, Takasago, and Hajime Yoshino and Shigetoshi Uto, Kakogawa, Japan, assignors to Harima Refractories Co., Ltd., Hyogo-ken, Japan

Filed July 27, 1971, Ser. No. 166,447

Claims priority, application Japan, Sept. 2, 1970, 45/76,324

Int. Cl. C04b 35/16

U.S. Cl. 106—57

14 Claims

Disclosed herein is an unfired refractory brick consisting essentially of zircon and pyrophyllite with sodium silicate added as a binder, wherein the grain sizes of said zircon and said pyrophyllite are defined in a predetermined range.



3,752,683

**PROTECTION OF TURBINE CASINGS**

Peter Frederick Hawthorne, Nechells, Birmingham, England, assignor to Fosco International Limited, Birmingham, England  
No Drawing. Filed Oct. 1, 1970, Ser. No. 77,348  
Claims priority, application Great Britain, Oct. 6, 1969, 49,044/69; July 2, 1970, 32,217/70  
Int. Cl. C04b 35/66

U.S. Cl. 106—55

9 Claims

Shaped refractory articles, especially turbine casing liners, are formed of a refractory fibre/water soluble binder composition, the hardness, strength and density of which do not vary across the bulk composition.

3,752,684

**INSULATING REFRACTORY AND A METHOD FOR MANUFACTURING SAME**

Jean-Pierre Klehl, Lyon, and Victor Jost, Bron, France, assignors to Societe Generale des Produits Refractaires Paris, France  
No Drawing. Filed June 14, 1971, Ser. No. 153,099  
Claims priority, application France, July 9, 1970, 70/25,437  
Int. Cl. C04b 35/04

U.S. Cl. 106—58

3 Claims

A semirigid insulating product and method of making same having a use-limit temperature of at least 1200° C. and a density less than 0.9 gm./cc. The product is made from a batch comprising, by weight:

Neutral magnesium phosphate—12 to 25%  
Alkaline-earth oxides in excess—up to 5%  
Silica—50 to 80%  
Other acid oxides—up to 20%, and  
Mineral fibers—2 to 20%.

3,752,685

**METHOD FOR PRODUCING HOLLOW GLASS MICRO-SPHERES AND THEIR COMPOSITES**

Hidemasa Honda, Yukio Isayama, Kazuhiko Jinnai, and Kunio Kimura, Tosu, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan  
Filed Mar. 2, 1971, Ser. No. 120,253  
Claims priority, application Japan, Mar. 6, 1970, 45/18,722  
Int. Cl. C08h 17/02; C09c; C09d

U.S. Cl. 106—288 B

8 Claims

When finely divided Shirasu (pumice ejected from volcanoes and the secondary deposit of such pumice) is roasted at a temperature in the range of from about 800° C., to about 1200° C., the vitreous particles contained in said Shirasu foam and consequently produce light-weight hollow glass micro-spheres. The hollow glass micro-spheres so produced are superior to conventional glass micro-spheres especially in their resistance to heat and can therefore be combined with metal, carbon, as well as with cement and other materials to produce novel light-weight composites.

3,752,686

**PROCESS FOR THE CONVERSION OF PERYLENE-3,4,9,10 - TETRACARBOXYLIC ACID DIIMIDE INTO A FORM SUITABLE AS PIGMENT DYE-STUFF**

Dietmar Kalz, Cologne, Karlheinz Wolf, Leverkusen, Gerhard Wolfrum, Bergisch-Neunkirchen, and Reinhold Hornle, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Filed Dec. 23, 1971, Ser. No. 211,681  
Claims priority, application Germany, Dec. 24, 1970, P 20 63 714.3  
Int. Cl. C08h 17/14

U.S. Cl. 106—288 Q

3 Claims

Perylene - 3,4,9,10-tetracarboxylic acid diimide is obtained in a brilliant, deeply coloured, light- and weather-fast pigment form by salt grinding in the presence of 1-30% of higher aliphatic amines.

3,752,687

**TITANIUM DIOXIDE MIXING**

Granville J. Hahn, Big Spring, Tex., assignor to Cosden Oil & Chemical Company, Big Spring, Tex.  
Continuation-in-part of application Ser. No. 525,949, Feb. 8, 1966. This application Nov. 10, 1969, Ser. No. 875,184  
Int. Cl. C09c 1/36

U.S. Cl. 106—300

2 Claims

Discoloration of white titanium dioxide during mixing, milling or blending by abrasive discoloration by metallic parts of the mixer are prevented by coating or plating the mixing bowl and mixing elements with very hard material exceeding about eight mohs such as tungsten carbide or other hard carbide materials.

3,752,688

**PROCESS FOR WET GRINDING OF PIGMENTS IN AQUEOUS ALKALINE MEDIUM**

Otto Fuchs, Frankfurt am Main, Reinhold Deubel, Altenhain, Taunus, and Joachim Weide, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany  
No Drawing. Filed Sept. 2, 1971, Ser. No. 177,517  
Claims priority, application Germany, Sept. 4, 1970, P 30 43 820.4  
Int. Cl. C08h 17/14

U.S. Cl. 106—309

5 Claims

A process for the wet grinding of pigments which comprises effecting the grinding in an aqueous medium containing 0.1-20 percent of a base selected from the group of water soluble alkali metal-, alkali earth metal- or ammonium compounds. The addition of bases improves the transmission of grinding energy to the material being ground and results in the production of purer pigments of better tintorial strength in a relatively short grinding time. Furthermore, the grinding process according to the invention is carried out in a simple and inexpensive way.

3,752,689

**REFRACTORY LAMINATE BASED ON POSITIVE SOLS AND ORGANIC OR INORGANIC BASES**

Earl P. Moore, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 49,906, June 25, 1970. This application June 1, 1971, Ser. No. 148,960  
Int. Cl. C04b 35/14

U.S. Cl. 106—38.3

12 Claims

A rapid process for forming a refractory laminate on the surface of a support structure which comprises dipping the structure into a bath comprising a sol of positively charged colloidal particles of an inorganic substance to form a coating on the surface, contacting the coated surface with a solution or dispersion of an organic or inorganic base to firmly set the coating, and removing excess setting agent solution or dispersion from the coated surface. This procedure is repeated until a laminate of the desired thickness is built up on the surface. This technique makes it possible to successively apply and set coatings in very short times without intermediate drying and without sloughing of coats. The process is particularly suited for making expendable refractory shell molds for precision investment casting of metals by the so-called "lost-wax" technique.

3,752,690

**METHOD OF MAKING INLAID RESINS AND ARTICLE PRODUCED THEREBY**

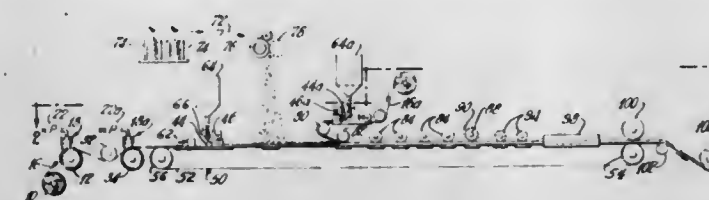
Everett R. Miller, Dennisport, Mass., assignor to Owens-Corning Fiberglass Corporation  
Filed May 24, 1971, Ser. No. 146,266  
Int. Cl. B44c 1/20

U.S. Cl. 117—8

7 Claims

A bottom carrier sheet of material having memory is passed over a roll having depressions therein, and a curable resin under pressure forces the sheet into the depres-

sion and fills the depressions in the sheet material. Excess resin is scraped from the sheet leaving the resin which fills the depressions in place. The sheet is then removed from the roll and caused to assume a flat condition to move the resin up out of the depressions and provide raised indicia of the configuration of the depressions.



Indicia of different colors can be added in like manner, and finally a film of resin is flowed around and over the raised indicia. The film of resin is covered by a top sheet of separation material and the composite sandwich of resin and top and bottom separation sheets are rolled into a package and cured to produce a sheet molding compound.

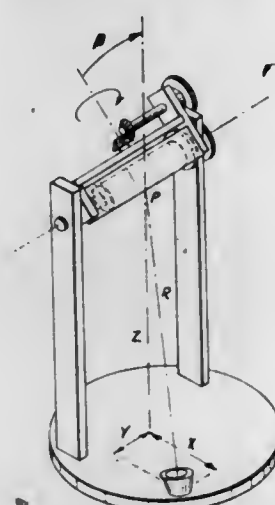
3,752,691

**METHOD OF VACUUM EVAPORATION**

William S. Little, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.  
Filed June 29, 1971, Ser. No. 157,911  
Int. Cl. C23c 13/02, 13/04

U.S. Cl. 117—38

4 Claims



A method of vapor depositing a uniform layer of material on the surface of cylindrical substrate which comprises rotating said substrate simultaneously about its perpendicular axis and longitudinal axis while maintaining the substrate at a plane inclined to the horizontal, with a small surface source of evaporant located below said rotating substrate, with the ratio of the radius of the substrate to the source-to-substrate distance being maintained from about 0 to 1.0, said evaporant source emitting a vapor flux which deposits as a substantially uniform layer upon the surface of said substrate by maintaining a slotted mask between the substrate and evaporant source, while maintaining said substrate and evaporant source under vacuum conditions during the entire evaporation cycle.

3,752,692

**DIFFUSION TRANSFER IMAGE RECEIVING ELEMENT**

Richard W. Young, Wellesley Hills, Mass., assignor to Polaroid Corporation, Cambridge, Mass.  
No Drawing. Filed Mar. 29, 1971, Ser. No. 129,276  
Int. Cl. B05c 9/04

U.S. Cl. 117—68

21 Claims

This invention relates to photographic elements for use in diffusion transfer processes performed outside of the

camera wherein exposure of said photographic elements was affected, and particularly relates to an image-receiving element which is opaque to avoid exposure of the photosensitive element after removal from the camera and which is further adapted to prevent distortion or curling of the image-receiving element subsequent to separation from the photosensitive element.

3,752,693

**PROCESS FOR TREATING METALLIC BASE MATERIAL**

Masao Suetsugi, Tokyo, Tadasu Kimura, Ichiji Kobayashi, and Koji Matsushima, Hiroshima, and Hideo Nakamoto, Yamaguchi, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan  
No Drawing. Filed May 12, 1971, Ser. No. 142,745  
Claims priority, application Japan, May 15, 1970, 45/41,160  
Int. Cl. B32b 15/08

U.S. Cl. 117—75

8 Claims

A metallic base material is treated to improve corrosion resistance, adhesion between the base material and film coated thereon, and post processability of said coating by applying a coating material containing 1 to 85% of free isocyanate groups and then if desired further applying a resin-containing coating material.

3,752,694

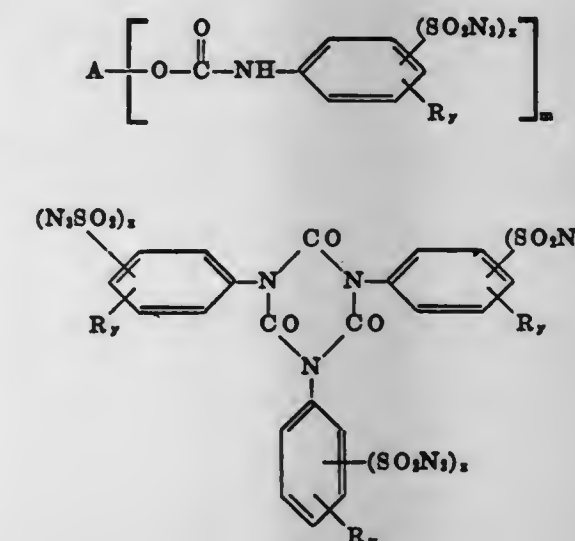
**PROCESS FOR BONDING POLYURETHANE TO SUBSTRATE**

Adnan A. R. Sayigh and Fred A. Stuber, North Haven, and Henri Ulrich, North Branford, Conn., assignors to The Upjohn Company, Kalamazoo, Mich.  
No Drawing. Original application Mar. 2, 1970, Ser. No. 15,948, now Patent No. 3,652,504. Divided and this application Dec. 2, 1971, Ser. No. 204,361  
Int. Cl. B44d 1/50

U.S. Cl. 117—93.31

4 Claims

Polyurethane coatings are chemically bonded to substrates, including polyolefins and like substrates with which polyurethanes will not normally react, by incorporating, into the polyurethane coating composition used to prepare the coating, from 0.1 percent to 10 percent by weight, based on polyurethane, of a sulfonylazide of formulae:





3,752,695

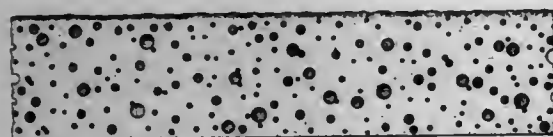
**COATED POLYURETHANE FOAM HAVING AN INTEGRAL SKIN**

Anthony F. Finelli, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio  
Continuation of abandoned application Ser. No. 650,800, July 3, 1967. This application Sept. 23, 1970, Ser. No. 74,855

Int. Cl. B32b 5/18, 27/40

U.S. Cl. 117—98

5 Claims



This invention relates to a molded polyurethane foam article which has an integral skin having the desired aesthetic and decorative effect such as simulated sewn seams. Polyurethane molded foam articles of this nature are obtained by pouring a foamable polyurethane reaction mixture into contact with a mold such as a silicone rubber, letting the foam react and cure. Since the foam will tend to discolor it is preferred to coat the skin with a coating, usually a spray coat of 2 to 6 mils of a polyurethane of a nondiscoloring type to obtain an article which is suitable for use as an interior decorative element in an automobile, for instance.

3,752,696

**COLOR ROOFING GRANULES**

Romayne M. Beyard and John C. Horai, Hagerstown, Md., assignors to GAF Corporation, New York, N.Y.  
No Drawing. Filed Feb. 17, 1967, Ser. No. 616,795

Int. Cl. B44d 1/20

U.S. Cl. 117—100 D

9 Claims

Barium fluosilicate and other metal fluosilicates encapsulated by a polymeric composition such as polyvinyl chloride, that is substantially insoluble in water and alkali silicate at a temperature below about 100° F., but is capable of dissolving in hot alkali silicate binder, is used as a latent reactant in the process for manufacturing artificially colored roofing granules. The latent reactant is suspended in a pigmented aqueous silicate slurry which is used to coat mineral granules. The coated granules are heated to above 200° F. to cause insolubilization of the silicate by the chemical action of the fluosilicate.

3,752,697

**TREATMENT OF CELLULOSIC FIBER CONTAINING FABRICS TO IMPROVE THE PHYSICAL CHARACTERISTICS**

Angelo J. Ramunda, deceased, late of Fairlawn, N.J., by Phyllis G. Ramunda, executrix, Fairlawn, N.J., Phillip Adams, Murray Hill, Sidney Beinfest, Berkeley Heights, and Thaddeus A. Gulakowski, Ridgefield, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 789,916, Jan. 8, 1969. This application May 19, 1971, Ser. No. 145,042

Int. Cl. D06m 13/12

U.S. Cl. 117—138.8 F

5 Claims

A treatment for cellulosic fabrics and fabrics constructed of blends of cellulosic and non-cellulosic synthetic fibers, whereby the durability of the fabrics is retained even after repeated launderings while the "hand" of the fabrics is much improved over that obtained by prior treatments. This treatment consists of the application to

the fabrics of a composition containing, as the active ingredient, a mixture of methylolated methyl carbamate with either (a) methylolated methoxyethyl carbamate, or (b) methylolated hydroxyethyl carbamate, or (c) methylolated n-propyl carbamate wherein the percentage of the methylolated methyl carbamate is about from 10 to 70 mol percent and of the other component is between about 90 to 30 mol percent.

3,752,698

**SUBSTRATES COATED WITH AIR-CONTAINING MICROCAPSULAR OPACIFIERS AND THE PRODUCTION THEREOF**

Anthony E. Vassiliades, Deerfield, Edward F. Nauman, Lake Forest, and Shrenik Shroff, Chicago, Ill., assignors to Champion International Corporation, New York, N.Y.

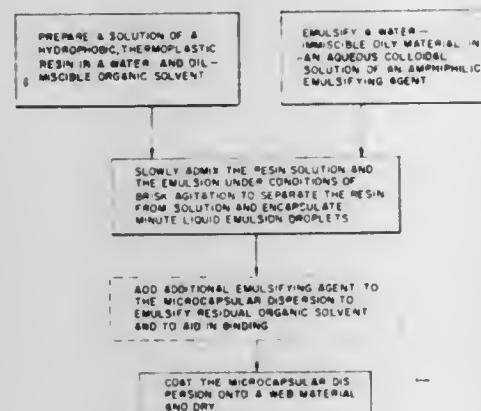
Original application Dec. 23, 1968, Ser. No. 786,337.

Divided and this application Mar. 16, 1971, Ser. No. 124,984

Int. Cl. B44d 1/24; B32b 29/00; D21h 1/34

U.S. Cl. 117—138.8 E

30 Claims



Opacifiers comprising air-containing microcapsules having an average particle diameter of below about one micron provide highly opaque surfaces when coated onto and/or incorporated into fibrous and non-fibrous substrates. The opacifiers are produced by heating liquid-containing precursor microcapsules at temperatures sufficient to expel the liquid and provide air in the microcapsule.

3,752,699

**HYDROXYLATED ALPHA-OLEFIN/NON-CONJUGATED DIENE POLYMER**

Jerald R. Harrell, Anestis L. Logothetis, and John J. Verbanc, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application July 9, 1969, Ser. No. 840,511, now Patent No. 3,679,627, which is a continuation-in-part of abandoned application Ser. No. 764,328, Oct. 1, 1968. Divided and this application May 30, 1972, Ser. No. 257,669

Int. Cl. D08m 3/02

U.S. Cl. 117—141

2 Claims

An hydroxylated alpha-olefin/non-conjugated diene polymer having hydroxylated side chains in admixture with clay, ZnO, ZnBr<sub>2</sub>, a phenol-formaldehyde resin or polyisocyanate. An hydroxylated alpha-olefin/non-conjugated diene polymer having hydroxyl substituted side chains containing one hydroxyl group each and other side chains containing ethylenic unsaturation and a process for making.

3,752,700

**METHOD OF IMPREGNATING PAPER**

Rolf Dahl, West Columbia, S.C., assignor to Continental Tapes, Incorporated, Columbia, S.C.

No Drawing. Original application June 29, 1970, Ser. No. 50,953. Divided and this application Mar. 22, 1972, Ser. No. 236,958

Int. Cl. C08c 17/16; C08d 13/16

U.S. Cl. 117—155 R

3 Claims

Very rapid catalytic formation and polymerization of polyurethane polymers followed by cross-linking with complex, hindered polyamines permits one step, in-situ and continuous production of new types of pressure-sensitive adhesives and impregnated permeable materials.

3,752,701

**GLASS FOR COATING SEMICONDUCTORS, AND SEMICONDUCTOR COATED THEREWITH**

William J. Morrissey, Chelmsford, Mass., assignor to General Instrument Corporation, Newark, N.J.

No Drawing. Filed July 27, 1970, Ser. No. 58,710

Int. Cl. C03c 3/04, 3/08

U.S. Cl. 117—201

8 Claims

An alkali-free zinc-borosilicate glass containing small amounts of lead and aluminum oxide constitutes an excellent passivating and protecting coating for semiconductors.

3,752,702

**METHOD OF MAKING A SCHOTTKY BARRIER DEVICE**

Mutsuo Iizuka, 801 Oaza Hoshida, Katanocho, Kitakawachi-gun, Osaka, Japan; Shohel Fujiwara, 6-23 Himurocho-1-chome, Takatsuki-shi, Japan; Gota Kano, 38 Uguisudai, Nagaokacho, Otokuni-gun, Kyoto, Japan; Hiromasa Hasegawa, 2-8 Saiwaicho, Takatsuki-shi, Japan; Iwao Teramoto, 78-83 Shimohozumi, Ibaragi-shi, Japan; and Hitoo Iwasa, 76-32 Okamotocho, Takatsuki-shi, Japan

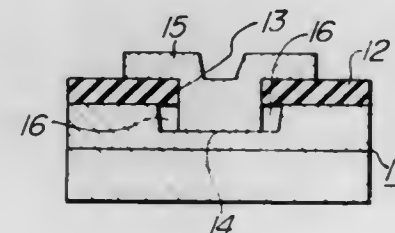
Filed Sept. 29, 1969, Ser. No. 861,670

Claims priority, application Japan, Oct. 4, 1968, 43/72,668

Int. Cl. B28d 5/00; H011 7/50

U.S. Cl. 117—217

4 Claims



An etching process for <111> oriented silicon substrate along a hexagonal window, in which an etched recess is formed along the window in a clear shape by means of directing one side of the hexagonal window parallel to a crystallographic axis <110> or <110>. A metal is then formed in the etched recess to form the Schottky barrier between the metal and the semiconductor material by depositing said metal by means of the sputtering or vacuum evaporation method. A vacant space is thereby formed just under an insulating film along the periphery of the window, resulting in a Schottky barrier device having a good backward characteristic.

3,752,703

**PROPELLANT MIXTURE COMPRISING DIFLUOROBROMINIUM TETRAFLUOROBORATE OXIDIZER COMPONENT**

Madeline S. Toy, Fountain Valley, and William A. Cannon, Costa Mesa, Calif., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Original application July 19, 1968, Ser. No. 745,984, now Patent No. 3,645,702. Divided and this application Nov. 13, 1970, Ser. No. 89,520

Int. Cl. C06d 5/06

U.S. Cl. 149—19

1 Claim

Propellant mixture comprising difluorobrominium tetrafluoroborate oxidizer in combination with binder and fuel components.

3,752,704

**SELF-SEALING BATTERY WITH NONAQUEOUS ELECTROLYTE**

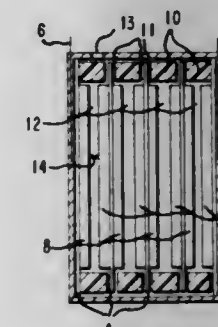
Hanspeter Alder, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 80,050, Oct. 12, 1970. This application Nov. 22, 1971, Ser. No. 200,728

Int. Cl. H01m 35/04

U.S. Cl. 136—6 B

13 Claims



A galvanic battery comprising a plurality of series connected galvanic cells each of which contains a liquid, nonaqueous electrolyte in contact with the electrolyte of the other cells has increased wet-stand life resulting from increased intercell electrical resistance obtained by: (1) restricting the area and increasing the length of intercell channels through the use of cell spacing gaskets composed of a material swellable in the electrolyte to the extent of from 1% to 10% linearly and (2) further restricting the intercell channels by employing electrolytes and electrolyte solvents so constituted that deposition of cell discharge products occurs in said restricted area, further restricting said channels, thereby progressively eliminating intercell shorting.

3,752,705

**HIGH CAPACITY RECHARGEABLE SEALED CELL**

Saverio F. Pensabene, Gainesville, Fla., assignor to General Electric Company

Filed Sept. 17, 1971, Ser. No. 181,305

Int. Cl. H01m 35/16

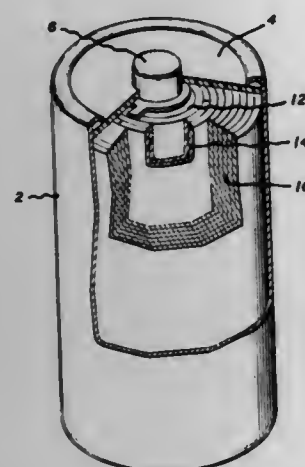
U.S. Cl. 136—13

6 Claims

A high capacity, rechargeable sealed cell is constructed using plate materials normally used in the construction of low capacity, high discharge rate materials. The cell is constructed by winding a strip of one of the electrodes onto itself, winding a layer of separator materials over this core, and winding a layer of the other electrode onto itself over the separator material. By eliminating the layers of separator between adjacent materials—except



for the single layer of separator between the two plates—additional space is provided in the same volume so that



additional active electrode material may be incorporated into the cell.

3,752,706

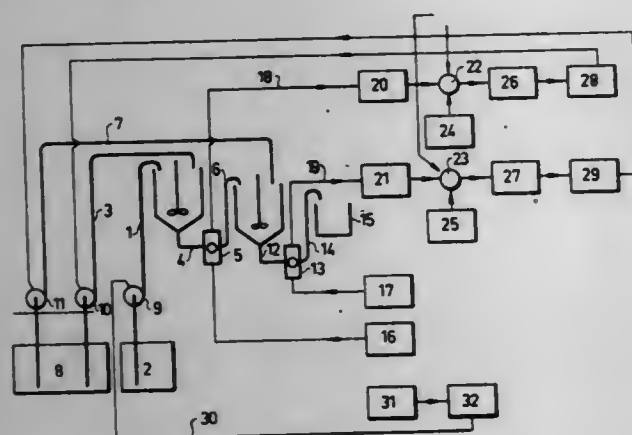
**METHOD FOR PRODUCING AN ELECTRO-CHEMICALLY ACTIVE MATERIAL FOR NICKEL HYDROXIDE ELECTRODES**  
Ake Lennart Melin, Oskarshamn, Sweden, assignor to Svenska Ackumulatör Aktieförbundet Jungner, Oskarshamn, Sweden

Filed Jan. 15, 1970, Ser. No. 3,149  
Claims priority, application Sweden, Jan. 31, 1969, 1,368/69

Int. Cl. H01m 43/00, 43/04

U.S. Cl. 136—24

1 Claim



Method and apparatus for producing electrochemically active metal hydroxides for nickel hydroxide electrodes for alkaline accumulators by precipitation of the hydroxides from a solution of metallic salts with the aid of an alkaline metal hydroxide solution, according to which the precipitation, in order to obtain a uniform crystallinity throughout the material, takes place continuously in at least one step by allowing the salt solution and the metal hydroxide solution to run down simultaneously into a reaction vessel, keeping pH value, temperature and concentration in each step constant.

3,752,707

# **CORROSION RESISTANT COMPOSITION AND METHOD**

Isaac Laird Newell, Wethersfield, Conn., and William F. Houlihan, Springfield, Mass., assignors to Heatbath Corporation, Springfield, Mass.

No Drawing. Filed Aug. 23, 1971, Ser. No. 174,150  
Int. Cl. C23f 7/26

U.S. Cl. 148—6.2

22 Claims

Corrosion resistant compositions are disclosed which comprise an aqueous solution of a water-soluble hexa-

valent chromium compound, a water-soluble inorganic fluorine-containing compound and a soluble rare earth metal salt. The method of imparting a protective film to a metal surface using these compositions is also described.

3,752,708

# **CORROSION RESISTANT COMPOSITION AND METHOD**

Isaac Laird Newell, Wethersfield, Conn., and William F. Houlihan, Springfield, Mass., assignors to Heatbath Corporation, Springfield, Mass.

No Drawing. Filed Aug. 23, 1971, Ser. No. 174,151  
Int. Cl. C23f 7/26

U.S. Cl. 148—6.2

23 Claims

Corrosion resistant compositions are disclosed which comprise an aqueous solution of a water-soluble hexavalent chromium compound, a water-soluble inorganic fluorine-containing compound, a soluble rare earth metal and a water-soluble manganese salt. The method of imparting a protective film to a metal surface using these compositions is also described.

3,752,709

# **CORROSION RESISTANT METASTABLE AUSTENITIC STEEL**

Victor F. Zackay, Berkeley, and Earl R. Parker, Oakland, Calif., assignors to the United States Atomic Energy Commission represented by the United States Atomic Energy Commission

No Drawing. Filed Oct. 12, 1970, Ser. No. 80,193  
Int. Cl. C21d 7/14

U.S. Cl. 148—12

9 Claims

A steel and a process for imparting to such steel a combination of high strength, high uniform elongation, high toughness and corrosion resistance. The process consists of subjecting single phase, austenitic steel which has an  $M_s$  below ambient temperature, a total carbon plus nitrogen content of from about 0.15% to about 0.5%, a chromium content of from about 11% to about 18%, and at least 0.5% of at least one alloying element selected from the group consisting of molybdenum, manganese, vanadium, niobium, tantalum and tungsten preferably molybdenum, to deformation at a temperature above about 400° F. but below the recrystallization temperature of the steel.

3,752,710

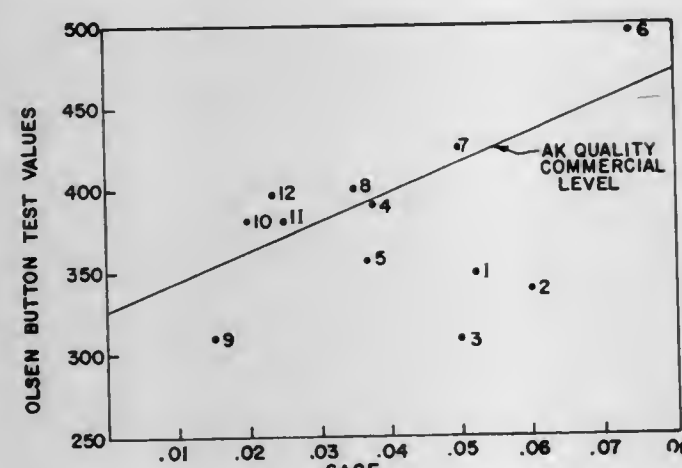
# **METHODS OF FINISHING RECONSTITUTED METAL**

Mark E. Whalen, Pepper Pike, and Joseph W. Malleck, Chagrin Falls, Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Filed July 21, 1971, Ser. No. 164,649  
Int. Cl. B22f 3/12, 3/14; C21d 7/14

U.S. Cl. 148—12

28 Claims



Methods are disclosed for rolling reconstituted metal, i.e., metal obtained by solid state compaction of pieces of

3,752,714

# **METHOD FOR SELECTIVE EPITAXIAL DEPOSITION OF INTERMETALLIC SEMICONDUCTOR COMPOUNDS**

Kazuhiro Ito, Hachioji, and Shinya Iida, Hino, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 31, 1970, Ser. No. 59,901  
Claims priority, application Japan, Aug. 4, 1969, 44/61,008

Int. Cl. H01l 7/36, 7/50

U.S. Cl. 148—175

2 Claims

A method of selective epitaxial deposition of intermetallic semiconductor compounds having a zinc blende type crystalline structure, such as gallium arsenide, in rectangular holes etched into {100} oriented substrates of same material as the deposited compound. The holes are oriented in the <100> to <310> directions, so as to obtain hole walls, which are substantially perpendicular with respect to the upper surface of substrate, and which result in the formation of flat upper surfaces of single crystals deposited in those holes. The holes are etched with a  $H_2SO_4:H_2O_2$  (1:10 by volume) solution.

3,752,711

# **METHOD OF MANUFACTURING AN IGFET AND THE PRODUCT THEREOF**

Else Kooi, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 1, 1971, Ser. No. 148,416  
Claims priority, application Netherlands, June 4, 1970, 7008101

U.S. Cl. 148—33.3

7 Claims

The invention relates to a method of manufacturing an insulated gate field effect transistor in which an inset silicon oxide layer is provided on the surface of a silicon body by means of a masking layer which masks against oxidation.

3,752,712

# **IRON-COPPER PREALLOYS**

Robert T. Holcomb, Westmount, Quebec, Canada, assignor to Domtar Limited, Montreal, Quebec, Canada

No Drawing. Filed June 7, 1971, Ser. No. 150,787  
Int. Cl. C21d 1/00

U.S. Cl. 148—126

6 Claims

A prealloyed iron-copper powder which has high compressibility and shrinks upon sintering is prepared by melting a charge of iron and copper, atomizing the charge with water jets under pressure, further comminuting the particles if desired, and subjecting the formed powder to a heat treatment between 1400° F. and 1800° F. in a reducing atmosphere followed by a controlled cooling.

3,752,713

# **METHOD OF MANUFACTURING SEMICONDUCTOR ELEMENTS BY LIQUID PHASE EPITAXIAL GROWING METHOD**

Masaaki Sakuta and Toshimasa Ishida, Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1971, Ser. No. 114,174  
Claims priority, application Japan, Feb. 14, 1970, 45/12,276, 45/12,277

Int. Cl. H01l 7/38

U.S. Cl. 148—171

9 Claims

A semiconductor element of multi-layer construction with P-N junctions between layers is prepared by contacting a semiconductor substrate with a solution containing at least three elements of groups III and V and doped with a P-type impurity and a N-type impurity, contacting a semiconductor substrate with the solution, heating the semiconductor substrate and the solution to a predetermined temperature and repeating alternately a relatively slow cooling and a relatively fast cooling to grow layers of semiconductor crystals of the III-V compounds.

3,752,716

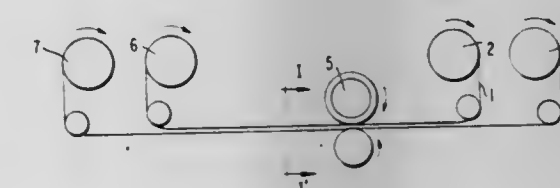
# **PROCESS FOR THE PRODUCTION OF PRESSURE-SENSITIVE ADHESIVES**

Yasuhiro Moriyama and Takafumi Okamoto, Osaka, Japan, assignors to Nitto Electric Industrial Co., Ltd., Osaka, Japan

Filed May 10, 1971, Ser. No. 141,562  
Claims priority, application Japan, May 9, 1970, 45/39,479

U.S. Cl. 156—3

19 Claims



A process for the production of a pressure-sensitive adhesive having a fluorocarbon resin film as the support,



which comprises treating at least one surface of a fluorocarbon resin film to provide adhesivity to the surface, applying a pressure-sensitive adhesive material to the surface of the film thus treated, superposing a fluorocarbon resin film on the adhesive layer thus formed, and compression rolling the laminate using rolls heated to temperatures of higher than 25° C. and lower than the melting point of the fluorocarbon resin is disclosed.

### 3,752,717 MOUNTING MEDIA FOR SEMICONDUCTOR FABRICATION

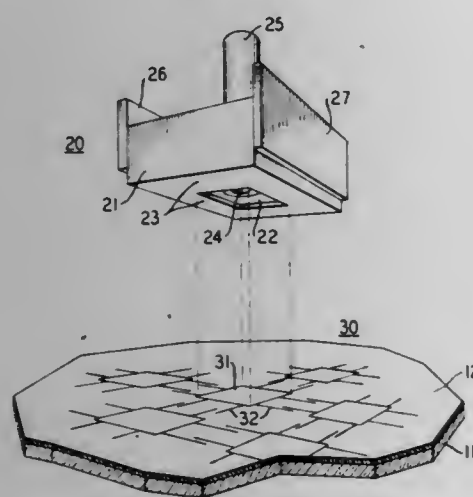
Malcolm Lunt White, Bethlehem, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 5, 1971, Ser. No. 169,305

Int. Cl. H01l 7/50; B32b 33/00

U.S. Cl. 156—17

12 Claims



Two hydrocarbon compounds, fluorene and docosane, are especially useful as temporary mounting media during various stages of processing semiconductor devices, and, in particular, for processing silicon integrated circuit chips. These compounds have an advantage over waxes in that they leave no contaminating residues upon vaporization when exposed to a source of heat, such as a thermode pickup device.

### 3,752,718 PROCESS FOR THE MANUFACTURE OF A SLIDE FASTENER

Marcel Potin, Choisy-le-Roi, France, assignor to Societe Financiere Francaise de Licences et Brevets, Choisy-le-Roi, France

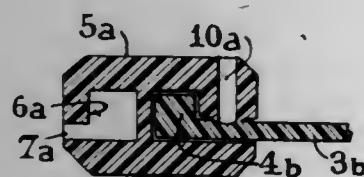
Filed Mar. 26, 1971, Ser. No. 128,331

Claims priority, application France, Mar. 31, 1970, 7011393

Int. Cl. A41h 37/04

U.S. Cl. 156—66

7 Claims



A separable slide fastener includes two rows of fastener elements having at one of their ends a separable coupling device consisting of respective male and female members,

said female member being in the form of a housing to receive the male member.

In a process for the manufacture of such a slide fastener, there are provided the steps of manufacturing the housing separately by moulding it from a thermoplastic material, engaging the housing onto an end of a supporting tape for a row of fastener elements, and securing said housing in position on said tape end by driving through a wall of said housing a means serving to force the material of said wall towards the inside of said housing.

### 3,752,719 METHOD OF MAKING HOSE OR OTHER TUBULAR BODIES OF CURABLE ELASTOMERIC MATERIAL

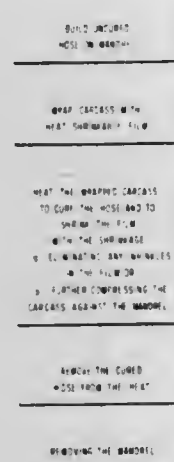
Clarence W. Borden, Trenton, N.J., assignor to Goodall Rubber Company, Trenton, N.J.

Filed May 15, 1970, Ser. No. 37,572

Int. Cl. B32b 31/20; B29c 27/20

U.S. Cl. 156—84

10 Claims



Biaxially oriented heat shrinkable plastic film is wrapped around a mandrel-supported tubular body of uncured elastomeric material so that the application of curing heat will cause the film to shrink in directions which lie axially and circumferentially of the tubular body and remove wrinkles in the film and compress the tubular body.

### 3,752,720 METHOD OF MAKING PNEUMATIC TIRES

Wilhelm Hamacher, Bruchkobel, and Hubert Leinweber, Hanau am Main, Germany, assignors to Dunlop Limited, London, England

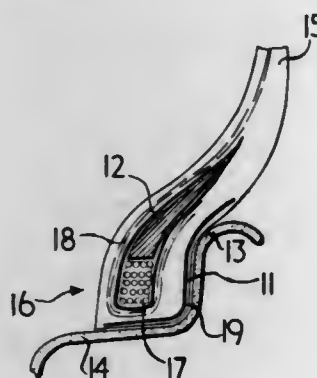
Filed Jan. 6, 1971, Ser. No. 104,207

Claims priority, application Germany, Jan. 15, 1970, P 20 01 706.5

Int. Cl. B29h 17/22

U.S. Cl. 156—132

7 Claims



A method of building a tubeless pneumatic tire, comprising a bead region reinforcement of rubberized fleece material, the fibers of which are preferentially orientated substantially perpendicularly to a tire circumference.

### 3,752,721 FIBRE CONTAINING COMPOSITIONS

Peter Stanley Clark and David William Hobbins, Chur, Switzerland, assignors to Fosco Trading A.G., Chur, Switzerland

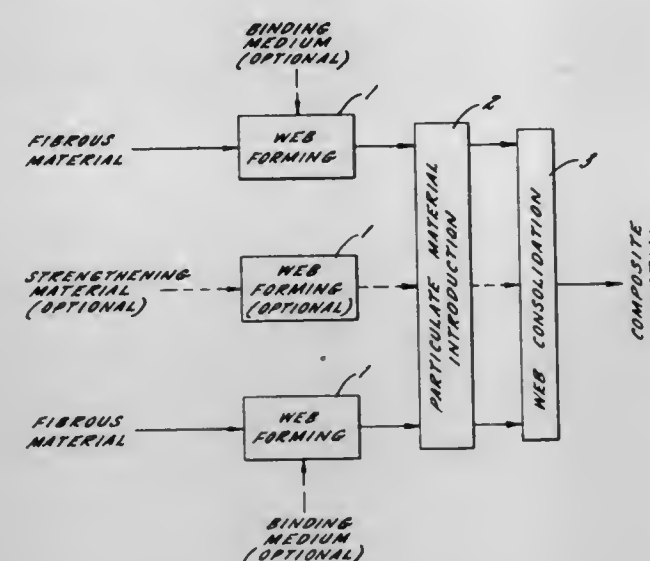
Filed June 25, 1970, Ser. No. 49,924

Claims priority, application Great Britain, July 3, 1969, 33,661/69

Int. Cl. B32b 31/14, 31/20

U.S. Cl. 156—148

19 Claims



A method for the production of a composite material comprising both fibrous and particulate ingredients includes the steps of forming a web of fibrous material, introducing particulate material onto or into the web, and consolidating the web containing the particulate material. The material so obtained has wide uses, for example as a hot top lining material or a sound insulation material.

### 3,752,722 METHOD OF MANUFACTURING PHOTOGRAPHIC FILM UNITS

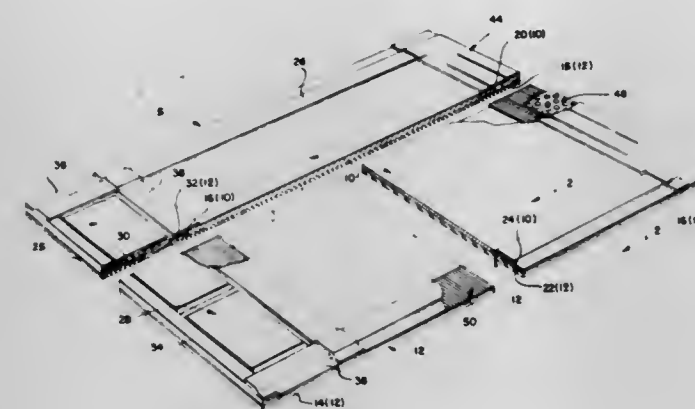
Rogers B. Downey, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 5, 1971, Ser. No. 140,537

Int. Cl. B31f 5/08; B32b 31/10, 31/18

U.S. Cl. 156—201

19 Claims



A method of fabricating and assembling a succession of photographic, self-developing film units each including photosensitive and second sheets secured in face-to-face relation at least along one end and two lateral margins; a container of processing liquid; means for collecting and retaining excess processing liquid overrun and spacing sheet.

means for controlling processing. In the manufacturing method, a succession of spaced apart photosensitive sheets are joined together by narrow connecting strips to form a first web which is superposed with a second and wider web and laminated thereto to form a sandwich by distributing a laminating liquid between the webs while pressing them together and applying heat and pressure to the connecting strips to adhere them to the second web. Other components of the film units including containers, liquid trapping elements and associated components are mounted on the lateral portions of the webs and, as the last operation, the sandwich is severed transversely at the connecting strips to form individual film units.

### 3,752,723 METHOD OF MANUFACTURING SELF-DEVELOP- ING PHOTOGRAPHIC FILM UNITS

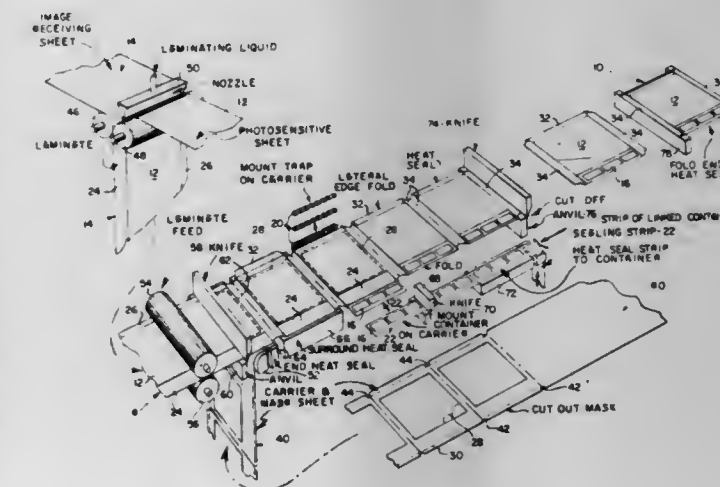
Louis O. Bruneau, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 20, 1971, Ser. No. 135,539

Int. Cl. B31f 5/00; B32b 31/04; G03c 3/00

U.S. Cl. 156—157

10 Claims



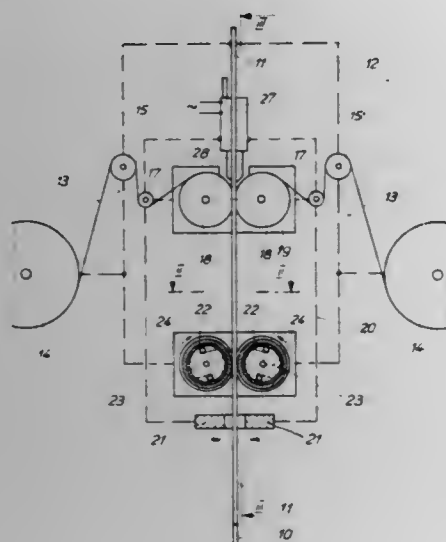
Method of manufacturing a succession of photographic film units each comprising rectangular photosensitive and second sheets secured in face-to-face relation by a combination mask and binding sheet formed with a rectangular exposure opening, secured to the outer surface of the second sheet and having marginal portions folded around the end and lateral margins of the photosensitive and second sheets and adhered to the lateral and at least one end margin of the photosensitive sheet. The film unit also includes a rupturable container of processing liquid mounted adjacent the trailing edge of the photosensitive sheet and having portions defining a liquid discharge passage coupled with the photosensitive and second sheets so as to direct the liquid contents of the container therebetween; and a trapping element secured between the trailing end marginal portion of the binding sheet and the trailing end portions of the photosensitive and second sheets for collecting and retaining excess processing liquid overrun.

During the assembly process, the binding sheet is in the form of an elongated strip which functions as a carrier on which the other components of a succession of film units are mounted as the carrier is moved between and through a succession of work stations at which assembly operations are performed and the components of each film unit are checked for proper assembly. The binding sheet carries the succession of film units through substantially all assembly and inspection steps except for the last two assembly steps in which the lateral edge portions of the binding sheet—which extend transversely of the carrier strip—are folded and adhered to the photosensitive sheet.



### 3,752,724 METHOD OF AND APPARATUS FOR MAKING FLAT PLASTIC TUBING

Bernhard Seiler, Zurich, Switzerland, assignor to  
Emil Hartmann, Zurich, Switzerland  
Filed Aug. 20, 1970, Ser. No. 65,593  
Claims priority, application Switzerland, Aug. 26, 1969,  
12,944/69  
Int. Cl. B32b 31/00, 31/04  
U.S. Cl. 156—351 6 Claims



A method of an apparatus for making plastic tubing by marginally securing plastic sheet material strips supplied from coils and brought together about a blowtube along which the plastic tube is advanced and moved beyond the end of the blowtube for a purpose such as to be formed into plastic containers. A step-and-repeat mechanism successively advances completed sectional lengths of the plastic tube beyond the end of the blowtube for processing into containers, and in each cycle completing another sectional length of the plastic tubing.

### 3,752,725 RESILIENT STRIP MOUNTING FOR PLASTIC BAG FABRICATOR

Max Freeman, 75 Arleigh Road,  
Great Neck, N.Y. 11021  
Filed Apr. 23, 1971, Ser. No. 136,725  
Int. Cl. B32b 31/00 7 Claims

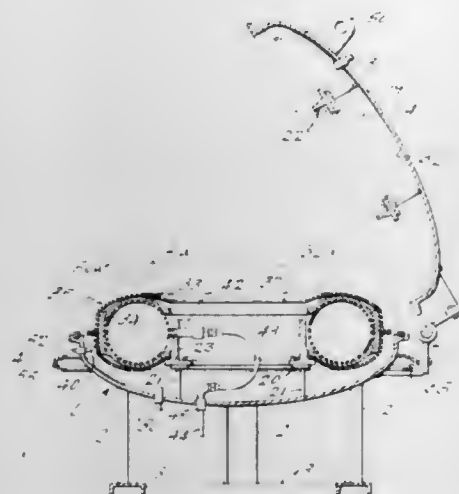
A plastic bag fabricating, dispensing and sealing unit includes a lid having mounted on it a strip of resilient, nonadherent heat resistant material that engages a heating wire of the unit when the lid is closed, the strip being axially received in a groove that extends along the inner face of the lid. Openings formed at each end of the groove receive a rod that extends through the strip and secures it to the lid. An aperture that extends through the strip parallel to the rod provides the strip with the necessary resiliency.

### 3,752,726 APPARATUS FOR RETREADING TIRES

Carlton Keith Barefoot, 601 Shellbark Road,  
Muncie, Ind. 47304  
Filed Apr. 16, 1971, Ser. No. 134,674  
Int. Cl. B29h 5/04, 17/36 8 Claims

The present invention is an apparatus for bonding a preshaped layer of retread stock to the periphery of a tire casing. A pair of mating shell members define a tire cavity and receive a tire assembly comprising the tire casing with attached tread stock. The tire assembly is

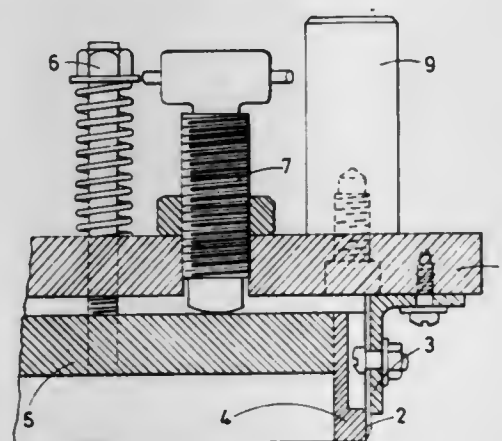
positioned within an elastomeric envelope. A flexible air tube is positioned within the tire assembly in opposed relationship to the envelope. When the mating shell members are in a closed position, air seals are effected between the inner edges of the envelope and the tire beads.



The air tube is pressurized to a predetermined pressure. The tire cavity is pressurized to a pressure below the predetermined pressure. The tire casing and its attached tread stock are held together tightly by the pressure forces. Heat is applied for bonding the retread stock to the tire casing.

### 3,752,727 DIES FOR HIGH FREQUENCY WELDING AND CUTTING

Gordon Cavell Cox, Rushden, England, assignor to Cox  
& Wright Limited, Northamptonshire, England  
Filed Feb. 23, 1971, Ser. No. 118,109  
Claims priority, application Great Britain, Feb. 23, 1970,  
8,632/70  
Int. Cl. B29c 27/04; B32b 31/18 5 Claims

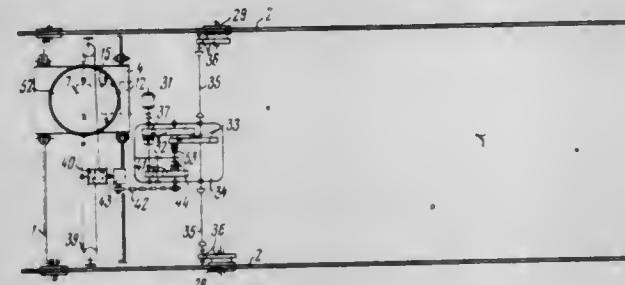


In a welding electrode and cutting die assembly, for the high frequency electric welding and cutting of heat sealable plastic sheet materials, the welding electrode is carried by a support plate which is spring-urged toward a base plate upon which the cutting knife is fixedly secured. The base plate also carries a plurality of fluid-pressure operated rams acting on the support plate so that, when the fluid pressure is applied, the rams thrust the support plate away from the base plate and cause the electrode work-engaging face to protrude beyond the knife edge.

### 3,752,728 DEVICE FOR MOLDING SHEETS OF GLASS- REINFORCED PLASTICS

Vasily Ivanovich Smirnov, deceased, late of Leningrad, U.S.S.R., by Viktoriya Stanislavovna Smirnova, ulitsa Frunze 15, kv. 101, and Valery Vasilievich Smirnov, Vitebsky prospekt 23, korpus 3, kv. 107, both of Leningrad, U.S.S.R., administrators; and Yakov Veniaminovich Epshtein, ulitsa Mayakovskogo 10, kv. 10; Solomon Grigorievich Ginzburg, Bulvar Novatorov 35, kv. 21; Sergei Mikhailovich Ivanov, naberezhnaya r. Fontanki 96, kv. 7; and Nikolai Petrovich Belyaev, Novoizmailovskiy prospekt 44, korpus 4, kv. 20, all of Leningrad, U.S.S.R.

Filed Apr. 17, 1970, Ser. No. 29,604  
Int. Cl. B32b 31/08, 31/20 2 Claims



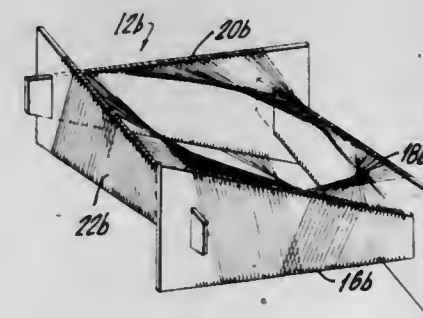
A device for molding sheets of glass-reinforced plastics having a bridge truss movable in the direction transverse to the truss span and a carriage moving along the truss. Secured on the carriage is a molding head with means for laying, and densifying the sheets of a glass reinforcing material and for impregnating them with binders. The device has with means for providing for a simultaneous movement of the bridge truss and carriage at speeds being in a predetermined ratio, while the molding head is secured on the carriage with the possibility of turning about a vertical axis and fixing in a required direction.

3,752,729  
STRENGTHENED GLASS ARTICLE  
Ellen L. Mochel, Painted Post, N.Y., assignor to  
Corning Glass Works, Corning, N.Y.  
No Drawing. Filed May 16, 1966, Ser. No. 550,121  
Int. Cl. C03c 3/20, 17/06 3 Claims

This invention relates to improved glass compositions for use in chemical strengthening wherein the position shape of the temperature versus log viscosity curve is changed by the addition of MgO and optionally K<sub>2</sub>O to the glass.

### 3,752,730 THREE-DIMENSIONAL STRING SCULPTURE

Richard M. Koff, 665 W. Sheridan Road,  
Chicago, Ill. 60613  
Filed Apr. 9, 1971, Ser. No. 132,701  
Int. Cl. B44f 7/00 5 Claims



A three-dimensional sculpture includes a plurality of members interlocked at their ends to form a polygonal

frame. Each of the frame members includes a series of notches formed along their opposing longitudinal edges. A filament such as a string is thereafter passed through the notches on the several frame members to thereby form a highly decorative sculptural pattern enclosed by the frame.

### 3,752,731 PLASTIC FILM MADE BY A FILM CASTING ARTICLE

Theodore Donald Stiegler and Clyde George Learn, Sr.,  
Richmond, Va., assignors to E. I. du Pont de Nemours  
and Company, Wilmington, Del.  
Original application Dec. 2, 1969, Ser. No. 881,370, now  
abandoned. Divided and this application Sept. 8, 1971,  
Ser. No. 178,697 1 Claim

A method of making a film casting article having a casting surface capable of imparting to polymeric film cast thereon and stripped therefrom desirable optical and slit-roll formation properties. The casting surface of the film casting article is polished, blasted with grit, and stoned and polished again to impart critical "roughness" characteristics to such casting surface.

### 3,752,732 REUSABLE, TEAR-RESISTANT POLYOLEFIN- PAPER LAMINATE

Lenart A. Peterson, Chicago Ridge, and John G. Finley,  
Worth, Ill., assignors to Phillips Petroleum Company  
Filed Feb. 24, 1970, Ser. No. 13,413  
Int. Cl. B32b 7/06, 13/12, 27/08 5 Claims



A tough, tear-resistant, reusable, well-bonded polyolefin-paper laminate is formed by laminating a polyolefin film, preferably oriented, to a paper substrate by means of a melt of a polymer containing the same olefin as used in the film.

3,752,733  
BONDED NONWOVEN FIBROUS PRODUCT  
Paul R. Graham, Ballwin, Morris V. Merchant, Floris-  
sant, and August F. Ottinger, St. Louis, Mo., assignors  
to Monsanto Company, St. Louis, Mo.  
No Drawing. Filed Oct. 29, 1969, Ser. No. 872,412  
Int. Cl. D04h 3/12, 5/04 23 Claims

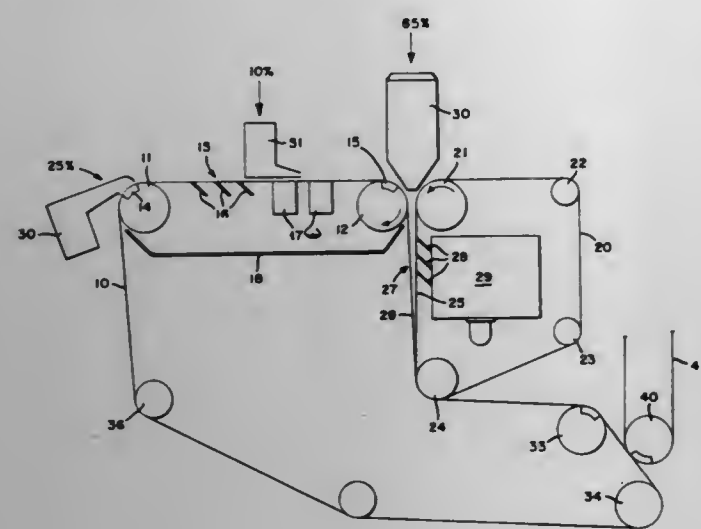
Bonded, nonwoven fibrous products bonded with a composition consisting essentially of an ethylene/vinyl chloride interpolymers, containing 5 to 70 percent ethylene; 30 to 95 percent vinyl chloride and 0.1 to 10 percent acrylamide or acrylamide/polar monomer mixtures.

3,752,734  
MULTI-PLY PAPER MACHINE  
Willard C. Nothohm, Watertown, N.Y., assignor to The  
Black Clawson Company, Hamilton, Ohio  
Filed Aug. 12, 1970, Ser. No. 63,076  
Int. Cl. D21f 11/04 10 Claims

A multi-ply paper machine utilizes a pair of forming belts with one belt having horizontal and vertical runs and the second belt having a vertical run in opposition to the vertical run of the first belt and defining therewith a vertically extending forming zone. Papermaking stock



is deposited on the horizontal run of the first belt and liquid drains therefrom as it progresses towards the vertical forming zone. The major portion of the stock making

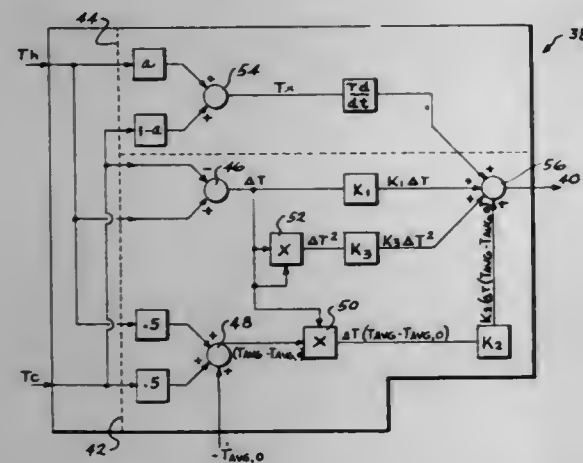


up the finished web is then deposited in the vertical forming zone, with principal drainage of this stock deposition being through the vertical run of the second belt.

**3,752,735**  
**INSTRUMENTATION FOR NUCLEAR REACTOR CORE POWER MEASUREMENTS**  
Charles R. Musick, Rockville, Conn., and Richard P. Remshaw, Brooklyn, N.Y., assignors to Combustion Engineering, Inc., Windsor, Conn.  
Filed July 16, 1970, Ser. No. 55,331  
Int. Cl. G21c 17/00

U.S. Cl. 176—19

8 Claims



In a nuclear reactor system, at least two independent measures of reactor core power are provided with one being dependent on neutron flux and the other on coolant thermal parameters. The two independent measures of core power are interrelated in a manner which exploits the advantages of each while avoiding inherent limitations of either to provide a more accurate determination of core power for a variety of system conditions.

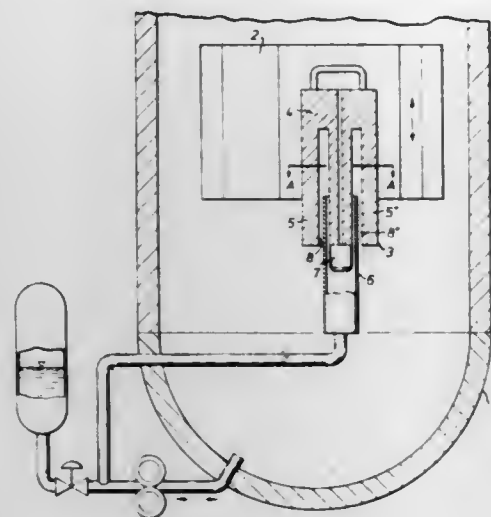
**3,752,736**  
**CONTROL ROD ARRANGEMENT PARTICULARLY FOR BOILING WATER REACTORS**  
Heinz Kornbichler, Falkenstein, and Peter Seidle, Niederneisen, Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany  
Filed Sept. 30, 1971, Ser. No. 185,143  
Claims priority, application Germany, Sept. 30, 1970, P 20 48 029.9  
Int. Cl. G21c 7/10

U.S. 176—36 R

5 Claims

An improved control rod arrangement for a nuclear reactor, and in particular a boiling water reactor, of the

type wherein the absorber portion of the control rod has a cross-shaped cross section, a coaxial guide tube is provided for guiding the control rod outside of the reactor and the control rod is provided with a lifting piston which cooperates with a lifting cylinder to insert the control rod into the reactor core from the bottom. According to the

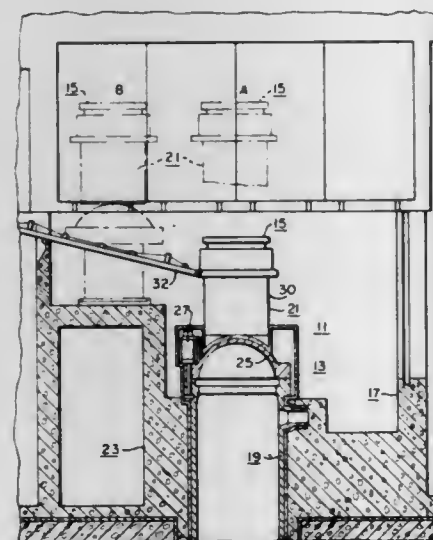


invention, the control rod guide tube is designed to simultaneously serve as the lifting cylinder and the absorber portion of the control rod is designed so that the four wings of the cross-shaped cross section will pass over the control rod guide tube, e.g. by providing each of the wings with an upwardly extending slit.

**3,752,737**  
**COMBINATION OF NUCLEAR REACTOR AND MISSILE SHIELD**  
Erling Frisch, Pittsburgh, and Harry N. Andrews, Export, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.  
Filed July 8, 1970, Ser. No. 53,200  
Int. Cl. G21c 9/00

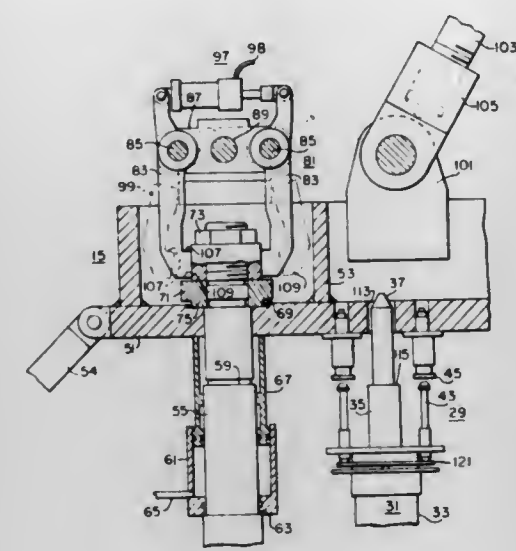
U.S. Cl. 176—38

11 Claims



There is disclosed the combination of a nuclear reactor with a missile shield which also affords protection in the event of a seismic disturbance. The shield is massive plate of steel or the like with ribs and is mounted above, and connected to, the upper package of the reactor. The plate has holes through which projections from the

housings of the retracting mechanism clusters for the control rods pass. In the event of a seismic disturbance the movement of the mechanism clusters is limited by the restraint exerted by the shield plate on the projections. In

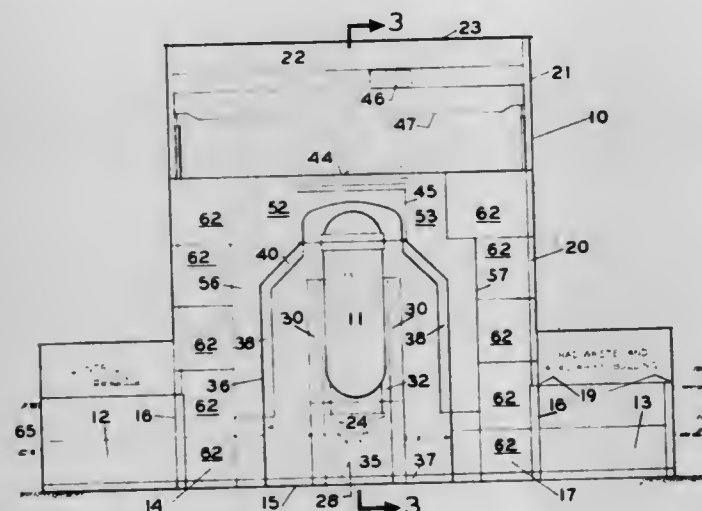


addition the shield is retractable from the upper package by operation of hydraulic pistons and when retracted locks the rod retracting mechanisms for a refueling operation.

**3,752,738**  
**NUCLEAR REACTOR PLANT AND MULTIPLE PURPOSE SHIELDING SYSTEM THEREFOR**  
Sherman Naymark, San Jose, Calif., assignor to Nuclear Services Corporation, Campbell, Calif.  
Filed July 6, 1970, Ser. No. 52,384  
Int. Cl. G21c 13/00

U.S. Cl. 176—87

19 Claims



A multipurpose compartmented reactor building in which water fillable tankage dispersed about the pressure vessel and the containment vessel of a nuclear reactor provide primary shielding of a primary pressure boundary; secondary shielding in the containment vessel therefor as well as protection against missiles from within and/or without the building; the tankage further providing multiple and immediate sources of water for emergency cooling and for flooding the containment boundary around the pressure vessel in the event of vessel rupture to keep the reactor core submerged; the tankage and water therein serving to absorb the energy release generated in

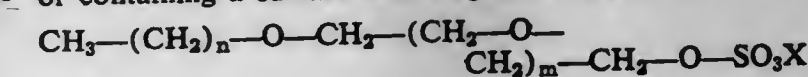
a nuclear accident; such tankage when empty rendering the building light enough to be floatable as a hull for transport from a place of the construction to mooring at a site of ultimate use where the water sustaining the hull serves as a seismic damper to the hull in the event of an earthquake.

**3,752,739**  
**RECOVERY OF A CULTIVATED MICRO-ORGANISM AND OF RESIDUAL SUBSTRATE EMPLOYED IN THE CULTIVATION**  
Jean Amaudric du Chaffaut, Marseille, France, assignor to The British Petroleum Company Limited, London, England  
No Drawing. Continuation of abandoned application Ser. No. 743,635, July 10, 1968. This application Nov. 15, 1971, Ser. No. 198,965  
Claims priority, application Great Britain, July 19, 1967, 33,088/67  
Int. Cl. A23j 1/18

U.S. Cl. 195—28 R

8 Claims

Aerobic cultivation of a micro-organism, for example *Candida tropicalis*, in the presence of a feedstock which consists of or contains a hydrocarbon and on which said micro-organism is capable of growth; thereafter separating part of the aqueous nutrient medium; thereafter treating the remaining product or part thereof comprising the micro-organism in admixture with at least part of the residual hydrocarbon and at least part of the residual nutrient medium, with a surface active agent consisting of or containing a surface active agent having the formula:



where  $n$  is an integer from 11 through to 14 and  $m$  is an integer from 4 through to 12 and where  $X$  is sodium or potassium, for example an oxyethylenated lauric alcohol sulphate, and thereafter subjecting the mixture so obtained to a separation treatment for the recovery of a fraction in which hydrocarbon predominates and a fraction consisting of or containing a mixture of the micro-organism and water.

Preferably the fraction in which hydrocarbons predominate and which will contain some aqueous medium held in emulsion and comprising surface active agent, is treated with a compound containing a metal ion which forms a water insoluble salt with said surface active agent, for example calcium hydroxide. After removal of the precipitated salt a hydrocarbon product free of surface active agent may be obtained.

**3,752,740**  
**PROCESS FOR PRODUCING  $\beta$ -CAROTENE**  
Oldrich K. Sebek, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.  
No Drawing. Filed Jan. 22, 1964, Ser. No. 339,331  
Int. Cl. C12d 5/00

U.S. Cl. 195—28 R

3 Claims

A process for producing increased titers of  $\beta$ -carotene which comprises fermenting *Blakeslea trispora* in an aqueous fermentation medium containing at least 7½% citrus molasses.

**3,752,741**  
**EXTRACTION OF PROTEASES**  
Monique Courtois, 5 Rue Auguste Barbier, Paris, France, and Bernard Ores, 13 Rue Bataille, Montreuil Sous Bois, France  
No Drawing. Filed May 24, 1971, Ser. No. 146,550  
Claims priority, application France, June 3, 1970, 7020365  
Int. Cl. C07g 7/028

U.S. Cl. 195—66 R

5 Claims

A novel process for the extraction of proteases active in alkaline medium from fermentation broths in which the proteases are produced by microorganisms, by adsorption on a non-ionic resin and elution with a solvent.



### 3,752,742 PROCESS AND APPARATUS FOR THE AEROBIC FERMENTATION OF SUBSTRATES

Gerhard Jaekel, Hurth-Hermulheim, Kurt Karrenbauer, Liblar, Eitel Goedicke, Hurth-Efferen, and Dieter Kirstein, Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany  
Filed Aug. 30, 1971, Ser. No. 175,815

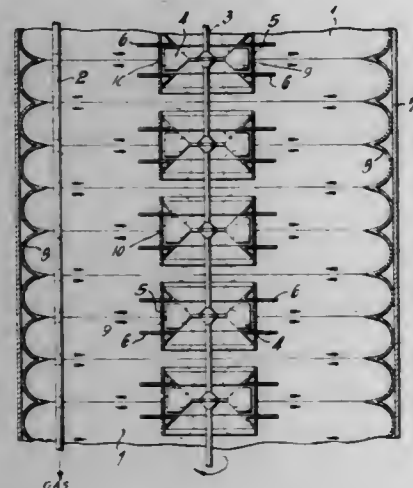
Claims priority, application Germany, Aug. 31, 1970,

P 20 43 077.7

Int. Cl. C12b 1/14

U.S. Cl. 195—109

2 Claims



Substrates are subjected to continuous aerobic fermentation or highly polluted effluent from organic chemical production facilities is continuously purified in the presence of micro-organisms in a biochemical reaction zone by aeration with an oxygen-containing gas. To this end the oxygen-containing gas is introduced into the biochemical reaction zone having a liquid phase therein, and while flowing therethrough, it is continually transformed with the resultant formation of fresh-surfaced gas bubbles and reduction of the time of contact between the gas in the bubbles and the liquid phase at any surface therebetween.

3,752,743

### BIOLOGICAL INDICATOR

Jack R. Henshilwood, Highland, Ind., assignor to Colab Laboratories, Inc.

Filed Mar. 15, 1972, Ser. No. 234,726

Int. Cl. C12k 1/10

U.S. Cl. 195—127

5 Claims

A sterilizing test device is provided for testing the completeness of sterilization procedures. The device comprises a semi-rigid transparent envelope with separate compartments for gas access, for the culture medium and for a source of micro-organisms, the compartments being interconnected so that the culture medium can be passed into contact with the micro-organisms and so that external air will be provided to the micro-organisms during their culture growth.

3,752,744

### POLAROGRAPHIC ELECTRODE METHOD

Robert R. Fike, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

Original application Sept. 2, 1969, Ser. No. 854,660.

Divided and this application Apr. 26, 1972, Ser. No. 247,825

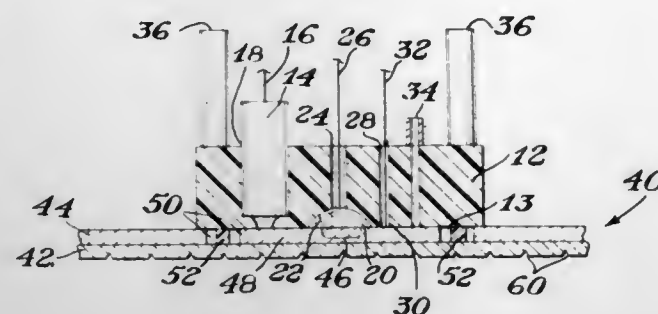
Int. Cl. G01n 27/46

U.S. Cl. 204—1 T

3 Claims

A polarographic electrode assembly comprising a confined working electrode is described. The electrode assembly is adapted to fit against a portion of a thin layer chromatogram to form a polarographic cell in which the

electrodes of the electrode assembly are all in the contact with an isolated zone of the thin layer containing a spot of substance to be assayed. A method of using the



polarographic electrode assembly to assay materials separated by thin layer chromatography without elution of the spots containing the substance is also described.

3,752,745

### RECOVERY OF METAL VALUES FROM OCEAN FLOOR NODULES

William S. Kane, Newport News, and Paul H. Cardwell, Zanolini, Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

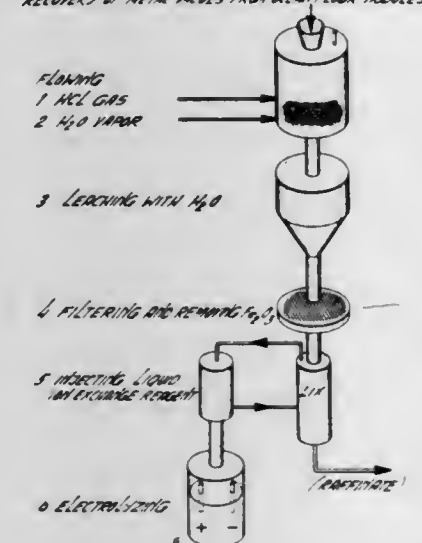
Filed May 12, 1971, Ser. No. 142,697

Int. Cl. C22d 5/08, 5/18, 5/30

U.S. Cl. 204—105 M

19 Claims

RECOVERY OF METAL VALUES FROM OCEAN FLOOR NODULES



Method for recovering metal values from ocean floor nodules of the type containing iron, manganese, copper, cobalt, and nickel, comprising grinding the nodules into particles, hydrochlorinating to obtain metal chlorides as reaction products, converting the iron chloride to iron oxide, leaching the reaction products, removing the iron oxide, separating the copper chloride, nickel chloride, and cobalt chloride solutions from the manganese chloride solution by means of liquid ion exchange and recovering the metal values by electrolyzing or by aluminothermal reduction.

3,752,746

### ELECTROLYTIC PRINTING METHOD AND SYSTEM

Adrien Castegnier, Montreal, Quebec, Canada (325 Melbourne Ave., Mount Royal, Quebec, Canada)

Filed Feb. 25, 1972, Ser. No. 229,303

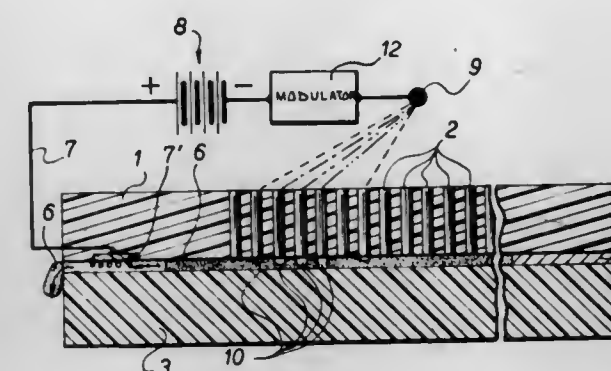
Int. Cl. G01k 3/00

U.S. Cl. 204—130

24 Claims

A printing method and system adapted to replace photography, cinematography and photocopying but which do not use any photosensitive film. A printing method and

system which consists of electrically imprinting an image into an electrically reactive layer. In particular, an electrolytic printing method and system wherein electrodes are arranged in contact with a suitable viscous electrolyte layer to produce, upon selective energization, gas bubbles



of different depths of penetration into the viscous electrolyte layer adjacent the corresponding electrodes, therefore making corresponding imprints into the layer and thereafter hardening the latter to retain the image reproduced.

3,752,747

### METHOD FOR CONTROLLING ALGAE POLLUTION

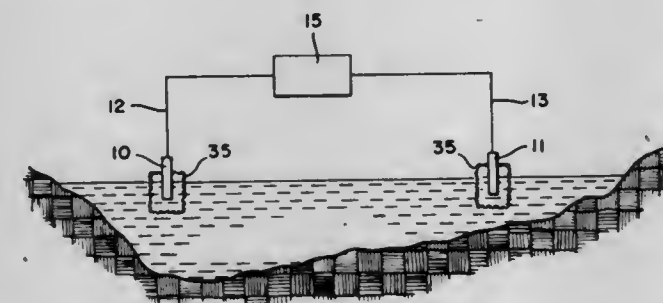
Richard W. Treharne, Xenia, Ohio, and Thomas E. Brown, Absecon, N.J., assignors to Kettering Scientific Research, Inc., Yellow Springs, Ohio

Filed Nov. 16, 1970, Ser. No. 89,983

Int. Cl. C02b 1/82; C02c 5/12

U.S. Cl. 204—149

12 Claims



Water in ponds, aquaria, streams and other open systems and the like exposed to light is subjected to electrolysis with electrochemically inert electrodes or with an electrochemically active anode and an electrochemically inert cathode to destroy or to control the growth of algae. A current density is maintained at a level high enough to destroy the algae, and low enough to be harmless to human and fish life. When an active anode is used it releases metal ions toxic to algae, and a detector electrode is used to sense the toxic ion concentration so that a predetermined concentration lethal to algae is maintained. Essentially the same system may be used for the destruction of bacteria, such as *E. coli*, *R. rubrum*, *Chromatium*, *Azotobacter*, *R. rubrum* mutant (R-26), and the like.

3,752,748

### OZONE GENERATING APPARATUS AND METHOD

Robert D. McMillan, Jr., Houston, Tex., assignor to McMillan Electronics Corporation, Houston, Tex.

Filed Apr. 19, 1971, Ser. No. 135,158

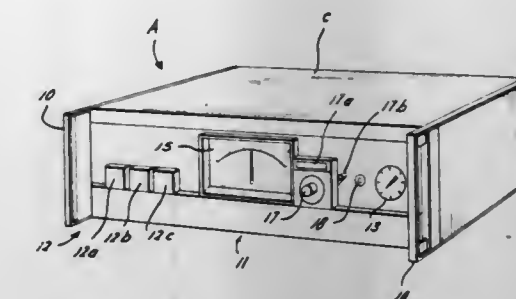
Int. Cl. B01k 1/00; B01j 1/10

U.S. Cl. 204—157.1 R

16 Claims

An ozone generating apparatus and method providing substantially constant, controlled concentrations of

ozonized gas for repeated operating cycles or for sustained lengths of operating time and capable of being



quickly and accurately calibrated to insure accuracy of the ozone concentrations generated.

3,752,749

### ELECTRODIALYTIC REMOVAL OF ACID FROM AQUEOUS EFFLUENT

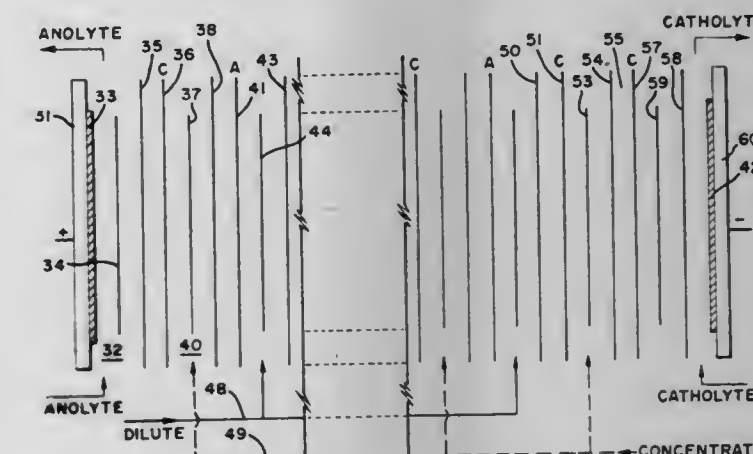
Frederick P. Chlanda, New Brunswick, Harry P. Gregor, Leonia, and Kang-Jen Liu, Somerville, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 27, 1971, Ser. No. 183,923

Int. Cl. B01d 13/02

U.S. Cl. 204—180 P

6 Claims



The electrodialytic concentration and removal of acids from aqueous effluents, e.g., malic acid effluent containing less than about 10% malic acid, to produce two streams, a relatively concentrated aqueous concentrate stream of about 30% acid and a relatively dilute stream of less than about 0.3% acid, is disclosed. The process, continuous, semicontinuous or batch offers a practical solution from the standpoint of meeting pollution control standards and for separating or recovering acids which may be returned to the process by direct recycling.

3,752,750

### METHOD FOR ELECTRODEPOSITION

Akira Matsushita and Rokuro Fukushima, Kawasaki, Japan, assignors to Akira Matsushita and Takeo Kagitani

Filed May 28, 1970, Ser. No. 41,329

Claims priority, application Japan, May 30, 1969,

44/49,690; May 31, 1969, 44/42,670, 44/42,671

Int. Cl. B01k 5/02; C23b 13/00

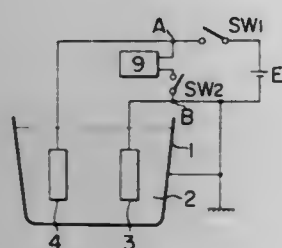
U.S. Cl. 204—181

5 Claims

There are described new methods of coating a substrate adapted to function as an anode with an electrodeposited layer in an electrodeposition bath containing therein an



electrodepositing liquid prepared by adding at least one of inorganic pigments, magnetic particles and dielectric particles, semiconductive particles, organic pigments, and their mixture to anionic solubilised resin formed by dispersing pigments (for example, a water-soluble alkyd resin containing 10 percent of solids), in which electric potentials of both electrodes of the electrodeposition bath are made equal to each other prior to the application of

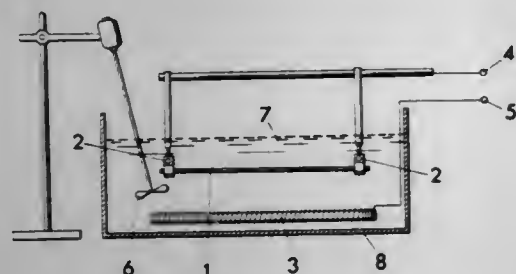


an electric voltage across them by maintaining electric potential of the substrate at a value lower than that of the electrodeposition liquid or by short-circuiting said both electrodes thereby to discharge the electric charge stored in said electrodeposition liquid, whereby formation of uniform electrodeposited layer on the substrate can be made possible under a constant initial condition of the electrodeposition. Furthermore, apparatuses adapted to carry out the above-mentioned methods are disclosed.

### 3,752,751 PROCESS FOR FORMING AN ELECTRICALLY CONDUCTIVE COATING ON A NONMETALLIC FILAMENT

Masanao Hirose, 2-9-93 Kodo, Adachi-ku, Tokyo, Japan  
Filed Jan. 8, 1971, Ser. No. 104,855  
Claims priority, application Japan, Mar 20, 1970, 45/23,389

Int. Cl. B01k 5/02  
U.S. Cl. 204-181 10 Claims

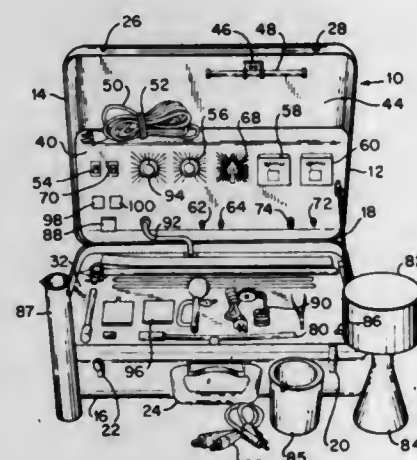


A process for forming an electrically conductive coating on the surface of a nonmetallic filament, characterized in that said nonmetallic filament is carried by electrically conductive members and placed in an electro-depositing coating material comprising electrically conductive particles dispersed in a resinous carrier with a concentration of 15-25%, preferably 18-20% by weight, said conductive members which serve as one electrode and the other electrode located in said electro-depositing coating material being electrified with a D.C. voltage, thereby forming a coating of a uniform and desired thickness on the surface of said nonmetallic filament. In the process according to this invention, an electric conductor employing a nonmetallic filament as a carrier or base and having a desired electric resistance can be easily and surely ob-

tained by controlling the D.C. voltage, current density or electrifying period for electro-deposition, employing simple and economical electro-depositing coating devices.

### 3,752,752 PORTABLE PLATING KIT

Harvey L. Slatin, New York, and Stanley Hirsch, New Rochelle, N.Y., assignors to Harstan Chemical Corporation, Brooklyn, N.Y.  
Filed May 22, 1972, Ser. No. 255,215  
Int. Cl. B01k 3/00; B23p 1/02  
U.S. Cl. 204-194 10 Claims

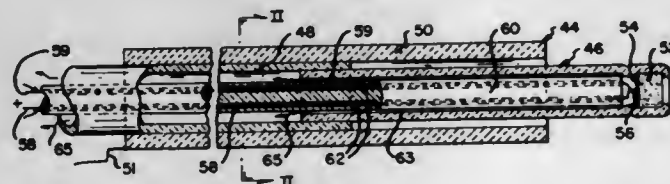


A portable electroplating kit contained in a carrying case and providing the necessary equipment for a complete plating laboratory and prototype plating machine including a rectifier, a pump, a magnetic stirrer, a source for heat, a storage compartment for accessory equipment and a built-in work surface area. The electronic equipment is housed in an enclosed control panel with appropriate control devices available at the face of the control panel.

### 3,752,753 METHOD OF FABRICATING A SENSOR FOR THE DETERMINATION OF THE OXYGEN CONTENT OF LIQUID METALS

George R. Fitterer, 825 12th St., Oakmont, Pa. 15139  
Continuation-in-part of application Ser. No. 786,866, Dec. 23, 1968, which is a continuation-in-part of application Ser. No. 570,855, Aug. 8, 1966, now abandoned. This application Apr. 30, 1971, Ser. No. 139,018  
Int. Cl. G01n 27/46

U.S. Cl. 204-195 S 22 Claims



A method for fabricating a direct reading oxygen probe structure for insertion into high temperature liquid metal comprises the steps of inserting a relatively closely fitting mass of an electrolyte material into one end of an insulating envelope, and heating the envelope to a sintering temperature of the mass at a temperature and time interval sufficient to sinter and seal the mass to the envelope. Desirably, the envelope and mass are sized and shaped so as to be capable of withstanding thermal shock upon contacting the liquid metal.

### 3,752,754 POWER SUPPLY FOR PULSE ELECTROPLATING

Roger A. Olson and Norman M. Osero, Amery, Wis., and Pat F. Mentone, St. Paul, Minn., assignors to Buckbee-Mears Company, St. Paul, Minn.  
Filed Jan. 31, 1972, Ser. No. 222,221  
Int. Cl. B01k 3/00

U.S. Cl. 204-228 5 Claims

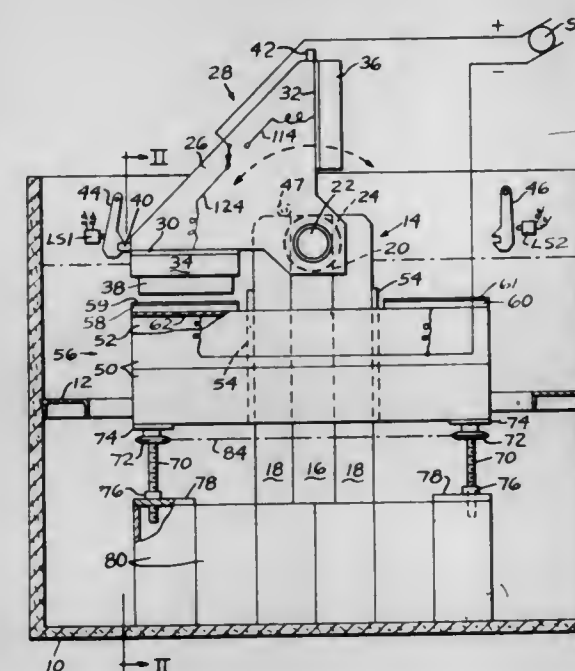


A solid state switching device connected to an energy source is turned on and off by the signal output from a multivibrator to pass pulses of energy through an output terminal to an electrode located in an electroplating bath. A circuit coupled to the switch and output terminal limits the magnitude of the output pulse.

### 3,752,755 DEBURRING APPARATUS

Frederick G. Krafft, 2975 Fox Hollow Road, Springfield, Ohio 45502  
Filed July 15, 1971, Ser. No. 162,933  
Int. Cl. B23p 1/12; C23b 5/70

U.S. Cl. 204-225 6 Claims



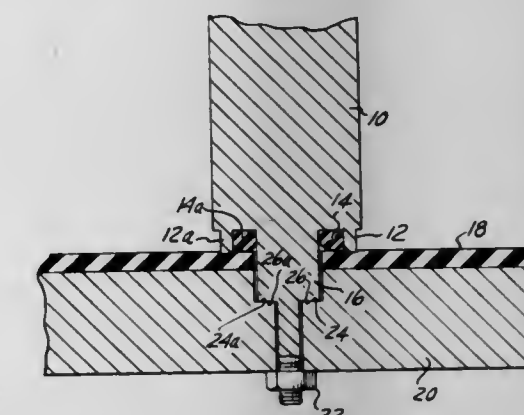
The specification discloses an electrolytic deburring machine having a tiltable work support table arranged so that when one work piece on a work station thereon is in working position, the other work station of the machine is tilted upwardly for being loaded. The machine is provided with a non-conductive tank to contain the electrolyte and in which the base and tiltable work support table are

mounted. All components of the machine exposed to the electrolyte, other than the work piece supporting member, is constructed of electrically non-conductive material, such as alumina, or fiberglass, or the like.

### 3,752,756 ANODE MOUNTING FOR ELECTROLYTIC CELL

Phillip E. Armstrong, Baton Rouge, La., Webster L. Kaiser, Jr., Cleveland, Tenn., and Newlin S. Nichols, Dearborn, John E. Schmidt, Southgate, and Orlando W. Stephenson III, Ann Arbor, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.  
Filed Jan. 31, 1972, Ser. No. 222,108  
Int. Cl. B01k 3/10

U.S. Cl. 204-252 6 Claims

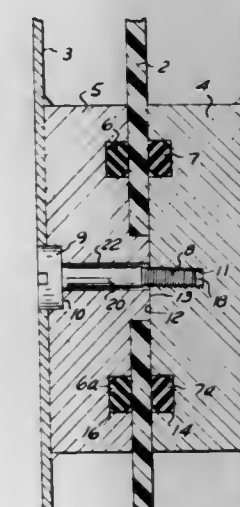


In a diaphragm-type electrolytic cell for the production of chlorine and caustic alkali from alkali metal chlorine solutions wherein the cell has metal anodes, a conducting and supporting cell base which is covered with an electrically non-conductive sheet, a two-point sealing system is provided for bolting the anode to the cell base and sealing the electrolyte out of the hole through which the bolt passes.

### 3,752,757 BIPOLAR ELECTRODE SEAL AT BARRIER SHEET

Orlando W. Stephenson III, Ann Arbor, and John E. Schmidt, Southgate, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.  
Filed June 7, 1972, Ser. No. 260,395  
Int. Cl. B01k 3/10

U.S. Cl. 204-256 5 Claims



In a filter press cell for the electrolytic production of chlorine from aqueous alkali metal chloride solu-



tions and having adjacent pairs of anodes and cathodes mechanically and electrically inter-connected, a two point sealing system is provided for bolting the anode to the cathode and sealing out the electrolyte from the hole through which the connection passes.

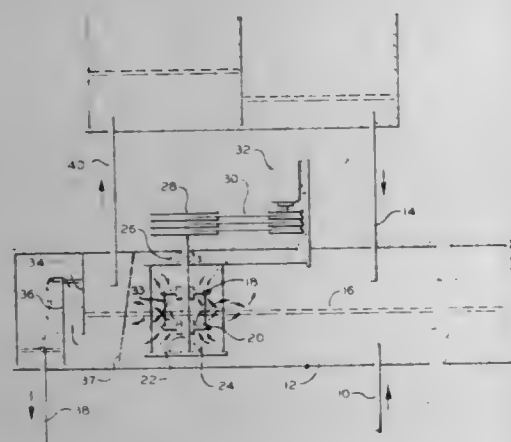
### 3,752,758 METHOD OF SEPARATING SOLID FROM LIQUIDS

Ahmad M. El-Hindi, Ridge Road, Fabius, N.Y. 13063, and Ralph G. Jaeggli, Sky High Road, Tully, N.Y. 13159

Filed July 15, 1971, Ser. No. 162,771  
Int. Cl. B01d 12/00

U.S. Cl. 210—21

3 Claims



A method of removing solid contaminants from a liquid wherein the solid particles have a weight-to-buoyancy ratio approaching unity. The contaminated liquid is placed in a container with a significantly heavier or lighter liquid, forming an interface. The two liquids are mutually immiscible and are forced together to be thoroughly interspersed with one another and then allowed to separate again. The solid particles are thereby wetted to some extent by the initially clean liquid and tend to remain therein after the liquids separate, thus being removed from the initially contaminated liquid.

### 3,752,759 DEPURATION OF AN AQUEOUS SOLUTION CONTAINING VANADIUM AND COBALT SALTS AS IMPURITIES

Martin S. Burg, Western Springs, Lynn M. Carbonaro, Oak Park, and Evelyn M. Songco, Chicago, Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.

No Drawing. Filed Jan. 14, 1972, Ser. No. 218,006  
Int. Cl. C02b 1/26; C02c 5/02

U.S. Cl. 210—50

7 Claims

Acidified ammonium persulfate spent as etchant for vicalloy (an alloy containing cobalt, vanadium, and iron and which may also contain silicon and manganese) is treated with an iron reagent for reducing pentavalent vanadium and trivalent cobalt. The solution is then neutralized to throw down substantially all of the vanadium from the solution as insoluble salts of trivalent and tetravalent vanadium, and to remove the iron as iron hydroxide. These insoluble materials, together with any silicon dioxide, are then separated from the liquid. The pH of the resulting liquid is highly alkalized to throw out therefrom substantially all of the cobalt and the remaining iron as insoluble materials of bivalent cobalt and iron hydroxide. These last insoluble materials are then separated from the liquid, which is thereafter neutralized.

### 3,752,760 SILT REMOVAL

Robert Cornelius Gordon, Jr., Rochester, Jerry Lee Walker, Coraopolis, Andrew Jackson Sharpe, Jr., McMurray, and Jerry Emile Boothe, Pittsburgh, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,322  
Int. Cl. C02b 5/06

U.S. Cl. 210—58

8 Claims

Polymers of certain N-(alkyl) amino acrylamides are useful to remove and prevent silt accumulations in water systems, such as cooling systems and the like. The preferred monomer is (3-acrylamido-3-methyl) butyl trimethyl ammonium chloride; this monomer may be homopolymerized or present to the extent of at least 1 percent in a water-soluble polymer of at least 100,000 molecular weight.

### 3,752,761 BOILER WATER TREATMENT

Jerry Emile Boothe, Pittsburgh, Andrew Jackson Sharpe, Jr., McMurray, and Jerry Lee Walker and Thomas Edward Cornelius III, Coraopolis, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,314  
Int. Cl. C02b 5/06

U.S. Cl. 210—58

7 Claims

It is disclosed that polymers containing at least 1 percent by weight of (3-acrylamido-3-methyl) butyl trimethyl ammonium chloride and/or related monomers perform as excellent boiler water dispersives and conditioners. The polymer should have an average molecular weight of at least 10,000.

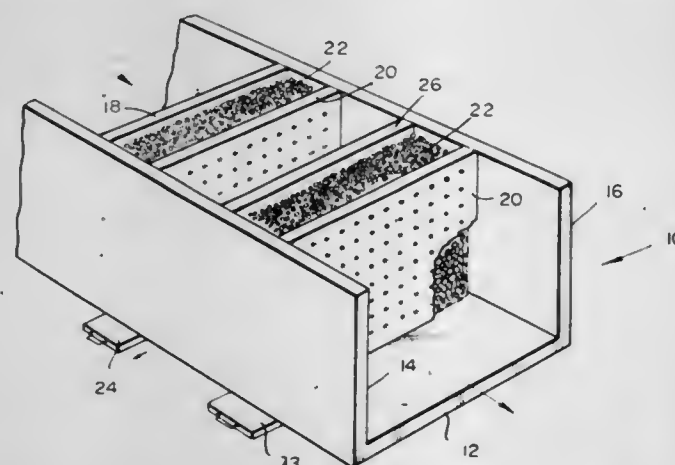
### 3,752,762 APPARATUS FOR REMOVING OIL FROM OIL-CONTAMINATED WATER

John Cincotta, 24—33 W. 3rd St., Brooklyn, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,254  
Int. Cl. B01d 15/06

U.S. Cl. 210—32

1 Claim



Apparatus is disclosed for using pumice stones for removing oil from oil-contaminated water and for enabling saturated pumice stones to be cleaned so that they can be reused.

### 3,752,763 DRILLING FLUID

Mahmoud S. Kablaoui and Jack H. Kolaian, Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 84,458, Oct. 27, 1970, now abandoned. This application Apr. 26, 1972, Ser. No. 247,642

The portion of the term of the patent subsequent to Feb. 15, 1989, has been disclaimed  
Int. Cl. C10m 3/14, 3/20

U.S. Cl. 252—8.5 C

10 Claims

An aqueous drilling fluid dispersant and a method of drilling wells using as the drilling fluid dispersant a 4-vinylidihydroxybenzene compound.

### 3,752,764 FUNCTIONAL FLUID COMPOSITIONS

James D. Sullivan, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 796,885, Feb. 5, 1969, now Patent No. 3,591,500, dated July 6, 1971, which is a continuation-in-part of abandoned application Ser. No. 540,488, Apr. 6, 1966. This application June 23, 1971, Ser. No. 156,134

Int. Cl. C10m 1/32, 1/38

U.S. Cl. 252—47.5

4 Claims

Functional fluid compositions comprising a fluid of lubricating or hydraulic viscosity, such as a polyphenyl thioether, mixed polyphenyl oxy-thioether or mixtures thereof, and a corrosion inhibiting amount of an azole, which compositions have improved metal compatibility and are particularly useful as aircraft engine lubricants and hydraulic fluids.

### 3,752,765 DIBENZIMIDAZOLE-DIUREA GREASE THICKENING AGENTS

August H. Birke, Godfrey, Ill., assignor to Shell Oil Company, New York, N.Y.

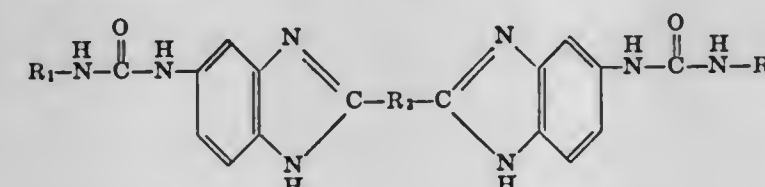
No Drawing. Filed Aug. 5, 1971, Ser. No. 169,460

Int. Cl. C10m 3/26

U.S. Cl. 252—51.5 A

8 Claims

Dibenzimidazole-diurea compounds corresponding to the formula:





3,752,771

**SYNTHESIS GAS PRODUCTION BY PARTIAL OXIDATION**

Roger M. Dille, La Habra, and Warren G. Schlinger, Pasadena, Calif., assignors to Texaco Inc., New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 649,490, June 28, 1967, and Ser. No. 692,306, Dec. 21, 1967. This application June 19, 1969, Ser. No. 834,879

Int. Cl. C07c 1/02

U.S. Cl. 252—373

15 Claims

In a high pressure synthesis gas generating process continuous control of the pH in the system may be accomplished by supplementing the nitrogen in the primary hydrocarbon fuel and oxygen-enriched gas fed to the generator with a controlled amount of nitrogen in the form of nitrogen containing organic compounds, and continuously neutralizing all or a portion of the formic acid produced in the system with ammonia synthesized in the system. Carbon-steel process equipment and piping is thereby protected from corrosion and system upsetting emulsions are prevented from forming in the carbon recovery zone.

3,752,772

**PREPARATION OF CATALYST FROM KAOLIN CLAY**

John P. Horzempa, Edison, N.J., assignor to Engeland Minerals & Chemicals Corporation, Woodbridge, N.J.

No Drawing. Filed June 25, 1971, Ser. No. 157,019

Int. Cl. B01j 11/40, 11/44

U.S. Cl. 252—448

6 Claims

A mixture of hydrated kaolin clay and calcined kaolin clay (metakaolin form) or partially rehydrated metakaolin is formed into particles such as extruded pellets. The particles are calcined at about 1350° F. to convert the hydrated clay into metakaolin. The particles are then immersed in water and heated under superatmospheric pressure to provide a cracking catalyst.

3,752,773

**PREPARATION OF CATALYSTS**

Roy B. Duke, Jr., and Larry M. Echelberger, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,958

Int. Cl. B01j 11/40; C10b 33/20

U.S. Cl. 252—454

19 Claims

This disclosure describes a method for preparing catalysts resistant to attrition or other types of physical degradation. The catalysts are formed by blending catalyst precursors, such as metallic hydroxides, oxides, or salts, or mixtures thereof, with a clay-talc binder, adding sufficient moisture to render the mixture pliant, forming the pliant mixture into a shape useful in a catalytic reactor, and then heating the mixture to harden the binder and transform the metallic oxides, hydroxides, and salts to a useful catalytic form. A wide variety of catalysts may be prepared, useful in such reactions as hydrogenation, oxydehydrogenation, dehydrohalogenation, oxidation, dealylation, disproportionation, automobile emission control, etc.

3,752,774

**ZIRCONIA-SILICA-PROMOTED COBALT OXIDE CATALYST**

Alvin B. Stiles, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 7, 1971, Ser. No. 150,790

Int. Cl. B01j 11/06

U.S. Cl. 252—462

8 Claims

The activity of cobalt, nickel or iron oxide catalysts is improved if the catalyst contains as a promoter, 0.1–10% zirconia or 0.1–5% ceria, and the catalyst is pre-

pared by being precipitated from a solution having a pH below 7.35. Further improvements in activity are obtained if the zirconia or ceria promoted catalyst also contains 0.08–1% of silica as a co-promoter.

3,752,775

**CATALYST FOR OXIDATION AND A METHOD FOR PRODUCING THE SAME**

Goro Yamaguchi, Tokyo, and Yasuo Nishikawa, Kazuhiro Yoshizaki, and Susumu Komatsu, Okayama-ken, Japan, assignors to Kyushu Taika Renga Kabushiki Kaisha, Okayama-ken, and Goro Yamaguchi, Tokyo, Japan

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,178

Claims priority, application Japan, Mar. 6, 1971, 46/11,695

Int. Cl. B01j 11/06, 11/08

U.S. Cl. 252—464

7 Claims

A catalyst for oxidation and a method for producing the same, in which said catalyst consists any one of:

- (A) alkali polyaluminate,
- (B) a mixture of said alkali polyaluminate and another refractory material,
- (C) a mixture of said (A) as catalyst carrier or promotor and other catalytic material, or
- (D) a mixture of said (B) as catalyst carrier or promotor and other catalytic material.

3,752,776

**MULTIMETALITE CATALYSTS**

Arthur W. Chester, Hightstown, and George T. Kerr and Howard S. Sherry, Trenton, N.J., and Albert E. Schweizer, Pasadena, Calif., assignors to Mobil Oil Corporation

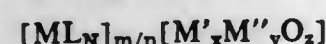
No Drawing. Filed Nov. 16, 1970, Ser. No. 90,129

Int. Cl. B01j 11/06, 11/22

U.S. Cl. 252—465

6 Claims

A new class of inorganic compounds has been prepared in which the cation is a transition metal complex and the anion is a heteropoly ion. These compounds can be represented by the general empirical formula:



where

M=a transition metal or a mixture of a transition metal with hydrogen

N=the number of ligands

L<sub>N</sub>=a set of N ligands at least one of which functions as a reducing agent

m=the charge on the anion

n=the charge on the cation

M'=a transition metal or non-metal or hydrogen

M''=a metal selected from the group consisting of Group V-B and VI-B metals

x is 1 or 2

y is between 5 and 20

z is between 20 and 50

Thermal decomposition of the above compounds in an inert atmosphere results in a new series of materials referred to herein as "multimetallites" which have been found to possess unusual catalytic properties.

3,752,777

**POLYMERS OF 2-(FLUOROPHENYL)-HEXA-FLUORO-2-PROPYL GLYCIDYL ETHER**

James R. Griffiths, River Heights, Md., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Apr. 9, 1971, Ser. No. 132,829

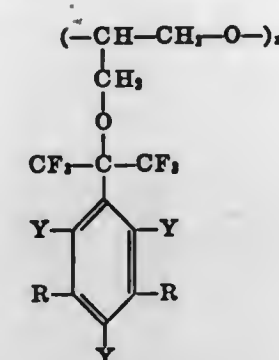
Int. Cl. C08g 23/02, 23/14

U.S. Cl. 260—2 A

8 Claims

Polymers useful for forming hydrophobic films or coatings.

ings, said polymers containing recurring units of the formula:



3,752,778

**"WATER-DILUTABLE" ALKYD RESINS MODIFIED BY RADICALS OF DRYING FATTY ACIDS**

Rolf Dhein, Krefeld-Bockum, Hermann Schnell, Krefeld-Urdingen, and Karl Raichle, Krefeld-Bockum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 24,866, Apr. 1, 1970. This application Oct. 4, 1971, Ser. No. 186,518

Claims priority, application Germany, Apr. 3, 1969, P 19 17 162.1

Int. Cl. C09d 3/64, 3/72

U.S. Cl. 260—22 TN

4 Claims

The invention relates to alkyd resins modified by drying fatty acid radicals, containing urethane groups and having an acid number of from about 30 to about 70 and a hydroxyl number of from about 20 to about 120, and processes for the production thereof. Alkali, ammonia or amine salts of said alkyd resins are soluble in water and the aqueous solutions of said salts are suitable as varnishes, said varnishes and coatings obtained therefrom having advantageous properties.

3,752,779

**ANTICORROSIVE HOT-DIP STRIPPABLE COATING MATERIAL AND METHOD FOR PRODUCING SAME**

Mieczyslaw Maciejewski, ul. Warynskiego 6 m. 16, Warsaw, Poland

No Drawing. Continuation-in-part of abandoned application Ser. No. 613,107, Feb. 1, 1967. This application Aug. 14, 1970, Ser. No. 63,936

Claims priority, application Poland, Feb. 3, 1966, P 112,777

Int. Cl. C08d 5/20; C09d 7/02

U.S. Cl. 260—23 H

5 Claims

An anticorrosive hot-dip strippable coating material is formed by mixing a thermoplastic polymer (polypropylene) with a plasticizer therefor at an elevated temperature wherein the polypropylene comprises 2 to 30% by weight of the whole mixture.

3,752,780

**HALOGENATED METHYLOL PHENOLS**

Kenneth C. Petersen and Charles A. Blowers, Scotia, N.Y., assignors to Schenectady Chemicals, Incorporated, New York, N.Y.

No Drawing. Filed Apr. 26, 1971, Ser. No. 137,577

Int. Cl. C08d 9/10; C08g 37/18

U.S. Cl. 260—25

19 Claims

Dimethylol alkyl phenols and low polymers thereof having an average of 60 to 85% of the available methylol groups replaced by halomethyl are prepared. They are useful in vulcanizing various elastomers at room (ambient) temperatures. Preferably the halogen is bromine. Also preferably a zinc compound, most preferably zinc oxide, is present to speed up the vulcanization. The vulcanization of liquid rubbers is particularly effective.

3,752,781

**POLYALKYLENIMINE-UREA-ALDEHYDE CATIONIC RESINS**

Thaddens M. Muzyczko, Melrose Park, and David L. York, Elgin, Ill., assignors to The Richardson Company, Melrose Park, Ill.

No Drawing. Filed Sept. 2, 1970, Ser. No. 69,146

Int. Cl. C09d 5/02; C08g 51/24

U.S. Cl. 260—29.4 R

16 Claims

A process for preparing novel water soluble polyalkylenimine-urea aldehyde resins with numerous branched tertiary amino groups which provide versatile polymers having increased stability, solubility and greater compatibility with anionic polymers. Their miscibility can be modified for greater solubility in organic solvents by reacting other aromatic nitrogen containing compounds therewith.

3,752,782

**STABILIZED POLYACRYLONITRILE COMPOSITIONS AND METHOD OF FORMING SAME**

Darrell R. Thompson, Somerville, N.J., and Michael W. Ensley, Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Apr. 22, 1971, Ser. No. 136,622

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 AN

14 Claims

A method of forming stabilized polyacrylonitrile compositions which are particularly suited for the spinning of polyacrylonitrile fibers and films and the compositions produced thereby wherein acrylonitrile polymers containing at least 85 percent acrylonitrile are dissolved in a solvent containing an unsaturated hydrocarbon as a color stabilizer, which solvent is acetonitrile or an acetonitrile/water mixture. Preferably, the solvent and polymer are purged with nitrogen and the pH of the solvent is adjusted to about 6.0–7.0.

3,752,783

**WATER- AND OIL-REPELLENT COMPOSITIONS CONTAINING FLUORO RESINS AND WATER SOLUBLE SALT OF GUANIDINE**

Akitoshi Iwantani, Osaka-fu, Japan, assignor to Daikin Kogyo Kabushiki Kaisha, Osaka-shi, Japan

No Drawing. Filed July 12, 1971, Ser. No. 161,890

Claims priority, application Japan, July 14, 1970, 45/62,278; May 1, 1971, 46/29,012; May 18, 1971, 46/33,818

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 F

9 Claims

The water- and oil-repellent composition of the invention comprises an aqueous medium having dispersed therein a fluorine-containing polymer having a perfluoroalkyl side chain of 3 to 21 carbon atoms in a concentration of 0.05 to 10 weight percent, a water-soluble salt of guanidine in the range of 0.001 to 10 times the weight of said fluorine-containing polymer and an antistatic agent in the range of 0.0003 to 20 times the weight of said fluorine-containing polymer.

3,752,784

**PROCESS FOR PREPARING MICROPOROUS OPEN-CELLED CELLULAR POLYMERIC STRUCTURES**

Francis Edward Jenkins, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,143

Int. Cl. C08f 45/30, 47/10; C08g 53/10

U.S. Cl. 260—2.5 R

24 Claims

A process for preparing microporous open-celled cellular polymeric structures which comprises (a) dissolving the starting polymer in a mixture comprising chloro-fluorocarbon solvent and a cosolvent selected from methanol, ethanol, isopropanol, t-butanol, dimethylformamide, dimethylacetamide, dioxane, trioxane, dimethylsulfoxide,



tetrahydrofuran, acetone, methylethyl ketone, hexamethyl phosphoramide, acetic acid, butyrolactone, N-methylpyrrolidone, pyridine, morpholine, methyl Cellosolve, ethyl Cellosolve, propyl Cellosolve and a mixture of any of said cosolvents to form a polymer solution; (b) adding water in the amount of at least 10 volume percent of the polymer solution thereto at a temperature below the atmospheric boiling point of the solvents but greater than 0° C.; (c) separating the resultant polymer-chlorofluorocarbon phase; and (d) removing the chlorofluorocarbon from the separated polymer-chlorofluorocarbon phase.

3,752,785

# BLEND OF SOL AND GEL CHLOROPRENE POLYMERS

John Frederick Smith, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation of application Ser. No. 864,207, Oct. 6, 1969. This application Feb. 17, 1972, Ser. No. 227,257

Int. Cl. C08f 45/34

U.S. Cl. 260—32.8 A

6 Claims

A blend of chloroprene polymers particularly useful in sprayable solvent cements comprises by weight based on the total weight of blend, (a) about 10 to 50% of a sol chloroprene polymer which has a Mooney viscosity (ML 1+2.5 at 100° C.) of 20 to 80 and is prepared by polymerizing a chloroprene monomer in the presence of about 0.4 to 1.0 weight percent of sulfur, and (b) about 90 to 50% of a gel chloroprene polymer.

3,752,786

# POLYURETHANE POLYUREAS

Conrad Rossitto, Andover, and David B. Taylor, Byfield, Mass., assignors to USM Corporation, Boston, Mass.

No Drawing. Filed Nov. 5, 1971, Ser. No. 196,190

Int. Cl. C08g 22/16

U.S. Cl. 260—33.4 UR

11 Claims

The method of making solvent soluble polyurethane polyureas by mixing a solution in a non-reactive solvent of —NCO terminated prepolymer with a solution of a diamine reactive to chain extend the prepolymer in a solvent mixture including a lower aliphatic alcohol.

3,752,787

# FLUOROELASTOMER COMPOSITION CONTAINING A TRIARYLPHOSPHORANE VULCANIZATION ACCELERATOR

Marjorie Ruth de Brunner, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 128,184, Mar. 25, 1971, which is a continuation-in-part of application Ser. No. 44,884, June 9, 1970, both now abandoned. This application Jan. 28, 1972, Ser. No. 221,785

Int. Cl. C08f 15/08, 45/04

U.S. Cl. 260—41 B

19 Claims

A fluoroelastomer composition which has beneficial utility in the manufacture of cured fluoroelastomer articles having good resistance to compression set can be prepared by blending the following components: (A) an elastomeric copolymer of vinylidene fluoride and another fluorinated monomer; and (B) a vulcanization accelerator comprised of a triarylphosphorane compound [for example, (carbethoxyethylidene) - triphenylphosphorane], which is used either alone or in combination with a certain quaternary ammonium compound or a certain guanidine or amidine compound; and when making the cured articles, it is also preferred to add (C) a suitable metal

compound such as a divalent metal oxide or hydroxide and optionally a metal salt of a weak acid; and (D) a cross-linking agent composed of a suitable polyhydroxylic-aromatic compound, for example, hexafluoroisopropylidene-bis(4-hydroxybenzene).

3,752,788

# MULTICOMPONENT COPOLYMERS CONTAINING UNSATURATED ETHER COMPOUNDS AND PROCESS FOR THE PRODUCTION THEREOF

Masaaki Hirooka, Ibaragi, and Kentaro Mashita, Takatsuki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Dec. 7, 1970, Ser. No. 95,985

Claims priority, application Japan, Dec. 11, 1969, 44/99,858

Int. Cl. C08f 15/40, 17/00, 19/18

U.S. Cl. 260—47 UA

12 Claims

A novel alternating multicomponent copolymer composed of at least one unsaturated ether compound as the group (A<sub>1</sub>) monomer, at least one group (A<sub>2</sub>) monomer selected from olefins, haloolefins, internal olefins and polyenes and at least one conjugated compound as the group (B) monomer and having a structure such that monomer units from groups (A<sub>1</sub>) and (A<sub>2</sub>) always alternate with monomer units from group (B). Said alternating copolymer is produced by contacting the monomers with an organoaluminum or organoboron halide.

3,752,789

# ISOLATION OF A FLUOROPOLYMER FROM A LATEX

Ausat Ali Khan, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 20, 1971, Ser. No. 173,642

Int. Cl. C08f 1/13, 3/22, 15/06

U.S. Cl. 260—47 UA

12 Claims

Washed and dried fluoropolymer particles free of any harmful impurities can be prepared efficiently from a latex by a process which comprises the following steps:

- providing a latex of a normally solid fluoropolymer (e.g., an elastomeric copolymer of tetrafluoroethylene and a suitable ether or olefin monomer),
- mixing the latex with a coagulating agent (e.g., magnesium chloride) and optionally with an aliphatic alcohol,
- passing the resulting slurry into a first hot water bath while passing steam therein in contact with the fluoropolymer to form floating easy-to-filter fluoropolymer particles,
- passing the floating fluoropolymer particles into at least a second hot water bath, and
- removing water from the resulting floating and washed fluoropolymer particles, for example, by means of a filter and a drying oven.

3,752,790

# CHLORINATED TOLUENEDIAMINE CURING AGENTS FOR USE IN PREPARING POLYURETHANE ELASTOMERS AND FOAMS

Herbert Felix McShane, Jr., and John Joseph Verbanc, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Feb. 26, 1969, Ser. No. 802,686, now abandoned. Divided and this application May 19, 1971, Ser. No. 145,061

Int. Cl. C08g 22/16, 22/44

U.S. Cl. 260—77.5 AM

4 Claims

Amine curing agents, for liquid polyurethanes having free isocyanate end-groups, such as 3-chloro-2,6-toluene-

3,752,794

# NITROGEN-CONTAINING p-TERT-BUTYL-STYRENE COPOLYMERS

Robert Bacskai, Kensington, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application Dec. 18, 1969, Ser. No. 886,383. Divided and this application Jan. 12, 1972, Ser. No. 217,237

Int. Cl. C08f 15/04

U.S. Cl. 260—88.1 PA

5 Claims

High molecular weight nitrogen-containing copolymers of p-tert-butylstyrene and lubricating oil containing them.

3,752,791

# PROCESS FOR THE PRODUCTION OF POLYAMIDE IMIDES BY REACTING POLYCARBONAMIDE WITH ALIPHATIC DIISOCYANATE AND CYCLIC DICARBOXYLIC ACID ANHYDRIDE

Wilfried Zecher, Cologne, and Rudolf Merten, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 23, 1970, Ser. No. 83,637

Claims priority, application Germany, Nov. 11, 1969, P 19 56 512.9

Int. Cl. C08g 20/38

U.S. Cl. 260—78 SC

9 Claims

The invention relates to a process which comprises reacting a polyamide with a polyisocyanate having at least two NCO groups, or a compound capable of reacting as such a polyisocyanate under the reaction conditions, and a cyclic dicarboxylic acid anhydride which contains at least one additional group capable of condensation or addition, or a compound capable of forming such an anhydride under the reaction conditions, at a temperature of from —20 to +450° C. Predominantly, high molecular weight reaction products, distinguished by their outstanding solubility, are obtained.

3,752,792

WITHDRAWN

3,752,793

# POWDERED COATING MATERIALS

Dieter Arlt, Cologne, Hans-Herwig Bertram, Leichlingen, Josef Pedaln, Cologne, and Erich Zankl, deceased, by Helga Zankl and Walter Zankl, Cologne, Germany, and Angelika Zankl de Ramis, Palma de Mallorca, Spain, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 22, 1971, Ser. No. 191,843

Claims priority, application Germany, Sept. 7, 1971, P 21 44 643.5

Int. Cl. C08f 27/08, 45/72

U.S. Cl. 260—78.5 T

5 Claims

Powdered coating agent for use in the electrostatic sprayed powder process consisting of mixtures of

- copolymers
- bis- or tris-oxazolines and optionally
- auxiliary agents such as pigments and flowing agents.

The copolymer contains polymerised units of

- 25–60% styrene or derivatives thereof or (meth)acrylonitrile;
- 30–65% by weight of acrylic or methacrylic esters and
- 5–20% by weight of  $\alpha,\beta$ -unsaturated carboxylic acids.

5 to 25 parts by weight of bis- or trisoxazolines are employed for 95 to 75 parts by weight of copolymer.

3,752,797

# MIXED CATALYST FOR THE POLYMERIZATION OF $\alpha$ -OLEFINS

Wolfgang Gordon, Hofheim, Taunus, Kurt Rust, Frankfurt am Main, and Erwin Schrott, Sulzbach, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Nov. 5, 1971, Ser. No. 196,196

Claims priority, application Germany, Nov. 7, 1970, P 20 54 950.2

Int. Cl. C08f 3/10, 1/44, 1/56

U.S. Cl. 260—93.7

13 Claims

Process for the polymerization of  $\alpha$ -olefins by means of a mixed catalyst composed of a phosphoric acid-N-



alkylamide, a cyclopolyalkene, a halogen compound of trivalent titanium and a halogen-free organo-aluminium compound. Products of improved stereospecificity are obtained with a good catalyst-time-yield.

3,752,798

TRIS- $\text{N}^{\text{A}_1}\text{N}^{\text{B}_1}\text{N}^{\text{C}_2}$  - (3-X-3-oxo-1-Y-prop-1-en-1-yl)[N $\delta$ -(4-Z-6-R-pyrimidin-2-yl) ORNITHINE B $_{22}$ ]-INSULINS AND THEIR PREPARATION

Gaston Amird, 27 Rue du Marechal Joffre, 77 Thoiry, France, and Truong van Thuong, 1 Allee la Bruyere, Domaine de la Lorette, 93 Clichy-sous-Bois, France

No Drawing. Filed Dec. 2, 1969, Ser. No. 881,602

Int. Cl. C07c 103/52

U.S. Cl. 260-112.7 9 Claims

Tris -  $\text{N}^{\text{A}_1}\text{N}^{\text{B}_1}\text{N}^{\text{C}_2}$  - (3-X-3-oxo-1-Y-prop-1-en-1-yl)[N $\delta$ -(4-Z-6-R-pyrimidin-2-yl) ornithine B $_{22}$ ]-insulins and their water soluble alkali metal salts existing in substantially dissociated state having delayed action hypoglycemic and their preparation.

3,752,799

$\text{N}^{\text{A}}$ -ACETYL-2-O-METHYLTYROSINE-OXYTOCIN

Karel Jost, Vladimir Pliska, Ivan Krejci, and Frantisek Sorm, Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

No Drawing. Filed May 20, 1970, Ser. No. 39,169

Claims priority, application Czechoslovakia, June 4, 1969, 3,973/69

Int. Cl. C07c 103/52; C07g 7/00; C08h 1/00

U.S. Cl. 260-112.5 1 Claim

$\text{N}^{\text{A}}$ -acetyl-2-O-methyltyrosine-oxytocin having uterine contraction inhibitory activity and process of preparing the same by reaction of 2-O-methyltyrosine-oxytocin with an ester of acetic acid.

3,752,800

PROCESS FOR THE MANUFACTURE OF A PYROGLUTAMYLPEPTIDE

Hans Wissmann, Bad Soden, Taunus, Wolfgang Konig, Langenhain, Taunus, and Rolf Geiger, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 6, 1971, Ser. No. 160,211

Claims priority, application Germany, July 7, 1970, P 20 33 600.9

Int. Cl. C07c 103/52; C07g 7/00; C08h 1/00

U.S. Cl. 260-112.5 1 Claim

Methods of making L-pyroglutamyl-L-histidyl-L-proline-amide, useful in the treatment of hypothyreosis:

- (1) by reacting an  $\text{N}^{\text{A}}\text{N}^{\text{B}}$ -protected glutamine with L-histidyl-L-proline-4,4'-dimethoxybenzhydrylamide; or
- (2) by reacting an  $\text{N}^{\text{A}}$ -protected- $\text{N}^{\text{B}}$ -4,4'-dimethoxybenzhydryl-L-glutamyl-L-histidine with L-proline amide or L-proline-4,4'-dimethoxybenzhydrylamide.

Protective groups are removed and the reaction product is cyclized by treatment with trifluoroacetic acid after catalytic hydrogenation of any benzyloxycarbonyl protective groups present.

3,752,801

FIBER-REACTIVE PHTHALOCYANINE-SULFONAMIDO AZO-PYRIDONE DYE STUFFS

Gerd Hoelzle, Liestal, and Alfred Fasciati, Bottmingen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

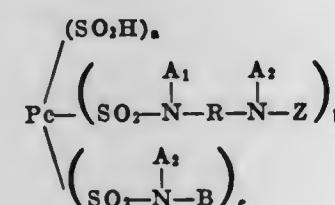
No Drawing. Filed June 4, 1970, Ser. No. 43,605

Claims priority, application Switzerland, June 12, 1969, 8,983/69, June 12, 1969, 18,644/69; Apr. 20, 1970, 5,874/70

Int. Cl. C09b 29/36, 62/02, 62/08

U.S. Cl. 260-146 T 15 Claims

Phthalocyaninesulfonamido azo-pyridone dyestuffs of the general formula



in which

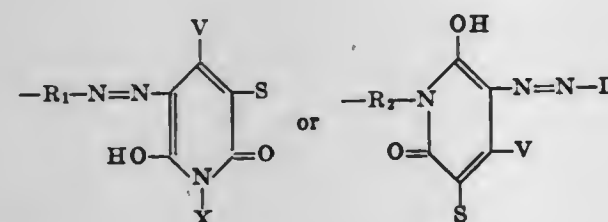
Pc is nickel or copper phthalocyanine

$\text{A}_1$ ,  $\text{A}_2$  and  $\text{A}_3$  each independently is hydrogen, lower alkyl or hydroxyethyl

R is phenylene, methylenephenylene, ethylenephenylene or diphenylene, each of which is unsubstituted or substituted in the phenylene moiety by one or more of chloro,  $\text{C}_1$ - $\text{C}_2$  alkoxy,  $\text{C}_1$ - $\text{C}_2$  alkyl or sulfonic acid, or alkylene or cycloalkylene of 2 to 6 carbon atoms, each of which is unsubstituted or substituted by  $\beta$ -hydroxyethyl, acetyl or carbamyl, ethylenepiperazinylene or R together with  $\text{A}_1$  and  $\text{A}_2$  forms piperazinylene or piperidinylene,

Z is a fibre-reactive group capable of reacting with the hydroxyl groups of cellulose to form a covalent bond

B is a group of the formula

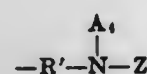


in which

$\text{R}_1$  is phenylene, methylenephenylene or ethylenephenylene where the phenylene moiety is substituted by one or more of chloro,  $\text{C}_1$ - $\text{C}_2$  alkoxy,  $\text{C}_1$ - $\text{C}_2$  alkyl or sulfonic acid and wherein the phenyl moiety is bound to the azo group

V is lower alkyl, phenyl, tolyl, carboxylic acid ethyl ester, carboxylic acid benzyl ester, methylene carboxylic acid ethyl ester, carbamyl, N-ethyl carbamyl, or  $\beta$ -cyano-ethylene

S is nitrile, carboxylic acid ethyl ester, carbamyl, N,N-dimethylsulfamyl, methylsulfonfyl or phenylsulfonfyl  
X is hydrogen, lower alkyl which is unsubstituted or substituted by amino, hydroxyl, sulfonic acid or  $\beta$ -hydroxy-ethyleneamine, phenyl, benzyl, cyclohexyl, each of which can be substituted by amino, or X is a group of the formula



where

$\text{R}'$  is alkylene of 1 to 6 carbon atoms, cyclohexylene, phenylene or methylenephenylene

$\text{A}_1$  is hydrogen or lower alkyl, and

Z is a fibre-reactive group

$\text{R}_2$  is  $\text{C}_1$ - $\text{C}_8$  alkylene

D is benzenesulfonate containing one or more sulfonic acid groups and substituted by one or more of chloro, hydroxy, methoxy, methyl, carboxy, acetamido, benzamido, nitro, sulphoacetyl amino, trifluoromethyl or aminobenzoyl, or naphthalenesulfonate containing one or more sulfonic acid groups and D can additionally be substituted by a fibre-reactive group, and

3,752,803

DERIVATIVES OF 3-(3'- $\beta$ -TRIDIGITOXOSYL-14'- $\beta$ -HYDROXY-5'- $\beta$ -ANDROSTAN-17'-YL)-ACRYLIC ACID

Wolfgang Eberlein, Biberach, Riss, and Joachim Heider, Warthausen-Oberhofen, Germany, Walter Kobinger, Vienna, Austria, and Willi Diederer, Biberach, Riss, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Filed Oct. 18, 1971, Ser. No. 190,279

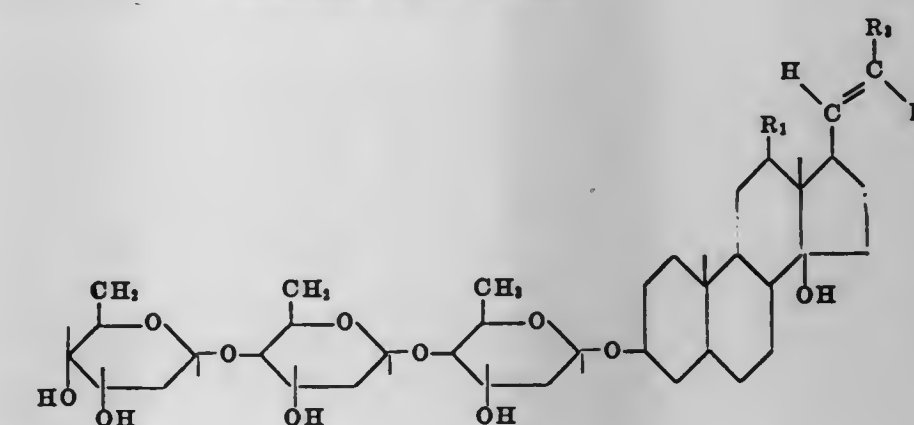
Claims priority, application Germany, Oct. 27, 1970, P 20 52 634.5

Int. Cl. C07c 173/00

U.S. Cl. 260-210.5

Compounds of the formula

6 Claims



a, b and c each, independently is an integer or fractional number provided that b and c is each at least 1.0 and the sum of  $a+b+c$  is an integer or fractional number between 3.0 and 4.0,

are useful as cotton dyes yielding green shades of good general fastness properties.

3,752,802

MONO-AZO COMPOUNDS CONTAINING AN ACYLATING FUNCTION

Chester Stephen Sheppard, Tonawanda, and Ronald Edward MacLeay, Williamsport, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

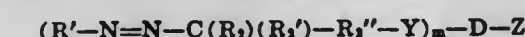
No Drawing. Continuation-in-part of application Ser. No. 667,352, Sept. 3, 1967. This application May 14, 1970, Ser. No. 37,311

Int. Cl. C07c 107/00, 107/02, 107/04

U.S. Cl. 260-192 13 Claims

(A) A class of azo compounds  $\text{R}-\text{N}=\text{N}-\text{R}_1$  where R and/or  $\text{R}_1$  are groups containing an acylating function, e.g., acyl chloride, chloroformate or anhydride. Example: Cis-4,4'-azobis-(4-cyanovaleryl chloride).

(B) A class of azo containing polymers



where  $\text{R}'$  is t-aliphatic, formed by reacting a polymer having at least one group reactive with an acyl group and a compound as in "A" containing only one acylating function. Example: the reaction product of 4-t-butylazo-4-cyanovaleryl chloride and hydroxyl terminated polybutadiene liquid resin.

(C) A class of azo containing polymers

$\text{Z}(\text{E}-\text{Y}-\text{R}_2'-\text{C}(\text{R}_2)(\text{R}_3)-\text{N}=\text{N}-\text{C}(\text{R}_2)(\text{R}_3)-\text{R}_4'-\text{Y})_m-\text{E}-\text{Z}$  formed by the reaction of a compound as in "A" having two acylating functions with (1) a monomer having two acyl-reactive groups and a monomer having two acylating functions, or (2) a polymer having at least one acyl-reactive group.

(D) Polymers B and C are useful in the production of block and graft polymers and in curing unsaturated polyester resin-vinyl monomer systems. Polymer C forms block and graft polymers with vinyl monomers with substantially no formation of homopolymers. These block and graft polymers are compatibilizing agents for solutions of homopolymers.

3,752,804

2-ALLYLOXYINOSINE-5'-PHOSPHATE AND PHYSIOLOGICALLY ACCEPTABLE SALTS THEREOF

Kin-Ichi Imai, Yoshio Yoshioka, Jun Toda, and Hisashi Aoki, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed June 10, 1970, Ser. No. 45,223

Claims priority, application Japan, June 14, 1969, 44/47,139; June 21, 1969, 44/49,179

Int. Cl. C07d 51/54

U.S. Cl. 260-211.5 R

5 Claims

A 2-allyloxyinosine-5'-phosphate and a physiological acceptable salt thereof have excellent ability for improving and/or enhancing the flavor of foods and beverages. Moreover, there is a significant synergistic action between these compounds and monosodium glutamate. Also provided are novel starting materials for preparing these compounds.

3,752,805

2-LOWERALKYLTHIOADENOSINES

Mary H. Maguire, Roland H. Thorp, and Denis M. Nobbs, Sydney, New South Wales, Australia, assignors to The University of Sydney, Sydney, New South Wales, Australia

No Drawing. Filed June 4, 1970, Ser. No. 43,570

Claims priority, application Australia, June 5, 1969, 56,064/69

Int. Cl. C07d 51/54

U.S. Cl. 260-211.5 R

4 Claims

2-loweralkylthioadenosines and pharmaceutical compositions and methods for producing coronary vasodilatation and hypotensive activity with these compounds.

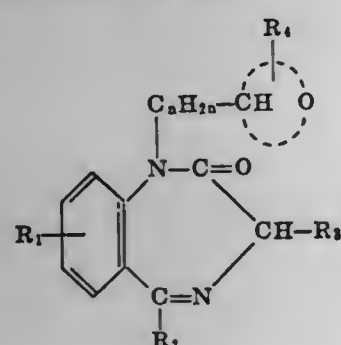


3,752,806  
BENZODIAZEPINES

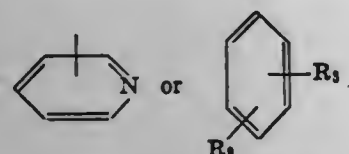
Hisao Yamamoto, Nishinomiya, Shigeo Inaba, Takarazuka, Toshiyuki Hirohashi, Ashiya, Michihiro Yamamoto, Toyonaka, Kikuo Ishizumi and Mitsuhiro Akatsu, Ikeda, Isamu Maruyama, Minoo, Yoshiharu Kume, Takarazuka, Kazuo Mori, Kobe, and Takahiro Izumi, Takarazuka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan  
No Drawing. Filed Aug. 16, 1971, Ser. No. 172,298  
Claims priority, application Japan, Aug. 24, 1970, 45/74,410

Int. Cl. C07d 53/06

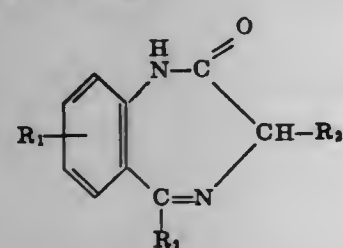
U.S. Cl. 260—239.3 D 6 Claims  
Novel benzodiazepines represented by the formula,



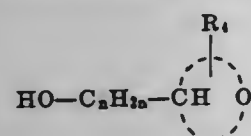
wherein R<sub>1</sub> represents hydrogen, halogen, nitro, C<sub>1-4</sub> alkoxy, cyano or trifluoromethyl; R<sub>2</sub> represents a group of the formula,



(wherein R<sub>5</sub> and R<sub>6</sub> represent hydrogen, halogen, trifluoromethyl, cyano or C<sub>1-4</sub> alkyl); R<sub>3</sub> and R<sub>4</sub> represent hydrogen or C<sub>1-4</sub> alkyl; and n represents an integer of 1 to 4 are prepared by reacting a 1-unsubstituted benzodiazepine represented by the formula,



wherein R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are as defined above, with a reactive ester of alcohol represented by the formula



wherein R<sub>4</sub> is as defined above.

The benzodiazepine derivatives of the Formula I have valuable pharmacological properties, in particular excellent tranquilizing, sedative, muscle relaxant, anticonvulsant and hexobarbital potentiating activities.

3,752,807

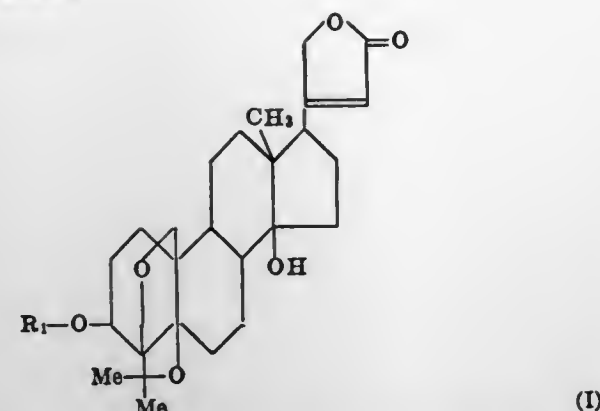
PROCESS FOR THE PREPARATION OF NOVEL ORALLY EFFECTIVE CARDIO-ACTIVE CARDENOLIDES

Johannes Hermann Hartenstein, Wittental, and Gerhard Satzinger, Gundelfingen, Germany, assignors to Warner-Lambert Company, Morris Plains, N.J.  
No Drawing. Filed Feb. 9, 1972, Ser. No. 224,960  
Claims priority, application Germany, Feb. 11, 1971, P 21 06 386.5

Int. Cl. C07c 173/00

U.S. Cl. 260—239.57 12 Claims  
The present application relates to compounds of the

General Formula I



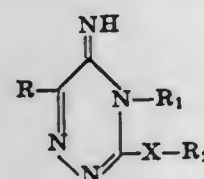
wherein R<sub>1</sub> means hydrogen, an alkyl, alkoxyalkyl, acyl, aroyl, a tetrahydropyranosyl, or a glycosyl residue, the latter two being substituted if desired. These compounds when taken orally produce a cardiotonic effect.

3,752,808  
5-IMINO-1,2,4-TRIAZINES AND THEIR PRODUCTION

Manfred Jautelat and Hans-Joachim Kabbe, Leverkusen, and Kurt Ley, Odenthal-Globusch, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Filed Jan. 19, 1971, Ser. No. 107,823  
Claims priority, application Germany, Jan. 24, 1970, P 20 03 144.1

Int. Cl. C07d 55/18

U.S. Cl. 260—249.5 18 Claims  
Novel 5-imino-1,2,4-triazine compounds of the formula



in which

R is an aliphatic, arylaliphatic, aromatic or heterocyclic radical which may be substituted by hydroxy, halogen, alkyl and/or nitro,

R<sub>1</sub> is an aliphatic hydrocarbon radical, amino, alkyl-amino or dialkylamino,

R<sub>2</sub> is hydrogen or an aliphatic hydrocarbon radical, and X is oxygen, sulfur or NR<sub>3</sub> where R<sub>3</sub> is for hydrogen or an aliphatic hydrocarbon radical,

possess outstanding herbicidal, especially selective herbicidal activity, and furthermore are intermediates for the preparation of other herbicidal compounds.

The invention also provides a novel process for making the novel 5-imino-1,2,4-triazine compounds by reacting a corresponding α-iminonitrile with a hydrazine derivative.

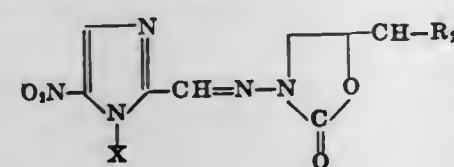
3,752,809

3-(5-NITRO-2-IMIDAZOLYL-METHYLENAMINO)-2-OXAZOLIDINONES

Clemens Rufer, Eberhard Schroder, and Hans-Joachim Kessler, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany  
No Drawing. Filed Apr. 16, 1970, Ser. No. 29,236  
Claims priority, application Germany, Apr. 17, 1969, P 19 20 150.4

Int. Cl. C07d 85/28

U.S. Cl. 260—240 A 34 Claims  
3 - (5 - nitro - 2 - imidazolyl - methylenamino) - 2 - oxazolidinones of the formula



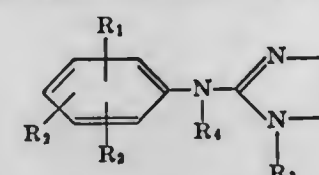
wherein X is substituted or unsubstituted hydrocarbon and R is hydrocarbon-thiol or -thione or a tertiary amino group, are antimicrobials, especially against *Trichomonas vaginalis*.

3,752,810  
SUBSTITUTED N-AMINOALKYL-ARYLAMINO-IMIDAZOLINES-(2)

Helmut Stähle, Herbert Köppe, Werner Kummer, and Hans-Wolfgang Samtleben, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany  
No Drawing. Filed Nov. 16, 1970, Ser. No. 90,036  
Claims priority, application Germany, Nov. 17, 1969, P 19 57 722.1

Int. Cl. C07d 87/38, 87/40

U.S. Cl. 260—247.5 R 10 Claims  
Novel compounds selected from the group consisting of N-aminoalkyl-arylamino-imidazolines-(2) of the formula



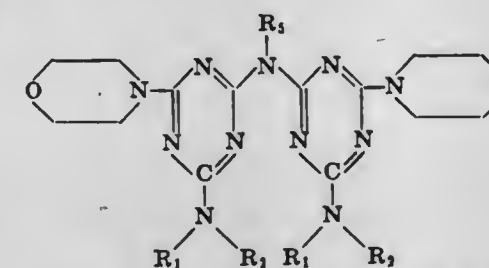
wherein R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> may be the same or different and are selected from the group consisting of hydrogen, fluorine, chlorine, bromine, trifluoromethyl, cyano and lower alkyl and lower alkoxy of 1 to 7 carbon atoms and one of R<sub>4</sub> and R<sub>5</sub> being hydrogen with the other being —(CH<sub>2</sub>)<sub>n</sub>—A, n is 2 or 3 and A is selected from the group consisting of dialkylamino with 1 to 4 carbon atoms in each alkyl, morpholino, pyrrolidino and piperidino and their non-toxic, pharmaceutically acceptable acid addition salts having hypotensive activity, their preparation and their use.

3,752,811  
NOVEL N,N-BIS-(BIS-AMINO-s-TRIAZINYL)-ALKYLAMINES

Denis Varsanyi, Arlesheim, Basel-Land, and Willy Roth, Strengelbach, Switzerland, assignors to Ciba-Gelgy Corporation, Ardsley, N.Y.  
No Drawing. Application Oct. 4, 1967, Ser. No. 672,701, now Patent No. 3,594,374, dated July 20, 1971, which is a continuation-in-part of abandoned application Ser. No. 560,855, June 27, 1966. Divided and this application Mar. 4, 1971, Ser. No. 121,139  
Claims priority, application Switzerland, June 30, 1965, 9,158/65

Int. Cl. C07d 87/40

U.S. Cl. 260—246 B 2 Claims  
New N,N-bis-(bis-amino-s-triazinyl)-alkylamines of the formula



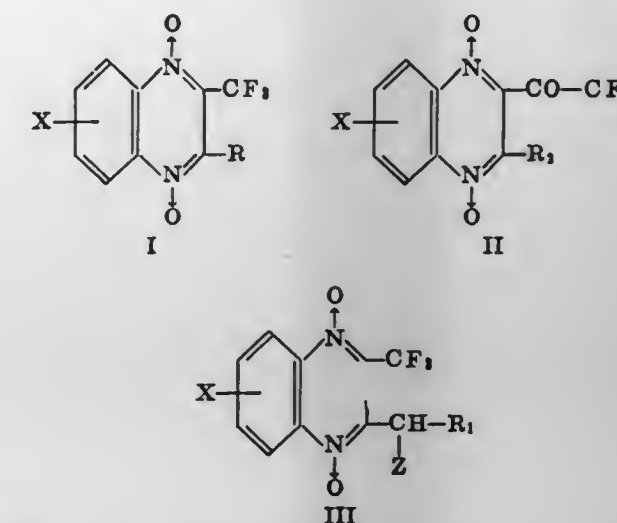
in which each of R<sub>1</sub> and R<sub>5</sub> represents alkyl or from 1 to 5 carbon atoms, and R<sub>2</sub> represents alkyl or from 10 to 18 carbon atoms, are useful as surface treating agents. Compositions containing these compounds are particularly useful as textile softeners.

3,752,812  
2-TRIFLUOROMETHYLQUINOXALINE-DI-N-OXIDES

Elie Abushanab, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.  
No Drawing. Filed Feb. 5, 1970, Ser. No. 9,041  
Int. Cl. C07d 51/78

U.S. Cl. 260—250 R 14 Claims  
Novel 2 - trifluoromethyl - 3 - substitutedquinoxaline-

di - N - oxides and 2 - trifluoroacetyl - 3 - substituted-quinoxaline - di - oxides having the formulae



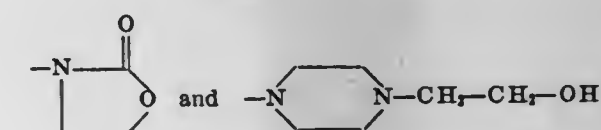
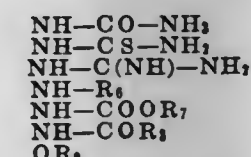
wherein

X is a 6- or a 7-position substituent and is hydrogen, chloro, fluoro, methyl, methoxy, trifluoromethyl, sulfonamido, N-methylsulfonamido and N,N-dimethylsulfonamido;

Z is hydrogen, carboxy, carbo(lower alkoxy), carbamyl, chloro, fluoro, bromo, (lower alkyl)thio, (lower alkyl)sulfinyl, (lower alkyl)sulfonyl, hydroxy, lower alkoxy, lower alkanoyloxy, amino, mono(lower alkyl)-amino, di(lower alkyl)amino, trimethylammonium and nitro-oxy;

R<sub>1</sub> is hydrogen and lower alkyl;

R is hydrogen, carbo(lower alkoxy), carbamyl, chloro, bromo, fluoro, cyano, lower alkoxy, (lower alkyl)thio, (lower alkyl)sulfinyl, (lower alkyl)sulfonyl, amino, mono (lower alkyl)amino, di(lower alkyl)amino, ω,ω,ω-trifluoro(lower alkyl), trifluoroacetyl, phenyl, cycloalkyl, di(lower alkyl)aminoethyl, —CO—R<sub>2</sub>, formyl and —CH=N—R<sub>5</sub> wherein R<sub>5</sub> is



wherein

R<sub>6</sub> is lower alkyl, benzyl and hydroxy alkyl containing from 2 to 4 carbon atoms;

R<sub>7</sub> is lower alkyl and hydroxy alkyl containing from 2 to 4 carbon atoms;

R<sub>8</sub> is lower alkyl and phenyl; and

R<sub>9</sub> is hydrogen and lower alkyl; and

R<sub>2</sub> is lower alkyl, phenyl, 2-furyl, 2-pyrrolyl, 2-thienyl, 2,5-dimethyl-3-thienyl and 5-substituted-2-thienyl wherein the substituent is methyl, chloro, bromo and iodo;

The non-toxic acid addition salts of those compounds wherein Z and R are amino, mono(lower alkyl)amino and di(lower alkyl)amino; and the sodium and potassium salts of those compounds wherein Z is carboxy; and methods for their preparation are described. The compounds are useful as antibacterial agents. Many of them are also useful as animal growth promotants.



3,752,813

**ORTHO-HYDROXY-DIHYDRO-PHENOZINE-CARBOXYLIC ACIDS AND DERIVATIVES**  
Tsung-Ying Shen, Westfield, Richard Greenwald, Fanwood, and Bruce E. Witzel and Gordon L. Walford, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application June 25, 1969, Ser. No. 836,583, now Patent No. 3,642,997. Divided and this application Aug. 2, 1971, Ser. No. 168,424

Int. Cl. C07d 51/80

U.S. Cl. 260—267

2 Claims

This invention relates to new tricyclic carboxylic acid and ester derivatives and processes for their preparation. These compounds have anti-inflammatory, anti-pyretic and analgesic activity. Also included are methods for preparing said carboxylic acid compounds.

3,752,814

2-BROMO- $\alpha$ -ERGOCRYPTINE

Edward Fluckiger, Binningen, and Franz Troxler and Albert Hofmann, Böttingen, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 827,144, May 23, 1969. This application Sept. 9, 1971, Ser. No. 179,169

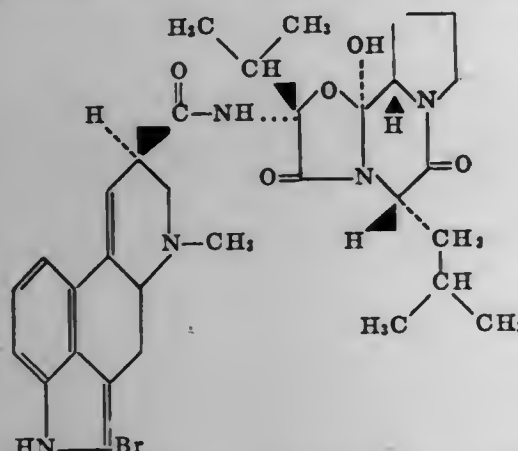
Claims priority, application Switzerland, May 31, 1968, 8,168/68

Int. Cl. C07d 51/70

U.S. Cl. 260—268 PE

2 Claims

The invention concerns 2-bromo- $\alpha$ -ergocryptine of the formula



and pharmaceutically acceptable acid addition salts thereof.

The compounds are useful in inhibiting lactation, i.e. they inhibit the secretion of luteotropic hormone and furthermore exhibit antifertility properties.

3,752,815

**LYSERGIC ACID N-NICOTINOYL PIPERAZIDE**

Peter Stutz, Basel, Switzerland, assignor to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Filed Sept. 4, 1970, Ser. No. 69,930

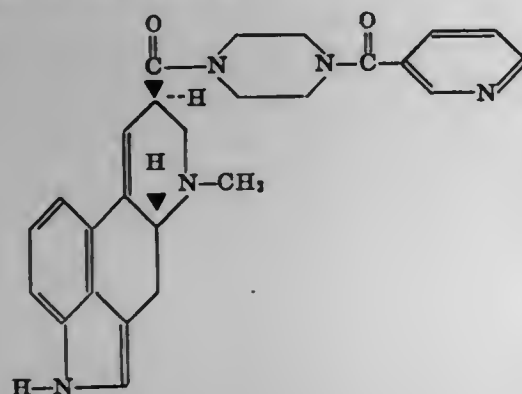
Claims priority, application Switzerland, Sept. 10, 1969, 13,651/69, 13,652/69

Int. Cl. C07d 51/70

U.S. Cl. 260—268 PE

1 Claim

The present invention concerns the novel heterocyclic compound of the formula:



and pharmaceutically acceptable acid addition salts thereof.

The compounds are useful in the treatment of conditions of orthostasis and hypertonia, and are also salidiuretics, anti-phlogistics and edema-inhibitors.

3,752,816

**CERTAIN 3-SUBSTITUTED-PYRIDO[3,2-d]PYRIMIDINE 2,4-(1H,3H)-DIONES**

Anson R. Cooke, Hatboro, Pa., and Richard L. Jacobs, Perrysburg, and Eli Dee Compton, Toledo, Ohio, assignors to The Sherwin-Williams Company

No Drawing. Continuation-in-part of abandoned applications Ser. No. 740,089 and Ser. No. 740,047, both June 26, 1968. This application June 10, 1969, Ser. No. 832,026

Int. Cl. C07d 57/20

U.S. Cl. 260—256.4 F

12 Claims

A method for controlling plant growth and compounds used in such method. The method includes the step of applying a composition comprising substituted pyrido [3,2-d]pyrimidine-2,4-(1H,3H)-diones as herein described to the locus to be protected.

As new compositions of matter, 3-substituted-pyrido [3,2-d]pyrimidine-2,4-(1H,3H)-diones, where the 3-substituent is a member of the group consisting of alkyl groups having from 2 to 8 carbon atoms, dimethoxyethyl, aralkyl groups such as benzyl, chlorosubstituted benzyl, and lower alkyl and methoxy substituted benzyl, cycloalkyl groups having from 3 to 8 carbon atoms, pyridyl substituted alkyl groups having from 1 to 2 carbon atoms, tetrahydrofurfuryl, aryl, pyrrolidino, piperidino, homopiperidino, and septamethyleneimino, and 1,3-disubstituted analogues.

3,752,817

**2,9-DICARBOXYQUINACRIDONE AND METHODS FOR ITS PRODUCTION**

Felix Frederick Ehrich, Mexico City, Mexico, and Edward E. Jaffe, Union, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 6, 1971, Ser. No. 140,984

Int. Cl. C07c 39/00

U.S. Cl. 260—279 R

6 Claims

This invention relates to 2,9-dicarboxyquinacridone and to methods for its preparation.

3,752,818

**SULPHONYL-UREAS AND SULPHONYL-SEMICARBAZIDES CONTAINING HETEROCYCLIC ACYL AMINO GROUPS AND THEIR PRODUCTION**

Hans Plumpe and Walter Puls, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 27, 1970, Ser. No. 32,465

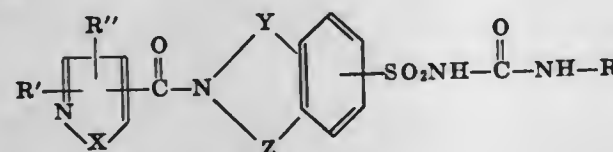
Claims priority, application Germany, Apr. 29, 1969, P 19 21 737.9

Int. Cl. C07d 33/60

U.S. Cl. 260—287R

9 Claims

Sulphonyl-ureas and sulphonyl-semicarbazides of the formula:



wherein

R is straight or branched chain saturated or unsaturated aliphatic of up to 10 carbon atoms, mono- or polycyclic cycloaliphatic and the corresponding ring systems wherein the carbon atom in the ring system of R at the point of linkage to the adjacent NH-group is replaced by a nitrogen atom, cycloalkylalkyl substituted by lower alkyl or polycycloalkylalkyl substituted by lower alkyl,

R' and R'' are hydrogen, halogen, alkyl, phenyl, mono- or di-halophenyl or lower alkoxyphenyl, or R' and R'' are alkyl linked together;

X is oxygen, sulphur, nitrogen or nitrogen whose hydrogen atom is replaced by alkyl, aryl, aralkyl or by alkyl, aryl or aralkyl substituted by halogen, alkyl, alkoxy or trifluoromethyl, and

Y and Z are unsubstituted or alkyl-substituted alkylene of 1 to 3 carbon atoms, or if Y or Z is at least 2 carbon atoms, the other one may be a direct bond, and pharmaceutically acceptable non-toxic salts thereof, exhibit blood sugar depressant properties and are thus useful agents in the treatment of diabetes. These compounds may be produced by the reaction of amino compounds with sulphonamide derivatives or arylsulphonyl isocyanates or by reacting sulphonamides with amine derivatives or isocyanate derivatives.

3,752,819

**5-PHENYL-ISOXAZOLE-3-CARBOXYLIC ACIDS AND THEIR DERIVATIVES**

Jean B. Philippe, Paris, France, assignor to Ferlux, Puy-de-Dome, France

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,527

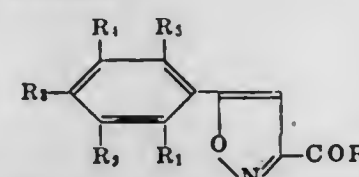
Claims priority, application France, Dec. 23, 1969, 6944556

Int. Cl. C07d 31/36

U.S. Cl. 260—295 R

4 Claims

New derivatives of 5-phenyl-isoxazole-3-carboxylic acid of the general formula



(I)

in which R represents a free or esterified hydroxylated group, an aminated group or hydrazine group.

These derivatives are prepared by the action of hydroxylamine or benzoylpyruvic acids.

Therapeutical application of the derivatives of the invention particularly as salidiuretics, sedatives, analgesics.

3,752,820

**SUBSTITUTED-1,2,3,4-TETRAHYDROBENZOTHIENO[3,2-c]PYRIDINE DERIVATIVES**

John T. Suh, Mequon, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,228

Int. Cl. C07d 31/50

U.S. Cl. 260—294.8 B

6 Claims

Substituted - 1,2,3,4 - tetrahydrobenzothieno[3,2-c]pyridine derivatives are central nervous system depressants having antipsychotic activity. A compound disclosed is 8-chloro-1,2,3,4-tetrahydrobenzothieno[3,2-c]pyridine.

3,752,821

**METHOD FOR THE CONTINUOUS MANUFACTURE OF HYDANTOINS, ESPECIALLY 5,5-DIMETHYLHYDANTOIN**

Johannes Wollner, Kapellen, Kreis Moers, Peter Francis Pascoe, Moers, and Hans Arendsen, Homberg (Lower Rhine), Germany, assignors to Rheinpreussen AG, Homberg, Germany

Continuation of abandoned application Ser. No. 752,643, Aug. 14, 1968. This application June 1, 1971, Ser. No. 149,069

Claims priority, application Germany, Aug. 18, 1967, P 16 95 646.0

Int. Cl. C07d 49/32

U.S. Cl. 260—309.5

4 Claims

Improved process for continuously manufacturing hydantoin by the reaction of aldehydes or ketones with hydrocyanic acid or cyanides with ammonia or ammonium compounds and carbon dioxide or bicarbonates wherein the reaction is carried out countercurrently in a packed column.

3,752,822

CARBAZOLE DYESTUFFS

Roderich Raue and Hans-Peter Kuhlthau, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 15, 1968, Ser. No. 721,177

Claims priority, application Germany, Apr. 24, 1967, F 52,230

Int. Cl. C07d 27/68

U.S. Cl. 260—315

2 Claims

New phenyl-heteryl-methane dyestuffs adapted for use in dyeing and printing of materials of leather, tannin-treated cotton, cellulose acetate, synthetic super polyamides and polyurethanes and for the dyeing of fibers containing lignin such as coco, jute and sisal or for the production of writing liquids, stamp dyes, paste for ball-point pens or for use in offset printing, or for dyeing and printing of materials consisting completely or partially of polymers or copolymers of acrylonitrile or vinylidene cyanide or acid-modified polyester materials and are characterized on these latter materials by good fastness to light, wet processing, rubbing and sublimation, as well as having good affinity to the fibers and good fastness to cross-dyeing.

3,752,823

**N-ALKYL-TETRAHYDROCARBAZOLES**

James M. McManus, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 853,933, Aug. 28, 1969. This application Apr. 2, 1971, Ser. No. 130,824

Int. Cl. C07d 27/68

U.S. Cl. 260—315

3 Claims

N-alkyl-tetrahydrocarbazoles such as N-alkyl-4-amino-alkyl-1,2,3,4-tetrahydrocarbazoles are useful as hypoglycemic agents.

3,752,824

THIOAMIDES

Aubert Yaucher Coran, Creve Coeur, Mo., and Joseph Edward Kerwood, St. Albans, W. Va., assignors to Monsanto Company, St. Louis, Mo.

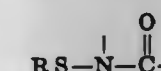
No Drawing. Division of application Ser. No. 714,445, Mar. 20, 1968, now Patent No. 3,546,185, and a continuation-in-part of applications Ser. Nos. 549,730, May 12, 1966, 579,493, Sept. 15, 1966, and 459,466, May 27, 1965, all now abandoned. This application Mar. 27, 1970, Ser. No. 29,717

Int. Cl. C07d 27/30

U.S. Cl. 260—326 S

16 Claims

Sulfenamides characterized by carbonyl adjacent to the sulfenamide nitrogen, the characteristic nucleus of which is



where the dangling valence on the nitrogen may be linked to a second carbonyl, alkyl, aryl, cycloalkyl, hydrogen, alkylene carbon, or arylene carbon, and R is alkyl, aryl, or cycloalkyl. The compounds, many of which are new, inhibit premature vulcanization of vulcanizable elastomers and stabilize styrene-butadiene rubber.

3,752,825

**PHENYL-HETERYL-METHANE DYESTUFFS**

Roderich Raue and Hans-Peter Kuhlthau, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Apr. 15, 1968, Ser. No. 721,177. Divided and this application Sept. 25, 1970, Ser. No. 75,768

Claims priority, application Germany, Apr. 24, 1967, F 52,230

Int. Cl. C07d 27/38

U.S. Cl. 260—326.11

3 Claims

This invention relates to phenyl-heteryl-methane dyestuffs having an indole nucleus, and the preparation thereof.



3,752,826

## AROYL-SUBSTITUTED PYRROLES

John Robert Carson, Norristown, Pa., assignor to McNeil Laboratories, Inc.  
No Drawing. Continuation-in-part of application Ser. No. 741,348, July 1, 1968, which is a continuation-in-part of application Ser. No. 656,074, July 26, 1967. This application Jan. 26, 1970, Ser. No. 5,958  
Int. Cl. C07d 27/26

U.S. Cl. 260—326.3 41 Claims  
The compounds are of the class of 5-aryl-pyrrole alkanolic acids and corresponding acid derivatives thereof useful as anti-inflammatory agents and as synthetic intermediates.

3,752,827

## DIELS-ALDER ADDUCTS OF BIS(TRIFLUOROMETHYL)THIOKETENE

Maynard Stanley Raasch, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 31,392, Apr. 23, 1970. This application Mar. 16, 1971, Ser. No. 124,989  
Int. Cl. C07d 65/04

U.S. Cl. 260—327 TH 10 Claims  
Diels-Alder reaction of bis(trifluoromethyl)thio ketene with conjugated cyclic dienes results in hexafluoroisopropylidenedihydrothiopyrans. These compounds, and certain derivatives thereof, have anti-inflammatory properties.

3,752,828

## STABILIZATION OF LACTONE COMPOUNDS

Donald C. Best, South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.  
No Drawing. Filed Dec. 7, 1970, Ser. No. 95,975  
Int. Cl. C07d 7/06

U.S. Cl. 260—343 7 Claims  
The invention relates to inhibiting the development of color formation of monomeric lactones such as epsilon-caprolactone by incorporating therein an inhibiting amount of certain triorgano phosphorus compounds as exemplified by triphenylphosphine.

3,752,829

## 4-CYCLOHEXYLVULPINIC ACID DERIVATIVES

Blaine M. Sutton, Hatboro, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 188,439, Oct. 13, 1971. This application Aug. 21, 1972, Ser. No. 282,534  
Int. Cl. C07d 5/06

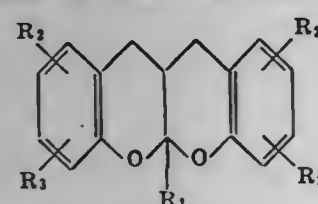
U.S. Cl. 260—343.6 11 Claims  
4-cyclohexylvulpinic acid derivatives having anti-arthritis activity prepared by alcoholysis of the corresponding 4-cyclohexylpulpinic acid dilactone.

3,752,830

## SUBSTITUTED PYRANO[2,3-b]PYRANS

Max von Strandtmann, Rockaway, Marvin P. Cohen, Mendham, and John Shavel, Jr., New Milford, N.J., assignors to Warner-Lambert Company, Morris Plain, N.J.  
No Drawing. Filed Feb. 4, 1971, Ser. No. 112,830  
Int. Cl. C07d 7/46

U.S. Cl. 260—345.2 2 Claims  
The present invention discloses novel substituted pyrano[2,3-b]pyrans of Formula I below:



wherein R<sub>1</sub> is a disubstituted amine, R<sub>2</sub> and R<sub>3</sub> are H, alkyl, halo, lower alkoxy, aryloxy, aralkyloxy, or R<sub>2</sub> and

R<sub>3</sub> taken together with the aromatic ring form a second aromatic or heteroaromatic ring.

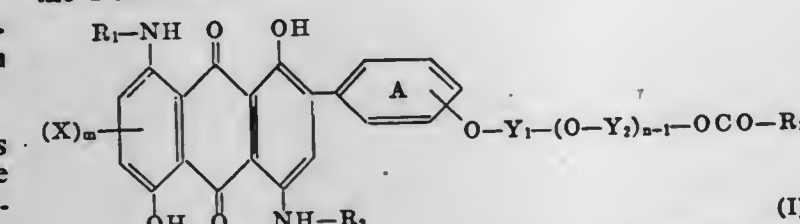
The compounds of this invention possess bronchodilator properties.

3,752,831

## ANTHRAQUINONE DYESTUFFS

Michael Diamantoglou, Erlench, Germany, and Hans Peter Koelliker, Munchenstein, Alfred Staub, Binningen, Hans Bosshard, Basel, and Urs Karlen, Magden, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland  
No Drawing. Filed Apr. 26, 1971, Ser. No. 137,656  
Claims priority, application Switzerland, Apr. 28, 1970, 6,352/70

U.S. Cl. 260—376 5 Claims  
Anthraquinone dyestuffs which are sparingly soluble in water and are free of groups which dissociate in water to give an acid reaction and impart solubility in water, of the Formula I



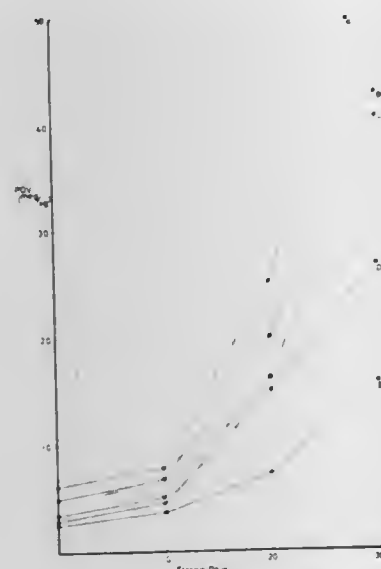
in which R<sub>1</sub> and R<sub>2</sub>, independently of one another, each denote hydrogen or a lower alkyl group, X denotes hydrogen or halogen, Y<sub>1</sub> and Y<sub>2</sub>, independently of one another, each denote a lower alkylene group which is optionally substituted by a hydroxyl group or a lower alkoxy group, m and n each denote one of the numbers 1 or 2, and R<sub>3</sub> denotes an optionally substituted aliphatic or aromatic hydrocarbon radical or a lower alkylamino, a cycloalkylamino or an optionally ring-substituted arylamino group, and in which the benzene ring A is optionally substituted further by halogen, or by a lower alkyl or lower alkoxy group.

3,752,832

## PROCESS FOR ANTI-OXIDATION AGAINST LIPID

Sadanobu Maruyama and Tsueno Wakayama, Tokyo, Japan, assignors to Kongo Yakuhin Kabushiki Kaisha, Toyama-ken, Japan  
Filed Sept. 3, 1971, Ser. No. 177,758  
Claims priority, application Japan, Sept. 8, 1970, 45/78,633; Dec. 11, 1970, 45/109,726  
Int. Cl. C11b 5/00

U.S. Cl. 260—398.5 5 Claims



(1) Process for anti-oxidation against lipid characterized in permitting co-existence of tocopherol and unsaponifiable matter of rice oil against said lipid.

3,752,833

## PHOSPHATIDE SEPARATION

Rajindra Aneja, Welwyn Garden City, and Jaswinder Singh Chadha, London, England, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Aug. 27, 1971, Ser. No. 175,731  
Claims priority, application Great Britain, Sept. 23, 1970, 45,295/70

U.S. Cl. 260—403 14 Claims  
Int. Cl. A23J 7/00; C07E 9/02

N-acylphosphatides, for instance N-acetylcephalin, are separated from phosphatides without an acylatable amino group, for instance lecithin, by making a mixture containing them acid to the equivalent of pH less than 3.5 under aqueous conditions and solvent-fractionating with acetone or methyl acetate.

3,752,834

## PROCESS FOR PREPARING ALKYL TITANATES FROM TITANIUM TETRACHLORIDE AND ALCOHOLS

Guy Marie Paul Bardin, Thann, and Roger Emile Jules Keck, Cernay, France, assignors to Fabriques de Produits Chimiques de Thann et de Mulhouse, Thann, France

Filed Apr. 9, 1971, Ser. No. 132,722  
Claims priority, application France, Apr. 17, 1970, 13,930

U.S. Cl. 260—429.5 6 Claims  
Int. Cl. C07f 7/28

Alkyl titanates are prepared by esterifying titanium tetrachloride with an alcohol and neutralizing the hydrochloric acid with ammonia in a process in which the pH of the reaction mixture is kept at about 4-6 until all the titanium tetrachloride has been introduced into the reactor and then continuing to introduce ammonia until pH of the reaction medium is about 9. This procedure facilitates removal of the precipitated ammonium chloride from the solution of alkyl titanate.

3,752,835

## PROCESS FOR PREPARING DIALKYL TIN DICHLORIDE AND AN ALKYL LEAD CHLORIDE CO-PRODUCT

Hymen Shapiro and Paul Kobetz, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Filed July 19, 1971, Ser. No. 163,990  
Int. Cl. C07f 7/22

U.S. Cl. 260—429.7 14 Claims  
A process for the production of dialkyltin dichloride compounds and an alkyllead chloride co-product by the reaction of tetraalkyllead and tin tetrachloride in the presence of a solvent is disclosed.

3,752,836

## CHROME COMPLEXED AZOMETHINE DYE

Elbert M. Idelson, Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Original application June 4, 1969, Ser. No. 830,499, now Patent No. 3,597,200. Divided and this application Oct. 23, 1970, Ser. No. 83,595

U.S. Cl. 260—438.5 R 3 Claims  
Int. Cl. C07f 11/00

Novel metal-complexed azomethine dyes which are also silver halide developing agents, novel non-complexed azomethines useful in the preparation of the same, and novel

photographic systems and procedures employing the aforementioned metal complexes to obtain color images, particularly systems and procedures for preparing color images by diffusion transfer.

3,752,837

## ANTIMONY AMINOALKOXIDE

Hiroshi Okuto, Toyonaka, and Kiyoshi Yasuda, Ikeda, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed May 17, 1971, Ser. No. 144,319  
Claims priority, application Japan, May 18, 1970, 45/42,286; Dec. 25, 1970, 45/129,651

U.S. Cl. 260—446 3 Claims  
Int. Cl. C07f 9/90

Novel antimony aminoalkoxides which are prepared by allowing antimony trioxide to react with aminoalcohol, and the antimony aminoalkoxides are usable as fire retardants.

3,752,838

## METHYLCARBAMOYLOXY-THIOLCARBANILATES

Mathias H. J. Welden, Raleigh, N.C., and Linwood K. Payne, Jr., deceased, late of Charleston, W. Va., by Betty Lou B. Payne, executrix, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 817,152, Apr. 17, 1969, which is a continuation-in-part of application Ser. No. 521,410, Jan. 18, 1966. This application July 15, 1970, Ser. No. 55,244

U.S. Cl. 260—455 A 8 Claims  
Int. Cl. C07c 155/08

A new series of methylcarbamoxyloxy-thiolcarbanilates have been found to be exceptionally active insecticides, particularly against larval stages of lepidopterous pests. These compounds are effective insecticides.

3,752,839

## HYDROCYANATION OLEFINS

William C. Drinkard, Jr., Wilmington, and Richard V. Lindsey, Jr., Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 858,098, Sept. 15, 1969, which is a continuation-in-part of application Ser. No. 679,608, Nov. 1, 1967. This application July 2, 1970, Ser. No. 52,143

U.S. Cl. 260—465.8 R 12 Claims  
Int. Cl. C07c 121/04

Process of adding hydrogen cyanide to nonconjugated carbon-carbon double bonds such as in 4-pentenitrile at from -25 to 200° C. using catalysts of the structure Pd(PX<sub>3</sub>)<sub>4</sub> where X is R or OR and R is an alkyl or aryl group of up to 18 carbon atoms.

3,752,840

## PROCESS FOR PREPARING FLUOROPERHALO-ALKYL NITRILES

Bryce C. Oxenrider, Florham Park, and Cyril Woolf and Robert A. Dear, Morristown, N.J., and Wilhelmus M. Beyleveld, Deventer, Netherlands, assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 9, 1971, Ser. No. 161,335  
Int. Cl. C07c 121/02

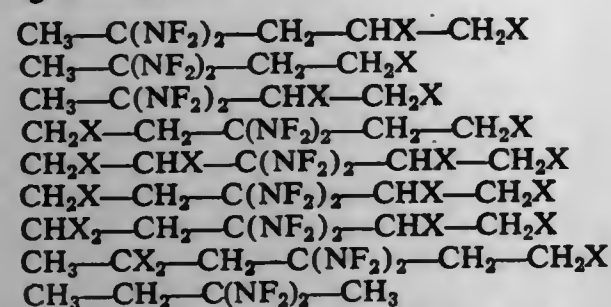
U.S. Cl. 260—465.7 4 Claims  
Fluoroperhaloalkyl nitriles are prepared by reacting a fluoroperhalo-1-olefin with cyanogen and an ionizable fluoride salt.







with a halogen substituted saturated aliphatic hydrocarbon selected from the group of compounds having the following formulas:



wherein X represents a halogen selected from the group consisting of chlorine and bromine to remove the halogen with hydrogen from a vicinal carbon atom, and recovering the unsaturated product containing the gem difluoro-amino group.

3,752,854

### HOMOPOLYMERS OF N-(2-HYDROXYETHYL) AZIRIDINES AND N-(2-THIOETHYL)AZIRIDINES AND A METHOD OF PREPARATION

Donald A. Tomalla and Narayanlal D. Ojha, Midland, Mich., assignors to The Dow Chemical Corporation, Midland, Mich.

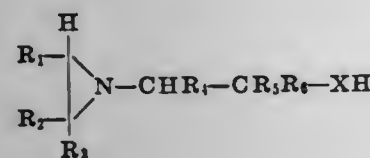
No Drawing. Filed Jan. 28, 1970, Ser. No. 6,558

Int. Cl. C07c 93/02

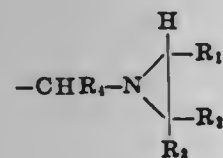
U.S. Cl. 260—584 B

17 Claims

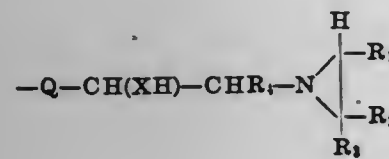
Homopolymers of aziridines having the structural formula



wherein X is oxygen or sulfur,  $\text{R}_1$ – $\text{R}_3$  are hydrogen or hydrocarbon groups, and  $\text{R}_6$  is hydrogen, a hydrocarbon group or



or



wherein Q is an inert divalent organic radical, are prepared in a polymerization reaction which comprises maintaining said monomer(s) in liquid phase with sulfur dioxide until the polymeric product is formed. The polymers are obtained as a complex with  $\text{SO}_2$ , and  $\text{SO}_2$  may be included within the backbone structure, e.g., as a sulfite linkage. The polymers are useful as flocculants and as fugitive sizing agents. For example, N-(2-hydroxyethyl) aziridine homopolymerizes in liquid sulfur dioxide at a temperature of  $-10^\circ\text{C}$ . to give a polymer having the repeating unit  $\{\text{CH}_2\text{CH}_2-\text{NH}-\text{CH}_2\text{CH}_2\text{O}\}$  as a complex with  $\text{SO}_2$ .

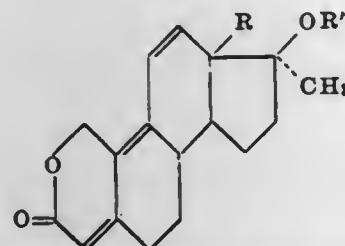
3,752,855  
**NOVEL 2-OXA-STERIODS**  
Robert Bucourt and Lucien Nedelec, Clichy-sous-Bois, France, assignors to Roussel UCLAF, Paris, France  
No Drawing. Original application Aug. 14, 1968, Ser. No. 752,467, now Patent No. 3,595,877. Divided and this application Feb. 3, 1971, Ser. No. 112,408  
Claims priority, application France, Aug. 17, 1967, 118,090, 118,091; Dec. 7, 1967, 131,343; Mar. 7, 1968, 142,767

Int. Cl. C07c 49/00

U.S. Cl. 260—586 H

3 Claims

2-oxa-13 $\beta$ -R-17 $\alpha$ -methyl- $\Delta^{4,9,11}$ -gonatrienes of the formula



(I)

wherein R is selected from the group consisting of methyl and ethyl and  $\text{R}'$  is selected from the group consisting of hydrogen, saturated alkyl of 1 to 5 carbon atoms which may contain a hetero oxygen atom, unsaturated alkyl of 2 to 5 carbon atoms, cycloalkyl of 3 to 5 carbon atoms which may contain a hetero oxygen atom, with the proviso that R is ethyl when  $\text{R}'$  is hydrogen which compounds possess anabolic and androgenic activity. The invention also relates to a novel process and novel intermediates for the preparation of the compounds of Formula I.

3,752,856

### PROCESS FOR THE PRODUCTION OF BROMINATED AROMATIC COMPOUNDS

Georges F. Nagy, Montrouge, Daniel Balde, Levallois-Perret, and Pierre Deloy, Colombes, France, assignors to Ugine Kuhlmann, Paris, France

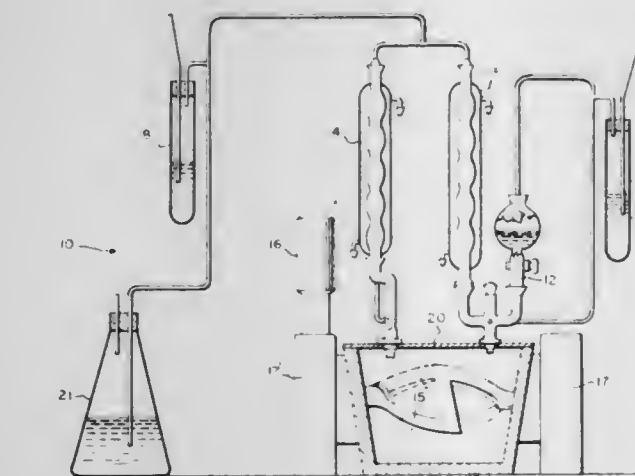
Filed Feb. 2, 1970, Ser. No. 7,662

Claims priority, application France, Feb. 3, 1969, 6902243

Int. Cl. C07c 41/00

U.S. Cl. 260—612 R

5 Claims



The present invention relates to a process for the production of aromatic compounds brominated on the ring portion or nucleus thereof and more specifically to the production of such compounds having a high melting point, comprising forming a solventless reaction mixture of elemental bromine and an aromatic compound and maintaining the reaction mixture during the period of reaction under constant agitation at a force sufficient to intimately mix the reactants and to crush solid brominated compounds formed by the reaction.

3,752,857

### NONIONIC SURFACTANT WITH LOW POUR POINT

John Gordon Milligan, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Continuation-in-part of application Ser. No. 790,445, Jan. 10, 1969, which is a continuation-in-part of application Ser. No. 671,995, Oct. 2, 1967, both now abandoned. This application Apr. 27, 1970, Ser. No. 32,423

Int. Cl. C07c 41/02

U.S. Cl. 260—615 B

1 Claim

Nonionic surface-active agents prepared by the addition of ethylene oxide to mixtures of alcohols containing from 8 to 20 carbon atoms are often solids or mixtures of solids and liquids at room temperatures. The pour points of such nonionic surfactants can be lowered without appreciably adversely affecting other properties by the sequential addition of ethylene oxide, propylene oxide and ethylene oxide to the alcohol if the initial oxyethylene block contains from 30% to 60% of the total oxyethylene groups in the molecule.

3,752,858

### PHENOL NITRATION PROCESS

Joseph D. Odenweller, Bloomfield Hills, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,013

Int. Cl. C07c 79/24

U.S. Cl. 260—622 R

8 Claims

A process is provided for making 2,4-di-nitro-6-sec-alkylphenols using both 2,6-di-sec-alkylphenols and o-sec-alkylphenols as starting material. In the first step, 2,6-di-sec-alkylphenols are added to excess concentrated sulfuric acid at  $75$ – $150^\circ\text{C}$ . causing concurrent dealkylation and sulfonation. In the second step, o-sec-alkylphenols are added to consume most of the remaining sulfuric acid, permitting replacement of sulfonic acid groups with nitro groups by reacting the final mixture with aqueous alkali metal nitrates. The products (e.g., 2,4-di-nitro-6-sec-butylphenol) are useful as selective herbicides.

3,752,859

### PREPARATION OF ALDEHYDES FROM OLEFINS

Raymond A. Schell, Berkley, Mich., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Continuation-in-part of abandoned application Ser. No. 626,681, Mar. 29, 1967. This application Dec. 8, 1969, Ser. No. 883,305

Int. Cl. C07c 45/08

U.S. Cl. 260—604 HF

9 Claims

Aldehydes are prepared by reacting carbon monoxide with an olefin and a primary alcohol in the presence of a rhodium halide catalyst. For example, when hexene-1 is reacted with methanol and carbon monoxide in the presence of a catalytic quantity of rhodium (III) chloride trihydrate, a mixture of n-heptaldehyde and 1-methylhexanal results. As a by-product, the alcohols corresponding to the aldehydes are also produced in many instances.

3,752,860

### CARBONYLATION OF ORGANOBORANES IN THE PRESENCE OF COMPLEX METAL HYDRIDES

Herbert C. Brown, 1840 Garden St., Lafayette, Ind. 46012

No Drawing. Filed May 20, 1968, Ser. No. 730,653

Int. Cl. C07c 27/00, 31/00, 31/14

U.S. Cl. 260—632 R

8 Claims

Metal triorganoborane alcoholate compounds are formed by reacting triorganoborane compounds with

carbon monoxide and a complex metal hydride at moderate conditions of temperature and pressure. The alcoholate compounds can subsequently be converted to alcohols and aldehydes. Alcohols are formed by hydrolyzing the alcoholate compound in a basic medium. Aldehydes are secured by oxidizing the alcoholate compound.

3,752,861

### PRODUCTION OF HYDROXY COMPOUNDS BY HYDROGENOLYSIS OF BUFFERED CARBOXYLATE SALTS

Charles C. Hobbs and John A. Bedford, Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Aug. 17, 1970, Ser. No. 64,665

Int. Cl. C07c 29/00, 31/20

U.S. Cl. 260—635 D

3 Claims

Carboxylic acids are converted to the corresponding hydroxymethyl-substituted compounds by preparing an aqueous solution of their alkali metal salts buffered to a pH between about 6.0 and 7.0 and then reacting the buffered salt solution with hydrogen in the presence of a hydrogenolysis catalyst such as active metallic cobalt. In a particularly useful embodiment the potassium salts of carboxylic acids, dicarboxylic acids, and hydroxycarboxylic acids having at least about four carbon atoms are hydrogenolyzed in a reactor within which the desired buffering is accomplished with potassium bicarbonate in the presence of a finite concentration of free carbon dioxide. After the reaction step the liquid product is degassed at a temperature high enough to decompose potassium bicarbonate to potassium carbonate; the reaction product separates into two phases because of the salting-out action of the resulting potassium carbonate, and the organic products can be recovered by decantation while the aqueous phase, containing reusable potassium carbonate, is recycled to the acid-neutralization step which precedes the hydrogenolysis.

3,752,862

### PROCESS FOR CONVERTING BUTANE AND HEXANE INTO ISOPENTANE BY AVERAGING AND ISOMERIZATION

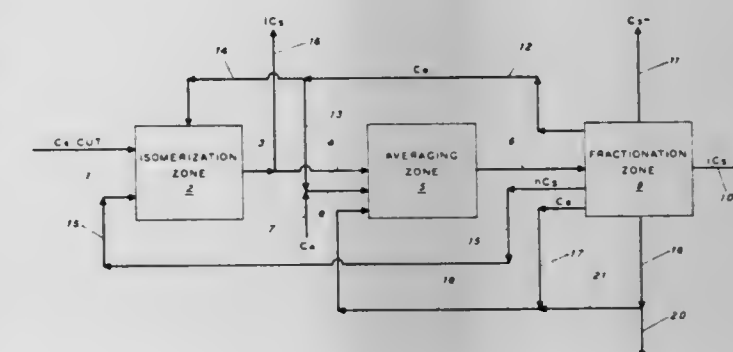
Robert P. Sieg, Piedmont, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 15, 1970, Ser. No. 80,857

Int. Cl. C07c 9/00

U.S. Cl. 260—676 R

8 Claims



A process for converting butane and hexane into isopentane which comprises: (a) averaging a  $\text{C}_6$  rich hydrocarbon stream containing less than 1 p.p.m. sulfur with butane in an averaging zone by contacting the  $\text{C}_6$  and



butane hydrocarbons with an averaging catalyst having a component which has catalytic activity for alkane dehydrogenation and a component which has catalytic activity for olefin averaging to obtain an  $nC_5$  rich averaging effluent stream, and (b) isomerizing at least a portion of the  $nC_5$  in the averaging effluent stream in an isomerization zone by contacting the  $nC_5$  with an isomerization catalyst at a hydrogen partial pressure between 10 p.s.i.g. and 3,000 p.s.i.g. and a temperature between 100° F. and 900° F. to obtain an  $iC_5$  rich stream.

3,752,863

**METHOD FOR THE PRODUCTION OF ISOPRENE**  
Kazuo Okada, Takeo Wada, and Itsuo Furuyoya, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed July 14, 1971, Ser. No. 162,631  
Claims priority, application Japan, July 16, 1970, 45/62,348

Int. Cl. C07c 1/00

U.S. Cl. 260—681

7 Claims

The present invention relates to a method for producing isoprene by reacting isobutylene with formaldehyde in the vapor phase in the presence of a catalyst comprising silicon dioxide and a bismuth component such as  $Bi_2O_3$ . The catalyst may further contain minor amounts of at least one element such as Al, B, W, Fe, Ti, Zr and V.

3,752,864

**PROCESS FOR THE ISOMERIZATION OF OLEFINS**  
Robert P. Arganbright, Houston, Tex., assignor to Petro-Tex Chemical Corporation, Houston, Tex.

No Drawing. Filed June 30, 1971, Ser. No. 158,530

Int. Cl. C07c 5/22

U.S. Cl. 260—683.2

11 Claims

Aliphatic hydrocarbon olefins having 4 to 5 carbon atoms are isomerized to their equilibrium mixture over a unique catalyst of  $PdO \cdot WO_3$  on a support. For example, 2-methyl butene-1 at a LHSV of 7 at 57° C. over 2%  $PdO \cdot 10\% WO_3$  on alumina gave 56.5% yield of 2-methyl butene-2 as compared to 35.6% over a  $NiO \cdot WO_3$  supported prior art catalyst.

3,752,865

**ELECTRICAL CABLES INSULATED WITH EXTRACTION RESISTANT STABILIZED POLYMERS**

Frank Scardiglia, Woodcliff Lake, and Kornel D. Kiss, Elmsford, N.Y., assignors to Dart Industries Inc., Los Angeles, Calif.

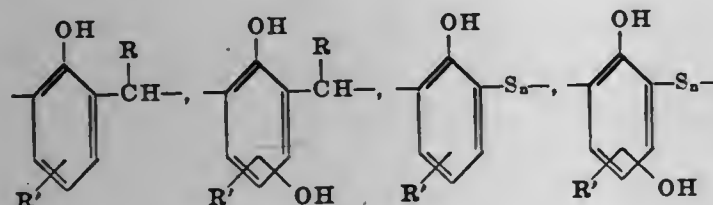
No Drawing. Continuation-in-part of abandoned application Ser. No. 130,818, Apr. 2, 1971. This application July 20, 1971, Ser. No. 164,450

Int. Cl. C08f 45/60; C08g 37/16

U.S. Cl. 260—848

8 Claims

Polymeric compositions that contain a phenolic resin containing repeating units having the formula:



or mixtures thereof wherein R and R' are hydrogen or alkyl, cycloalkyl or aryl radicals having from 1 to 24 carbon atoms, n is 1 or 2 and the average number of repeating units in said polymeric compound is at least 3, and a metal deactivator have unexpectedly high thermal oxidative stability after extraction by viscous liquids.

These compositions are particularly useful in the insulation of electrical cables which are utilized in environments likely to cause extraction of stabilizer systems.

3,752,866

**POLYCARBONATE MODIFIED POLYESTERS OF REDUCED CARBOXYL GROUPS**

Marvin LeRoy Doerr, Charlotte, N.C., assignor to Fiber Industries, Inc.

No Drawing. Filed Mar. 23, 1971, Ser. No. 127,367

Int. Cl. C08g 39/10

U.S. Cl. 260—860

8 Claims

A process is disclosed and claimed which provides for the late addition of a polycarbonate to a fiber-forming polyester melt which results in a polyester having a lower level of carboxyl end groups. The improved polyester of this invention exhibits utility in reinforced rubber articles such as industrial belts and pneumatic tire structures.

3,752,867

**FIREPROOF POLYESTERS FROM HALOGENATED SALICYLIC ACID**

Yves Merck and Jean-Marie Vion, Brussels, Belgium, assignors to UCB, Societe Anonyme, Brussels, Belgium

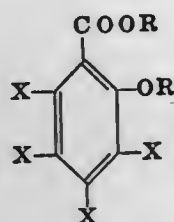
No Drawing. Filed Nov. 8, 1971, Ser. No. 196,742  
Claims priority, application Great Britain, Nov. 10, 1970, 53,434/70

Int. Cl. C08f 21/02; C08g 17/10

U.S. Cl. 260—869

15 Claims

Fireproof polymers which are the polymerization products of unsaturated polyester resin compositions comprising: (a) a polycondensation product of unsaturated aliphatic polycarboxylic acids, optionally saturated aliphatic carboxylic acids or aromatic carboxylic acids, polyhydric alcohols and halogenated salicylic acids of the formula



wherein X is hydrogen or halogen, at least one X being halogen, R is hydrogen, alkyl or aryl and R' is hydrogen, alkanoyl or aroyl, and (b) a monoethylenically unsaturated copolymerizable monomer.

3,752,868

**METHOD FOR PRODUCING DYEABLE POLYOLEFIN**

Kanji Kaku, Mitsuo Asaba, Yasaka Gondo, and Atsuyuki Kachi, Kanagawaken, and Satoshi Matsumoto, Chiba-ken, Japan, assignors to Chisso Corporation, Osaka, Japan

No Drawing. Original application Nov. 25, 1968, Ser. No. 778,763. Divided and this application May 24, 1971, Ser. No. 146,525

Claims priority, application Japan, Dec. 6, 1967, 42/78,323, 42/78,324

Int. Cl. C08f 27/00, 29/12; D06p 3/06

U.S. Cl. 260—876 R

7 Claims

Method for producing dyeable polyolefin which comprises graft-copolymerizing a vinyl monomer containing at least one basic nitrogen atom with a polyolefin to an extent more than half the amount to be included in the final graft-copolymerized polymer and then reacting a non-vinyllic acidic compound with thus graft-copolymerized product, preferably in the graft-copolymerizing system. This dyeable polyolefin has excellent dye affinity to acid dyes while retaining excellent mechanical properties of polyolefin.

3,752,869

**S-(N-ISOBUTYNYL-N-PHENYLCARBAMOYL-METHYL) DITHIOPHOSPHATES**

Karl Kiehs, Lampertheim, and Adolf Fischer, Mutterstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany  
No Drawing. Filed Oct. 15, 1970, Ser. No. 81,141  
Claims priority, application Germany, Oct. 18, 1969, P 19 52 650.2

Int. Cl. A01n 9/36; C07f 9/16

U.S. Cl. 260—943

3 Claims

New and valuable thiophosphoric esters which have a good herbicidal action and a process for controlling the growth of unwanted plants with these compounds.

3,752,870

**POWDER COATING COMPOSITIONS CONTAINING POLYMER OF ETHYLENICALLY UNSATURATED GLYCIDYL ESTERS, DICARBOXYLIC ACIDS, AND FLOW CONTROL AGENTS**

Santokh S. Labana, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,236

Int. Cl. C08g 45/04

U.S. Cl. 260—836

33 Claims

Powder coating compositions are disclosed. In general, individual powder coating compositions are a mixture of the following materials. A copolymer of glycidyl methacrylate and an ethylenically unsaturated compound is formed in such proportions as to obtain a copolymer with a glass transition temperature in the range of 40° C. to 90° C. and a molecular weight ( $M_n$ ) in the range of 2500 to 8500. The glycidyl methacrylate is present in the copolymer from at least about 8% by weight to no more than about 25% by weight. Another material of the coating composition is a saturated, straight chain, aliphatic, dicarboxylic acid containing 4 to 20 carbon atoms per molecule in the amount of 0.8 to 1.1 carboxylic groups for each epoxy group in the copolymer. A third material utilized in forming the powder coating mixture is a flow control agent which forms at least 0.05% by weight of the mixture. The flow control agent is a polymer having a molecular weight ( $M_n$ ) of at least 1000. The flow control agent also has, at the baking temperature of the powder coating composition, a lower surface tension than the surface tension of the copolymer.

3,752,871

**O-ALKYL-N-MONOALKYL-S-(N'-ACYL-CARBAMYL-METHYL)-THIONOTHIOLPHOSPHORIC ACID ESTER AMIDES**

Claus Stölzer, Wuppertal-Vohwinkel, Bernhard Homeyer, Opladen, and Ingeborg Hammann, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

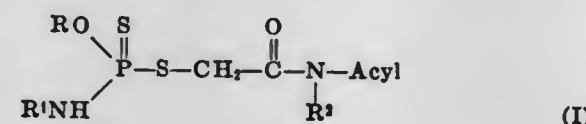
No Drawing. Filed July 22, 1971, Ser. No. 165,411  
Claims priority, application Germany, July 30, 1970, P 20 37 855.6

Int. Cl. H01n 9/36; C07f 9/16, 9/24

U.S. Cl. 260—938

7 Claims

O-alkyl-N-monoalkyl-S-(N'-acyl-carbamylmethyl)-thionothiophosphoric acid ester amides of the general formula



in which

R and R<sup>1</sup> each is an alkyl or alkenyl radical with up to 6 carbon atoms,  
R<sup>2</sup> is hydrogen or an alkyl or alkenyl radical with up to 6 carbon atoms, and  
Acyl is an HCO-, alkyl-CO- or alkoxy-CO- radical optionally substituted by halogen or a phenyl-CO- or phenoxy-CO- radical optionally substituted by halogen or an alkyl radical,

which possess nematocidal, insecticidal, acaricidal, and plant growth-promoting properties.

3,752,872

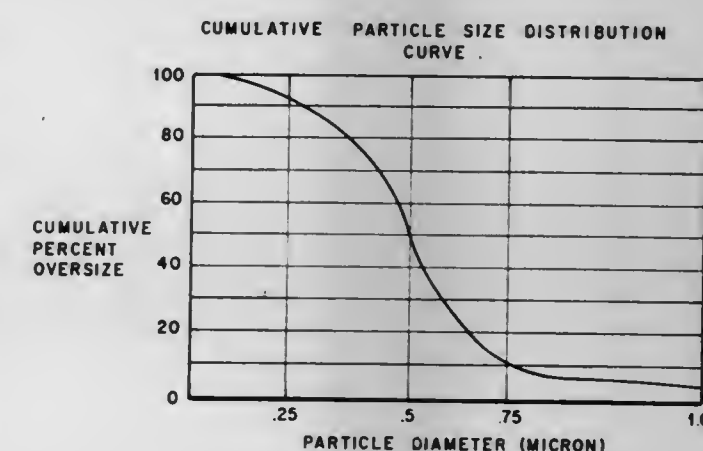
**METHOD OF PREPARING UNIFORM SIZE POWDERS**

Howard W. Hill, Fremont, Mickey O. Marlowe, Livermore, and Alexis I. Kaznoff, Castro Valley, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission  
Filed Aug. 26, 1971, Ser. No. 175,155

Int. Cl. G21c 21/02, 21/12

U.S. Cl. 264—5

1 Claim



A method for preparing inorganic powders consisting of particles of uniform controlled size in the range 0.2 to 40 microns is described. The procedure utilizes isostatic forming and high temperature sintering to form grains of the desired size. The compact then is disintegrated by cyclic oxidation-reduction to separate the grains along grain boundaries thus preserving the identity of the grains. These grains form the particles of the new powder. The procedure is applicable to  $UO_2$  or other compounds of multivalent cations.

3,752,873

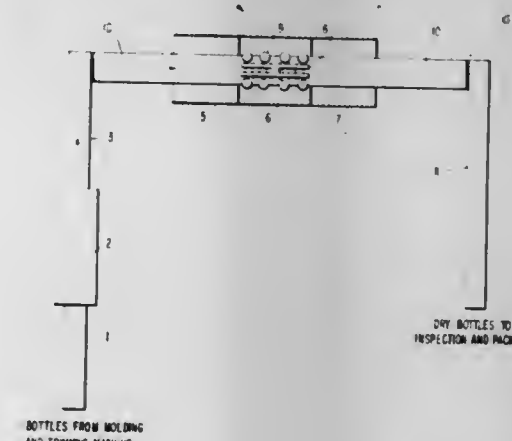
**PRINTING PROCESS FOR PLASTIC CONTAINERS**  
Dan Lewis, Jr., Champaign, Ill., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 807,841, Mar. 17, 1969. This application Aug. 5, 1971, Ser. No. 169,454

Int. Cl. B29c 25/00

U.S. Cl. 264—78

9 Claims



Heat diffusable non-drying inks are printed on plastic containers. The residual surface ink is removed in an oven annealing process which is used to control container volume and dry the bottles.



3,752,874

## PROCESS FOR MELT SPINNING

Ronald Bell Coates, Harrogate, England, assignor to Imperial Chemical Industries, London, England

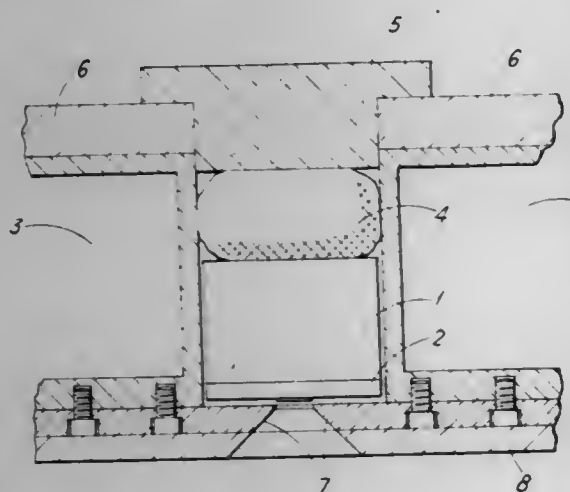
Filed July 26, 1971, Ser. No. 165,985

Claims priority, application Great Britain, Aug. 4, 1970, 37,582/70

Int. Cl. B28b 3/20; B29c 25/00

U.S. Cl. 264—176 F

21 Claims



Filaments by melt-spinning through plurality of packs with variation of heat losses from free faces of packs minimized by shields in close proximity with substantially identical temperatures.

3,752,875

## PROCESS FOR INCREASING REACTION RATE IN CONVERSION OF SULFIDES AND HYDROSULFIDES

Harold A. O'Hern, Jr., Toledo, Ohio, and Kermit E. Olson, Tomahawk, Wis., assignors to Owens-Illinois, Inc.

Filed Dec. 28, 1970, Ser. No. 101,524

Int. Cl. C01b 17/64

U.S. Cl. 423—201

17 Claims

A catalytic process for enhancing the rate of oxidation of alkaline solutions of water-soluble, oxidizable, inorganic sulfides and/or hydrosulfides wherein effective catalytic amounts of water-insoluble smelt solids are employed. These solids selectively catalyze the reaction by which thiosulfate is formed. This catalytic process may also be employed for substantially increasing the rate of oxidation of sulfides in a pulping green liquor to thereby greatly deplete the amount of sodium sulfide present therein and simultaneously form substantial quantities of sodium hydroxide which may be employed to absorb effluent sulfur dioxide emanating, for example, from boilers.

3,752,876

## REMOVAL OF ORGANIC AND INORGANIC IODINE FROM A GASEOUS ATMOSPHERE

George I. Cathers, Knoxville, and William E. Shockley, Oak Ridge, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Aug. 26, 1971, Ser. No. 175,352

Int. Cl. C01b 7/00

U.S. Cl. 423—240

5 Claims

A method of removing iodine from a gaseous atmosphere is provided which comprises contacting said iodine-containing atmosphere with a refluxing aqueous solution which is at least 15.3 M in nitric acid under such conditions as to avoid adverse volatilization of iodine.

3,752,877

## RECOVERY OF SULFUR COMPOUNDS FROM TAIL GASES

David K. Beavon, Los Angeles, Calif., assignor to The Ralph Parsons Company, Los Angeles, Calif.

Continuation-in-part of application Ser. No. 853,286, Aug. 27, 1969. This application Mar. 19, 1971, Ser. No. 126,280

Int. Cl. C01b 17/16

U.S. Cl. 423—244

12 Claims

Gas streams containing sulfur, water, sulfur dioxide, carbonyl sulfide, and carbon disulfide are enriched with hydrogen and catalytically hydrogenated and hydrolyzed to hydrogen sulfide which is removed.

3,752,878

## HYDROLYSIS OF ARYL HALIDES WITH A RARE EARTH METAL PHOSPHATE

William L. Kehl and Raymond J. Rennard, Jr., Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Dec. 30, 1970, Ser. No. 103,003

Int. Cl. C01f 17/00

U.S. Cl. 423—263

13 Claims

Aryl halides, such as chloroethylene, are hydrolyzed to the corresponding ring hydroxylated aryl compounds, such as xlenol, by contacting the aryl halides and steam with a rare earth metal phosphate catalyst, such as lanthanum phosphate, cerium phosphate and neodymium phosphate. A method of preparing the rare earth metal phosphate is also disclosed. The addition of small amounts of copper greatly improves the activity of the catalyst.

3,752,879

## PROCESS FOR MANUFACTURING SODIUM PHOSPHATES

Giorgio Cozza, Milan, Carlo Scaglia, Busto Arsizio, and Filippo Barilli, Milan, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

Filed Dec. 10, 1970, Ser. No. 96,815

Claims priority, application Italy, Dec. 23, 1969, 26,208/69

Int. Cl. C01b 15/16, 25/26

U.S. Cl. 423—315

3 Claims

The degree of salification of phosphoric acid in its part neutralisation with sodium hydrate for sodium tripolyphosphate manufacture is controlled by withdrawing samples, titrating to convert wholly to disodium phosphate then to convert the same sample wholly back to monosodium phosphate, and controlling the admission of sodium hydrate to the neutralisation according to the relative amounts of the titrating agents required. The titration is preferably potentiometric, making use of the inflections in the curve at these points.

3,752,880

## METHOD OF PREPARING ISOCYANIC ACID AND STABILIZING SAME

Walter Stamm, Tarrytown, and Carl C. Greco, Garmerville, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 426,285, Jan. 18, 1965. This application Mar. 17, 1969, Ser. No. 807,677

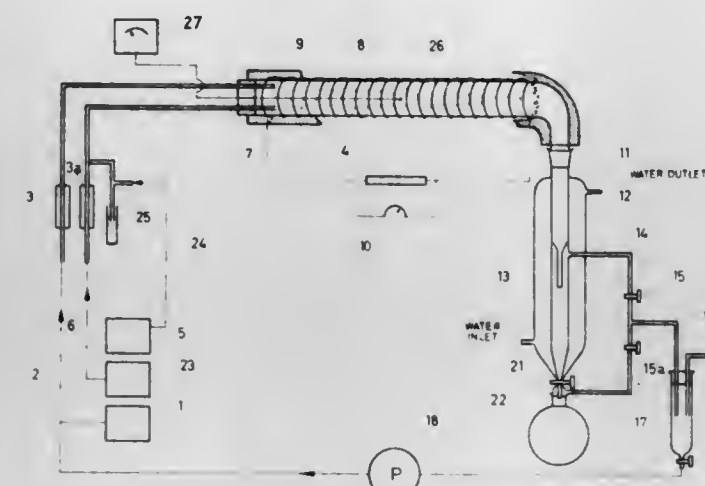
Int. Cl. C01c 3/00, 3/14

U.S. Cl. 423—365

15 Claims

A method for the preparation of isocyanic acid from carbamoyl chloride with a hydrogen chloride abstractor, the basicity of which is sufficient to abstract hydrogen chloride from the carbamoyl chloride but insufficient to

cause polymerization of the formed isocyanic acid. Preferred hydrogen chloride abstractors are the weak Lewis bases such as the ethers, thioethers and N,N-disubstituted amides.



3,752,881

## PROCESS FOR PRODUCTION OF AZIDES

William K. Snead, Wheeling, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 24, 1970, Ser. No. 92,372

Int. Cl. C01b 21/08

U.S. Cl. 423—410

10 Claims

Hydrazoic acid is produced by acidifying alkali metal azide or alkaline earth metal azide. Hydrazoic acid dissolved in the by-product liquid resulting from the acidification is stripped and entrained in a flow of inert gas which removes the stripped hydrazoic acid vapor from the stripping system. The hydrazoic acid is contacted with a basic alkali metal or alkaline earth metal compound and the inert gas withdrawn and recycled to the process.

3,752,882

## FLUX FOR GALVANIZING, TIN PLATING AND LEAD COATING

Wolfgang Muller, Mannheim-Rheinau, Germany, assignor to Th. Goldschmidt, A.G., Essen, Germany

No Drawing. Filed May 16, 1969, Ser. No. 825,451

Claims priority, application Germany, Dec. 12, 1968, P 18 14 258.0

Int. Cl. C01b 9/00

U.S. Cl. 423—463

4 Claims

This invention relates to a compound having the formula



and to a process for the preparation thereof. The compound is useful as a flux for galvanizing, tin plating, lead coating, and soldering processes.

3,752,883

## PROCESS FOR THE PRODUCTION OF HYDROGEN HALIDES FROM A BRINE

William Percy Moore, Jr., Chester, Va., assignor to Allied Chemical Corporation, New York, N.Y.

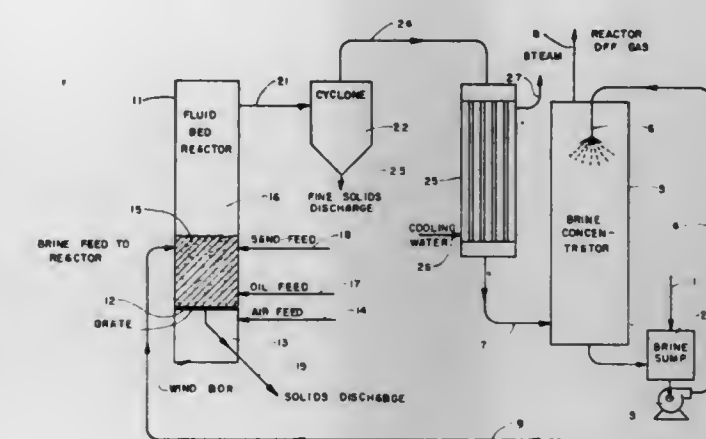
Filed Apr. 1, 1971, Ser. No. 130,357

Int. Cl. C01b 7/08, 7/12

U.S. Cl. 423—481

3 Claims

A process for the production of hydrogen halides from halide brines containing bromides by treating the brine in a reactor containing a fluidized bed of particles maintained in a fluidized state by upward passage of gases at elevated temperatures producing halides, the gases being



in the brine treating zone to prevent formation of corrosive elemental bromine.

3,752,884

GAS DRYING AND SO<sub>2</sub>-ABSORPTION FOR SULFURIC ACID PRODUCTION

Joachim Sasse, Junkersdorf, Germany, assignor to Chemiebau, Dr. A. Zieren GmbH & Co. KG, Cologne, Germany

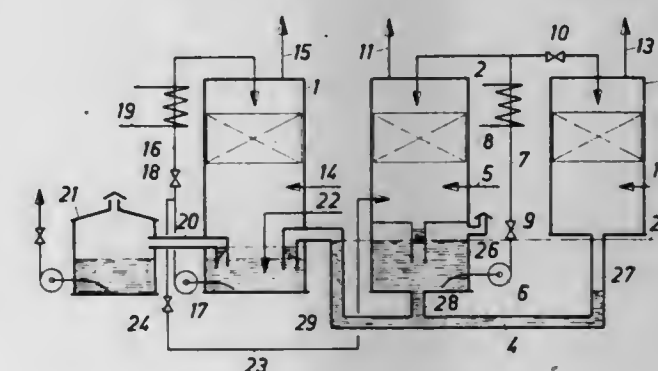
Filed Oct. 28, 1970, Ser. No. 84,777

Claims priority, application Germany, Oct. 28, 1969, P 19 54 098.8

Int. Cl. C01b 17/72

U.S. Cl. 423—522

11 Claims



In the production of sulfuric acid by the contact process comprising the preliminary steps of

- drying SO<sub>2</sub>-containing gas in an SO<sub>2</sub>-drying tower with a concentrated sulfuric acid, the volume of said acid increasing thereby;
- drying air in an air-drying tower with a concentrated sulfuric acid; and
- the post catalytic reaction step of absorbing resultant sulfur trioxide with a concentrated sulfuric acid in a scrubbing tower;

the improvement comprising establishing fluid communication between the sumps of all of said towers which interconnects the inlet of the SO<sub>3</sub>-absorption tower, the outlet of the SO<sub>2</sub>-drying tower and the outlet of the air drying tower with one another. An acid level is obtained in the drying towers and in the SO<sub>3</sub>-absorption tower sumps which is dependent on the gas pressure in each respective tower.



3,752,885

## PROCESS FOR THE PRODUCTION OF HYDROGEN PEROXIDE

Martin Liebert, Frankfurt, Heinz Delle, Bad Homburg vor der Höhe, and Gerhard Kablsch, Rheinfelden, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

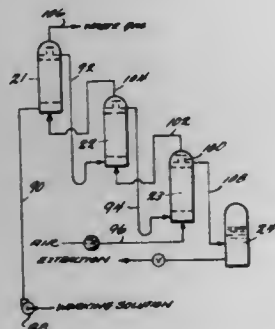
Filed Sept. 24, 1971, Ser. No. 183,561

Claims priority, application Germany, Jan. 26, 1970, P 20 03 268.2

Int. Cl. C01b 15/02; B011 11/00

U.S. Cl. 423-588

15 Claims



The oxidation step in the anthraquinones process for producing hydrogen peroxide is carried out in a plurality of stages in an apparatus arranged for separating gas and liquid phases. The hydroquinone containing working solution is conducted in each stage in parallel flow from bottom to top with one oxygen containing gas. The stage with the highest hydroquinone concentration in the working solution is led to the gas mixture most depleted in oxygen and the fresh gas mixture is introduced into the stage which contains the working solution poorest in hydroquinone.

3,752,886

## LYSOLECITHINS AS IMMUNOLOGIC ADJUVANTS

Paul Gerhard Munder, Siegelau, near Waldkirch, and Herbert Fischer, Burg, near Kirchzarten, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

No Drawing. Filed Feb. 23, 1971, Ser. No. 118,084

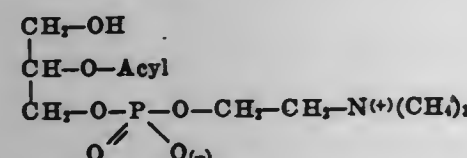
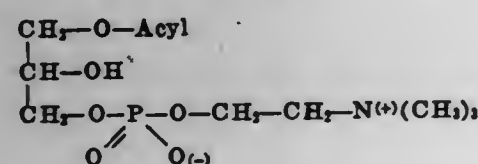
Claims priority, application Germany, Feb. 27, 1970, P 20 09 343.0

Int. Cl. A61k 27/00

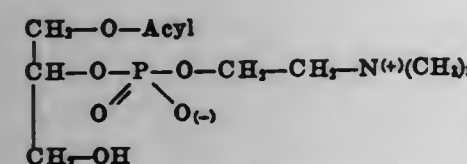
U.S. Cl. 424-199

7 Claims

Pharmaceutical immunologic adjuvant dosage unit compositions consisting essentially of an inert pharmaceutical carrier and an effective immunologic adjuvant dose of a lysolecithin of the formula



or



wherein Acyl is acyl of an aliphatic fatty acid; and a method of enhancing antigenicity and improving immune

response in warm-blooded animals with the aid of such compositions.

3,752,887

## METHOD OF COMBATING FUNGI USING DIMETHYL 1,2,5-THIADIAZOL-3-YL PHOSPHATE

James Billet, Rochester, N.Y., and Stanley T. D. Gough, Branchburg, N.J., assignors to Mobil Oil Corporation

No Drawing. Continuation-in-part of application Ser. No. 813,270, Apr. 3, 1969. This application Apr. 14, 1972, Ser. No. 244,261

Int. Cl. A01n 9/12, 9/22, 9/36

U.S. Cl. 424-200

1 Claim

Phosphate, phosphorothionate, phosphonate, and phosphonothionate esters of 3-hydroxy-1,2,5-thiadiazole and its substituted derivatives are provided, specifically dimethyl 1,2,5-thiadiazolyl phosphate. The latter compound has fungicidal activity.

3,752,888

2-BROMO- $\alpha$ -ERGOCRYPTINE AS A LACTATION INHIBITOR

Edward Fluckiger, Binningen, and Franz Troxler and Albert Hofmann, Bottmingen, Switzerland, assignors to Sandoz Ltd. (also known as Sandoz AG), Basel, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 827,144, May 23, 1969. This application Sept. 17, 1971, Ser. No. 181,624

Claims priority, application Switzerland, May 31, 1968, 8,168/68

Int. Cl. A61k 27/00

U.S. Cl. 424-250

6 Claims

The invention concerns a novel method of inhibiting lactation in a warm-blooded female animal which comprises administering to the animal a dose of from about 0.03 milligram to about 10 milligrams per kilogram animal body weight of 2-bromo- $\alpha$ -ergocryptine.

A process for the production of 2-bromo- $\alpha$ -ergocryptine is also described.

3,752,889

## TREATMENT OF CHRONIC FATIGUE FOLLOWING ACUTE DISEASE

James B. Mercer, 13109 W. 95th St., Lenexa, Kans. 66215

No Drawing. Continuation-in-part of abandoned application Ser. No. 860,062, Sept. 22, 1969. This application Apr. 13, 1972, Ser. No. 243,865

Int. Cl. A61k 27/00

U.S. Cl. 424-273

4 Claims

The administration internally to mammals of 1-( $\beta$ -hydroxyethyl) - 2 - methyl - 5 - nitroimidazole (metronidazole), in a dosage range for adult humans of about 31 to 1000 mgs. per twenty-four hour period, is an effective therapeutic treatment for chronic fatigue which sometimes follows acute disease.

3,752,890

## N-(1-AZIDO-2,2,2-TRIFLUOROETHYL)AZIDES AND CARBAMATES AS NEMATOCIDES

Malcolm S. Singer, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

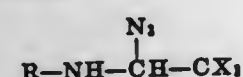
No Drawing. Original application Jan. 7, 1969, Ser. No. 789,595, now Patent No. 3,636,062. Divided and this application June 28, 1971, Ser. No. 163,522

Int. Cl. A01n 9/20

U.S. Cl. 424-226

10 Claims

Azides of the formula



in which X is Cl or Br and R is a carboxyacyl, sulfonyl-acyl or alkoxycarbonyl group. These azides are nematocidal.

3,752,891

## METHOD FOR PRODUCING ANTIHYPERTENSIVE ACTIVITY

Daniel Kaminsky, Parsippany, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

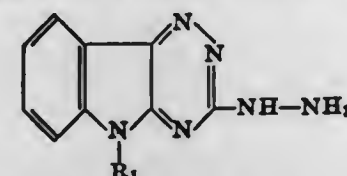
No Drawing. Filed June 4, 1971, Ser. No. 150,203

Int. Cl. A61k 27/00

U.S. Cl. 424-249

8 Claims

The present invention relates to a method for producing antihypertensive activity in a hypertensive mammal by the administration of a compound of the formula:



(I)

wherein R<sub>1</sub> is hydrogen, lower alkyl or phenyl lower alkyl.

3,752,892

## ANOREXIGENIC TETRAHYDROBENZAZEPINE DERIVATIVE, METHOD AND COMPOSITION THEREOF

Karl Hoegerle, Basel, and Ernst Habicht, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Aug. 9, 1968, Ser. No. 751,380, now abandoned. Divided and this application Mar. 11, 1970, Ser. No. 23,526

The portion of the term of the patent subsequent to Feb. 13, 1990, has been disclaimed

Int. Cl. A61k 27/00

U.S. Cl. 424-244

2 Claims

6-chloro-2,3,4,5-tetrahydro-H-3-benzazepine and pharmaceutically acceptable acid addition salts thereof are prepared; pharmaceutical compositions containing said compounds and a method of producing an anorexigenic effect in a mammal are provided.

3,752,893

## METHOD FOR INHIBITING GASTRIC ACID SECRETION IN MAMMALS

Henry George Roscoe, Montvale, N.J., and Donald Arthur Blickens, Suffern, and David Kupfer, Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Apr. 2, 1971, Ser. No. 130,811

Int. Cl. A61k 27/00

U.S. Cl. 424-270

5 Claims

This disclosure describes compositions of matter useful for inhibiting the formation of histamine in mammals and the method of inhibiting histamine formation in mammals therewith, the active ingredients of said compositions of matter being certain substituted 3-(2-amino-4-thiazolyl) indoles.

3,752,894

## ANTI-INFLAMMATORY DICARBOXYLIC ACID ESTER COMPOSITIONS AND METHODS OF USING SAME

Antonio Esteve, Barcelona, Spain, assignor to Laboratorios Del Dr. S.A., Barcelona, Spain

No Drawing. Filed July 11, 1969, Ser. No. 841,115

Int. Cl. A61k 27/00

U.S. Cl. 424-273

14 Claims

Novel dicarboxylic acid esters and semi-esters of 1,2-diphenyl - 4-n-butyl-4-hydroxyalkyl-3,5-dioxypyrazolidines have been found. One of these, the semi-succinate ester of 1,2-diphenyl-4-n-butyl-4-hydroxymethyl-3,5-dioxypyrazolidine, has been found to have particularly desirable therapeutic properties including a high anti-inflammatory activity and low toxicity. This compound can be used as an anti-inflammatory agent and can be administered orally, rectally or parenterally; either alone or in combination with a corticosteroid, in particular with prednisone.



## ELECTRICAL

3,752,895

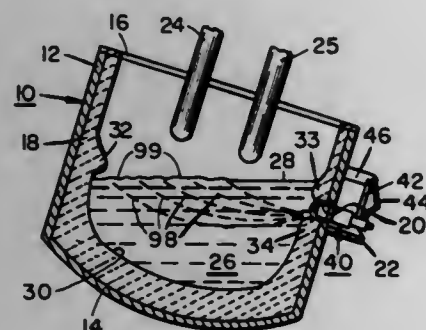
### ELECTRIC MELTING FURNACE AND PROCESS OF USING IT

Thomas A. Clissem; Francis R. Duerr, and Frederick D. Olympia, all of Jefferson County, N.Y., assignors to Corhart Refractories Company, Louisville, Ky.  
Division of Ser. No. 58,901, July 29, 1970, Pat. No. 3,703,391.  
This application June 6, 1972, Ser. No. 260,125

Int. Cl. F27d 3/16

U.S. Cl. 13—10

6 Claims



Furnace has carbon electrodes suspended in a refractory-lined melting pot with a tap hole in the middle of a front wall portion thereof. A water-cooled copper lance sealably and removably engages the tap hole for injecting reactive gas into a molten charge in the pot. The lance has a tapered portion for sealably engaging the walls of the tap hole and has a stubby end as the only part thereof protruding inside of and facing into the pot. The stubby end has a plurality of jet orifices for discharging reactive gas, which orifices have axes disposed at an acute downward angle from the horizontal and in a divergent fan-like pattern in the direction of gas flow in the lance. Furnace is operated to produce molten oxidic refractory material by providing a shallow pool of that molten material in the pot, electrically melting further oxidic refractory material by means of the electrodes to enlarge the pool, engaging the water-cooled lance in the tap hole and causing reactive gas, e.g., oxygen, to flow from the lance into the pot, tilting the furnace forward to cause the pool surface to rise above the tap hole and to effect injection of gas into the pool with stirring thereof, then back-tilting the furnace after a predetermined time of lancing, discontinuing flow of the gas and removing the lance from the tap hole in preparation for fusion-casting the pool.

3,752,896

### METHOD AND APPARATUS FOR JOINING THE ELECTRODES OF AN ELECTROSLAG REMELTING SYSTEM

Erich Zimmermann, Hattingen-Blankenstein, and Nikolaus Forster, Dortmund-Brackel, both of Germany, assignors to Rhein Stahl Huttenwerke AG, Essen, Germany  
Filed Sept. 19, 1972, Ser. No. 290,371

Claims priority, application Germany, Oct. 16, 1971, P 21 51 617.6

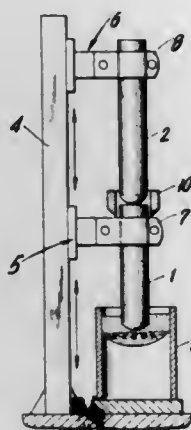
Int. Cl. H05b 7/10

U.S. Cl. 13—18

12 Claims

A method for joining the electrodes for electroslag remelting comprises arranging the electrodes in a feeding position in which they are fed downwardly one above the other relative to an ingot to be remelted and welding at least the core regions of the two electrodes together by subjecting them to currents of high intensity. An electrode feeding device comprises a vertical stand with first and second electrode holders on the stand which are independently vertically movable thereon. Each

holder is insulated from the associated stand and from each other and from ground and it is provided with clamping means for clamping an electrode in a position in which its axis extends substantially vertically above the ingot to be remelted. During operation, the holders are moved vertically such that the electrode held by the uppermost holder is positioned into



abutting contact with the top of the electrode held by the lowermost holder. The apparatus also advantageously includes a centering, packing and insulating ring which surrounds the space between the two abutting electrodes and which may advantageously be made with a funnel-shaped upper portion which may be filled with a slag.

3,752,897

### DEVICE FOR MANUFACTURING IRON OR NON-ORE-SMELTING TYPE

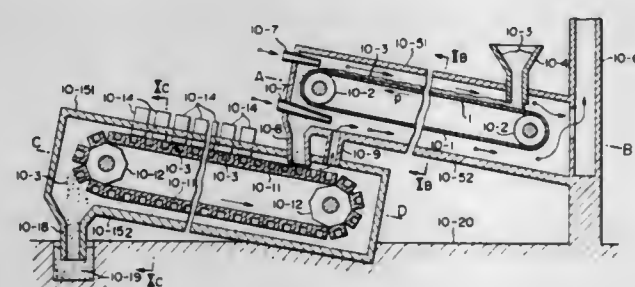
Masami Atsukawa, 14-3, 2-chome, Tsukushino, Machida-shi, Tokyo, Japan

Filed June 17, 1971, Ser. No. 153,947

Int. Cl. F27b 9/12; F27d 3/00; H05b 3/60

U.S. Cl. 13—20

17 Claims



A device for manufacturing iron, in which by supplying an alternating current directly to the accumulation of a pre-heated iron-manufacturing raw material in the form of powder and particles a high-density current concentrated locally in the accumulation is formed. The reduction of iron oxide is carried out by applying Joule heat and electromagnetic force caused by the high density current to the raw material for manufacturing iron through which the current is flowing, thereby to soften a gangue material and simultaneously to aggregate iron particles, whereby in a non-ore-smelting state the iron in the form of a bare rod or particles is separated from the gangue material in the form of pumice.

AUGUST 14, 1973

ELECTRICAL

679

3,752,898

### ELECTRONIC MUSICAL INSTRUMENT

Nobuharu Obayashi, Shizuoka-ken, Japan, assignor to Kabushiki Kaisha Kawai Gakki Selsakusho, Shizuoka-ken, Japan

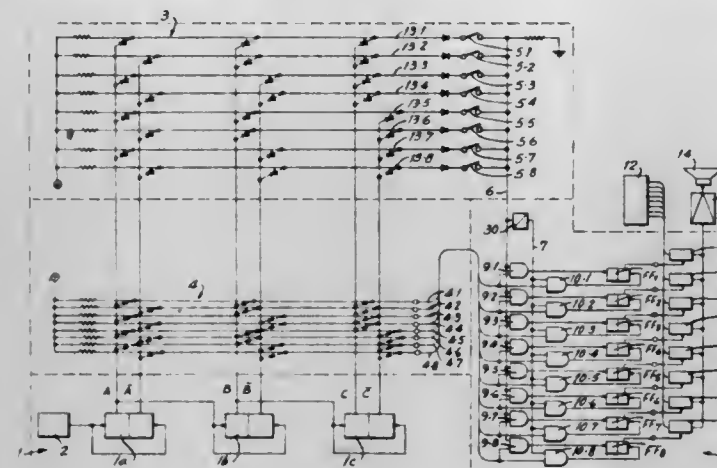
Filed Apr. 4, 1972, Ser. No. 240,976

Claims priority, application Japan, Apr. 5, 1971, 46/20294; Apr. 6, 1971, 46/20712

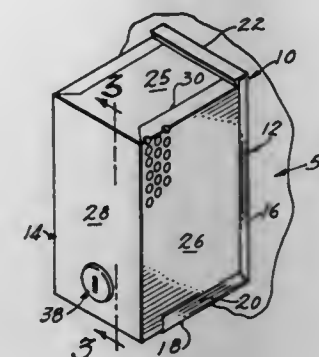
Int. Cl. G10h 1/00

U.S. Cl. 84—1.01

4 Claims



An electronic musical instrument having a simplified circuit arrangement intermediate the instrument key circuit and a control signal circuit, and including a pair of matrix circuits for connection through an array of switching and gate means of a speaker and amplifier.



tioned. The cover includes four sides of the box which are bent from a piece of sheet metal and the wall mounted portion of the box has two sides bent from a piece of sheet metal with marginal channels formed by turning-in a small portion of the edges to receive the edges of the cover.

3,752,899

### SHIELDING AND GASKETING MATERIAL

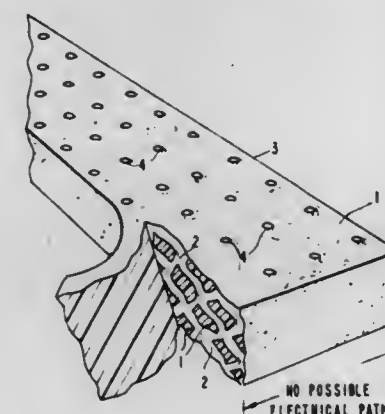
Willem F. Bakker, Piscataway, N.J., assignor to Metex Corporation, Edison, N.J.

Filed May 25, 1970, Ser. No. 40,329

Int. Cl. H05k 9/00

U.S. Cl. 174—35 GC

12 Claims U.S. Cl. 174—84 C



An elastomeric matrix has an upper face and a lower face. Preferably a plurality of continuous unitary conductive layers is disposed within the matrix perpendicular to said face. A plurality of contact points are in contact with the conductive layer. The conductive layer is preferably expanded metal.

3,752,900

### LOCKED THERMOSTAT BOX

Charles V. Harrison, 1894 Boulderview Dr. S.W., Atlanta, Ga., and William H. Higginbotham, 2080 Tilson Rd., Decatur, Ga.

Filed July 21, 1972, Ser. No. 274,084

Int. Cl. H05k 5/03

U.S. Cl. 174—52 R

7 Claims

A locked thermostat box for wall mounted thermostats including a cylindrical lock which cannot be opened except by the proper key. The cover for the box is a portion of the box it-

3,752,901

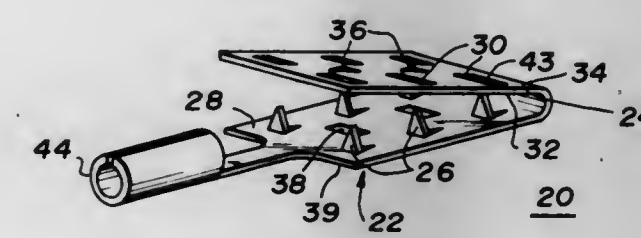
### FOIL CONNECTOR

Lai Che Kuo, Elizabeth, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Aug. 23, 1971, Ser. No. 174,068

Int. Cl. H01r 11/08

4 Claims



An electrical connector for engagement preferably with relatively thin conductive material comprising, in one embodiment, a pair of generally planar interengaging members matingly arranged in spaced, opposing relationship. Each of preferably a plurality of preferably tapered piercing members selectively disposed adjacent a first surface of at least one of said members is arranged to penetrate through thin conductive material interposed between said members and extend into and be deformed about an associated selectively proportioned transverse aperture in the mating member as said members are compressively urged against the intervening conductive material, to establish a secure connection therebetween. Each of the members may be provided with one or more extending portions for coupling the connector to a further conductor or support member. Other embodiments include a multiple of spaced, interengaging members similarly comprising selectively disposed transverse apertures and mating piercing members.



3,752,902

## CLIP-TYPE ELECTRICAL FENCE INSULATOR

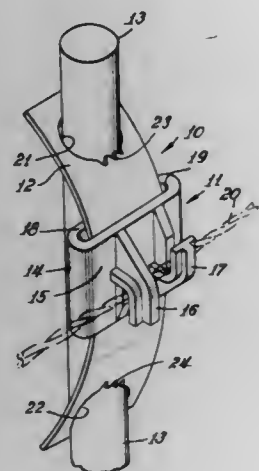
Robert M. Wilson, Battle Creek, Mich., assignor to Dare Products Incorporated, Battle Creek, Mich.

Filed Oct. 30, 1972, Ser. No. 302,294

Int. Cl. H01b 17/16; A01k 3/00

U.S. Cl. 174-163 F

15 Claims



An electrical fence insulator comprising a spring clip with apertures adapted to engage a fence post and a body member of a plastic material having electrical wire engaging hooks, and a channel engaging the spring clip.

3,752,903

## PILOT VOLTAGE SUPPLY &amp; VOLTAGE REGULATION MEANS

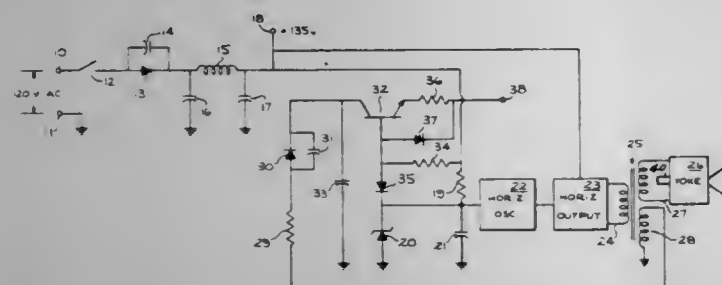
Robert H. Newman, Norfolk, and Mervyn M. Pluck, Portsmouth, both of Va., assignors to General Electric Company, Portsmouth, Va.

Filed Nov. 8, 1971, Ser. No. 196,267

Int. Cl. H04n 5/44

U.S. Cl. 178-7.5 R

3 Claims



Means for energizing an oscillator, and for regulating a voltage derived from the oscillator output. A pilot voltage is developed across a zener diode and applied to an oscillator, and to the base of a regulating transistor by means of a reverse-biased diode. Unregulated voltages are applied to the cathode of the zener diode and to the base of the regulating transistor. The pilot voltage arising across the zener diode energizes the oscillator which drives circuitry for producing scansion signals to deflect an electron beam within a cathode ray tube. The scansion signals are also applied to the collector of the regulating transistor after being rectified and smoothed. The regulating transistor is controlled by a base voltage derived across the zener diode and uses the rectified scansion signal voltage to produce a relatively low-impedance, regulated DC voltage at the emitter terminal thereof.

## CREDIT AND OTHER SECURITY CARDS AND CARD UTILIZATION SYSTEM THEREFOR

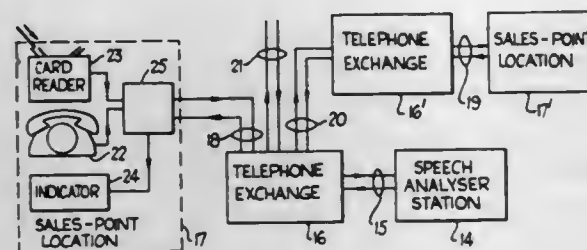
Nelson J. Waterbury, Palm Beach, Fla., assignor to Cynthia Cannon, London, England and Louis Beck, New York, N.Y., part interest to each

Filed Aug. 9, 1971, Ser. No. 169,906

Int. Cl. H04n 1/44

U.S. Cl. 178-5.1

22 Claims



A security card (which may be a credit card) according to the invention has recorded on it data identifying a personal and non-counterfeitable characteristic, such as a voice print, of the authorized holder of the card. Card utilization systems according to the invention provide means for comparing the characteristic as recorded by this data with the corresponding characteristic of the person wishing to use the card, thereby substantially eliminating the possibility of unauthorized use of the card. The system, when applied to credit card utilization, preferably includes document facsimile transmission, whereby a credit card user obtaining credit remotely can be provided with a facsimile copy of the usual credit sale document, which facsimile copy he signs before transmitting another facsimile copy, this time of the signed first copy, to provide the remote credit issuing location with his authentication of the transaction.

Preferably, also, the system includes provision for television communication between credit card holders and the credit-giving locations, whereby, for example, a remote would-be purchaser can be shown goods in which he is interested.

The system is also adapted to provide for credit card payment in, for example, pay television distribution systems and for remote purchase of theatre and airline tickets and of services such as the supply of information from computerized information systems and computerized translation services.

3,752,905

## GAMMA CONTROL IN THE LUMINANCE CHANNEL OF A COLOR TELEVISION TRANSMITTER

Hans-Dieter Schneider, Am Bruckelchen 6, Gross-Gerau, Germany

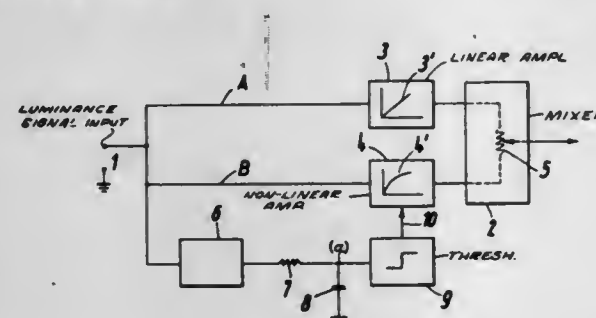
Filed Dec. 15, 1971, Ser. No. 208,337

Claims priority, application Germany, Dec. 16, 1970, P 20 61 952.7

Int. Cl. H04n 9/53

U.S. Cl. 178-5.4 R

12 Claims



The invention relates to a method and apparatus for transmitting a television picture signal having a high contrast range. The method involves integrating at least a portion of the television picture signal to obtain a test signal. The test signal is sensed by a threshold circuit which generates a control signal when the test signal approaches or exceeds a threshold

level. The television picture signal is also simultaneously transmitted through two parallel channels, one channel including a linear amplifier and the other channel including a gamma amplifier having a changeable gain characteristic. The control signal, generated in response to the test signal exceeding the threshold level, modifies the gain characteristic of the gamma amplifier to increase the amplification of the signal corresponding to the picture in the shaded areas and reducing the amplification of the signal corresponding to the picture in the light areas. The output of the two channels are then combined in a mixer prior to transmission. An apparatus is disclosed for carrying out the method.

3,752,906

## VIDEO-TO-FILM CONVERSION PROCESS

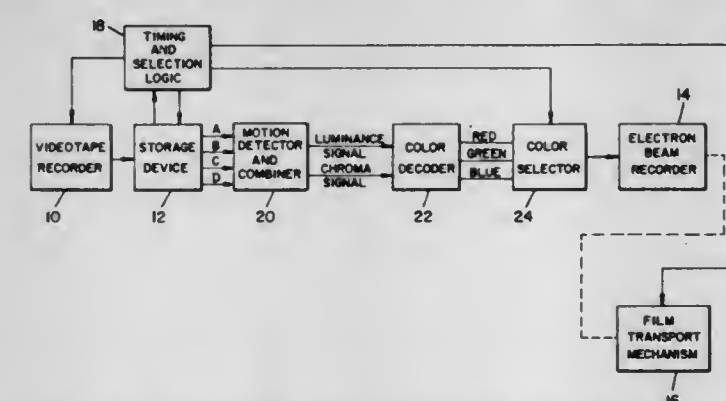
John D. Lowry, Willowdale, Ontario, Canada, assignor to Elain Investments, Ltd., Toronto, Ontario, Canada

Filed Dec. 20, 1971, Ser. No. 209,859

Int. Cl. H04n 5/78, 5/84, 9/02

U.S. Cl. 178-5.4 CD

10 Claims



A color videotape-to-film conversion process uses a random-access storage medium to store a group of color image fields. Selected stored image fields are then repeatedly retrieved for the successive decoding and recording of the primary colors. For each color, the retrieved fields are combined in varying order for noise reduction, frame rate conversion, and luminance-chroma separation. The monochromatic combined fields are then recorded on film in pairs as monochromatic frames, with a full blank field between frames to provide adequate time for film advance and precision registration. Internally clocked timing means control the storage, selection, and retrieval of the video tape signals.

3,752,907

## METHOD AND APPARATUS FOR TRANSFERRING COMMANDS FROM THE CONTROL SITE TO THE RECORDING SITE IN CLOSED LOOP TELEVISION INSTALLATIONS

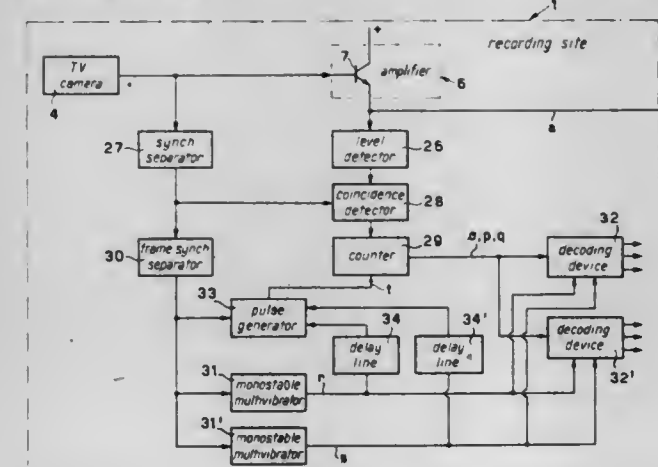
Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pordenone, Italy

Filed Mar. 19, 1971, Ser. No. 126,160

Int. Cl. H04n 1/32

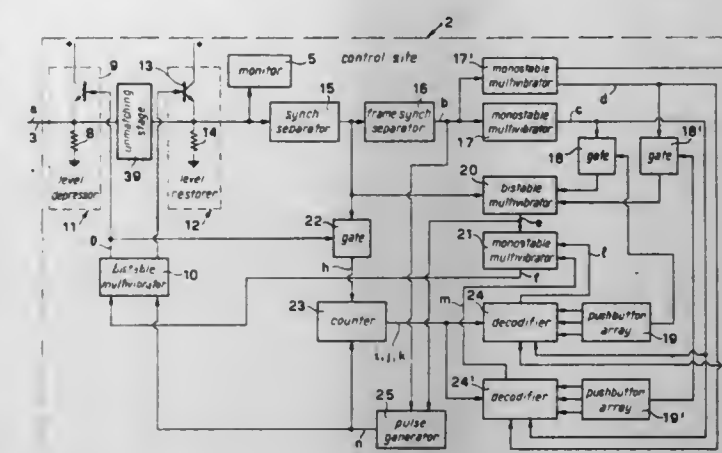
U.S. Cl. 178-5.6

21 Claims



A method and an apparatus for transferring commands from the control site of a closed loop TV circuit to the record-

ing site, said method essentially consisting in the steps of selecting a predetermined number of line-synchronizing pulses from the video signal for each command starting from the control site, the pulses so selected being impressed to the recording site and counted the counted number being con-



verted into a signal whose magnitude and destination are a function of said counted number. The advantage of the invention is that additional command-transferring lines can be actually dispensed with, the usual coaxial cables being generally sufficient to the above specified purpose.

3,752,908

## CATV AUDIO INTERACTION SYSTEM

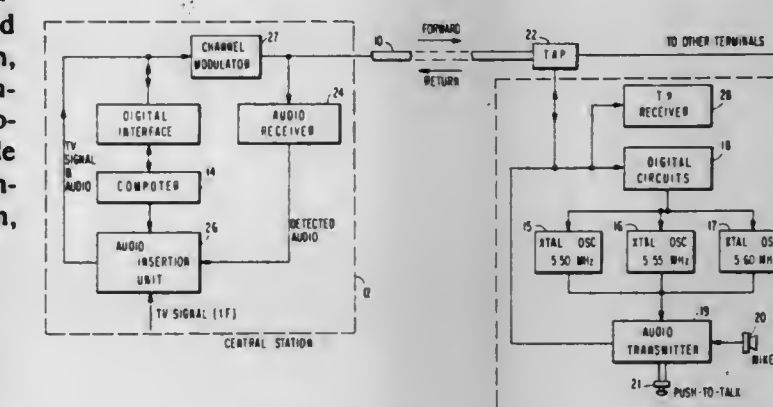
Clyde A. Boenke; Ronald L. Reimink, and James A. Jackson, all of Ann Arbor, Mich., assignors to KMS Industries, Inc., Ann Arbor, Mich.

Filed June 28, 1972, Ser. No. 266,923

Int. Cl. H04n 7/14

U.S. Cl. 178-5.6

9 Claims



A central station including a computer is connected via a multi-channel CATV cable to a plurality of remote terminal stations. Some of the channels are reserved for commercial television programs. However, a predetermined number of forward television channels are reserved for private television programs which may be generated either at the central station and transmitted on these forward channels to selected terminal stations under the control of the computer, or else a private TV program may be originated at one of the remote terminals, transmitted via the cable on a return television channel thereof to the central station, and then retransmitted from the central station via the cable on a forward television channel thereof to selected remote terminal stations under the control of the computer. Each terminal station contains an audio input means, such as a microphone and an audio transmitter, for permitting a return audio or speech signal to be inserted at the central station upon the audio subcarrier of television signal which is being received by the other remote terminal stations. For a given television channel, all terminal stations use the same audio return channel, thereby communicating in a party line mode. In one embodiment, the return audio carriers for the private television channels are generated at each terminal station and the audio interaction is provided















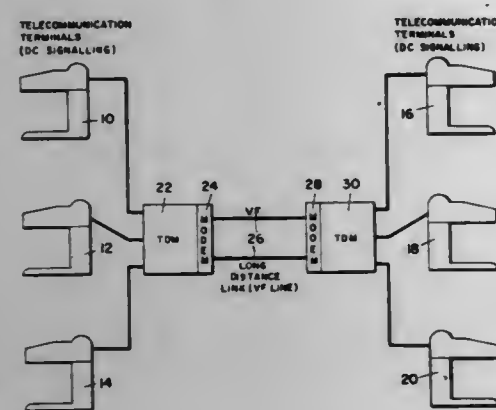
### 3,752,933 BIT REGENERATION FOR TIME DIVISION MULTIPLEXERS

Peter J. Cohen, Stony Brook, and Philip W. Ackerman, Smithtown, both of N.Y., assignors to Databit Incorporated, Hauppauge, N.Y.

Filed Jan. 6, 1972, Ser. No. 215,781  
Int. Cl. H04j 3/16

U.S. Cl. 179—15 BA

11 Claims



The disclosed multiplexer responds to data appearing on separate channels at different signalling speeds or bit rates. At least two sampling rates are selected. One of the sampling rates is a base rate equal to or higher than the lowest signalling speed and the other sampling rate is a multiple of the base rate equal to or higher than the fastest signalling speed. The lowest speed signals are sampled at the base rate and the higher speed signals with the higher rate. The resulting sampled data is then interleaved. The lowest bit rate occupies the normal number of slots and the higher bit rate occupies a multiple number of the low rate slots. The interleaved signals are then transmitted. To accommodate telex call-establishing signals, which may occur in the same channel at rates different from the data rate, the existence of such call-establishing signals is determined and the sampling times are adjusted. The sampled signals are regenerated into bits which are multiples of the data rate. These bits are interleaved as data. Within the multiplexer distortion is removed by regenerating the signals in each channel on the basis of the condition of the center of each bit. This is comparable to a repeater. The bit center is located by high speed sampling techniques which count to the center of each bit on the basis of predetermined programs which are preset in accordance with the expected bit rate in each channel.

### 3,752,934 STEREO DEMODULATING CIRCUIT TRIGGERED BY A MINIMUM INPUT SIGNAL LEVEL

Nakamura, Shoichi, 408, Fushimido, Tondabayashi; Nada, Naohiro, 4-15, Sakuradanicho, Nishinomiya-shi, and Okubo, Tsuneo, 1642-7, Oaza Kisaichi, Katanocho, Kitakawachi-gun, all of Japan

Filed Dec. 17, 1970, Ser. No. 99,069

Claims priority, application Japan, Dec. 19, 1969, 44/103154; Dec. 19, 1969, 44/103155; Dec. 19, 1969, 44/103156; Dec. 19, 1969, 44/103157; Dec. 19, 1969, 44/103158; June 6, 1970, 45/48819; June 6, 1970, 45/48820; June 6, 1970, 45/48821; June 6, 1970, 45/48822

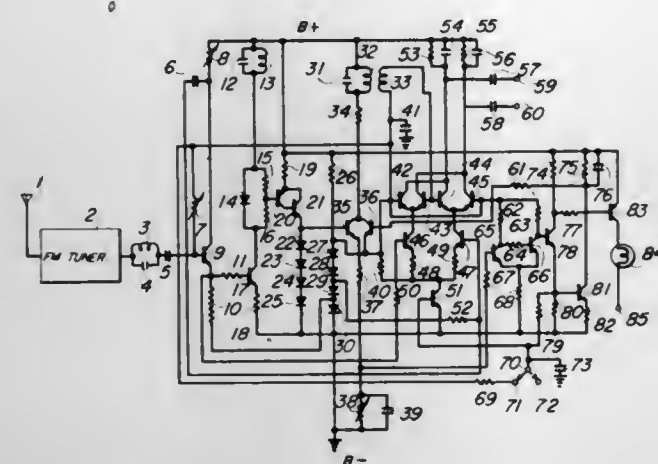
Int. Cl. H04h 5/00

U.S. Cl. 179—15 BT

18 Claims

An FM stereo receiver having a composite signal circuit, a circuit for producing a 38-kHz switching carrier from a 19-kHz pilot signal, a demodulating circuit, a positive feedback amplifier, means for maintaining the stereo-on level constant irrespective of any variation in the power supply voltage and ambient temperature, means connected to the positive feedback amplifier for turning on and off a stereo lamp while, at the same time, turning on and off the 38-kHz switching carrier, and means for applying a first composite signal of one phase and a second composite signal of opposite phase to a

first and a second composite signal amplifier in the demodulating circuit respectively and varying the level of the input to



the second composite signal amplifier for improving the stereo separation.

### 3,752,935 AUTOMATIC SWITCH DEVICE FOR MAGNETIC RECORDING AND REPRODUCING DEVICE

Yasutaka Iwawaki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

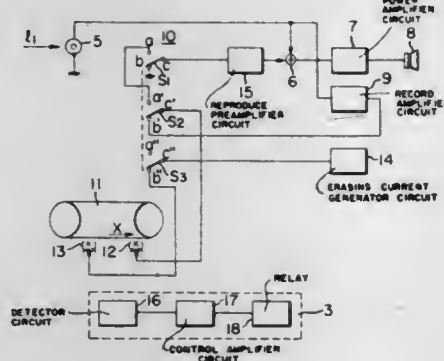
Filed Jan. 6, 1971, Ser. No. 104,433

Claims priority, application Japan, Jan. 20, 1970, 45/6014 (utility model); Jan. 27, 1970, 45/8453 (utility model); Jan. 27, 1970, 45/8454 (utility model)

Int. Cl. G11b 15/02

U.S. Cl. 179—100.2 S

3 Claims



An automatic change-over mechanism for a magnetic recording-reproducing device which contains therein an endless magnetic recording medium and which may be additionally connected with a separate conventional magnetic recording-reproducing device without reforming the interior construction thereof. The change-over mechanism basically comprises detector means for detecting an electrical variation appearing at the external terminal of the separate magnetic recording-reproducing device when it is in its reproduce mode, and switching means electrically associated with the detector means and operated thereby to change over the connected recording-reproducing device between its operation mode for transferring the information reproduced by the separate recording-reproducing device and its operation mode for reproducing the transferred information, whereby the magnetic recording-reproducing device connected to the separate one may be automatically operable to repeatedly reproduce the transferred information after the separate device has been stopped from its reproducing operation.

### 3,752,936 KEY TELEPHONE CALL DISTRIBUTING SYSTEM

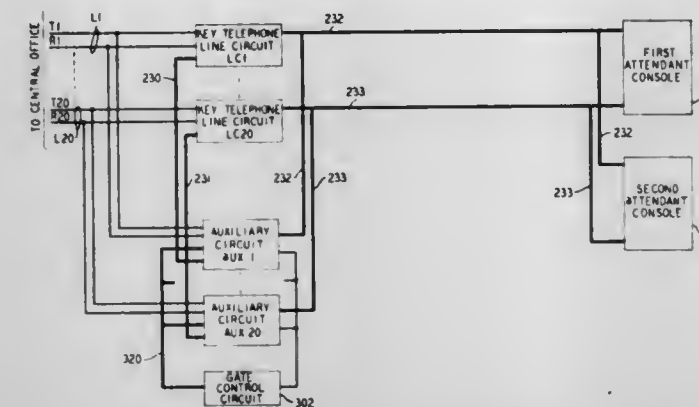
Charles Ernest Morse, Holmdel, N.J., assignor to Bell Telephone Laboratories, Murray Hill, N.J.

Filed May 30, 1972, Ser. No. 258,106

Int. Cl. H04m 3/22

U.S. Cl. 179—99

7 Claims



The circuitry of a standard key telephone system is modified to serve as a call distributing system. A gate circuit, associated with the key telephone line circuits, is arranged to establish a first timed interval during which all incoming connections to the station are processed in a manner such that the associated line lamp at the key telephone station provides a first visual indication. The line lamps associated with incoming connections arriving at the conclusion of the first timed interval are arranged to provide a second mode distinctive visual indication. When all of the first mode lines are answered, the second mode lines are switched to the first mode and the associated line lamps are changed from second mode distinctive flashing to first mode flashing. When any incoming connection remains unanswered for a predetermined interval, a special announcement is returned over the associated incoming line.

### 3,752,937 MAGNETIC-RECORDING AND REPRODUCING APPARATUS WHICH IS AUTOMATICALLY PLACED IN FORWARD MODE AFTER RESPONSE TO A PREVIOUS CONTROL SIGNAL

Keijiro Mori, Sakai-shi; Akito Sugahara, Yokohama; Kozo Yamamoto, Osaka, and Yukio Takeda, Neyagawa-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

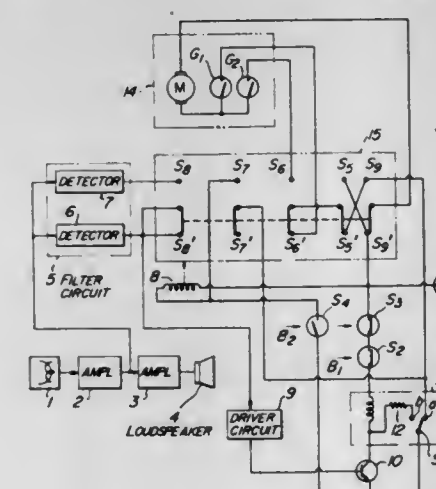
Filed May 14, 1971, Ser. No. 143,471

Claims priority, application Japan, May 18, 1970, 45/43021

Int. Cl. G11b 27/22, 27/28, 15/44

U.S. Cl. 179—100.2 S

3 Claims



A magnetic-recording and reproducing apparatus wherein a magnetic tape recorded with a control signal at every section of information signals, has the information signal and the control signal reproduced therefrom, such that the reproduction

operation is stopped in association with the control signal, and wherein when the tape is driven in the rewind direction from the stopped state, the rewinding operation is stopped in response to the control signal reproduced in the rewinding process.

### 3,752,938 MAGNETIC RECORDING AND REPRODUCING APPARATUS HAVING ELECTRICAL SWITCHING INTERLOCKED WITH MECHANICAL CONTROLS TO SENSE THE PRESENCE OR ABSENCE OF A CARTRIDGE TAB

Yasuo Ozawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

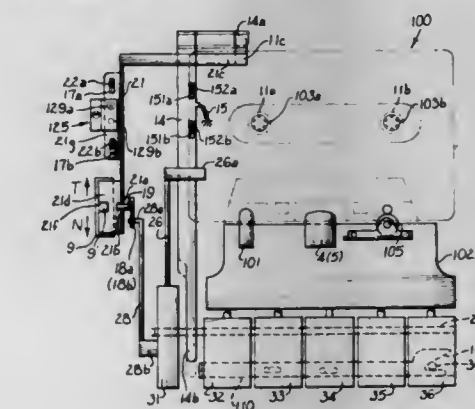
Filed July 29, 1971, Ser. No. 167,171

Claims priority, application Japan, Aug. 1, 1970, 45/76738 (utility model)

Int. Cl. G11b 15/04, 23/04

U.S. Cl. 179—100.2 Z

11 Claims



A cassette recorder/reproducer having a feeler to determine the presence or absence of a tab indicating permanent recording and means to deactivate the feeler when using a teaching cassette having one track of prerecorded teaching material and a second track on which the student may record and later play back his own material. The switching means also allows the magnetic head that operates on the teacher's track to be used either as a playback or recording head for cassettes other than instructional ones. The switching means are controlled by apparatus actuated when a cassette is removed at which time the circuits are automatically switched for non-instructional use and must be deliberately set for instructional use if that is desired.

### 3,752,939 PROSTHETIC DEVICE FOR THE DEAF

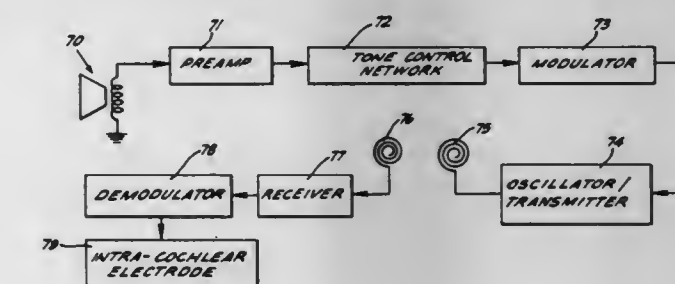
Melvin C. Bartz, Newport Beach, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation-in-part of Ser. No. 075,142, Sept. 24, 1970, abandoned. This application Feb. 4, 1972, Ser. No. 223,415

Int. Cl. H04n 25/00

U.S. Cl. 179—107 R

24 Claims



There is disclosed a method and apparatus for inducing the sensation of intelligible hearing by direct electrical excitation of the auditory nerve endings distributed along the basilar membrane within the cochlea. An electrode is positioned within the lower scala of the cochlea by insertion through the



round window. The electrode consists of a resilient base member shaped to conform to the inner surface of the lower scala, such base member extending along the basilar membrane. The base member retains a pair of conductors which extend parallel to the length of the basilar membrane. Means are also provided for transmitting an excitation signal to a receiver implanted with and connected to the conductors. Several configurations for the electrode are disclosed as well as several techniques for the excitation thereof.

3,752,940

## LINE VERIFICATION TESTER

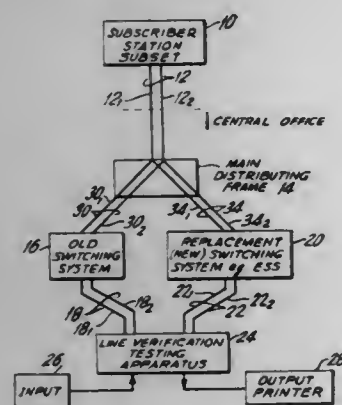
Vincent F. Santulli, Manhasset, N.Y.; George Manos, Bridgeport, Conn.; John J. Gazzo, Jr., Commack, N.Y., and William P. Roumanos, Shelton, Conn., assignors to Porta Systems Corp., Roslyn, N.Y.

Filed July 10, 1972, Ser. No. 270,058

Int. Cl. H04m 3/26

U.S. Cl. 179-175.2 R

18 Claims



Card programable line verification tester apparatus iteratively and automatically establishes connections via old and replacement (e.g., ESS) switching apparatus to subscriber loop appearances on a main distributing frame. The assumed continuous tip and ring conduction paths are then tested for faults such as spurious battery, or short, open, high impedance or crossed connections.

3,752,941

## ELECTROACOUSTIC TRANSDUCERS

Frank Massa, Cohasset, and Gilbert C. Barrow, Scituate, both of Mass., assignors to Massa Division, Dynamics Corporation of America, Hingham, Mass.

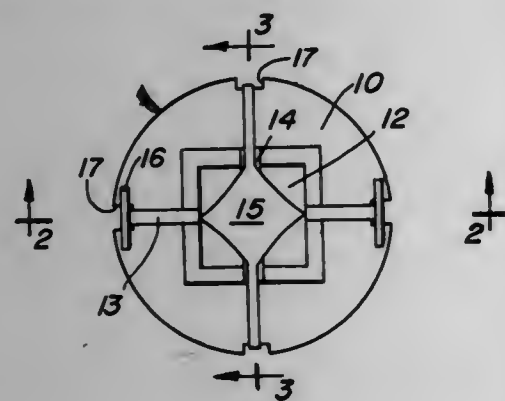
Continuation of Ser. No. 17,430, March 9, 1970, abandoned.

This application Dec. 20, 1971, Ser. No. 210,280

Int. Cl. H04r 17/00

U.S. Cl. 179-110 A

9 Claims



An electroacoustic transducer uses a bilaminar vibratile element having at least two plate members which are bonded together in face-to-face relationship, at least one of the plates being made from a piezoelectric material. Flexible electrical conductors freely support the bilaminar vibratile plate members on a frame. Any flexural vibrations of the bilaminar ele-

ment apply an alternating voltage to the electrical conductors. A sonic energy mask is positioned over and spaced away from an exposed surface of the vibratile element to prevent sound radiation from the masked surface portion of the vibratile element.

3,752,942

## DIFFERENTIAL PRESSURE SWITCH WITH PIVOTED ONE-PIECE RIGID FLAT SWITCH-ACTUATING DISC MEMBER CAPTURED BETWEEN TWO ROLLING DIAPHRAGMS

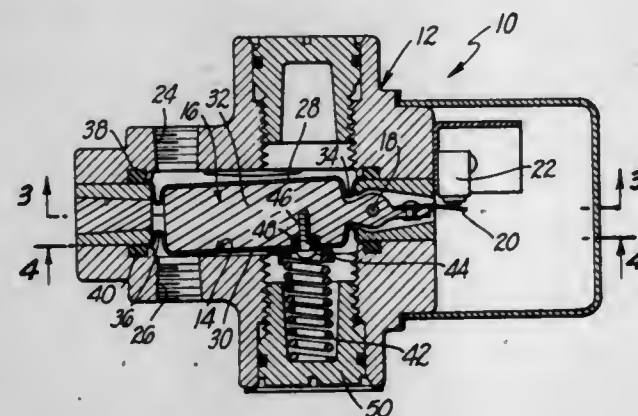
Darrell F. McAfee, Artesia, Calif., assignor to DeLaval Turbine, Inc., Princeton, N.J.

Filed Mar. 10, 1972, Ser. No. 233,584

Int. Cl. H01h 35/34

U.S. Cl. 200-83 Y

4 Claims



A differential pressure switch comprising a one-piece rigid flat pivoted switch-actuating disc member isolated from the high and low actuating pressures by rolling diaphragms respectively carried by the housing of the pressure switch on opposite sides of and engaging opposite sides of the pivoted member. A compression coil spring biases the pivoted member against the action of the higher actuating pressure and a threaded seat for this spring serves to adjust the spring force applied to the pivoted member.

3,752,943

## MULTIPLE MEMO TIMING DEVICE WITH ADJUSTABLE PIN CONDUCTORS

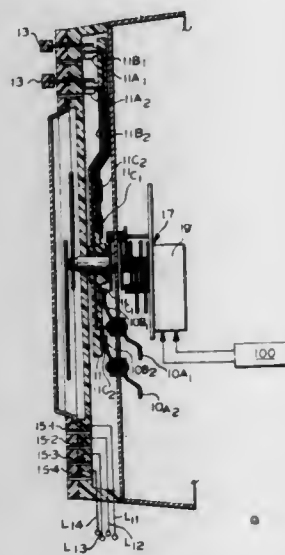
Raywend Wang, 10 Lane 2 Ching Tien St., Taipei, China /Taiwan

Filed July 15, 1971, Ser. No. 162,980

Int. Cl. H01h 43/18

U.S. Cl. 200-33 R

1 Claim



Timing device comprising clock means having a contactor arm and a conducting ring with conductor pins selectively set therein at locations corresponding to selected times, and a

switching means including rotary cam means and switches and under the control of the clock means for simultaneously or separately controlling the connection of power source to one or more loads.

3,752,944

## TIMER BLADE ARRANGEMENT

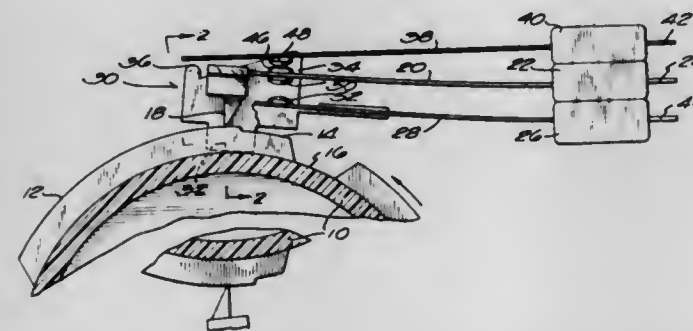
Roger J. Cartler, Hoffman Estates; George Obermann, Niles, and John Willigman, Elk Grove Village, all of Ill., assignors to Controls Company of America, Melrose Park, Ill.

Filed Nov. 1, 1971, Ser. No. 194,184

Int. Cl. H01h 3/42

U.S. Cl. 200-38 B

17 Claims



The timer has switches including upper and lower passive blades and an active blade therebetween. The distal end of the lower passive blade has depending spacers which straddle the cam upon which the follower on the distal end of the active blade rides. The spacers reference the lower passive blade off the hub of the drum type program cam. The lower passive blade is provided with a rest or stop for the upper passive blade limiting downward movement of that blade. With precision molding, both passive blades are accurately referenced from the cam hub and the location of the follower which actuates the active blade is precisely located. Accuracy of switching is increased without increased precision in manufacture. Use of two cam tracks permits simultaneous actuation of the active and "passive" blades to effect faster switching. It is possible to provide a "make-make" arrangement instead of the double throw arrangement.

3,752,945

## ELECTRICAL ALTERNATING CONTACT SWITCH

Dieter Christian Achterberg, Krs. Landsberg/Lech, Haus Nr. 94, 8911 Schoeffelding, Germany

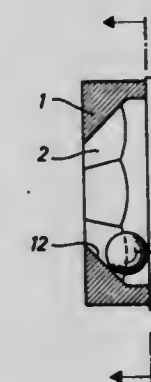
Filed June 14, 1972, Ser. No. 262,622

Claims priority, application Germany, June 4, 1971, P 21 27 900.5

Int. Cl. H01h 35/02

U.S. Cl. 200-166 BB

3 Claims



An electrical alternating contact switch is designed to produce switching impulses by inclining and rotating the switch and for this purpose is made up of an electrically conductive ring with a pyramidal tapered inner surface, a cover plate on the ring closing the larger end of this taper and having

3,752,946

## ARCING CONTACT FOR AN ELECTRIC CIRCUIT BREAKER AND METHOD OF MAKING SAME

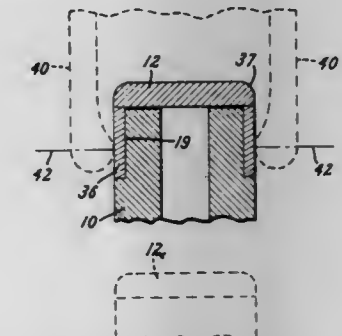
Cecil Bailey, Woodlyn, and Oscar C. Frederick, Springfield, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Mar. 1, 1972, Ser. No. 230,856

Int. Cl. H01h 1/00

U.S. Cl. 200-166 C

7 Claims



An arcing contact for an electric circuit breaker comprises a conductive support and an arcing part containing pressed-together, sintered-together refractory metal particles. The support and the arcing part have substantially flat surfaces which are joined together by a welded bond between said flat surfaces. A coating of plasma-arc sprayed material containing partially-fused interlocking, flattened particles of refractory metal covers said support in the region adjacent said arcing part to protect said support from hot arcing products. The arcing part is so located that it bears the principal arc-erosion duty imposed on the contact by arcs established by circuit-breaker opening.

3,752,947

## AUXILIARY MECHANISM FOR OPERATING HANDLE OF CIRCUIT BREAKER

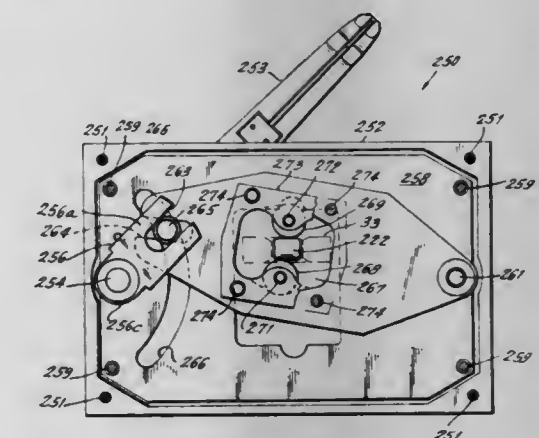
Albert Strobel, Cherry Hill, N.J., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed July 27, 1972, Ser. No. 275,454

Int. Cl. H01h 3/02

U.S. Cl. 200-172 A

12 Claims



An auxiliary handle mechanism for operating a multipole circuit breaker is provided with a pair of links that transmits operating forces from a relatively long main operating handle to a relatively short circuit breaker handle extension. The main handle and links move in planes generally parallel to the front of the circuit breaker, and the circuit breaker handle moves in a plane generally perpendicular to the front of the



circuit breaker. The links are interconnected by a pin-roller means including a follower portion disposed in a cam slot. The latter is designed so that the relative effective lengths of the links change by virtue of the changing position of the connecting pin means relative to the fixed pivots of both links as for different positions of the main handle. The configuration of the cam slot is such that the mechanical advantage achieved by the auxiliary mechanism increases and decreases as the force requirements for operating the contact operating mechanism increase and decrease. As the mechanical advantage is reduced, the motion disadvantage is also reduced.

3,752,948

**MAGNETRON STARTING CIRCUIT**

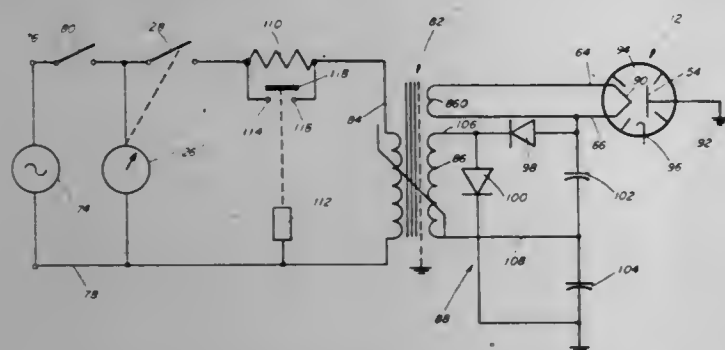
Donald E. Peterson, Iowa City, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Oct. 1, 1971, Ser. No. 185,624

Int. Cl. H05b 9/06; H03b 9/10

U.S. Cl. 219—10.55

1 Claim



A circuit for and method of operating microwave oven apparatus is disclosed including means for the momentary interruption of the starting cycle at a predetermined time interval. Such operation will shift the operating mode of the energy generator as well as the voltage level from a higher to a lower frequency to prolong life and enhance efficiency. The invention is particularly suited for permanent magnet type energy generators for use in microwave oven apparatus where continuous operation is utilized. The invention may be implemented in all types of microwave oven apparatus simply and economically.

3,752,949

**APPARATUS FOR CAGE ROLLING AND WELDING**

Alfred A. Nordgren, Holland, Mich., assignor to New York Wire Mills Corporation, Tonawanda, N.Y.

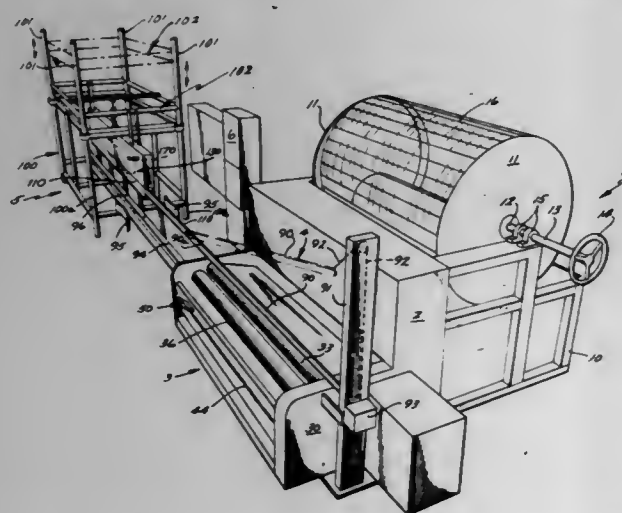
Division of Ser. No. 55,071, July 15, 1970, Pat. No. 3,678,971.

This application May 18, 1972, Ser. No. 254,761

Int. Cl. B23k 11/08; B65b 13/10

U.S. Cl. 219—56

10 Claims



A storage crib is provided for a roll of wire fabric which is fed beneath a shear, to a cage forming assembly which forms

the fabric into a concrete pipe reinforcing cage in such a manner that it encircles a boom extending over the forming rollers. When a cage is formed, the boom can be elevated, thus extracting the formed cage from the forming apparatus. The cage is then conveyed down the boom to a welding conveyor by which it is conveyed on a beam past a welding apparatus. The welding apparatus engages and holds a pair of juxtaposed circumferential wires and then travels with the cage as the wires are welded together. Upon completion of the weld, the wires are disengaged and the welding apparatus travels in the opposite direction towards the next pair of juxtaposed circumferential wires. The beam is supported by a plurality of supports which can be disengaged from the beam such that the cage can travel past each support as it travels towards the egress end of the welding apparatus.

3,752,950

**APPARATUS FOR SLOTTING A CLAMPING BUSHING BY EDM**

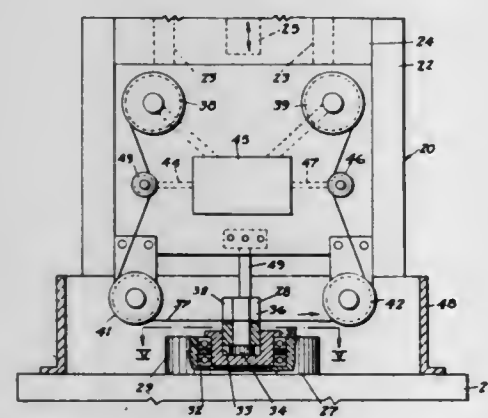
Leon H. Castonguay, Wheelwright, Mass., assignor to Astratronics, Inc., Wheelwright, Mass.

Filed Mar. 15, 1971, Ser. No. 124,331

Int. Cl. B23p 1/12

U.S. Cl. 219—69 V

4 Claims



This invention has to do with an apparatus for slotting and a clamping bushing manufactured with such apparatus and, more particularly, to a machine using the E.D.M. process for slotting workpieces and the slotted work clamping bushing or collet manufactured on said apparatus. The apparatus has a wire electrode which is moved between two rolls, and has a workholder which is relatively movable linearly toward and away from the electrode and rotatable about an axis passing through the electrode. Cam means is provided to synchronize the two modes of motion. The bushing is formed of a right circular cylindrical tube, the sides of which are slotted. The slots are at some points parallel and at some points skewed to the generatrices.

3,752,951

**APPARATUS FOR WELDING WITH GRANULAR FLUX ON A ROTATABLE CYLINDRICAL SURFACE**

Glenn E. Kniepkamp, 530 W. Smithfield St., Elizabeth Twp., Allegheny County, Pa.

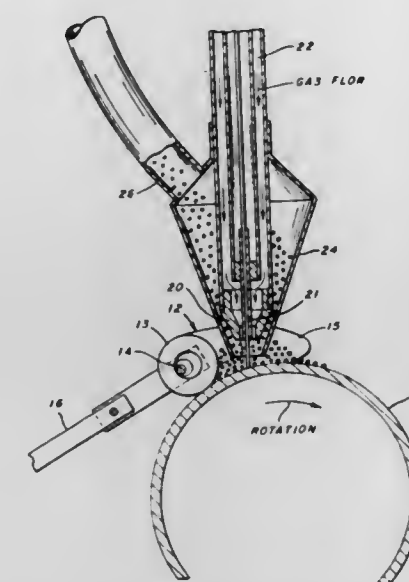
Division of Ser. No. 127,903, March 25, 1971, Pat. No.

3,692,971. This application May 25, 1972, Ser. No. 256,995

Int. Cl. B23k 9/18

U.S. Cl. 219—73

1 Claim



Apparatus for confining granular flux in the proximity of a welding torch when making an overlay on a cylindrical surface.

3,752,952

**PROCESS FOR PRECISION SETTING OF THE ELECTRON BEAM IN ELECTRON BEAM WELDING**

Jurgen Ruge, and Heiner Eggers, both of Braunschweig, Germany, assignors to Stelgerwald Strahltechnik GmbH, Munchen, Germany

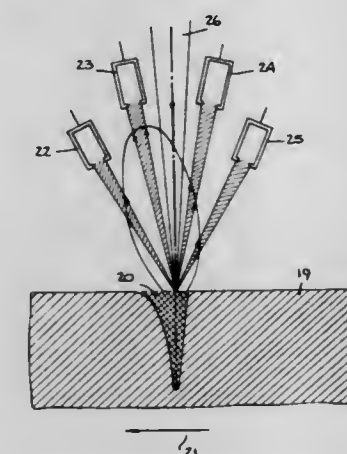
Filed Mar. 23, 1971, Ser. No. 127,331

Claims priority, application Germany, Mar. 24, 1970, P 20 13 950.8

Int. Cl. B23k 15/00

U.S. Cl. 219—121 EM

4 Claims



A process for the precise setting of the electron beam in electron beam welding by the capturing of the electrons scattered back from the moving workpiece or workpieces and/or through sensing of the secondary electrons in which the setting is performed by determining the directional distribution of the leaked back electrons and/or secondary electrons as a function of the geometry of the weld cavity produced. Since the angular distribution of the electrons leaked back by the weld cavity and/or the secondary electrons emitted therefrom is asymmetric in the half-space above the welding point, this distribution permits the geometry of the weld cavity to be deduced respectively the corresponding setting of the electron beam to be determined precisely.

3,752,953

**METHOD FOR THE AUTOMATIC ELECTRIC WELDING OF ANGLE METAL PLATES THROUGH THREE ARCS IN SERIES, IN A SINGLE PASSING OPERATION**

Giovanni Giardina, Venezia-Mestre, and Giovanni Lombardo, Genova-Sestri, both of Italy, assignors to Italsider S.p.A., Genova, Italy

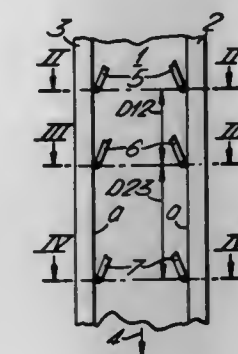
Filed Oct. 14, 1971, Ser. No. 189,216

Claims priority, application Italy, Oct. 31, 1970, 13003 A/70

Int. Cl. B23k 9/00

U.S. Cl. 219—137

8 Claims



A method of automatically welding uncalked angle metal plates along a seam in which three spaced apart electrodes are moved along the seam and in which the first electrode is supplied with direct current and the trailing electrodes are supplied with alternating current.

3,752,954

**OVEN CONTROL**

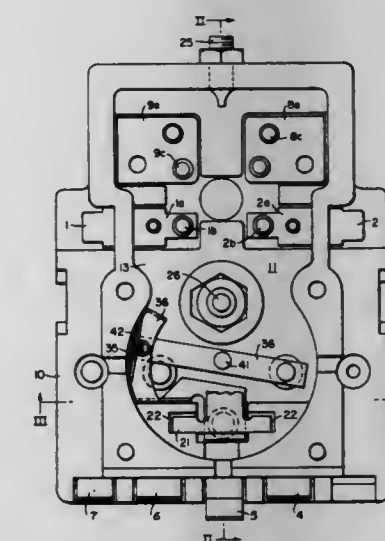
Calvin J. Holtkamp, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 20, 1971, Ser. No. 209,855

Int. Cl. A21b 1/00; H05b 1/00

U.S. Cl. 219—413

7 Claims



An oven control of the type having a bistable mechanism operable in accordance with oven temperature variations to effect opening and closing of snap-acting switch means series connected to directly control energization of the oven heating means is provided with a second creep action switch means which is operated between open and closed positions in accordance with the movement of the bistable mechanism, with the second switch means being connected in circuit means to provide control of any of various functions other than the main oven heating. The second switch means may control a door locking arrangement when the oven is of the self-cleaning pyrolytic type, or may be used to provide control of a safety signal for the oven, or to control auxiliary heating means in the oven whenever the temperature in the oven is below a predetermined level.



3,752,955

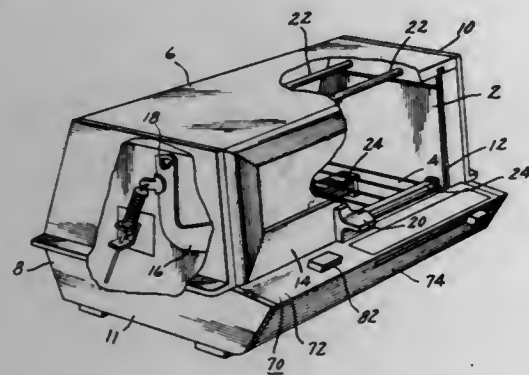
**ELECTRIC OVEN TOASTER CONTROL MECHANISM**  
Lawrence L. Grove, Allentown, Pa., assignor to General Electric Company, Bridgeport, Conn.

Filed Jan. 19, 1973, Ser. No. 325,103

Int. Cl. F27d 11/02; A21b 3/02

U.S. Cl. 219-413

11 Claims



An electric oven toaster control mechanism wherein a unique lever and solenoid mechanism is arranged for cooperation with a main switch and an oven toaster door for permitting the switch to be closed when the door is closed and for allowing the solenoid to open the main switch at the end of a toasting cycle. A solenoid core is connected to an arm of a movable latch member for pivoting the latch member at the end of a toasting cycle to open a main switch. A spring urged door lever operates on the solenoid core and the arm of the latch member for preventing closure of the main switch when the oven toaster door is open.

3,752,956

**ELECTRICAL RESISTANCE HEATING CONTROL CIRCUIT**

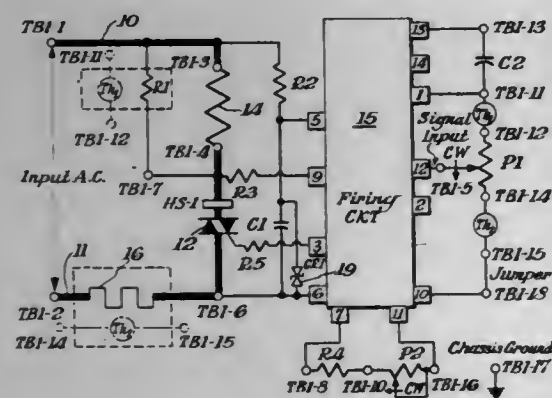
Harold James Cahill, Wilmington, and Cornelius James Erickson, Newark, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 3, 1972, Ser. No. 249,821

Int. Cl. H05b 1/02

U.S. Cl. 219-505

7 Claims



Apparatus for maintaining an electrical resistance load at substantially constant operating resistance level utilizing the sensed current and voltage inputs as joint control parameters.

3,752,957

**BUSINESS MACHINES**

Kenneth F. Oldenburg, Arcadia, Calif., assignor to Litton Business Systems, Inc., New York, N.Y.

Division of Ser. No. 50,064, June 26, 1970. This application

Jan. 6, 1972, Ser. No. 215,869

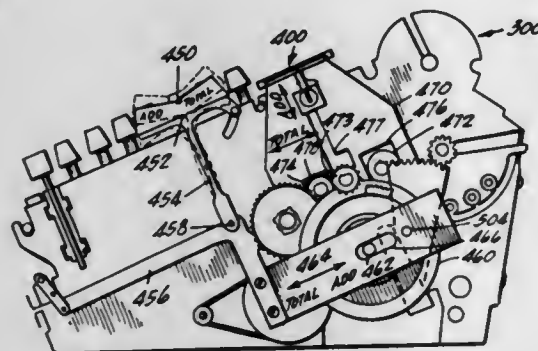
Int. Cl. G07g 1/00

U.S. Cl. 235-7 R

18 Claims

A cash register is provided with a flexible plastic digit tape to interconnect the cash register display with the selected

depressed digit keys. The plastic digit tapes are very flexible and lightweight, and are operated to transmit force under tension to avoid binding and frictional forces. The digit tape is deflected down at the rear of the register to save space. The accumulator is moved down to engage the tape and to the rear to transfer to the display. Both the accumulator and the display assemblies have interleaved indicator wheels having dif-



ferent indications, with the wheel spacing and movement being unitarily related to the keyboard spacing. A combined ADD and TOTAL control, operating upon a cam-cam follower assembly is used to initiate the two modes of operation of the cash register to perform ADD cycles and TOTAL cycles of operation. Light duty components and simple controls, compatible with the low inertia of the digit tapes are used throughout the cash register.

3,752,958

**FIELD DETECTION LOGIC**

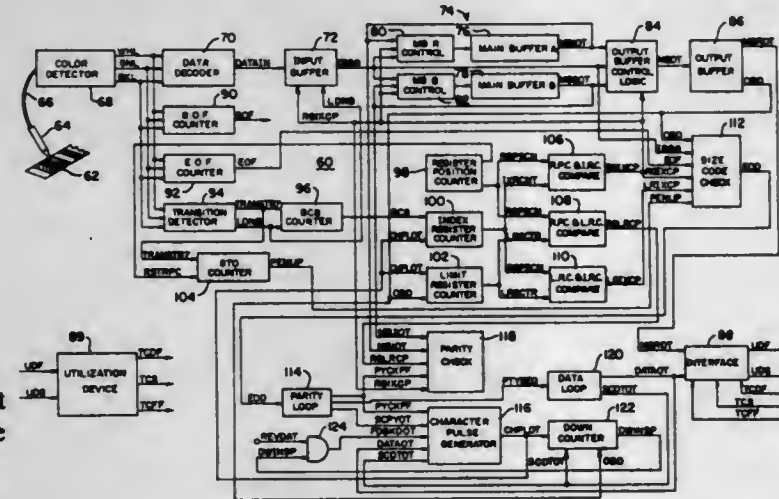
Robert C. Gilberg, Dayton; James P. Donohue, Fairborn, and Ramesh S. Patel, Kettering, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Dec. 7, 1971, Ser. No. 205,542

Int. Cl. G06k 7/12

U.S. Cl. 235-61.11 E

11 Claims



A system for processing a color bar code read optically from a coded medium is disclosed. The system includes logic for determining the binary code from color signals and storage means for temporarily storing the binary code. Logic is also provided which allows the reading of a double field tag and which checks the parity and the size of the captured message. Further, logic is provided for transmitting the captured message to a utilization device.

3,752,959

**PERFORATED TAPE READER**

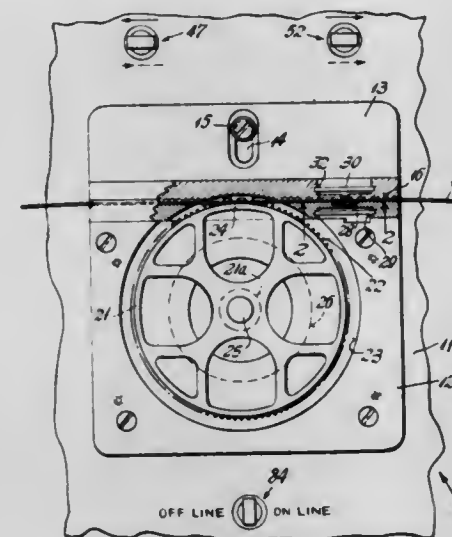
Joe C. May, Cheshire, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Dec. 20, 1971, Ser. No. 209,983

Int. Cl. G05b 19/40; G06k 7/10

U.S. Cl. 235-61.11 E

8 Claims



A reader for providing electrical signals using photocells that represents information coded by rows of perforations in tape in which the tape is moved by a stepping motor that accelerates its steps upon starting while decelerating in only two steps to a stop with each stop placing the row of perforations next to be read at the photocells.

3,752,960

**ELECTRONIC IDENTIFICATION & RECOGNITION SYSTEM**

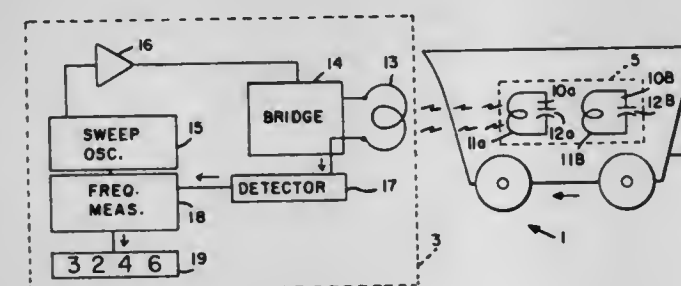
Charles A. Walton, 19115 Overlook Rd., Los Gatos, Calif.

Filed Dec. 27, 1971, Ser. No. 212,281

Int. Cl. G06k 7/08

U.S. Cl. 235-61.11 H

6 Claims



An electronic identification and recognition system for identifying or recognizing an object carrying an electrically passive circuit. The system comprises an active electrical signal generation network with a sensing coil for generating an electromagnetic field within the proximate area of said sensing coil; and an object having a passive electrical circuit with a coded resonant frequency, said object being adapted to move relative to and from said proximate area and adapted for inductive coupling with said active system. The active generation network being further adapted to generate digital control signals responsive to the resonant frequency of the passive object when said passive object is inductively coupled with said active system.

3,752,961

**CIRCULAR TRACK CODED PATTERN READER**

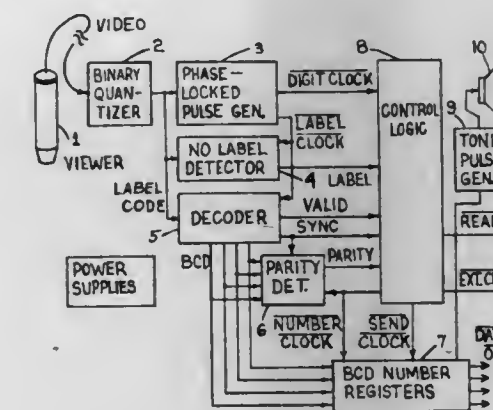
Bradford M. Torrey, Rutland St., Carlisle, Mass.

Filed Feb. 5, 1971, Ser. No. 112,959

Int. Cl. G06k 7/14, 19/06, 9/06; G01n 21/30; G01r 25/04

U.S. Cl. 235-61.11 E

10 Claims



A label reading system for reading a circular coded label with a scan path within a predetermined tolerance range of eccentricity between the circular label and circular scan path including means for scanning the label and producing label scan signals representing the encoded information; a clock pulse generator for generating clock pulses; a clock control circuit for controlling the frequency of the clock pulse generator and a variable synchronizing circuit responsive to the label code signals and to the clock pulses for producing a phase signal representative of the difference in phase between the clock pulses and the label code signals; the clock control circuit being responsive to the phase signal to vary the frequency of the clock pulse generator to synchronize clock pulses with the label code signals as the label code signals vary within the tolerance range.

3,752,962

**MAGNETIC CARD HANDLING SYSTEM**

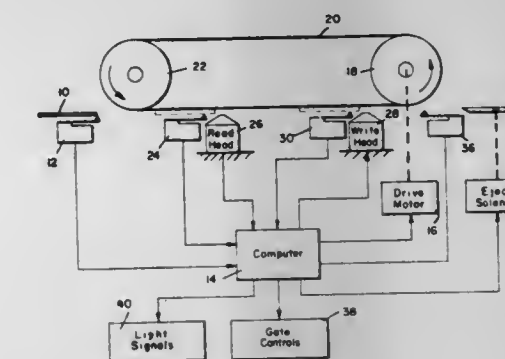
Paul Greskovics, Manhattan Beach, Calif., assignor to Western Data Products, Inc., Los Angeles, Calif.

Filed Mar. 14, 1972, Ser. No. 234,516

Int. Cl. G06k 13/07

U.S. Cl. 235-61.11 D

8 Claims



This invention describes a high speed card handling system for writing and reading magnetically encoded information into and from a card. Registration of the card with respect to the heads and moving the card at a constant velocity is achieved by using an endlessly rotating belt that is skewed at an angle with respect to a fixed linear card guide. The endless rotating belt frictionally engages the card and moves the card from the read head to the write head. The endless belt being skewed with respect to the fixed guide continuously urges the moving card against the guide thereby maintaining registration of the card at all times.











3,752,977

**ADJUSTABLE FLUORESCENT LAMP MOUNTING MEANS**

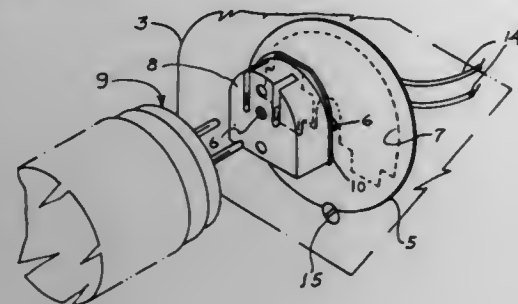
Rooney W. Davis, Mehlville, Mo., assignor to Sola Basic Industries, Inc., St. Louis, Mo.

Filed Apr. 20, 1972, Ser. No. 245,887

Int. Cl. H05b 33/02

U.S. Cl. 240—51.12

12 Claims



In an adjustable fluorescent lamp holder for use in a lighting fixture, a plate member(s) pivotally mounts to an end panel of the fixture and said plate removably supports a lamp socket for accommodating this type of a lamp, and particularly a fluorescent lamp of the U-shaped variety. The plate is pivotal in its mounting to the panel, and a locking means is provided for fixing said plate to the same as when it has been adjusted for positioning of its attaching socket at an approximate location for mounting of a U-lamp of a particular size, in said plate, upon loosening of said locking means, capable of being pivoted for repositioning of said socket to dispose it for accommodating a U-lamp of differing size.

**ERRATUM**

For Class 240—2 W see:  
Patent No. 3,753,217

3,752,978

**PHOTOELECTRIC INTRUSION DETECTOR**

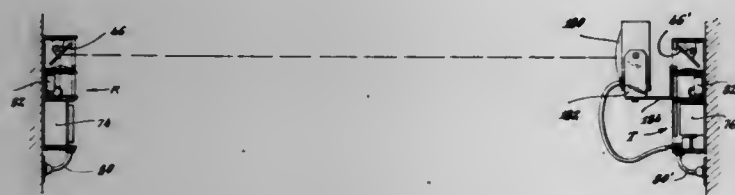
William G. Kahl, Jr., Brookfield, and Andrew J. Davenport, New Milford, both of Conn., assignors to Arrowhead Enterprises, Inc., Bethel, Conn.

Filed Feb. 4, 1971, Ser. No. 112,632

Int. Cl. G01t 1/16

U.S. Cl. 250—340

1 Claim



There is disclosed a photoelectric intrusion detector comprising a transmitter unit and a receiver unit. Each unit includes a collimating lens and a mirror adjustable about two axes of rotation. The detector employs an infrared beam invisible to the human eye and the mirror of each unit is positioned behind a dark red window, making it extremely difficult to ascertain beam direction. Jamming of the system is prevented by utilizing a pulsed, rather than a steady, beam. This also makes the system substantially insensitive to ambient light. There is also disclosed means for rapid alignment upon installation by method of an external visible light source attachable to each unit in turn, followed by adjustment of the mirror of the other unit.

3,752,979

**METHOD AND APPARATUS FOR MATRIX-EFFECT-COMPENSATED CONTINUOUS X-RAY ANALYSIS OF STREAMS OF SOLID PARTICLES**

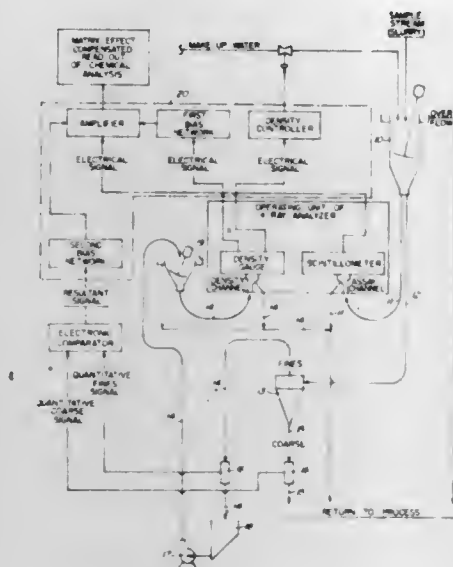
Hans H. Pick, Salt Lake City, Utah, assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Sept. 2, 1971, Ser. No. 177,413

Int. Cl. G01n 21/00

U.S. Cl. 250—375

9 Claims



A method and apparatus for X-ray fluorescence spectrographic analysis of streams of solid particles, wherein a matrix-effect-compensated, chemical analysis readout is obtained by separating the stream into fine and coarse component streams, sensing the mass-flow of the component streams to provide respective signals representative of such mass-flows, comparing the signals and feeding a resultant signal to an X-ray fluorescence spectrographic analyzer as a corrective factor in its operation, and passing a corrected signal to the readout means of such analyzer.

3,752,980

**APPARATUS FOR MEASURING ELECTROLUMINESCENT DEVICE PARAMETERS**

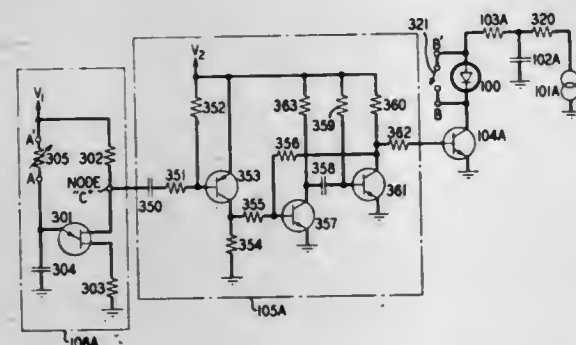
Richard Wayne Dixon, Morristown; James Michael Ralston, North Plainfield and Walter Rosenzweig, West Orange, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 30, 1972, Ser. No. 257,582

Int. Cl. G01n 21/16; H03k 3/42

U.S. Cl. 250—552

12 Claims



Apparatus and method for measuring output characteristics of an electroluminescent device as a function of the amplitude of an input current pulse. The pulse duty factor and pulse amplitude of the input current to the electroluminescent device are varied to maintain a constant time-averaged input current such that the magnitude of the time-averaged light output radiant flux is a function essentially only of the input current pulse amplitude.

3,752,981

**SCINTILLATION CAMERA WITH IMPROVED RESOLUTION**

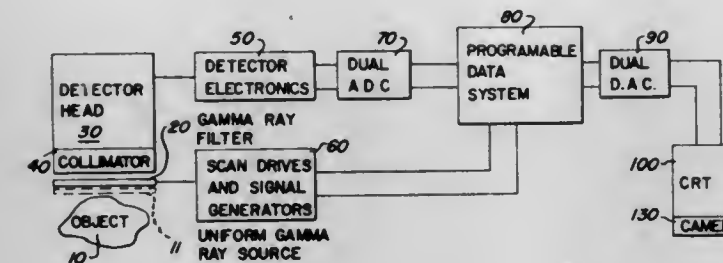
Ronald J. Jaszczak, Arlington Heights, Ill., assignor to G. D. Searle &amp; Co., Chicago, Ill.

Filed Mar. 10, 1972, Ser. No. 233,670

Int. Cl. G01t 1/20

U.S. Cl. 250—368

5 Claims



An Anger-type scintillation camera system fitted with a gamma ray filter between the object under study and the detector and an output signal filter of the signal funneling type which employs a non-linear array of signal filter windows to compensate for inherent non-linear spatial response characteristics in the camera system.

3,752,982

**TOMOGRAPHIC SCINTILLATION CAMERA WITH IMPROVED RESOLUTION**

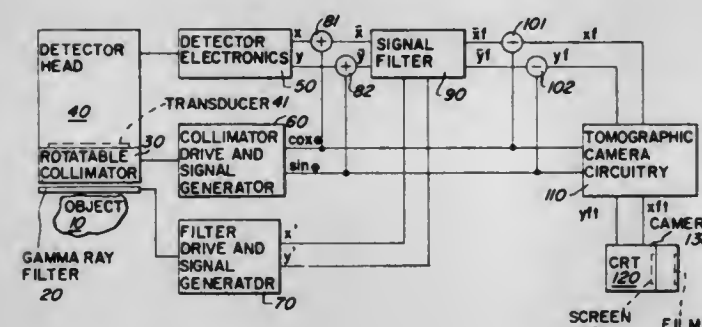
Ronald J. Jaszczak, Arlington Heights, Ill., assignor to G. D. Searle &amp; Co., Chicago, Ill.

Filed Feb. 23, 1972, Ser. No. 228,640

Int. Cl. G01t 1/20

U.S. Cl. 250—368

2 Claims



An Anger-type scintillation camera employing a rotating slanted channel collimator and associated circuitry to produce a tomographic imaging capability and also employing a scanning radiation filter and associated signal filtering circuitry to improve the resolution of the tomographic imaging. Circuitry at the output of the camera corrects the detector output signal before they are processed by the signal filtering circuitry to eliminate the effect of apparent circular precession of passageways in the radiation filter caused by rotation of the collimator. After signal filtering the effect of apparent circular precession of the radiation filter passageways is reintroduced either by separate circuitry before processing by tomographic camera circuitry or by tomographic camera circuitry adapted to allow for the earlier signal correction. The system may employ the rotating collimator alone or in conjunction with a bed which precesses in a circle.

3,752,983

**INFRARED VIEWING AND PHOTOGRAPHY**

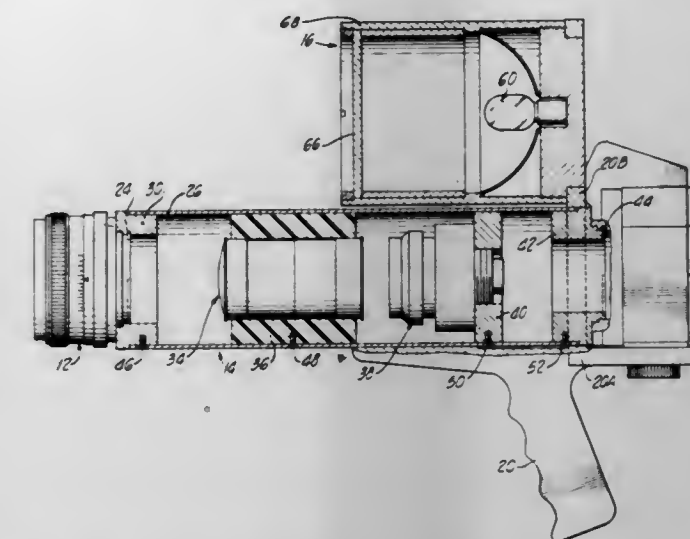
Serge J. Yanez, Arcadia, Calif., assignor to Condamatic Company, Inc., Warren, Mich.

Filed Sept. 13, 1971, Ser. No. 180,044

Int. Cl. H01j 31/50

U.S. Cl. 250—333

6 Claims



An infra red attachment for a single lens reflex 35mm camera body involves imaging optics within which are axially aligned a first lens system, an infra red image converter, and a second lens system, in that order. The first lens system serves to focus infra red on the converter. The second lens system serves to focus a visible image produced by the converter onto black and white type, slow speed film within the single lens reflex camera body which is releasably connected to such light tube whereby a person may see an infra red converted image just prior to its being photographed on black and white film in the camera body.

3,752,984

**METHODS AND SYSTEM FOR DETECTING SUBSURFACE MINERALS**

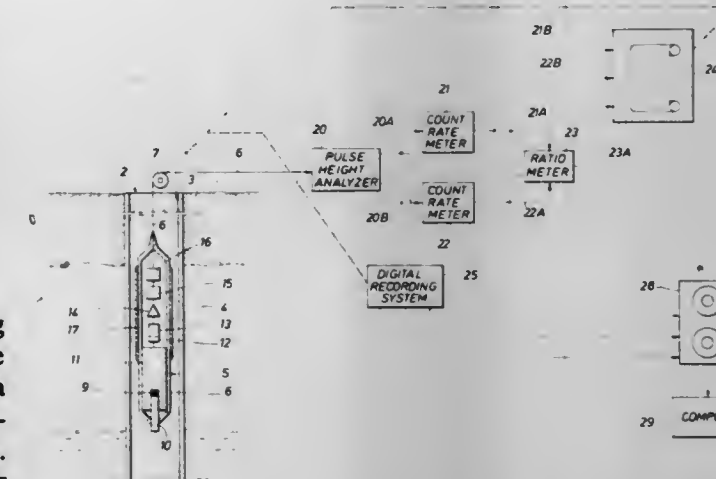
Hubert D. Scott, Houston, Tex., and Robert E. Maute, Columbus, Ohio, assignors to Texaco Inc., New York, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,071

Int. Cl. G01t 1/18

U.S. Cl. 250—261

18 Claims



An improved radiological borehole logging system and technique for detecting sulfur is provided for use in cased or uncased boreholes. The earth around the borehole is irradiated with neutrons, and pulses are generated which are representative of the number and energies of the resulting secondary gamma radiations. The pulses are sorted into a first group comprising a high energy range of gamma rays including sulfur-emitted gammas, and a second group comprising a lower energy range of gammas including those emitted by



nuclei of calcium, silicon, chlorine and iron. The energy ranges are chosen so that the ratio of the count rates of these two groups will be substantially constant unless the irradiated formation happens to contain a significant number of sulfur nuclei. Accordingly, a change in the ratio may be taken as an indication of the presence of a sulfur-bearing formation, and the magnitude of the change will be functionally related to the relative proportion of sulfur in the formation.

3,752,985

# PORTABLE DETECTOR FOR DOSIMETRY OF X AND GAMMA RADIATION

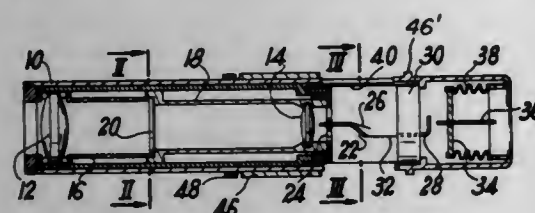
Francis Berman, Le Raincy; Paul Courtaud, Massy; Claude Dioux, Monthlery; Andre Manificier, Fontenay-aux-Roses; Andre Raboeuf, Morangis, and Pierre Ruffet, Marolles en Hurepoix, all of France, assignors to Commissariat AL Energie Atomique, Paris, France

Filed Feb. 9, 1970, Ser. No. 9,726

Int. Cl. G01t 1/14

U.S. Cl. 250-472

9 Claims



In a dosimeter comprising a microscope and a fiber electrometer contained in a thin-walled cylindrical ionization chamber, at least one sleeve can be caused to slide over the exterior of the chamber so as to cover or uncover its thin wall, thereby endowing the dosimeter with a selectable response equivalent to radiation doses absorbed under a protection of different thicknesses of human body tissue, instant measurements being taken as a function of the skin dose by means of a double-scale reticule.

3,752,986

# COMPTON SCATTER ATTENUATION GAMMA RAY SPECTROMETER

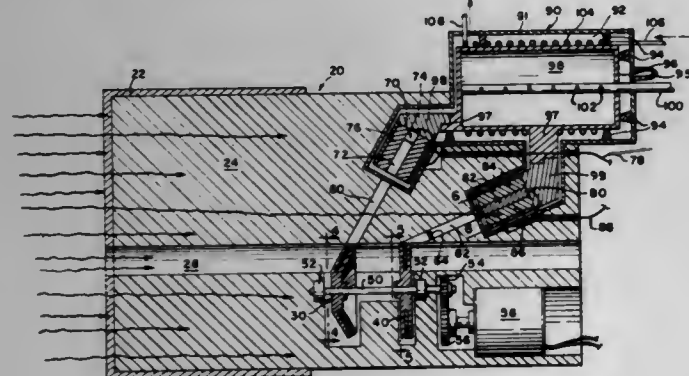
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and William E. Austin, Wayne, Pa.

Filed Mar. 3, 1972, Ser. No. 231,662

Int. Cl. G01t 1/16

U.S. Cl. 250-394

3 Claims



A gamma ray spectrometer system for obtaining gamma ray spectra from intense gamma field containing significant neutron flux. Spectra are measured for a continuous gamma spectrum from about 50 Kev to 7 Mev or higher.

A radiation shield protects individual spectrometers from the incident radiation. An aperture in the shield admits a collimated radiation beam. Compton scattering targets are placed in the radiation beam to scatter part of the beam into the in-

dividual spectrometers. The targets are made changeable to control the rate at which radiation strikes the spectrometers. Two spectrometers are used, one for low energy radiation and one for high energy radiation, the axis of the low energy spectrometer is placed at a 60° angle to the radiation beam and the high energy spectrometer is placed at a 20° angle to the radiation beam. The spectrometers are rotationally symmetric and comprise an inner or "A" detector on which the radiation is incident and an outer or "B" detector which is subject to radiation scattered in detector A. The spectrometers employ sum-compton coincidence techniques to distinguish signal events from background events. The output from the A & B detectors of one spectrometer are amplified and added together to represent the entire energy released by an event. The individual amplified signals are also converted to bipolar waveforms. The time of the zero crossing of each bipolar waveform is compared to determine whether the two events occurred simultaneously and are a signal event. If the events are simultaneous and the quantity of energy deposited in the B detector is of an appropriate amount, the energy representing signal is gated to a multichannel pulse height analyzer to determine the energy of the incident radiation which created the event. This information is recorded for readout and analysis. When the number of coincident events counted by a spectrometer exceeds 10<sup>4</sup> per second, the Compton Scattering targets are changed to less dense ones which scatter a smaller percentage of the radiation beam and thus reduce the count rate.

3,752,987

# SYSTEM FOR DETECTING HIGH ENERGY ELECTROMAGNETIC RADIATION

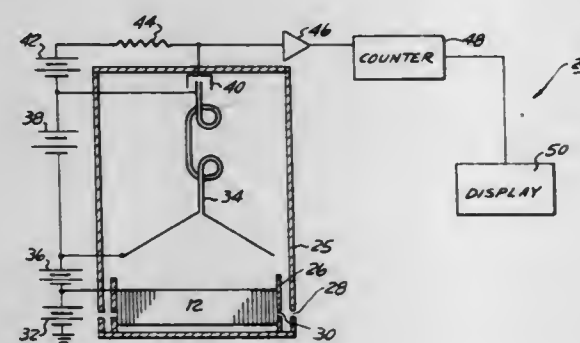
Christopher H. Tossell, Ann Arbor, Mich., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Mar. 29, 1971, Ser. No. 129,082

Int. Cl. G01t 1/16

U.S. Cl. 250-336

15 Claims



An array comprising a large number of thin walled electron multiplying passageways is disposed in a housing having windows disposed so that high energy or penetrating electromagnetic radiation passing through the windows strikes the side of the passageway array. The high energy radiation penetrates the passageway walls and undergoes interactions with the wall electrons and atoms in a statistically determinable manner. The array includes a sufficient number of passageways, and the passageway walls are sufficiently thin to provide a probability substantially of unity that high energy radiation striking the array will impart energy to electrons sufficiently close to the surface of a passageway wall to cause at least one electron to be emitted from a passageway wall. The array multiplies emitted electrons and provides an output pulse of a number of output electrons in response to each received high energy electromagnetic radiation signal. The array provides sufficiently large output pulses that will not be lost by apparatus for detecting and counting those pulses.

3,752,988

# CIRCUIT FOR REDUCING PULSE PILE-UP IN PULSE DETECTION SYSTEMS

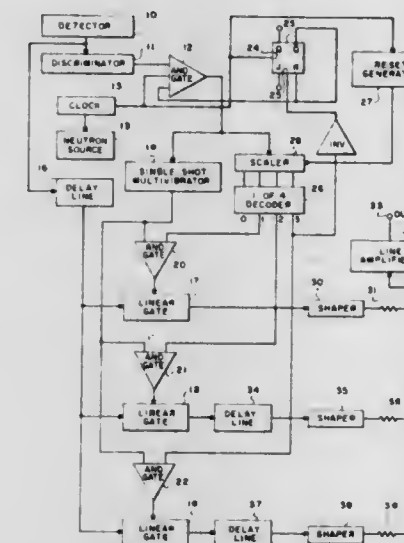
Richard B. Culver, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 1, 1971, Ser. No. 148,765

Int. Cl. H01j 39/30

U.S. Cl. 250-270

15 Claims



The amplified pulses from a radioactivity detector are coupled to a discriminator and via a 400 nanosecond delay line to the inputs of three linear gates. The discriminator is AND gated with a clock pulse and a J-K flip-flop. A scale of four and a 1 of 4 decoder and a single shot multivibrator are driven by the AND gate output. The single shot output and the decoder outputs are AND gated to control the linear gates.

In an alternative embodiment, the linear gates and delay lines are replaced with charge and hold, delay and interrogate circuits.

3,752,989

# METHOD OF PRODUCING AN INTENSE, HIGH-PURITY K X-RAY BEAM

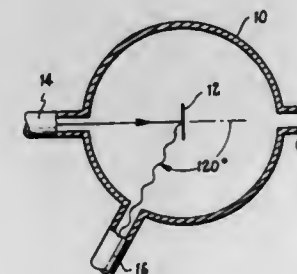
Joseph W. Motz, Charles E. Dick, Robert C. Placius, and Julian H. Sparrow, all of Rockville, Md., assignors to the United States of America as represented by the Secretary of Commerce

Filed Jan. 27, 1972, Ser. No. 221,249

Int. Cl. H01j 37/00

U.S. Cl. 250-401

4 Claims



This method comprises the steps of bombarding an X-ray target of atomic number Z with a substantially monoenergetic electron beam having an energy in the region from about  $(Z+0.0014Z^3)$  to about  $(3Z+0.0092Z^3)$  kev. and collimating into an output beam the X-rays emitted from the target at an angle in the range from about 120° to about 180° with respect to the direction of the electron beam.

3,752,990

# X-RAY DEVICE HAVING AN ANODE TUBE WITH FILTERING MEANS THEREON

Heimbert Fischer, Feldbergstrasse 1, D 7801 Vorstetten, Germany

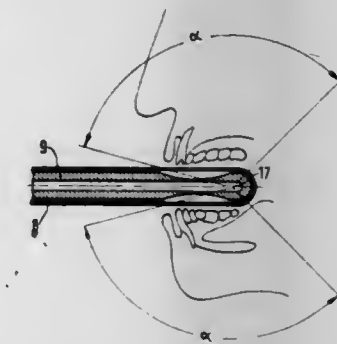
Filed June 18, 1971, Ser. No. 154,530

Claims priority, application Germany, June 22, 1970, P 20 30 624.5

Int. Cl. H01j 35/16, 5/16

U.S. Cl. 250-503

7 Claims



A device for use in the production of dental X-ray photographs comprises a hollow-anode X-ray tube projecting from a housing with the tube specially mounted to absorb shocks and stresses imposed on the anode tube. The anode tube which projects from the housing is preferably shielded when not in use by a projecting tube slidable relative to the housing. The device may also include a second X-ray tube for intra-oral and extra-oral photography with this second tube emitting X-rays at 90° to the axis of the hollow anode X-ray tube. Prefiltering material may be provided on the head of the anode tube or the head of the anode tube may be specially shaped so that uniform prefiltering of the radiation from the anode tube occurs over the beam angle necessary for full-mouth photography.

3,752,991

# PHOTO TIMER

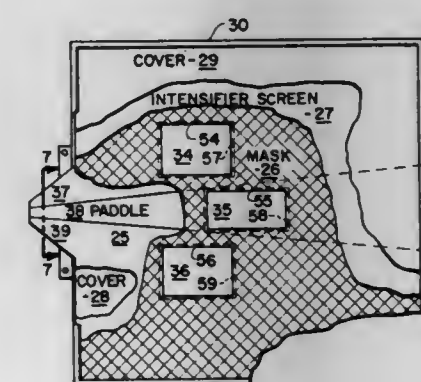
Edward Slagle, Lyndhurst, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Filed June 28, 1971, Ser. No. 157,536

Int. Cl. H05g 1/38

U.S. Cl. 250-460

24 Claims



A phototimer for controlling a radiographic exposure includes a plurality of light transmitting panels each having a light accepting portion adjacent a separate area of fluorescent screen. The light transmitting panels have light emitting portions positioned adjacent a light responsive phototube. Movable shielding means selectively block the transmission of the light from the light transmitting panels to the phototube whereby light from selected portions of the fluorescent screen may be transmitted to the light responsive phototube.



3,752,992

## OPTICAL COMMUNICATION SYSTEM

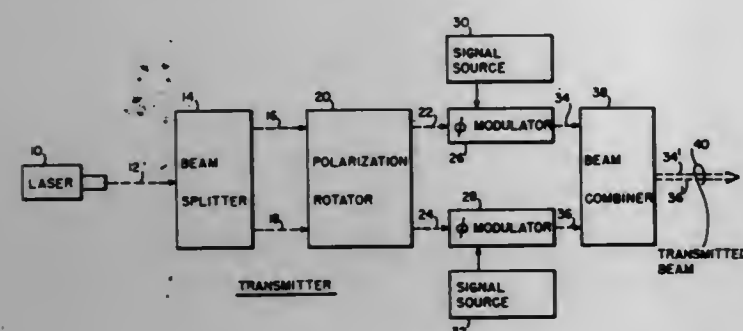
Frederick R. Fluhr, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 28, 1969, Ser. No. 828,550

Int. Cl. H04b 9/00

U.S. Cl. 250—199

2 Claims



An optical communication system including a device for splitting the output beam from a laser into two quadrature polarized beams, phase modulators for modulating at least one of the two beams, and a combiner for thereafter aligning the two means in a non-interfering manner for transmission along a single path. The system further includes a receiver for receiving and separating the two transmitted beams, a rotator for axially re-aligning the polarized beams, and a combiner for combining the two beams in an interfering manner thereby causing amplitude modulation of the combined beam. The signal information is then removed from the amplitude modulated beam by a detector and fed to any suitable readout device.

3,752,993

## SPACECRAFT ATTITUDE SENSOR

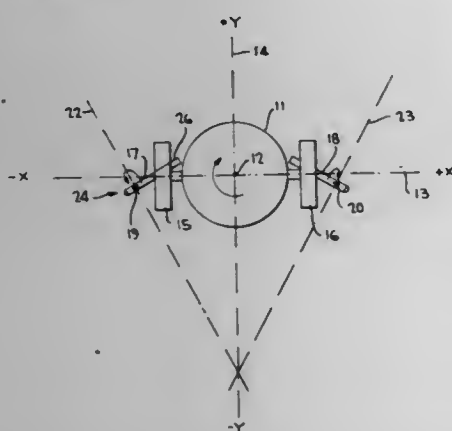
Arthur C. Davidson, Davidsonville, and McLean M. Grant, Silver Spring, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 2, 1971, Ser. No. 111,998

Int. Cl. G01j 1/20

U.S. Cl. 250—203 R

22 Claims



A system for sensing the attitude of a spacecraft includes a pair of optical scanners having a relatively narrow field of view rotating about the spacecraft x-y plane. The spacecraft rotates about its z axis at a relatively high angular velocity while one scanner rotates at low velocity, whereby a panoramic sweep of the entire celestial sphere is derived from the scanner. In the alternative, the scanner rotates at a relatively high angular velocity about the x-y plane while the spacecraft rotates at an extremely low rate or at zero angular velocity relative to its z axis to provide a rotating horizon scan. To avoid ambiguity while the spacecraft is spinning at an extremely low velocity or is stationary relative to its z axis, the scanners are successively

activated during alternate scans. The positions of the scanners about the x-y plane are read out to assist in a determination of attitude. While the satellite is spinning at a relatively high angular velocity, the angular positions of the bodies detected by the scanners are determined relative to the sun by providing a sun detector having a field of view different from the scanners.

3,752,994

## VISUAL DATA HANDLING SYSTEMS

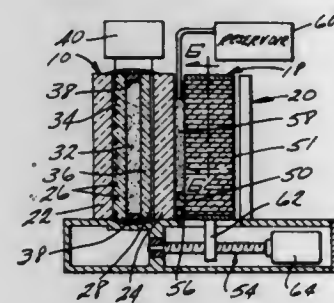
John D. Grier, 1367 Meadowbrook Way, Temperance, Mich., and Harold E. Camp, 3221 Astor Pl., Toledo, Ohio

Division of Ser. No. 574, Jan. 5, 1970. This application June 25, 1971, Ser. No. 156,999

Int. Cl. H01l 17/00

U.S. Cl. 250—213 R

5 Claims



A visual data handling system incorporating a visual display device to provide an illuminated display of data. A print-through device utilizing a matrix of light conducting elements transfers the illuminated display of data to a light responsive type printer. This illumination transfer can be selectively interrupted by a turn-off mechanism, which does this by maneuvering the print-through device. Also, the light conducting elements can incorporate lasing devices to intensify the illumination.

3,752,995

## BLANK VALUE STORING PHOTOMETER

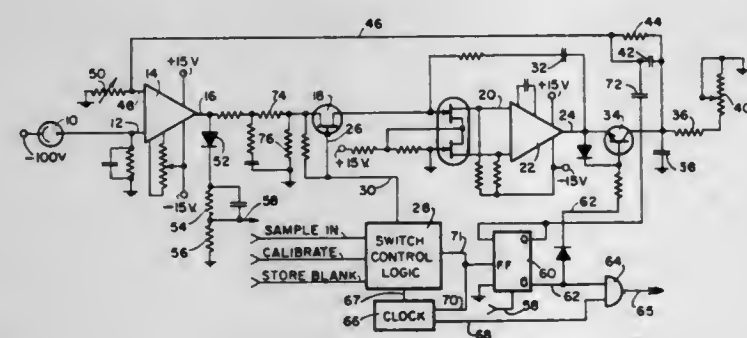
Gerhard A. Liedholz, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Apr. 7, 1972, Ser. No. 242,049

Int. Cl. H01j 39/12

U.S. Cl. 250—214 R

15 Claims



Circuitry which permits an externally supplied blanking solution, such as a serum blank, to be electronically stored for a long period of time, during which a calibration control solution and then a sequence of samples are applied to the photometer for calibration of the photometer and measurement of the sample in a logarithmic rundown mode. Specific subcircuits enhance the storing, calibrating and measuring operations.

3,752,996

## METHOD OF AND DEVICE FOR DETERMINING THE CHARACTERISTICS AND FLUX DISTRIBUTION OF MICROMETEORITES

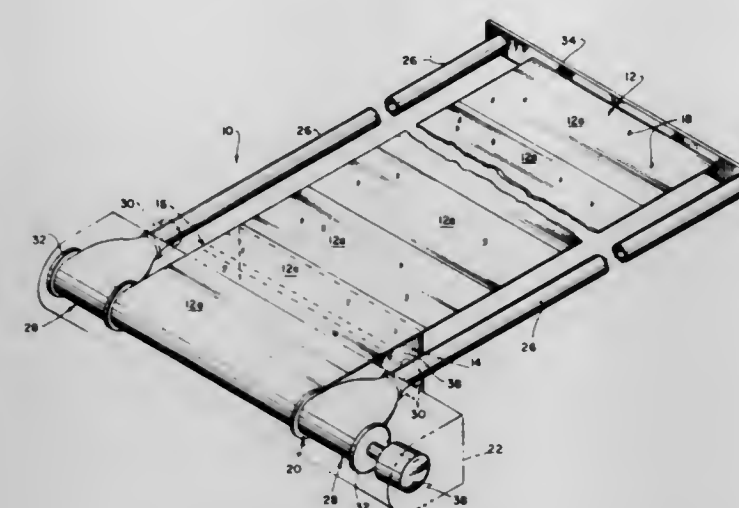
Hans F. Meissinger, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Jan. 13, 1971, Ser. No. 106,106

Int. Cl. G01n 21/30

U.S. Cl. 250—219 DF

10 Claims



A micrometeorite impact sensing method of and device for determining the characteristics and flux distribution of micrometeorites by first exposing to the micrometeorite environment a panel of sheet material of a thickness to be punctured by impacting micrometeorites of given impact energy and then scanning the panel with a scanner which produces an output representing the number and size of the puncture holes in the panel. The disclosed inventive embodiment employs a panel of varying thickness which is exposed to the micrometeorite environment by deployment from a stowage container. After exposure, the panel is scanned for puncture holes by illuminating one side of the panel and retracting the panel into its stowage container past a photoelectric scanner which receives light through the panel holes as the latter travels across a scanning slit in the scanner and produces an output representing the incident light.

3,752,997

## TENSION DETECTOR FOR STRING-LIKE ELEMENT

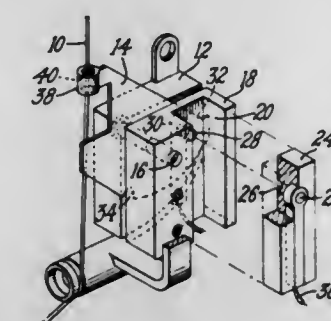
Fred T. MacKenzie, and Daniel W. Woodman, both of Beverly, Mass., assignors to USM Corporation, Boston, Mass.

Filed July 23, 1971, Ser. No. 165,040

Int. Cl. D02h 13/08

U.S. Cl. 250—219 S

2 Claims



A detector responsive to the tension of a string-like element including a member having a portion for engaging the element, the member being movable between first and second positions in response to a tensile condition of the element to cause cooperative signal generating means to produce a detector signal.

3,752,998

## LINEAR SCANNING SEEKER WITH SINGLE AXIS ROTATION

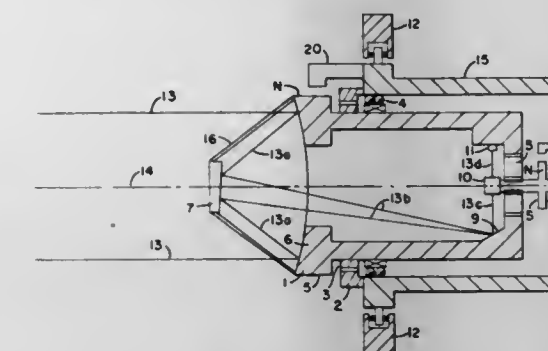
William W. Stripling, and Joe S. Hunter, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 1, 1972, Ser. No. 285,791

Int. Cl. G01c 9/02; G01d 5/34; G02b 17/00

U.S. Cl. 250—234

6 Claims



A linear scanning seeker with optical components mounted on a common rotational axis to facilitate field of view target area scanning without introducing unwanted precessional torques. The optical elements, with the exception of one prism, form an integral portion of a spinning gyroscopic mass. The seeker spin axis is defined by the gyroscopic mass spin axis. A parabolic primary mirror, which is cut into the face of the gyroscopic mass, and a slanted secondary mirror are positioned along the gyroscopic mass spin axis. A concave mirror and a prism are arranged to direct the incoming energy beam onto a detector in a direction orthogonal to the seeker spin axis. As the gyroscopic mass spins, energy beams from the seeker field of view are reflected off the primary, secondary, and concave mirrors. These energy beams are directed through the prism and scan the detector in a curved radial sweep pattern. The prism may be made to rotate in the same direction or in a direction opposite to the direction of spin of the gyroscopic mass. Rotating the prism in a direction opposite to the direction of the spinning gyroscopic mass increases the density of the curved radials. This same effect may be achieved by increasing the rotational speed of the gyroscopic spinning mass. In this invention, the gyroscopic mass and the prism are rotated about a common spin axis. This eliminates the necessity to counter rotate a mass to cancel the moment generated by the prism if it is not spun parallel to the seeker spin axis. A target is displayed on one of the beams when a target is present in the seeker field of view. Magnetic sensors react with magnets on the rotating gyroscopic mass and on the prism to indicate where a target is located in the seeker field of view when an image from the target is displayed on the detector.

3,752,999

## READING APPARATUS FOR OPTICALLY DISCERNIBLE CHARACTERS

Erwin Sick, Jcking; Gernot Pinior, Germering, and Johan Plockl, Unterhaching, all of Germany, assignors to Zellweger AG Apparate-Und Maschinenfabrik, Uster, Switzerland

Filed Jan. 28, 1972, Ser. No. 221,702

Claims priority, application Switzerland, Mar. 22, 1971, 4237/71

Int. Cl. G01n 21/30; G02b 17/00; G06m 7/00

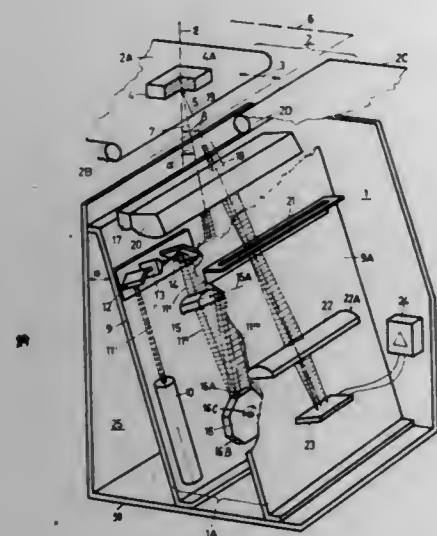
U.S. Cl. 250—219 D

8 Claims

A reading apparatus for optically discernible characters, particularly optically discernible characters associated with an article and applied thereto or thereat comprising means for producing an optical transmitted light beam, a moved transmitted light beam directed towards a reference plane with regard to which the character to be read is arranged or moves within predetermined spatial limits departing from said transmitted light beam-producing means. Receiver means respon-



sive to changes in the reflected light receive a light beam reflected by the character. The means for producing the transmitted light beam is arranged such that a surface or plane in



3,753,000

# RECHARGEABLE LIGHTING SYSTEM FOR BICYCLES AND THE LIKE

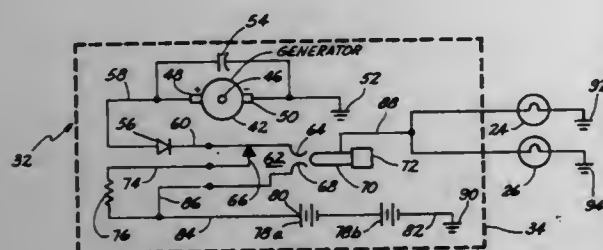
James J. Newman, P.O. Drawer 579, Palm Desert, Calif.

Filed Mar. 9, 1972, Ser. No. 233,119

Int. Cl. H02g 3/00; H02j 7/00

U.S. Cl. 307-9

15 Claims



A plastic housing or casing contains a generator, diode, battery and a miniature jack for connection to the head and tail lights of a bicycle or motor bike. By means of a curved resilient strip or plate attached to the front fork of the bicycle a drive cone on the projecting end of the generator shaft is biased against the rim of the bicycle's front wheel. Two normally closed contacts in the jack connect the generator and diode through a current limiting resistor to the battery composed of two serially connected nickel-cadmium cells so that when the generator is rotated at a sufficient speed by the rim of the wheel, the battery is charged; when the wheel speed is too low, and the generator then not furnishing a sufficient charging voltage, the diode prevents the battery from discharging. When the two lamps, that is the head light and tail light, are to be lighted, the user inserts a plug connected to these two lamps into the jack to establish an electrical path directly from the diode to the lamps via the plug. The plug connection also establishes a parallel connection with the battery to assure energization of the lamps at low wheel speeds when there is an insufficient charging voltage or when the bicycle is completely stopped and the generator not providing any voltage at all.

## ELECTRIC POWER SUPPLY SYSTEM USING BACK-UP CAPACITOR

Minoru Hiroshima, Fumiyuki Inose, Sadao Kobayashi, Takashiro Iwasaki, all of Tokyo; Shizuhisa Watanabe, Katsuta, and Takahiko Tanigami, Mito, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

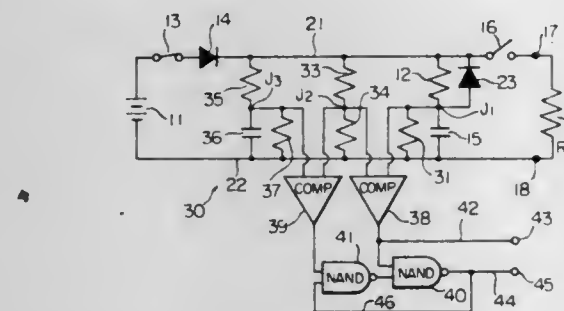
Filed June 29, 1972, Ser. No. 267,359

Claims priority, application Japan, June 30, 1971, 46/47231

Int. Cl. H02j 1/06

U.S. Cl. 307-10 R

2 Claims



Herein disclosed is an improved d-c power supply system which comprises a d-c power source, a first rectifier serially connected to the power source, and series connection composed of a protective resistor and a back-up capacitor, the series connection being connected across the first rectifier and the power source, and the protective resistor being bypassed by a second rectifier so that a discharge current from the back-up capacitor flows through the second rectifier. The power supply system further comprises means for producing information signals representing condition of the back-up capacitor.

3,753,002

## SYNCHRONIZING AND TRANSFER SYSTEM

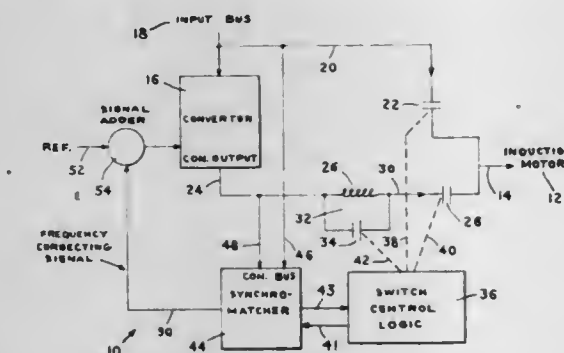
Elton J. Jacobson, Hopkins, and Davis W. Schlicher, Richfield, both of Minn., assignors to Electric Machinery Manufacturing Company, Minneapolis, Minn.

Filed May 5, 1972, Ser. No. 250,576

Int. Cl. H02p 1/30

U.S. Cl. 307-87

11 Claims



A synchronizing and transfer system enabling a fully loaded induction motor to be switched from or to a variable frequency converter having a quasi-square wave voltage, to or from a line having a sine wave voltage. Upon the motor to be transferred reaching a full-speed condition, the system senses the frequency and phase angle difference between the converter output and line and acts upon the converter frequency to decrease the difference. When the frequency and phase angle differences are within preset limits, load transfer switching is initiated. During the course of load transfer, an inductive impedance is transiently inserted in series with each phase of the converter output for a period of parallel feed, the impedance acting to prevent excessive cross currents from damaging the converter.

3,753,003

## SAFETY DEVICE AGAINST RADIATION LEAKAGE FROM MICROWAVE APPARATUS

Lamberto Mazza, Prodenone, Italy, assignor to Industrie A. Zanussi S.P.A., Prodenone, Italy

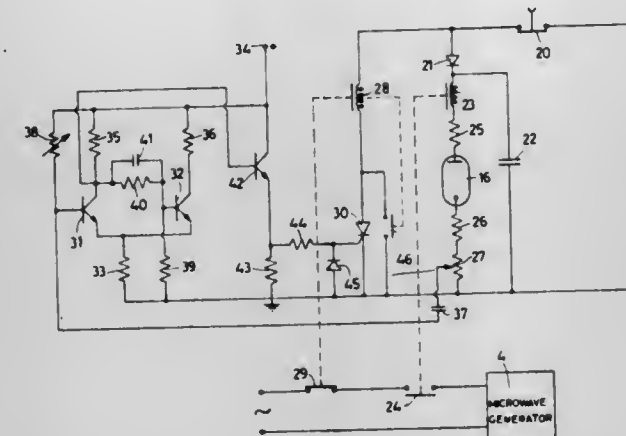
Filed Oct. 5, 1971, Ser. No. 186,717

Claims priority, application Italy, Oct. 7, 1970, 30700 A/70

Int. Cl. H01h 35/00

U.S. Cl. 307-117

7 Claims



A safety device for microwave ovens is disclosed, which prevents radiation leakage from such an oven, the device being of the kind where a gas lamp is located in the area where radiation leakages may occur, said lamp being connected serially with a potentiometer which cooperates with a controlled diode which drives a relay which cuts the feed to the microwave generating circuit, the safety device being characterized by further comprising a bistable circuit and an amplifier which are connected to one another in cascade arrangement, the bistable circuit and the amplifier being inserted between the potentiometer voltage tap and the control electrode of the controlled diode. By such an arrangement, the sensitivity, the promptness and the reliability of the safety device of the kind described are considerably improved.

3,753,004

## ELECTRIC TYPEWRITER AUTOMATIC ON-OFF SWITCH

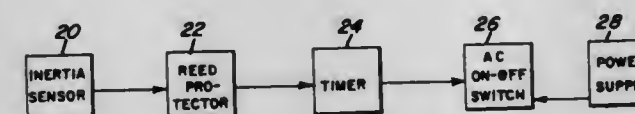
Paul C. Dominic, Annandale, Va., assignor to Custom Electronic Devices, Inc., Alexandria, Va.

Filed June 16, 1971, Ser. No. 153,773

Int. Cl. H01h 35/00

U.S. Cl. 307-121

17 Claims



An Inertia Sensor with an oscillatory reed connectible upon actuation to reed protection circuitry, timing circuitry, AC switch circuitry, and power supply circuitry for turning on an electric typewriter upon actuation of the spacer bar and automatically turning off the typewriter after a predetermined time delay. Another embodiment discloses an impact sensor utilizing a vibration sensitive reed having a magnet thereon movable within a coil for creating an electromotive force for producing a signal which is amplified by amplifier circuitry, detected, and utilized to actuate timing circuitry and an on-off switch which is connected to a power supply.

913 O.G.-26

3,753,005

## INTEGRATED CIRCUIT COMPRISING STRIP-LIKE CONDUCTORS

Uwe Bertram, Hamburg; Hans Hoffman, Friedrichsgabe, and Hans Wilhelm Neuhaus, Hamburg, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 851,231, Aug. 19, 1969, abandoned.

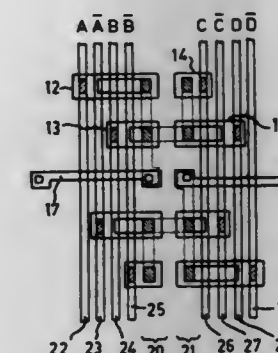
This application June 3, 1971, Ser. No. 149,756

Claims priority, application Germany, Aug. 20, 1968, P 17 62 759.7

Int. Cl. H03k 19/08; G08c 5/00

U.S. Cl. 307-213

9 Claims



An integrated circuit using ETL gates especially useful for code conversion is described. All of the input transistors of the gate having interconnected emitters and interconnected collectors. The inputs are made to the base regions and are supplied by means of a series of parallel, strip-like conductors on top of the circuit and passing over the input transistors. At least some of the input transistors have elongated base regions which extend perpendicular to the direction of the strip conductors so as to locate the base contact for the base region directly underneath the conductor to which it is connected. Space is provided between the conductors for the emitter interconnections and for connection to a coupling resistor. The arrangement described avoids many of the crossovers of the input conductors required in the prior art arrangement.

3,753,006

## HIGH SPEED, LOW POWER, DYNAMIC SHIFT REGISTER WITH SYNCHRONOUS LOGIC GATES

Robert H. Crawford, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

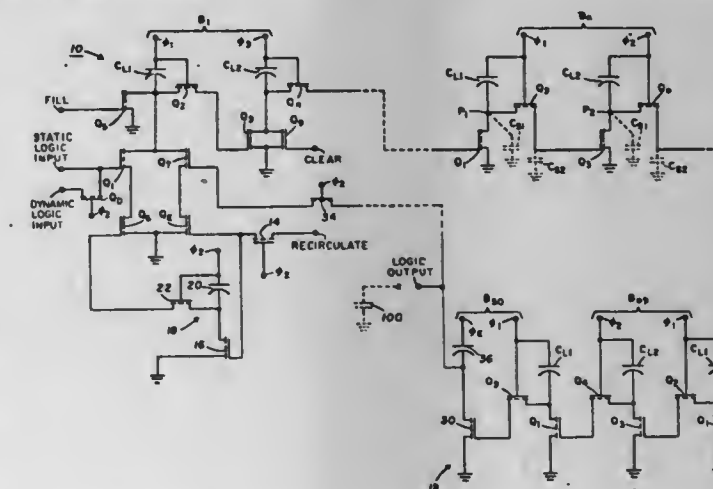
Division of Ser. No. 685,238, Nov. 13, 1967, Pat. No. 3,599,010, which is a continuation-in-part of Ser. No. 636,998, May 8, 1967, abandoned.

Filed Oct. 14, 1970, Ser. No. 80,786

Int. Cl. H03k 19/40

U.S. Cl. 307-214

4 Claims



A shift register having a plurality of bits each formed by a pair of serially interconnected synchronous inverter stages operated by nonconcurrent clock pulses. Each inverter has an MOS transistor driver, a capacitive load, and a bilateral MOS transistor output. The shift register is in integrated circuit form on the (110) crystallographic plane with the current flow



in all transistors in a direction normal to the (110) crystallographic plane. The logic input is the gate of the MOS transistor driver. The clock pulses are sequentially applied to the two inverter stages so that the logic number is shifted through the bit in two steps. Each clock pulse is applied across the load and driver and also is applied to the gate of the output transistor of the respective stage. "Fill," "Clear," and "Recirculate" modes are provided by NAND and NOR logic gates formed in the first bit by connecting two or more MOS transistor drivers for the inverter stages in series or in parallel, respectively. The last stage of the last bit is a unique high speed D.C. buffer capable of driving a highly capacitive circuit external to the shift register at high speed.

3,753,007

## STROBE GENERATION SYSTEM

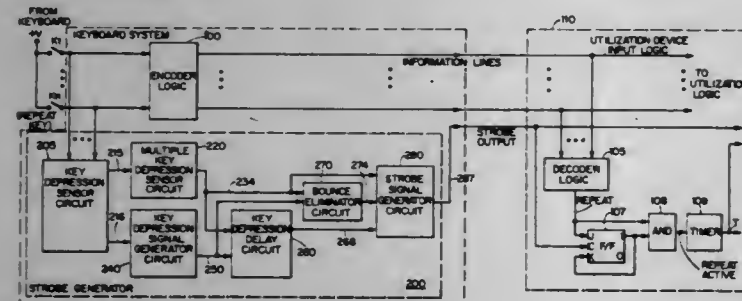
G. R. Viswanathan, Saint Troy, N.Y., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 16, 1970, Ser. No. 89,914

Int. Cl. H04b 15/00; H04I 15/06

U.S. Cl. 307—247 A

19 Claims



A strobe generator in response to a key depression generates a strobe which is not affected by contact bounce produced by depressing and releasing keys whereby the strobe signals when a utilization device may sample valid keyboard generated information. An accurate strobe interval is generated by utilizing a retriggerable logic circuit to produce a strobe only after contact bounce produced by depressing a key subsides. The width of the strobe is arranged to be a function of the length of time the key is depressed. Therefore, the strobe may be used to reset special keyboard control functions within the device conditioned by previous keyboard entries. Additionally, the strobe generator also includes logic for sensing multiple key depressions to condition the generation so that it does not generate a strobe for invalid key generated information thereby eliminating signaling unnecessary error indications to the operator.

3,753,008

## MEMORY PRE-DRIVER CIRCUIT

Gianpiero Guarnaschelli, Milan, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

Filed June 14, 1971, Ser. No. 152,930

Claims priority, application Italy, June 20, 1970, 26313 A/70

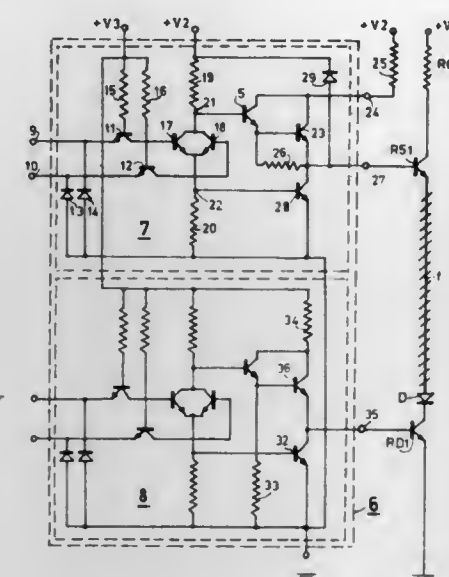
Int. Cl. H03k 19/34, 19/36; G11c 11/34

U.S. Cl. 307—270

10 Claims

A low power dissipating monolithic integrated core memory driver circuit for driving memory line transistor switches. The

circuit is supplied with two distinct voltage levels and a control circuit responsive to input signals for processing the proper



voltage required to effect the selection of a memory line without overloading the integrated driver circuit.

3,753,009

## RESETTABLE BINARY FLIP-FLOP OF THE SEMICONDUCTOR TYPE

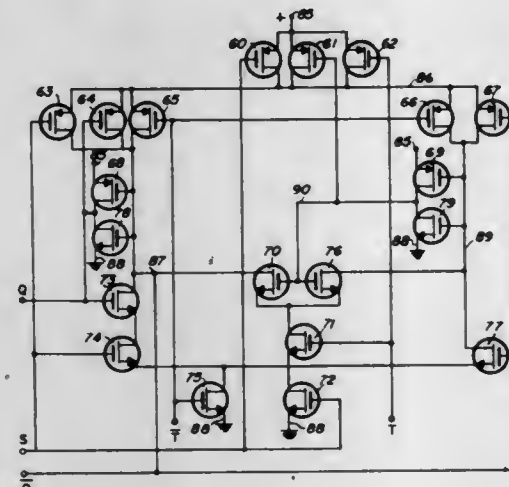
Steven L. Clapper, Fort Lauderdale, Fla., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 23, 1971, Ser. No. 173,894

Int. Cl. H03k 3/26

U.S. Cl. 307—279

10 Claims



A bistable flip-flop circuit utilizing insulated gate field effect transistors in a plurality of AND, NOR and inverter circuits connected to receive a signal and the inverse thereof on two inputs and to supply an output signal and the inverse thereof on two outputs, the outputs being resettable to specific levels upon the application of a reset signal to a reset input.

3,753,010

## ELECTRIC DYNAMICALLY OPERATED STORAGE ELEMENT

Tegze Haraszti, Heilbronn, Germany, assignor to Lincentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Aug. 10, 1971, Ser. No. 170,509

Claims priority, application Germany, Aug. 10, 1970, P 20 39 606.9; Aug. 10, 1970, P 70 29 971.7

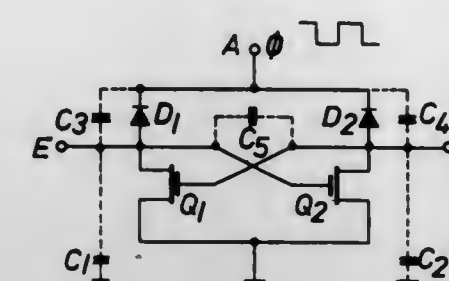
Int. Cl. H03k 3/286

U.S. Cl. 307—279

15 Claims

An electric dynamically operated storage element comprises two energy stores. Each store has a charging circuit including a rectifying element and a discharging circuit includ-

ing a controlled respectively variable resistance connected in series with the rectifying element. Also, circuitry is provided



for applying periodically repeating phase clock pulses simultaneously to the energy stores through the charging circuits.

3,753,011

## POWER SUPPLY SETTABLE BI-STABLE CIRCUIT

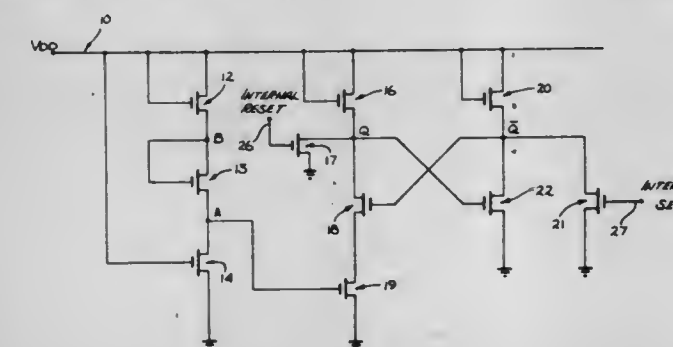
Federico Faggin, Cupertino, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Mar. 13, 1972, Ser. No. 234,259

Int. Cl. H03k 17/22, 3/286, 3/33

U.S. Cl. 307—247 R

10 Claims



A circuit for setting a bi-stable circuit such as a flip-flop in a predetermined state when power is applied to the bi-stable circuit is disclosed. The circuit is fabricated using MOS technology and does not require the fabrication of an RC circuit.

3,753,012

## CIRCUIT FOR PROVIDING PRECISE TIME DELAY

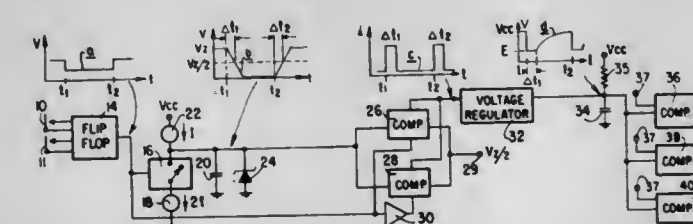
Thomas M. Frederiksen, San Jose, Calif.; William F. Davis, Tempe, and Ronald W. Russell, Mesa, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 17, 1972, Ser. No. 227,166

Int. Cl. H03k 5/13

U.S. Cl. 307—293

11 Claims



Integrated circuit structure responsive to being triggered to produce output signals at precise time intervals following points in the operation of a device. The circuit is adapted for accurate repeating operation, and provides a plurality of signals at different precise time delays. A discrete capacitor is discharged to a predetermined value (reset) by a voltage regulator at each triggering of the circuit, and at the end of a short time starts to charge so that the voltage thereacross forms a repeatable exponential ramp. A plurality of comparators are coupled to the capacitor and each produces an output when the capacitor voltage reaches the reference voltage for that comparator. The triggering may be provided by a circuit in-

cluding a reset capacitor which responds to the change of levels of a signal derived from the device to alternately charge and discharge the reset capacitor. The voltage across the reset capacitor is applied to a pair of comparators which produce current pulses during the beginning of the charge and discharge periods of the reset capacitor for operating the voltage regulator.

3,753,013

## LIQUID-COOLED ELECTRIC MACHINE, PARTICULARLY TURBO-GENERATOR

Heinrich Beermann, and Hans Lenting, both of Mulheim-Ruhr, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

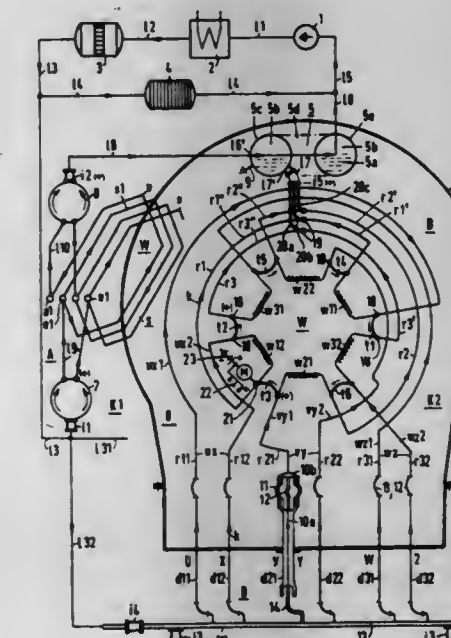
Filed July 20, 1971, Ser. No. 164,367

Claims priority, application Germany, July 30, 1970, P 20 37 794.0

Int. Cl. H02k 9/00

U.S. Cl. 310—54

5 Claims



A liquid-cooled electric machine, such as a turbo-generator, has a stator with a multi-phase double-layer lap winding composed of winding portions, main current feed-throughs, and circuit connectors. The circuit connectors form electric circuit-group connections between the winding portions and also connect the winding portions with the feed-throughs. The stator comprises a liquid-coolant system which has two hydraulically parallel connected branch groups of coolant ducts. A first one of these duct groups extends through the multi-phase winding. The second branch group of ducts extends through the feed-throughs and the connectors. Insulating hose members form part of the second branch group and fluidically bridge each two of those connectors that have instantaneous potentials, i.e. have different electrical potentials or ascertain to different phases. A plurality of hydraulically parallel cooling branches of the second group is formed by the hose members and those of said connectors that are electrically located between each two of the feed-throughs. The connectors form a ring conductor arrangement, and each of said cooling branches between two respective ones of said feed-throughs has a portion which extends through the geodetically topmost region of the arrangement. At least one insulating coolant discharge line is connected to this topmost portion, the coolant being conducted in the cooling branch between the two feed-throughs and the associated discharge line in double-stream fashion. A coolant collector tank with an internal gas cushion space is mounted geodetically above the topmost ring conductor portion. The coolant discharge line forms a riser communicating from below with said tank so as to pass not only coolant but, due to buoyancy, also entrained undissolved gas into the tank.



3,753,014

**FAST INHIBIT GATE WITH APPLICATIONS**

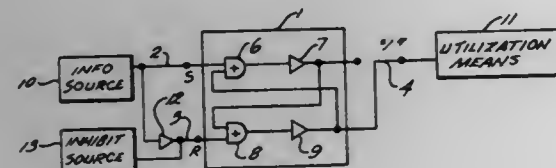
Reinhard Kurt Kronies, Glendora, and John Robert Coup-land, El Monte, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 15, 1971, Ser. No. 124,415

Int. Cl. H03k 19/20, 19/38

U.S. Cl. 307—217

3 Claims U.S. Cl. 310—90



An electronic circuit that has two input terminals and is responsive to three combinations of binary input signals is useful as a fast inhibit gate. The electronic circuit functions as an RS flip-flop for two of the combinations of binary input signals and as a combinational logic element for the third combination, which is the combination of a binary 1 on each input. Binary data to be transferred through the circuit is applied to one input terminal with the complement being applied to the other input terminal. An inhibit signal in the form of a binary 1 is applied to the same terminal to which the complement of the data is connected. In this way the inhibit signal may be applied directly to the electronic circuit rather than through additional logic elements with their attendant delay.

**ERRATUM**

For Class 310—54 see:  
Patent No. 3,753,013

3,753,015

**ROTOR WINDING FOR AN ELECTRICAL MACHINE**

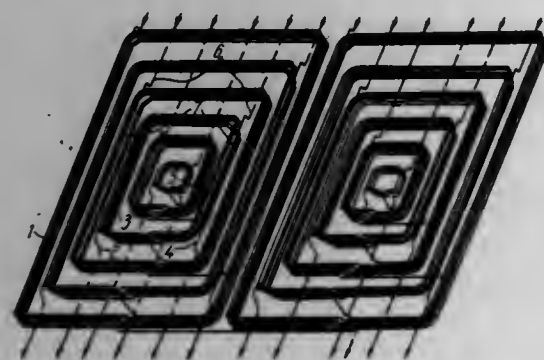
Boris Leonidovich Konovalov, 603 Mikroraiion, 1, kv. 346; Boris Volkovich Spivak, ulitsa Kosiora, 56, kv. 55; Leonid Vasilievich Ugrjumov, pereulok Fanlinsky, 3, kv. 39; Alexandr Abramovich Chigirinsky, ulitsa Kuibysheva, 11, kv. 8; Evgeny Khaimovich Glider, prospekt Ordzhonikidze, 18, kv. 55; Oleg Borisovich Gradov, ulitsa Kosiora, 6, kv. 1, and David Bentsionovich Karpman, ulitsa Frantishka Kraila, 49, kv. 54, all of Kharkov, U.S.S.R.

Filed Mar. 29, 1971, Ser. No. 128,853

Int. Cl. H02k 1/32

U.S. Cl. 310—64

1 Claim



Liquid-cooled rotor windings for turbo-alternators including an electrical-machine rotor winding with internally liquid-cooled conductors composed of a number of concentrically arranged coils, in which the cooling-liquid inlet and outlet taps are located between the coils in the coil ends of the winding, and the bends of the coils where to said taps are connected are made more gradual than the adjacent bends of the next coils, while being made more gradual are the bends of turns of the coils placed below the turns of the coils onto which the taps are connected.

3,753,016

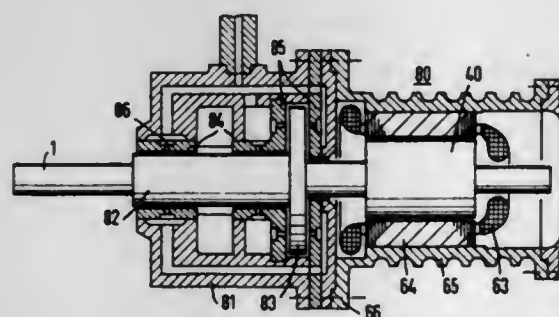
**BEARING SYSTEM FOR SHAFTS DRIVEN BY AN ELECTRIC MOTOR**

Gerald Klein, Ruckersdorf, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 17, 1972, Ser. No. 235,511

Int. Cl. H02k 7/08

1 Claim



For the bearing support of shafts driven at high speed, particularly shafts of centrifuges, either the rotor proper is of rotationally symmetric construction or is provided with rotationally symmetric extensions or appendages, the rotationally symmetric surfaces of which at least partly form supporting surfaces of an air bearing.

3,753,017

**SELF STARTING, SINGLE-PHASE, SINGLE-COIL INDUCTION AND SYNCHRONOUS MOTOR**

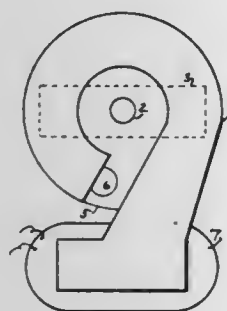
Max Alth, 6 Tamarack Rd., Port Chester, N.Y.

Filed Feb. 25, 1972, Ser. No. 229,265

Int. Cl. H02k 19/14

U.S. Cl. 310—163

10 Claims



The rotor may comprise a solid conductive disc, a slotted conductive disc, a conductive disc with a plurality of iron cores or permanent magnets equally spaced within the perimeter of said disc.

The stator is a solenoid with an iron core and two iron arms, parallel to each other, positioned above and below the rotor; the arms forming an almost complete circle within and following the perimeter of the rotor.

An AC field, originating within the solenoid, travels to the end of the solenoid's core arms. The flux lines are parallel to the rotor shaft and set up an opposing field within the conductive rotor causing it to rotate. Poles within the rotor sync with the ends of the core arms.

3,753,018

**WALL-STABILIZED HIGH-PRESSURE MERCURY AND METAL IODIDE VAPOUR DISCHARGE LAMP WITH OUTER ENVELOPE**

Louis Benjamin Beijer; Antonius Jozephus Gerardus Cornelis Driessen, and Cornelis Adrianus Joannes Jacobs, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

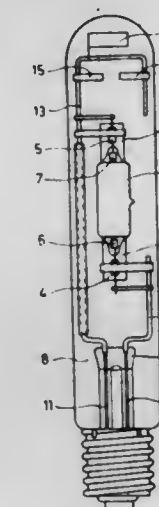
Filed July 8, 1971, Ser. No. 160,656

Claims priority, application Netherlands, July 31, 1970, 7011321

Int. Cl. H01j 61/26, 61/34

U.S. Cl. 313—25

4 Claims



A wall-stabilized high-pressure mercury vapour discharge lamp having an ignition voltage of less than 500 volts. The discharge vessel of the lamp contains in addition to mercury the iodides of one or more other metals and a mixture of neon and argon. The discharge vessels is surrounded by an outer envelope which is filled with a mixture of nitrogen and neon. Furthermore a selective hydrogen getter is present within the outer envelope.

3,753,019

**METAL HALIDE LAMP**

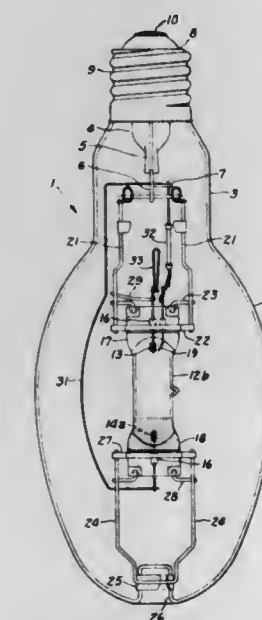
Wayne R. Hellman, Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 5,759, Jan. 26, 1970, abandoned. This application Jan. 31, 1972, Ser. No. 222,253

Int. Cl. H01j 61/22

U.S. Cl. 313—47

10 Claims



A high pressure metal halide discharge lamp containing mercury and metal halides including an alkali metal halide and wherein the segregation of alkali metal (sodium) is minimized.

3,753,020

**MULTI-ANODE X-RAY TUBE**

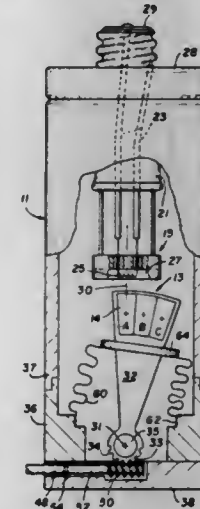
William P. Zingaro, Hartsdale, N.Y., assignor to Philips Electronics and Pharmaceutical Industries, New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,438

Int. Cl. H01j 35/10

U.S. Cl. 313—60

6 Claims



A plurality of anodes in an X-ray tube are each disposed at the circumferential portion of adjacent sectors having a common center which is concentric with a gear nonmovable fitted to the sectors. The gear is in mating arrangement with a worm screw for permitting selection of one of the anodes to be in line with a stream of electrons from the cathode.

3,753,021

**X-RAY TUBE ANODE TARGET**

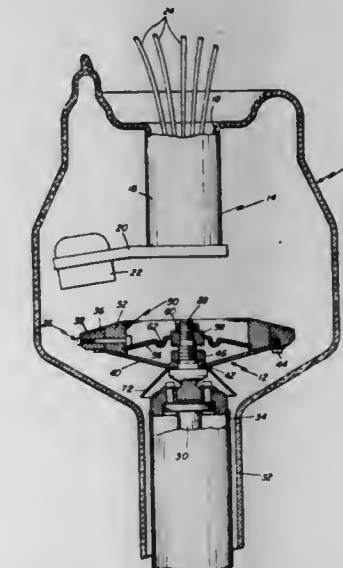
Martin Braun, Stamford, Conn., assignor to The Machlett Laboratories, Incorporated, Springdale, Conn.

Filed Apr. 3, 1972, Ser. No. 240,713

Int. Cl. H01j 35/10

U.S. Cl. 313—60

7 Claims



An X-ray tube having a rotating anode comprising a target which is provided with improved heat dissipation charac-



teristics by means of an X-ray generating member and an associated heat sink of high thermal storage capacity material which during operation of the tube more closely engages the X-ray generating member for providing efficient thermal conductivity therebetween.

3,753,022

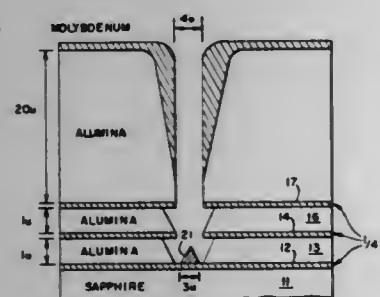
**MINIATURE, DIRECTED, ELECTRON-BEAM SOURCE**  
Donald L. Fraser, Jr., Laurel, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 26, 1971, Ser. No. 137,299

Int. Cl. H01j 29/74, 1/90

U.S. Cl. 313—78

7 Claims



A miniature, directed, electron-beam source, consisting of a conventional field emission source with an associated first anode plate, and several deposited layers of alumina and molybdenum for focusing and deflecting the electron beam, the deposited layers having a column etched through them to the field emission source.

3,753,023

**ELECTRON EMISSIVE DEVICE INCORPORATING A SECONDARY ELECTRON EMITTING MATERIAL OF ANTIMONY ACTIVATED WITH POTASSIUM AND CESIUM**

Alfred Hermann Sommer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

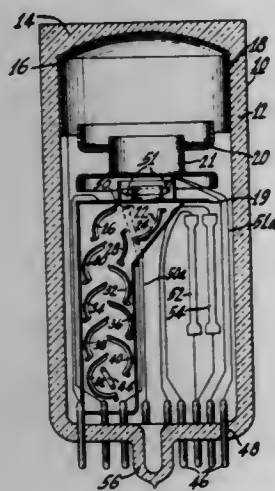
Continuation of Ser. No. 34,699, May 5, 1970, abandoned.

This application Dec. 3, 1971, Ser. No. 204,697

Int. Cl. H01j 43/00

U.S. Cl. 313—103

5 Claims



In an electron emissive device having electron multiplying dynodes, the dynode surfaces upon which the electrons impinge are provided with a layer of antimony activated with cesium and potassium.

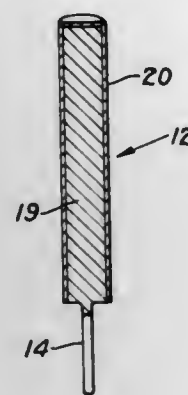
**3,753,024**  
**GLOW LAMP WITH NICKEL-PLATED ELECTRODES**  
Egon Vical, Richmond Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 20, 1972, Ser. No. 236,399

Int. Cl. H01j 61/06

U.S. Cl. 313—217

3 Claims



A glow discharge device is provided with nickel-plated steel electrodes. The nickel plating thickness and steel composition vary within certain limits.

3,753,025

**INDIRECTLY HEATED SUPPLY CATHODE**

Antonius Johannes Alberta Van Stratum; Simon Lambertur Loyen, and Johannes Gerardus Van Os, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

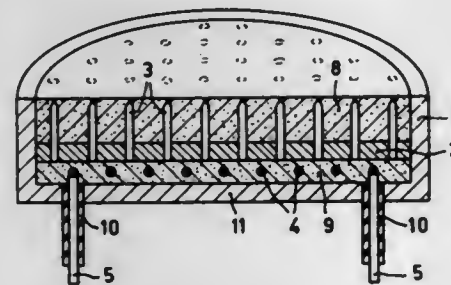
Filed Dec. 1, 1971, Ser. No. 203,705

Claims priority, application Netherlands, Dec. 10, 1970, 7018001

Int. Cl. H01j 1/88, 19/42, 1/26

U.S. Cl. 313—270

3 Claims



A supply cathode having a large diameter in which the emissive body is supported by a metal base plate having metal pins which are embedded in the sintered emissive body.

3,753,026

**QUARTZ LAMP SEAL**

Jan Goorissen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

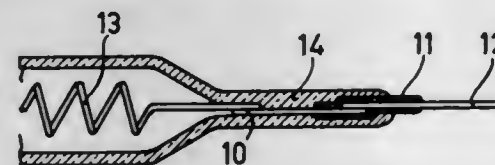
Filed Dec. 7, 1970, Ser. No. 95,436

Claims priority, application Netherlands, Dec. 13, 1969, 6918746

Int. Cl. H01j 5/38, 5/46, 5/52

U.S. Cl. 313—318

4 Claims



An electric lamp including an envelope of quartz glass in which at least part of the metal components sealed in the pinch is coated with SiO<sub>2</sub>.

3,753,027

**DISCHARGE LAMP ARRANGEMENT**

Dirk Kolkman, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

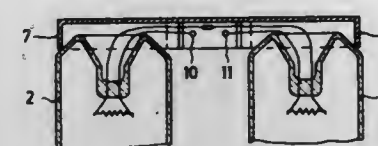
Filed Feb. 22, 1971, Ser. No. 117,508

Claims priority, application Netherlands, Mar. 20, 1970, 7003970

Int. Cl. H01j 5/50

U.S. Cl. 313—318

8 Claims



A lamp comprising a composition of two or more parallel arranged fluorescent lamps whose ends are rigidly connected together.

3,753,028

**DISCHARGE LAMP ELECTRODE**

Yves Renaud, Puteaux, France, assignor to Compagnie Des Lampes, Paris, France

Filed Apr. 27, 1971, Ser. No. 137,818

Claims priority, application France, May 22, 1970, 7018756; Apr. 7, 1971, 7112325

Int. Cl. H01j 1/14, 19/06

U.S. Cl. 313—346 R

18 Claims



This discharge lamp electrode comprises a cylindrical tungsten rod having fitted and welded to its upper end a coil of spiral-wound wire of the same metal and two small disks, i.e. a thorium emitting disk and a titanium-emitting disk disposed above the end of the cylindrical tungsten rod; the thorium emitting disks consists of tungsten powder sintered under a relatively high pressure to constitute a skeleton, and the titanium emitting disk consists of a tungsten skeleton in which titanium is incorporated; other coils of spiral-wound tungsten wire are disposed around said disks and locked in position by weld spots.

3,753,029

**CATHODE RAY TUBE INCLUDING VARIABLE DELAY MEANS**

Gerard Kantorowicz, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 15, 1971, Ser. No. 198,585

Claims priority, application France, Nov. 17, 1970, 70/41170

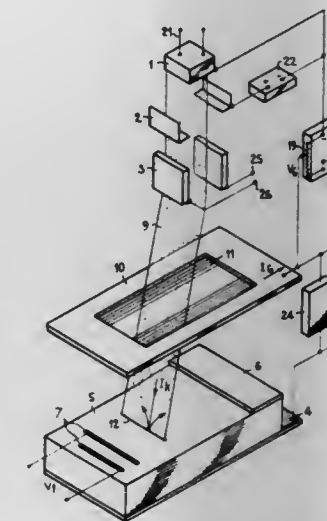
Int. Cl. H01j 23/24, 29/96, 29/41

U.S. Cl. 315—3

2 Claims

The delay line comprises a piezoelectric material wafer with an input transducer for converting the electrical wave to be delayed into a mechanical one propagating along the wafer

and a movable output pick-up means. This pick-up means comprises an electron beam striking the wafer and producing therefrom secondary electrons with a secondary emission coefficient greater than unity, and a two-wire line made of two plane and parallel electrodes between which the wafer is in-



serted, that one of the two electrodes through which the electron beam passes being a grid collecting the emitted secondary electrons. The electrical signal thus appearing between the two leads of the two-wire line is a reproduction of the high frequency input wave delayed by a time depending upon the position of the electron beam along the wafer.

3,753,030

**GAIN COMPENSATED TRAVELING WAVE TUBE**

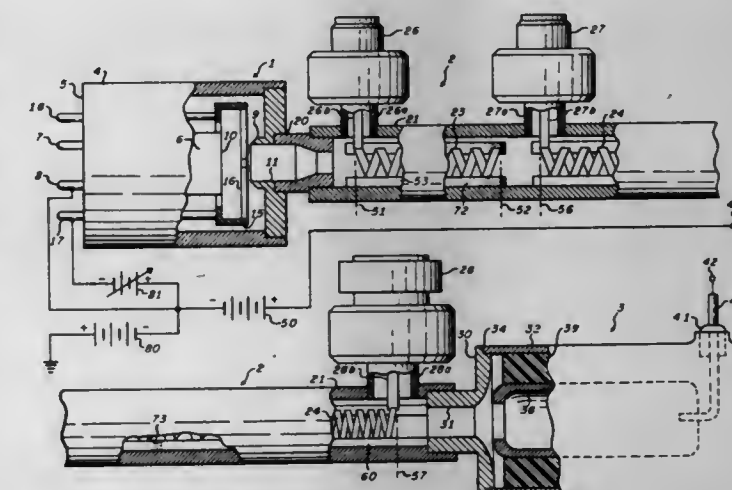
William K. McManus, Gainesville, Fla., assignor to Sperry Rand Corporation, New York, N.Y.

Filed June 1, 1972, Ser. No. 258,672

Int. Cl. H01j 25/34

U.S. Cl. 315—3.6

8 Claims



A dual-helix slow wave traveling wave tube has successive amplification sections associated with first and second input transmission lines, the first amplification section compensating for the high frequency power deficiencies of the second amplification section when the amplifier is operated over a wide range of input power levels.



3,753,031

**OUTPUT DEVICES FOR MICROWAVE TUBES SUCH AS KLYSTRONS, AND KLYSTRONS INCORPORATING SUCH OUTPUT DEVICES**

Paul Aucouturier, and Jean Hervier, both of Paris 8e, France, assignors to Thomson-CSF, Paris, France

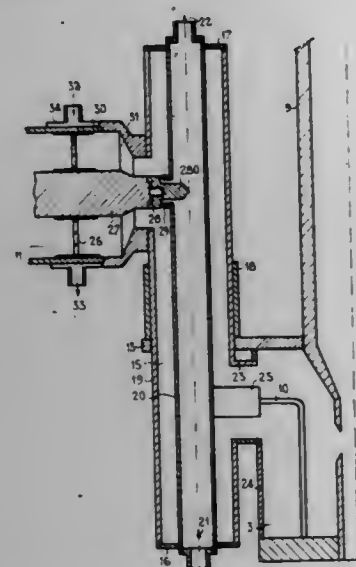
Filed Apr. 26, 1972, Ser. No. 247,745

Claims priority, application France, May 18, 1971, 7117977

Int. Cl. H01j 25/10

U.S. Cl. 315-5.39

6 Claims



Output devices for microwave tubes such as klystrons comprising an auxiliary coaxial line parallel to the direction of the electron beam in the tube, and connected between the output coupling loop which picks off the power from the tube, and a coaxial line section which constitutes the output line to which the load circuit is connected. The length of said auxiliary coaxial line determines the location of the output section. This device can in particular be used in klystrons and especially klystrons employing magnetic focussing.

3,753,032

**CRT WITH BUILT-IN DISPLAY REGISTRATION TEST**

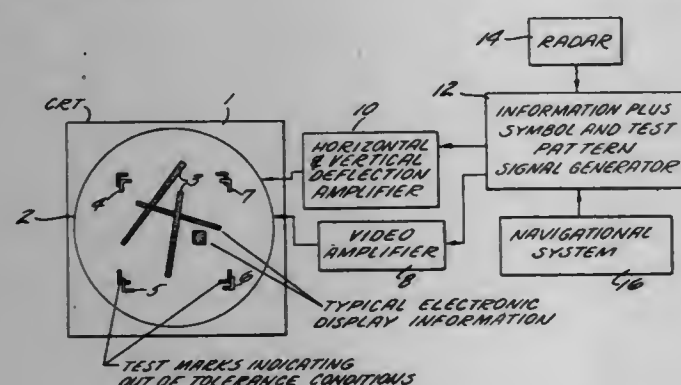
Herbert H. Naidich, Stamford, Conn., and John J. Boncer, Carlsbad, Calif., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 27, 1971, Ser. No. 166,527

Int. Cl. H01j 29/06

U.S. Cl. 315-18

4 Claims



The face of a cathode ray tube is treated so as to provide inactive areas thereon, either by having the face of the CRT opaqued before the deposition of phosphor thereon, or by having the phosphor selectively removed, such as by etching or scribing, in any desired configuration. The inactive areas are in the form of simple check symbols which may be continuously generated, said symbols being invisible so long as complete registration occurs, and become visible so as to indicate fault, whenever the registration or symbol generation apparatus driving the CRT fails to operate within tolerance.

Flashing symbols may be utilized to direct attention to the loss of registration, and a purposeful misregistration may be introduced in the system to test for the generation of the normally invisible check symbols. The inactive areas may be sufficiently fine so as not to detract from other displayed information during normal system operation.

3,753,033

**HIGH-VOLTAGE STABILIZER**

Yoshinori Kitamura, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

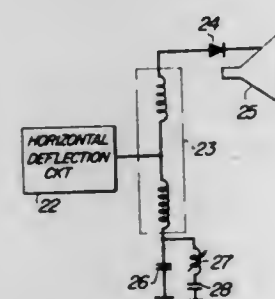
Filed Nov. 23, 1970, Ser. No. 91,710

Claims priority, application Japan, Dec. 2, 1969, 44/97410; Dec. 6, 1969, 44/98145

Int. Cl. H01j 29/70

U.S. Cl. 315-29

8 Claims



A horizontal deflection circuit is connected with a series resonance circuit consisting of a boosting transformer and a capacitor, said series resonance circuit being appropriately resonated to generate resonance pulses other than pulses which are generated upon cutting off a switching element inserted in said horizontal deflection circuit, thereby to stabilize a high voltage.

3,753,034

**ELECTRON BEAM APPARATUS**

Denis Frank Spicer, Putnoe, Bedford, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

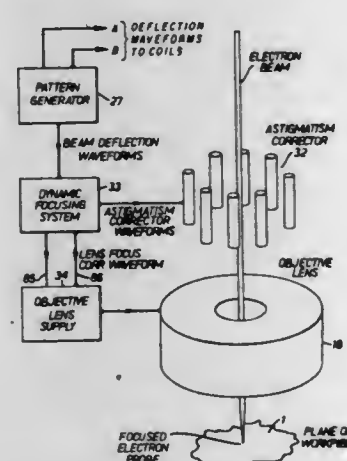
Filed Sept. 30, 1970, Ser. No. 76,875

Claims priority, application Great Britain, Oct. 10, 1969, 49919/69

Int. Cl. H01j 29/56

U.S. Cl. 315-31 R

19 Claims



An electron beam apparatus is provided, including means for producing an electron beam in combination with an electron lens for focussing the beam and means for deflecting the beam in two directions. A signal derived from the deflecting signals is applied to the lens for correcting for the curvature of the surface described by the focus of the beam during deflection, and is also applied to means for correcting astigmatism of the electron lens.

3,753,035

**ELECTRON-BEAM TUBE AS SYMBOL-PRINTING TUBE**

Werner Veith, Munich 80, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

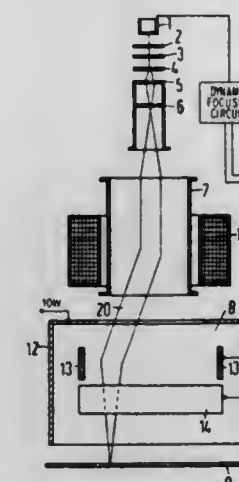
Filed Sept. 16, 1970, Ser. No. 72,594

Claims priority, application Germany, Sept. 23, 1969, P 19 48 153.9

Int. Cl. H01j 29/56

U.S. Cl. 315-31 R

4 Claims



An electron tube for the continuous translation of electrical data into characters of scanning pattern points to be reproduced on a fluorescent screen, preferably an ultraviolet screen, employs a raster structure of insulated metal strips which may be scanned to determine the data passing the raster structure in the form of electron beams. Cylindrical lenses are employed in the raster structure to overcome distortions at the edges of the picture.

3,753,036

**INTEGRATED FLUORESCENT LAMP UNIT**

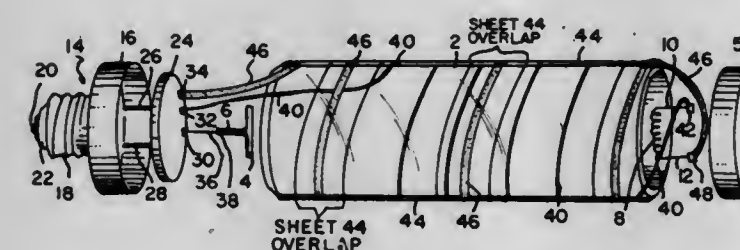
William J. Roche, Danver, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed May 3, 1971, Ser. No. 139,551

Int. Cl. H01j 17/30

U.S. Cl. 315-60

7 Claims



A fluorescent lamp unit having integral starting and ballast circuitry. Attached to one end of the lamp is a screw-in base containing a solid state starting circuit module. Ballasting is provided by a resistance wire series connected between the starting circuit and the cathode electrode of the lamp and spiralled about the lamp tube in a manner providing a thermal gradient. A strip of clear plastic insulating material is helically wrapped about the wire wound lamp, and cathode preheating can be provided through a strip of conductive tape connected between the starting circuit and one terminal of the cathode and helically wrapped about the lamp within overlaps of the strip of plastic insulating material.

3,753,037

**DISCHARGE-LAMP OPERATING DEVICE USING THYRISTOR OSCILLATING CIRCUIT**

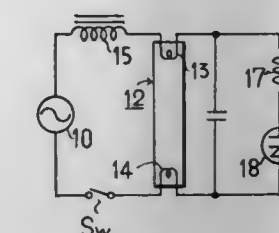
Isao Kaneda, and Kiyokazu Takeuchi, both of Osaka, Japan, assignors to New Nippon Electric Company Ltd., Kita-ku, Osaka, Japan

Continuation-in-part of Ser. No. 14,325, Feb. 26, 1970, Pat. No. 3,665,243. This application Nov. 29, 1971, Ser. No. 202,766

Int. Cl. H05b 37/00, 41/23

U.S. Cl. 315-99

15 Claims



A discharge-lamp operating device is provided which comprises a power source connected in series with a discharge lamp and arc discharge stabilizing means of the linear inductor type, and a starting device including a capacitor connected in parallel with the discharge lamp and a series circuit including a voltage responsive switching element or a symmetrical switch element such as a bidirectional diode thyristor and a saturable non-linear inductor connected in parallel with the discharge lamp. Each filament of the discharge lamp is preferably interposed between the capacitor and the series circuit for improved preheating of the filaments. In addition, a bias coil which is magnetically coupled with the saturable non-linear inductor can be connected in series with the capacitor to control oscillating frequency and voltage of the starting device. Further, there can be provided a second bias coil in series with the linear inductor so as to obtain desired effects according to the connections of the first and/or second bias coils which are magnetically coupled with the saturable nonlinear inductor.

3,753,038

**METHOD AND APPARATUS FOR OPERATING ROW-COLUMN MATRIX PANELS AND DEVICES**

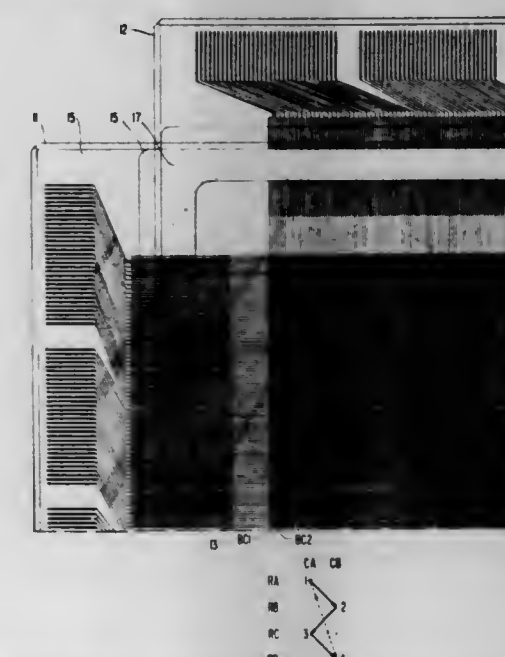
David E. Liddle, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 11, 1970, Ser. No. 97,307

Int. Cl. H05b 37/00

U.S. Cl. 315-169 TV

15 Claims



There is disclosed a method and apparatus for reducing or eliminating differential line aging on gaseous discharge dis-



play/memory panels. For a given size  $N \times M$  grid or point pattern the use or incidence rate of each point is determined by applying normal patterns of characters thereto. The row-column conductor arrays forming matrix cross-points locating a discrete discharge site are shifted so as to assure that the positions in the dot matrix are more evenly utilized.

3,753,039

### CONTROL CIRCUIT FOR VARYING THE INTENSITY OF FLASH LAMPS

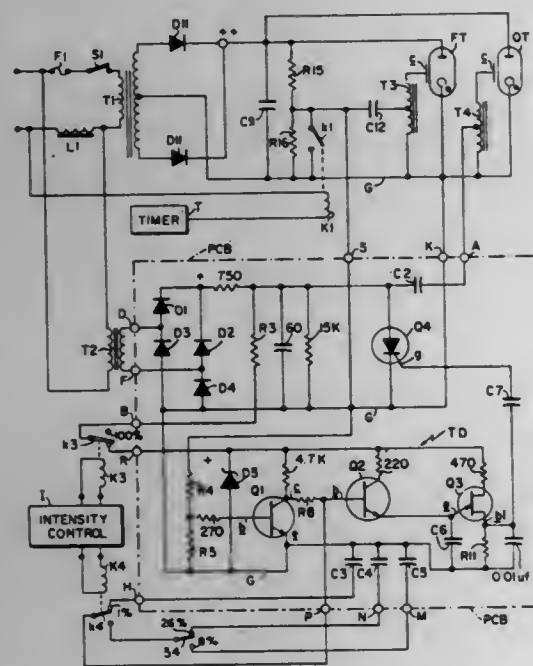
Robert P. Bonazoli, Hamilton, and Ellison H. Kirkhuff, Needham, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Sept. 8, 1971, Ser. No. 178,628

Int. Cl. H05b 37/00

U.S. Cl. 315—227

17 Claims



In an airport runway flashing light beacon system the intensity of emission of individual xenon flash lamps is varied by shunting capacitive discharge from the flash lamp to a lower impedance, non-emissive discharge tube at the end of selected intervals after initiation of the flash discharge. The intensity of flash lamp emission is dependent on the interval of its discharge. This interval is varied by a one cycle multivibrator time delay circuit responsive to the initiation of flash lamp discharge to produce a trigger pulse for the discharge tube after an interval selected by one of several switchable resistors or capacitors in the time delay circuit.

3,753,040

### FLUORESCENT LAMP STROBING CIRCUIT

Robert Quenelle, Tucson, Ariz., assignor to IMS Corporation, Albuquerque, N. Mex.

Filed Dec. 10, 1971, Ser. No. 206,606

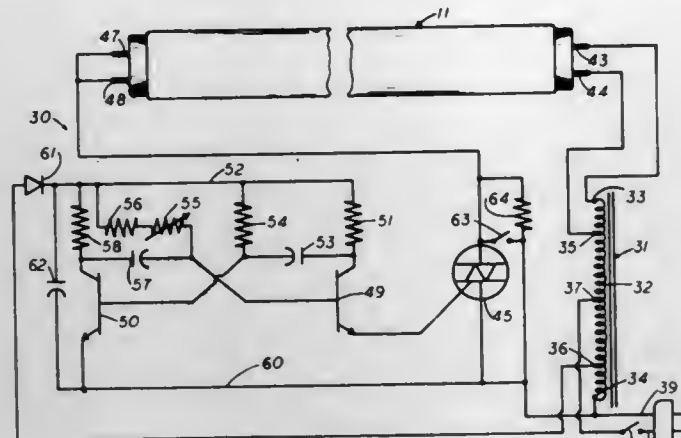
Int. Cl. H05b 41/34

U.S. Cl. 315—241 S

9 Claims

Strobing circuit for a fluorescent lamp, preferably an ultraviolet lamp, wherein a Triac connects the lamp to a ballast winding, the Triac being controlled by a two transistor mul-

tivator supplied with DC voltage through a diode connected to a tap of the ballast winding. The resistor is con-



nected in parallel with the Triac to conduct a small amount of current when the Triac is non-conductive and to keep the lamp ionized.

3,753,041

### DIGITALLY ADDRESSABLE GAS DISCHARGE DISPLAY APPARATUS

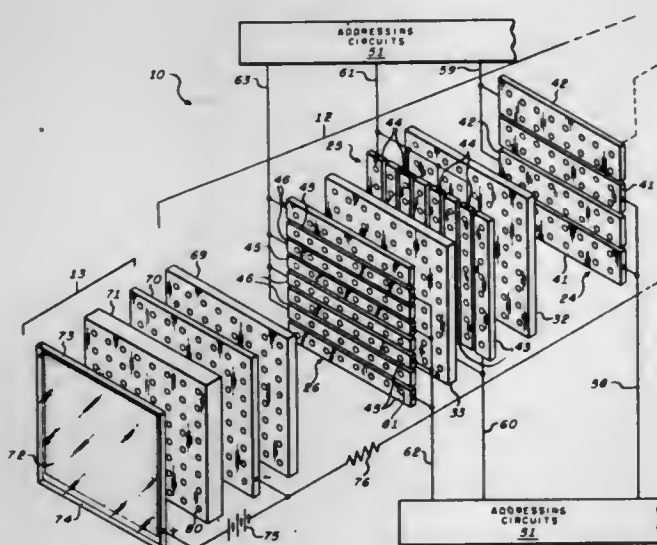
Claude D. Lustig, Lexington, and Albert W. Baird, III, Burlington, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Nov. 18, 1970, Ser. No. 90,538

Int. Cl. H05b 37/00

U.S. Cl. 315—169 TV

17 Claims



A digitally addressable gas discharge display including a reservoir for providing ionizable gas and a plurality of gas discharge display cells. The device includes a plurality of addressing electrodes each having a plurality of apertures therethrough. The addressing electrodes are arranged in stacked configuration so that the apertures are aligned to form gas conductive channels extending from the reservoir to the display cells, respectively. The addressing electrodes are adapted for selective connection to sources of electrical potential whereby gas discharge columns are extended from the reservoir through selected channels thereby igniting gas discharges in selected display cells.

3,753,042

### APPARATUS FOR THE CURRENT LIMITING INTERRUPTION OF CURRENTS AT HIGH VOLTAGES

Dieter Kind, Pockelstrasse 4; Hagen Hartel, both of Braunschweig; Jurgen Salge, Salzgitter-Osterlinde, and Rudolf Brilka, Salzgitter-Lebenstedt, all of Germany, assignors to said Kind, by said Hartel, Salge, and Brilka

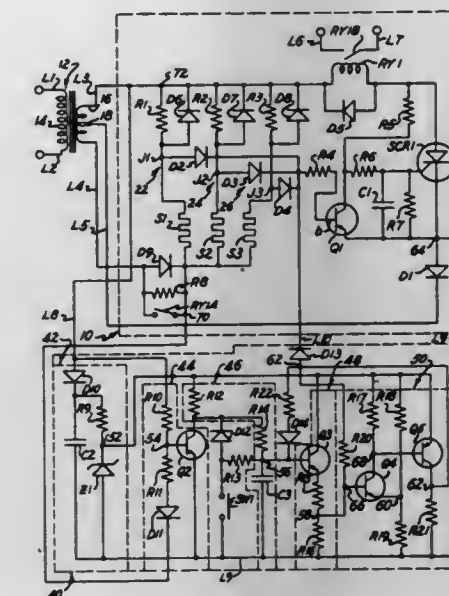
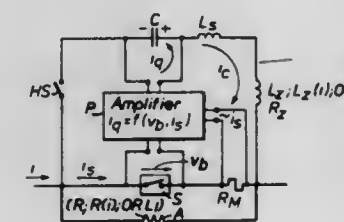
Filed Aug. 4, 1971, Ser. No. 168,967

Claims priority, application Germany, Aug. 4, 1970, P 20 38 624.7

Int. Cl. H02h 7/22

U.S. Cl. 317—11 A

10 Claims



dent upon the temperature of the winding of the motor or other desired parameters to be monitored.

An improved circuit for the current limiting interruption of currents in a power main at high voltages of the type wherein an energy absorbing circuit and a capacitor are each connected across the interrupter or commutation switch, and the capacitor is precharged so that upon opening of the switch the discharge current of the capacitor will oppose the current flowing through the switch and cause it to flow through the energy absorbing circuit. Circuit means are provided which causes charging of the capacitor only during the opening of the interrupter switch to a value which is dependent on the arc voltage at the interrupter switch and/or the current in the main so that sufficient time is available to the switch during the commutation phase to increase its arc resistance to an extent sufficient to commute the main current into the parallelly connected capacitor and accordingly into the energy absorber and prevent the main current from commutating back into the switch.

3,753,043

### CONDITION RESPONSIVE CONTROL APPARATUS

Leo A. Plouffe, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

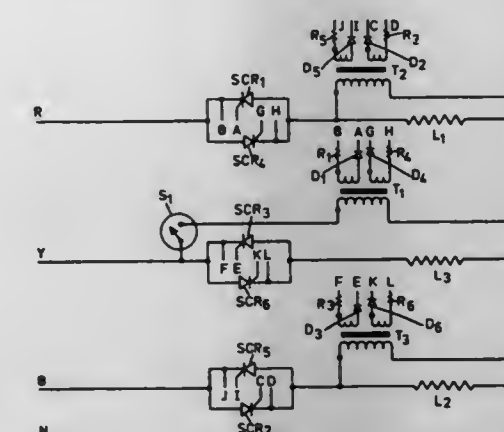
Filed Apr. 12, 1972, Ser. No. 243,327

Int. Cl. H02h 7/08

U.S. Cl. 317—13 A

19 Claims

A circuit is disclosed for determining, after a predetermined period of time has elapsed following the energization of a load, such as an air-conditioning compressor, whether a certain condition exists, such as whether operating oil pressure level has been reached in the compressor, and for shutting down and locking out the air-conditioning system if the condition does not exist. The circuit is reset either by removing power therefrom or by actuating a push button switch. In one embodiment a pressure switch is employed to determine the oil pressure level while in another embodiment a temperature dependent resistor is used to determine the presence of the oil.



3,753,044  
PHASE FIRING CIRCUITS  
Collin John Hawker, Broadmayne, near Dorchester; Wilfred Roy Curle, Martock, and Harold David Read, East Coker, all of England, assignors to Westland Aircraft Limited, Yeovil, Somerset, England  
Filed June 19, 1972, Ser. No. 263,952  
Claims priority, application Great Britain, July 5, 1971, 31,479/71

Int. Cl. H02h 7/22

U.S. Cl. 317—33 SC

15 Claims

A control circuit for switching single or polyphase electrical supplies, wherein actuation of a single pole switch energises transformer means which control thyristor means adapted to supply electrical load means from a source of alternating current, the electrical load means being electrically connected to said alternating current as the phase voltage is at or near zero volts, in polyphase systems the transformer means controlling thyristor in preceding or succeeding phases, and each phase having a transformer means and thyristor means.



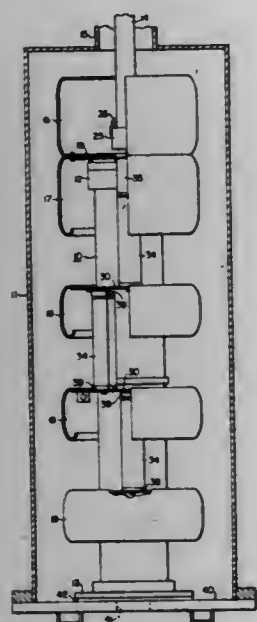
3,753,045

**SHIELDED METAL ENCLOSED LIGHTNING ARRESTER**  
Norman K. Osmundsen; John E. Harder, both of Bloomington, Ind., and Tohei Nitta, Hyogo, Japan, assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 11, 1972, Ser. No. 296,687

Int. Cl. H02h 9/06

U.S. Cl. 317-62



A high voltage lightning arrester enclosed in a grounded metal enclosure containing a pressurized insulating gas. The arrester is provided with capacitance grading means to control the voltage distribution across the arrester.

3,753,046

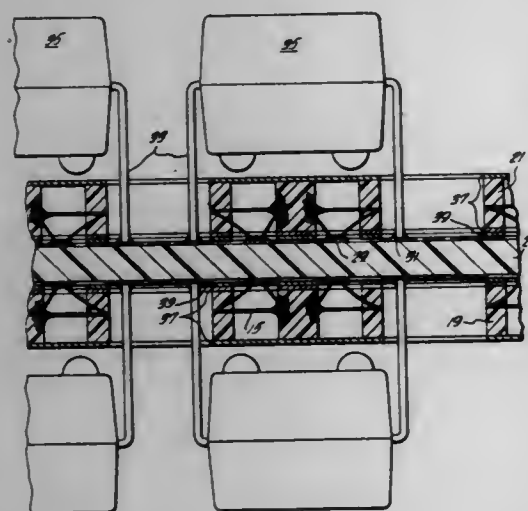
**MULTI-LAYER PRINTED CIRCUIT BOARD**  
Leroy D. Towell, Dallas, Tex., assignor to University Computing Company, Dallas, Tex.

Filed Nov. 3, 1971, Ser. No. 195,434

Int. Cl. H05k 1/04

U.S. Cl. 317-101 CM

18 Claims



A method and apparatus is disclosed for routing and interconnecting insulated wire to selected areas on a printed circuit board. The apparatus comprises a printed circuit board having land pads located thereon. A wire mat, comprising a quantity of routed wire encapsulated within a layer of photopolymer material, is adapted to extend over the circuit board. The wire mat also includes a plurality of windows formed in areas extending over the land pads in order to permit the wire exposed in those areas to be reflow soldered to the registering land pads. The method of forming the wire mat and the multi-layer printed circuit board comprises the steps of prerouting the insulated wire on a jig board and encapsulating the wire with a

quantity of light sensitive photopolymer material. After the windows are formed by washing away masked portions of the photopolymer material, the soldering connections are all made simultaneously.

3,753,047

**TAMPER-PROOF ELECTRIC POWER DISTRIBUTION AND METER ENCLOSURE SYSTEM**

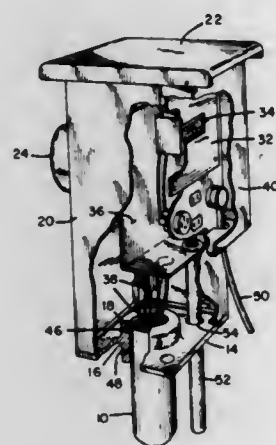
Albert J. Shallbetter, 15 Kaiser Ave. N., Minneapolis, Minn.

Filed Aug. 20, 1971, Ser. No. 173,365

Int. Cl. H02b 9/00

U.S. Cl. 317-107

3 Claims



An electric power meter and distribution box suitable for use in mobile home parks and similar outdoor applications in which underground wiring is brought up through a vertical hollow stand pipe to which is affixed a base member by means of first and second pairs of set screws. The base member is adapted to support an enclosure in which is located one or more duplex receptacles, a set of circuit breakers, an electrical watt-hour meter, as well as any other similar type of power receptacles. The first pair of set screws is located external to the enclosure whereas the second pair of set screws is located within the enclosure. A hinged cover member, which may be locked, is provided to prevent unauthorized access or tampering with the electrical components.

3,753,048

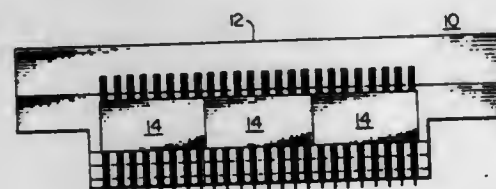
**MULTI-CHANNEL ELECTRICAL CONNECTOR**  
George Tuck, Leucadia, Everett R. Price, Escondido, and John E. Oakley, Encinitas, all of Calif., assignors to Teledyne, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 147,481, May 27, 1971, abandoned. This application Nov. 22, 1971, Ser. No. 201,062

Int. Cl. H02b 1/02

U.S. Cl. 317-101 DH

8 Claims



An electrical connector is disclosed which includes an insulative body having a first surface, a second surface and a third surface whose plane intersects the plane of the first and second surfaces. An interconnecting module is provided which includes an insulative support member and a plurality of resilient electrically conductive contact members. Each of these contact members includes a first end portion, a central portion and a second end portion. The central portion of each of the contact members is embedded in the support member such that each of the contact members is supported in spaced parallel relation relative to the other contact members. The support member is secured to the third surface of the insula-

tive body so that the first end portion of each of the contact members is positioned in one of a first plurality of grooves in the first surface and extends resiliently through the first surface and the second end portion of each of the contact members is positioned in a corresponding one of a second surface and extends resiliently through the second surface.

3,753,049

**MULTIPLE CONNECTABLE POWER OUTLET BOX WITH CONDUIT SEPARATING Baffles**

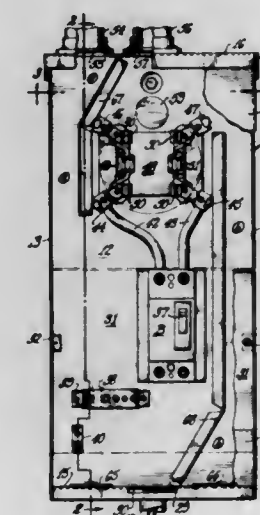
Merle A. Plummer, North Hollywood, Calif., assignor to Myers Electric Products, Inc., Los Angeles, Calif.

Filed Apr. 10, 1972, Ser. No. 231,256

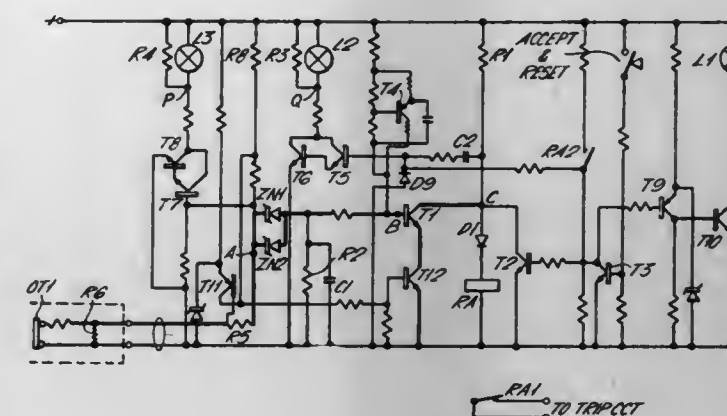
Int. Cl. H02b

U.S. Cl. 317-107

5 Claims



An electric power outlet box is used to connect either an underground or overhead supply line led into the box, and by either underground or overhead outlet conduits from the box it services the establishment of an adjacent power consumer such as a unit in a mobile home park. Top and bottom walls of the upstanding, rectangular box are each formed with a pair of actual or potential apertures, members of each pair within the box being separated by a generally vertical channel-forming baffle, each baffle spaced laterally from the adjacent side-wall of the box and inwardly terminating at a central area adjacent terminals provided for connection of the inlet and outlet lines. A circuit breaker and jaws for mounting an electric meter are part of the circuit thus formed. Incoming and outgoing conduits placed along opposite sides of a baffle are thus physically isolated in event of sparking or flame-out in the box, and thus need not be carried through opposite walls to meet safety requirements. Such box may be mounted on the side of a hollow post, through which post an underground supply conduit can be brought into the box through a knock-out aperture in the rear face in place of use of one of the other four apertures. As many of the latter as are not used to carry conduits at a particular installation, remain sealed.



stops oscillating in a non-conductive condition to warn of a cable fault, and in a conductive condition to repeat the input signal.

3,753,051

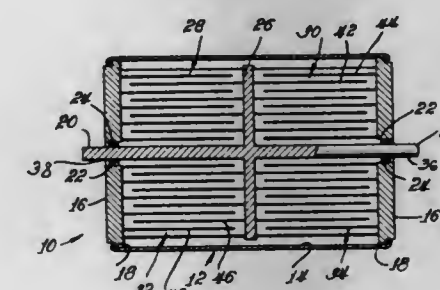
**ELECTROLYTIC CAPACITOR HAVING LOW VALUE INDUCTANCE AND EQUIVALENT SERIES RESISTANCE**  
John Robert Willy, Easley, S.C., assignor to Sangamo Electric Company, Springfield, Ill.

Filed May 1, 1972, Ser. No. 249,394

Int. Cl. H01g 9/00

U.S. Cl. 317-230

10 Claims



An electrolytic capacitor assembled in an elongated container in which a conductive arbor is axially disposed. The ends of the conductive arbor are electrically insulated from the end covers of the container and a conductive plate is secured crosswise to the conductive arbor to divide its interior into two chambers. Capacitor sections are wound around the arbor on either side of the conductive plate with the anode foil making parallel electrical contacts with the conductive plate and the cathode foil making parallel electrical contacts with the end covers.

3,753,050

**SEQUENTIAL SWITCHING DEVICE**

Dennis Dawes Bowen, 8 Rowan Tree Dr., Sale, England  
Filed Jan. 26, 1972, Ser. No. 221,011

Claims priority, application Great Britain, Jan. 27, 1971, 3,335/71; May 25, 1971, 16,787/71

Int. Cl. H01h 47/18, 47/22

U.S. Cl. 317-141 S

8 Claims

A sequential switching device for repeating an input signal such as one representing the opening of a circuit breaker at



3,753,052

**RECTIFIER BRIDGE ASSEMBLY COMPRISING STACK OF HIGH-CURRENT PN SEMICONDUCTOR WAFERS IN A SEALED HOUSING WHOSE END CAPS COMPRISE AC TERMINALS OF THE BRIDGE**

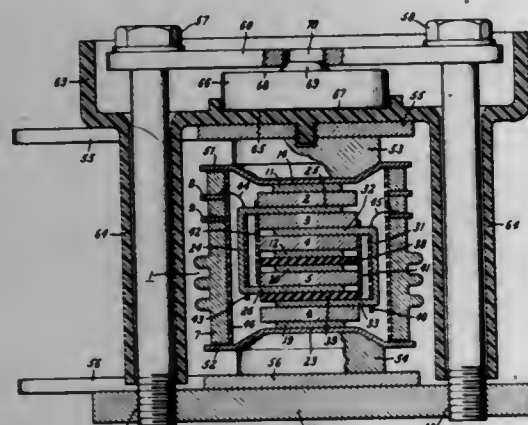
Daniel B. Rosser, Springfield, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Mar. 1, 1972, Ser. No. 230,586

Int. Cl. H011 3/00, 5/00

U.S. Cl. 317-234 R

7 Claims



An integrally housed bridge circuit including a plurality of high power semiconductor rectifiers. The rectifiers are disposed within a hermetically sealed insulative housing and are electrically interconnected therein to form a bridge circuit having a pair of A-C terminals and a pair of D-C terminals.

3,753,053

**SEMICONDUCTOR ASSEMBLY**

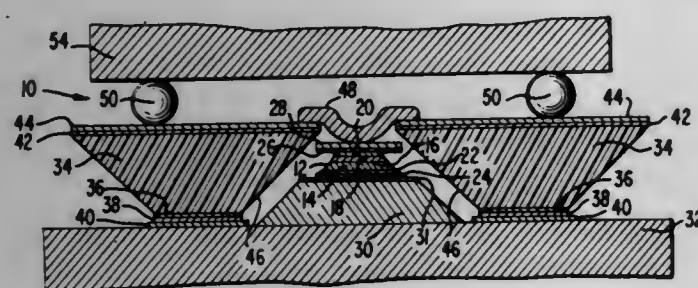
George Allan Swartz, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,291

Int. Cl. H011 3/00; H01k 5/00

U.S. Cl. 317-234 R

16 Claims



A semiconductor assembly for use with a high frequency semiconductor device is presented which uses at least one stand-off having a conductive surface which overhangs the semiconductor device and which has pressure-absorbing contacts mounted thereon thereby protecting the semiconductor from direct pressure while providing for electrical contact to the semiconductor and allowing for very short leads from the stand-off to the semiconductor device.

3,753,054

**HERMETICALLY SEALED ELECTRONIC PACKAGE**

Clair Allen Johnson, Sherman, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 67, Jan. 2, 1970, Pat. No. 3,657,805. This application Oct. 13, 1971, Ser. No. 188,445

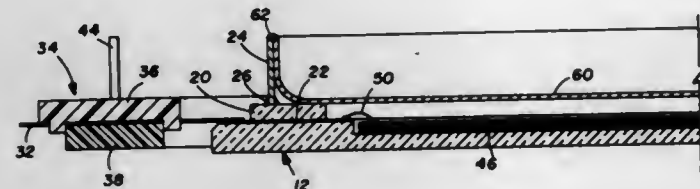
Int. Cl. H011 3/00, 5/00

U.S. Cl. 317-234 R

10 Claims

In a method of housing semiconductors, a sealing collar formed from a nickel-cobalt-iron alloy is mounted on a ceramic boat. An LSI slice is then mounted on the boat within the

collar. Finally, a lid formed from the material of the collar is welded to the distal end of the collar. In a second embodiment of the method, the boat is formed from a ceramic ring, a



nickel-cobalt-iron alloy plate and a molybdenum plate. In a third embodiment, an LSI slice and at least one conventional integrated circuit are mounted on the boat within the collar.

3,753,055

**FIELD EFFECT SEMICONDUCTOR DEVICE**

Akio Yamashita, Ikeda-shi, and Takashi Fujita, Toyonaka-shi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

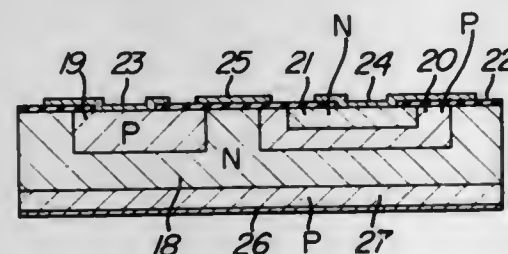
Filed Dec. 28, 1971, Ser. No. 213,128

Claims priority, application Japan, Dec. 28, 1970, 45/124925

Int. Cl. H011 1/10

U.S. Cl. 317-235 R

2 Claims



A field effect semiconductor switching device of high breakdown voltage and large current capacity having negative resistance characteristics which are controllable by an electric field.

3,753,056

**MICROWAVE SEMICONDUCTOR DEVICE**

Harry F. Cooke, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

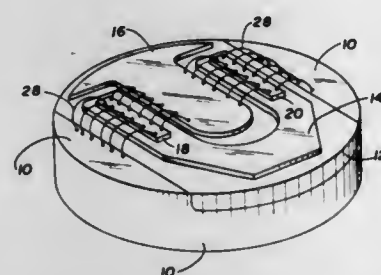
Continuation of Ser. No. 787,928, Dec. 30, 1968, abandoned.

This application Mar. 22, 1971, Ser. No. 126,885

Int. Cl. H011 5/00

U.S. Cl. 317-234 R

4 Claims



Semiconductor devices, such as transistors or diodes, which dissipate appreciable heat, may be mounted on an insert having high thermal conductivity in a discrete component configuration. This insert of high thermal conductivity, such as beryllia, is embedded in a disc of copper or other material having a high thermal conductivity and good electrical conductivity. The disc, with the insert embedded therein, may then be mounted in a microwave circuit formed on a dielectric substrate. Strip line jumpers are bonded to the microwave circuit

on the dielectric substrate and to the active elements of the semiconductor device formed on the insert. The disc is embedded in the substrate in a manner to be in electrical contact with a ground plane thereon so that the heat generated by the semiconductor device will be dissipated by the ground plane.

3,753,057

**FRIT CAPACITOR**

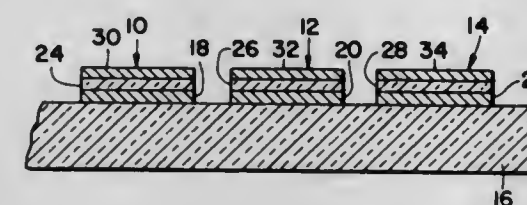
John W. Asher, Elmira, and Andrew Herczog, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 729,800, May 16, 1968, Pat. No. 3,699,620. This application Sept. 14, 1970, Ser. No. 71,750

Int. Cl. H01g 3/06

U.S. Cl. 317-258

7 Claims



A frit capacitor of either the discrete or integrated microcircuit variety having a ferroelectric glass-ceramic dielectric whose dielectric constant is of intermediate value between about 20 and 400. The desired value of dielectric constant is accurately obtained in a readily reproducible manner by mixing a batch containing appropriate quantities of stable non-crystallizable glass partials and glass particles capable of forming a ferroelectric crystal phase. The desired dielectric constant is obtained by subjecting the batch to heat treatment. By controlling the weight ratio of the two glass components during the batch preparation, individual capacitor dielectrics having different dielectric constants can be provided utilizing the same firing schedule for each.

3,753,058

**OPERATION OF MAGNETOSTRICTIVE APPARATUS**

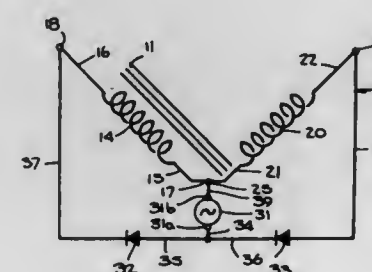
Alden P. Edson, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 48,377, June 22, 1970, Pat. No. 3,634,742. This application Dec. 16, 1971, Ser. No. 208,822

Int. Cl. H01u 9/00

U.S. Cl. 318-118

11 Claims



Electromechanical transducer core containing magnetostriuctive material is energized by two mutually transverse electromagnetic fields controlled to oscillate the direction of mag-

3,753,059

**SIMPLIFIED BATTERY POWERED REGENERATIVE DRIVE SYSTEM**

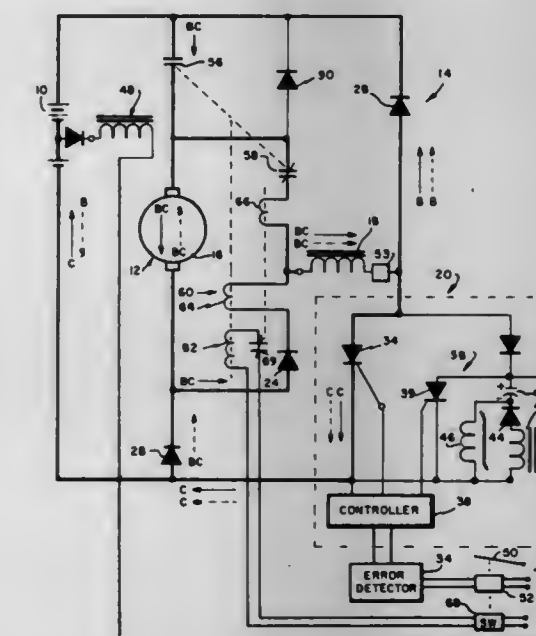
Baruch Berman, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Apr. 3, 1972, Ser. No. 240,389

Int. Cl. H02p 7/28

U.S. Cl. 318-139

6 Claims



A battery powered regenerative drive system having a time ratio controlled regenerative chopper circuit for regulating electrical power flow between the drive system battery and traction motor in both the drive and regenerative modes of the drive system, and a novel and simplified mode switching arrangement utilizing only two switches, which may be either unidirectional solid state switches or contacts of a single pole double throw relay, for switching the drive system between its drive and regenerative modes.

3,753,060

**INDUCTION MOTOR SYSTEM FOR TRACTION**

Jack E. Greenwell, Reno, Nev., assignor to Lear Motors Corporation, Reno, Nev.

Continuation of Ser. No. 144,897, May 19, 1971. This application June 5, 1972, Ser. No. 259,771

Int. Cl. H02p 5/40

U.S. Cl. 318-227

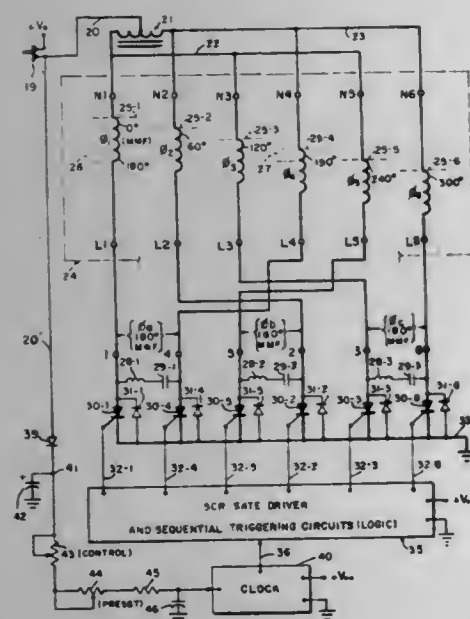
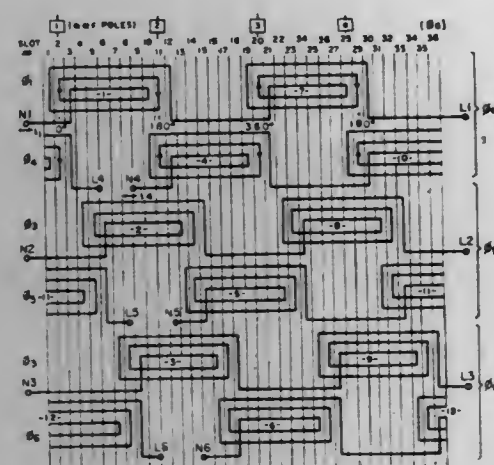
10 Claims

An electric induction motor/control system that provides the desirable high starting torque and torque-speed characteristic of series type direct current motors. The stator of the induction motor is polyphase with two specially interrelated winding sets per phase. The motor windings are supplied with unidirectional current pulses from silicon controlled rectifiers that are programmed to provide the traction mode of operation for the induction motor. The unique relation and interaction between the motor windings hereof and the associated electronic circuitry results in high power factor, good efficiency, and self-clearing SCR commutation action. The preferred motors use a squirrel cage rotor with no commutator, brushes, or slip rings. The complementary stator winding arrangements are not voltage limited, and thereby permit the construction of large power motor systems. Practical motor ratings are from fractional to over 500 horsepower, at speeds ranging from 600



to 40,000 rpm, and higher. The electronic control sections for even the high horsepower motors are operated at low voltage and with few watts. Control circuitry is provided that can

the circuit has means to count a selected number of revolutions of the drive shaft and to then cause a DC voltage to be



operate the motor system with traction output characteristics similar to that of series motors; and with direct speed reversal in such mode. The motor system requires little maintenance, and may be hermetically sealed.

3,753,061

## CONTROL CIRCUIT FOR AC MOTOR

William A. Owens, Rossville, Ga., assignor to Electric Systems, Inc., Chattanooga, Tenn.

Filed Jan. 3, 1972, Ser. No. 215,057

Int. Cl. H02p 3/20

U.S. Cl. 318-212

3 Claims

A control circuit is employed to stop a tufting machine with its needles up and clear of the carpet. The AC motors, which drive the needle bar through a drive shaft connected to the motors, are disconnected from the power source when the drive shaft of the tufting machine is at a preset or selected position. After this position of the drive shaft is determined,

An electric induction motor/control system that provides the desirable high starting torque and wide speed characteristics of direct current motors. The stator of the induction motor has two specially interrelated winding sets per phase. The motor windings are supplied with unidirectional current pulses from silicon controlled rectifiers that are programmed

applied to the motors to dynamically brake the motor. As a result, the needles are positioned up and clear of the carpet when the motors are stopped.

3,753,062  
POLYPHASE MOTOR SYSTEM WITH DC MOTOR CHARACTERISTICS

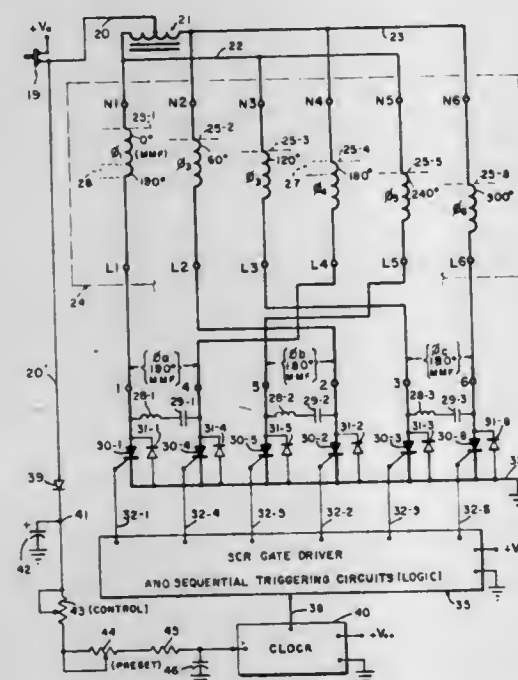
Jack E. Greenwell, Reno, Nev., assignor to Lear Motors Corporation, Reno, Nev.

Filed May 19, 1971, Ser. No. 144,897

Int. Cl. H02p 7/36; H02k 17/02

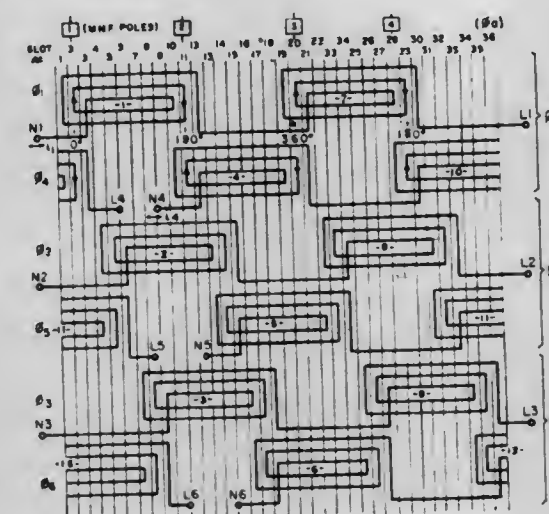
U.S. Cl. 318-225 R

13 Claims



to provide advantageous modes of operation for the motor. The unique relation and interaction between the motor windings hereof and the associated electronic circuitry results in high power factor, good efficiency, and self-clearing SCR commutation action. The preferred motors use a squirrel cage rotor with no commutator, brushes, or slip rings. The complementary stator winding arrangements are not voltage limited, and thereby permit the construction of large power motor systems. Practical motor ratings are from fractional to over

and means responsive to the first signal for generating a stabilizing signal phase shifted with respect to the first signal. The stabilizing signal is supplied to and utilized by the control apparatus for the power conversion means as a control signal to adjust the power output, preferably the output voltage, of the power conversion means. The stabilizing signal generator means includes a phase shifting network for phase shifting the stabilizing signal relative to the first signal by an amount sufficient to cause oscillations in the output voltage to occur substantially in-phase with oscillations in the motor speed.



3,753,064  
SYSTEM FOR CONTROLLING THE TORQUE OUTPUT OF AN INDUCTION MOTOR

Paul D. Agarwal; Richard W. Johnston, both of Troy; John G. Neuman, Grosse Pointe; Mark E. Preiser, Sterling Heights; Norman L. Traub, Troy, and Thaddeus Schroeder, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 21, 1972, Ser. No. 282,132

Int. Cl. H02p 5/40

U.S. Cl. 318-227

5 Claims

500 horsepower, at speeds ranging from 600 to 40,000 rpm, and higher. The electronic control sections for even the high horsepower motors are operated at low voltage and with few watts. Control circuitry is provided that can operate the motor systems: (a) at constant output torque over a wide speed range; (b) at constant horsepower over a selected speed range; (c) with traction output characteristics similar to that of series motors; (d) at constant speed; (e) and with direct speed reversal in any of these modes. These motor systems require little maintenance, and may be hermetically sealed.

3,753,063  
STABILIZING MEANS FOR AN A-C MOTOR DRIVE

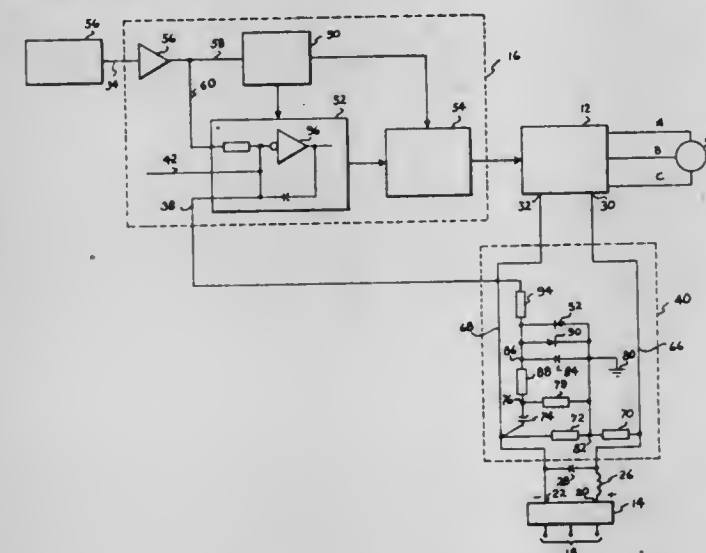
Carlton Eugene Graf, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed June 13, 1972, Ser. No. 262,270

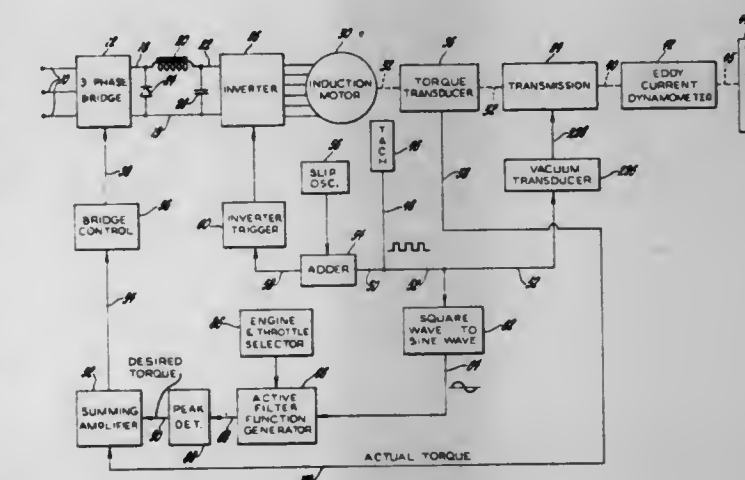
Int. Cl. H02p 5/16

U.S. Cl. 318-227

6 Claims



An a-c adjustable speed motor drive system including an a-c motor and power conversion means for converting d-c electric power to adjustable frequency, adjustable voltage electric power for delivery to the motor is provided with stabilizing means for damping motor speed oscillations. The stabilizing means includes apparatus for generating a first signal having oscillations therein related to oscillations in the d-c voltage of the electric power supplied to the power conversion means



A motor control system for an induction motor which is capable of controlling the induction motor such that it operates with a predetermined torque-speed characteristic. The induction motor is operated with a predetermined constant slip frequency and the input voltage to the induction motor is varied to control the output torque and speed of the induction motor. The control system includes a closed loop feedback arrangement for controlling the output torque and speed of the induction motor such that the motor simulates the torque-speed characteristic of an internal combustion engine. Since the induction motor can be controlled to simulate the torque-speed characteristic of an internal combustion engine it can be used as a power source for driving an automatic transmission in a test setup for testing automatic transmissions. The control system includes means for sensing the actual output speed of the induction motor and the actual output torque of the induction motor. An electrical signal which is a function of induction motor output speed is applied to a function generator and the output of this function generator determines the desired output torque of the induction motor. The function generator is an active low pass filter and is designed to simulate various internal combustion engine torque-speed characteristics for various throttle settings for a given internal combustion engine.



3,753,065

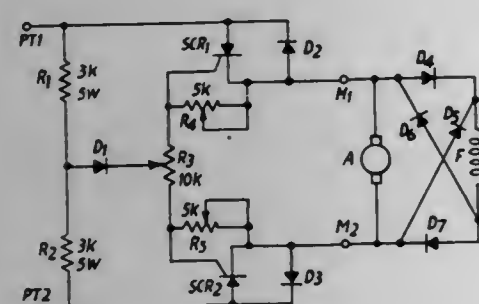
# METHOD OF REGULATING AND CONTROLLING SPEED AND DIRECTION OF ELECTRIC MOTORS AND APPLIANCE

Seaborn Howard Chiles, San Francisco, Calif., assignor to Chiles (Patents and Systems) Limited, Hong Kong, Hong Kong

Filed Oct. 29, 1971, Ser. No. 193,912  
Int. Cl. H02p 5/16

U.S. Cl. 318—257

10 Claims



A control circuit for a reversible electric motor to be driven from an a.c. supply. Two thyristors are connected on respective sides of the motor in a series circuit including the thyristors, the motor and the a.c. terminals. The thyristors are inversely connected with respect to each other and a potentiometer is connected with respective ends to the thyristor trigger electrodes. A potential divider is connected across the supply terminals and there is a connection between the potential divider and the wiper on the potentiometer.

3,753,067

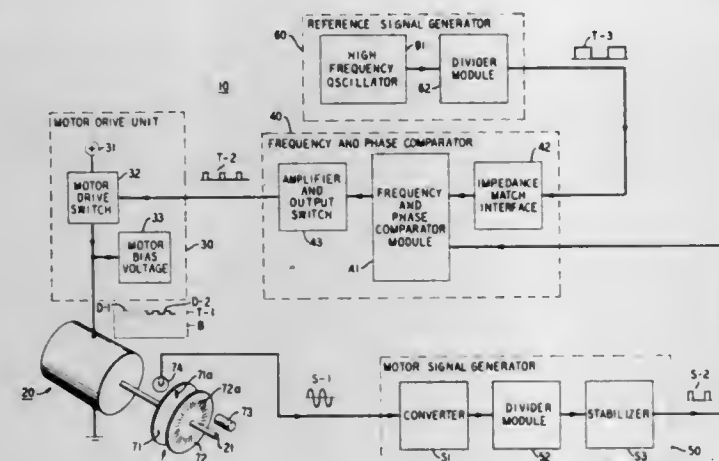
# MOTOR SPEED REGULATION SYSTEM

Lee J. Milligan, Fairfield, N.J., assignor to Peripheral Systems Corp., Fairfield, N.J.

Filed May 17, 1972, Ser. No. 254,242  
Int. Cl. H02p 5/16

U.S. Cl. 318—314

12 Claims



A motor speed regulation system employing integrated and discrete semiconductor components, in which either a direct drive signal or a digitally incremented biasing signal is applied to the motor to bring it up to speed or to maintain it at a desired speed under load.

3,753,068

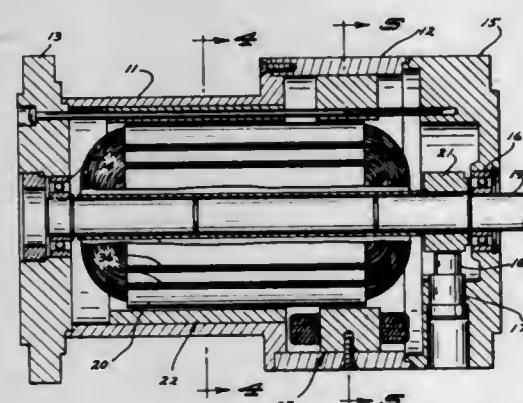
# CONTROLLED SPEED ELECTRIC MOTOR

Peter Walker, Jr., Brooklyn, Minn., assignor to Electro-Craft Corporation, Hopkins, Minn.

Filed Nov. 9, 1971, Ser. No. 197,055  
Int. Cl. H02p 5/06

U.S. Cl. 318—338

12 Claims



A variable, multiple speed direct current electric motor having a low power requirement for multiple high speed operation and low variable speed operation. A direct current armature is rotatably mounted in a frame which includes a first and a second source of magnetic flux energy. One of the sources is of substantially constant magnitude and the other is adjustably variable. The sources of magnetic flux energy are axially spaced apart so that the magnetic field from each of them may be linked to different portions of the armature and its conductors along any given axial length thereof.

In various modes of operation the effect of the variable source of magnetic flux may be used in an additive or subtractive sense, with respect to the axially extending conductors or the armature to provide a multiple high speed operation having low driving voltage requirements for the armature supply.

3,753,066

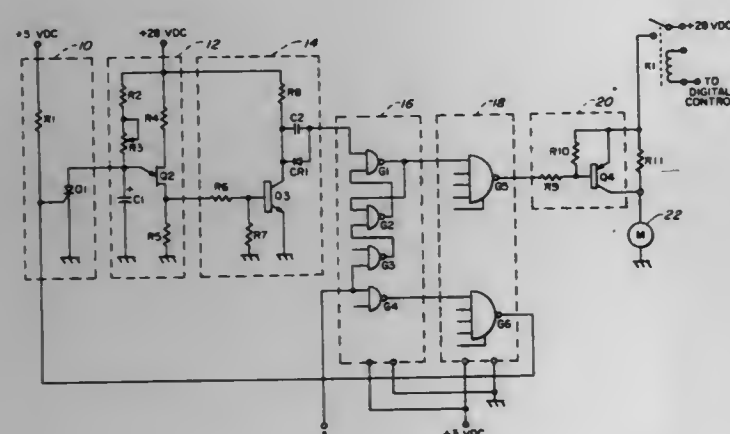
# DIGITAL TWO-SPEED MOTOR CONTROL

Henry Sailer, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 8, 1972, Ser. No. 251,063  
Int. Cl. H02p 5/16

U.S. Cl. 318—305

10 Claims



A remote digital two-speed motor control, for controlling frequency or bandwidth tuning of a jamming transmitter. A digitally controlled transistor switches the speed of a motor after a predetermined time delay. The motor may be retained in the initial speed by continuous resetting of the digital circuit before the timing circuit reaches a firing voltage.

or in a variable low speed operation to materially reduce the driving current requirements for the armature supply.

The overall result is a motor providing improved performance characteristics over a wide range of speed of operation while reducing the power requirements and the complexity of the power supplies and controllers.

3,753,069

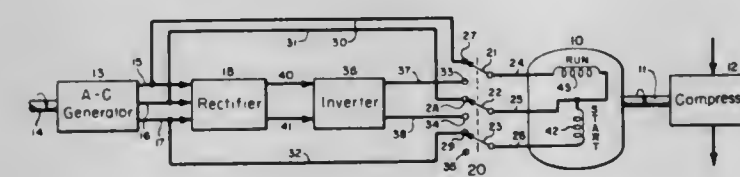
# START-UP SYSTEM FOR INVERTER DRIVEN MOTOR INCLUDING INVERTER BYPASS CIRCUITRY

Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 18, 1971, Ser. No. 199,875  
Int. Cl. H02p 1/16

U.S. Cl. 318—440

5 Claims



An AC electrical motor is normally energized from an inverter which in turn is coupled to a rectifier. An alternator driven from a variable speed source supplies energy to the rectifier. During start-up non-regulated output energy of the alternator is passed directly to the motor until the system approaches operating speed. After start-up, the motor is energized from the inverter at the appropriate normal operating voltage and frequency. The system may be used in a car, where an alternator energizes the motor driving a compressor in the air conditioning system.

3,753,070

# PROTECTIVE CIRCUIT FOR ELECTRIC MOTORS

Franz Bunker, Mannheim, and Karl-Heinz Lehmann, Ostersheim, both of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannheim, Germany

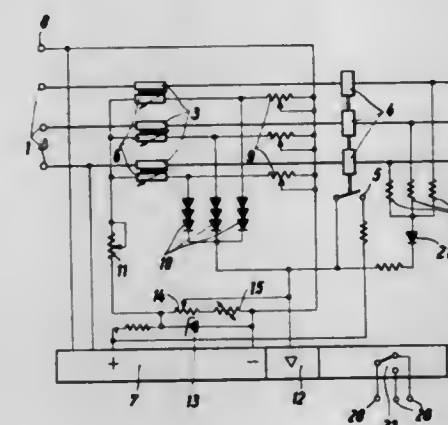
Filed Dec. 6, 1971, Ser. No. 205,246

Claims priority, application Germany, Dec. 9, 1970, P 20 60 483.5

Int. Cl. H02h 7/085

U.S. Cl. 318—472

10 Claims



The protective circuit is used in a switching arrangement for protecting an electric motor against thermal overload, and of the type including a heating resistor in the motor supply circuit, a temperature sensing resistor, having a highly temperature-dependent resistance characteristic, in heat transfer contact with the heating resistor and a motor cut-off control means connected to the temperature sensitive resistor to provide a signal voltage for disconnecting the motor from its source of potential upon thermal overloading of the motor. The heating resistor has a thermal behavior simulating the

thermal behavior of the motor to be protected. A bias voltage is applied to the input of an amplifier of the cut-off control means, and this bias voltage can be set on a potentiometer and is influenced by an additional temperature-dependent resistor to compensate the room temperature at the location of the switching arrangement. The arrangement may be used with either a direct current motor supply, a single phase AC motor supply, or a polyphase AC motor supply.

3,753,071

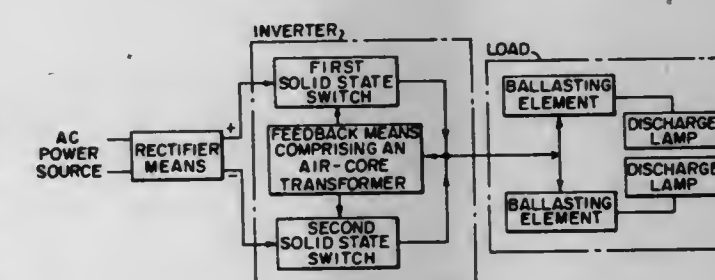
# LOW COST TRANSISTORIZED INVERTER

Joseph C. Engel, Monroeville, and Robert T. Elms, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 15, 1972, Ser. No. 263,041  
Int. Cl. H02m 5/44

U.S. Cl. 321—2

9 Claims



Low cost circuit for operation of discharge lamps utilizing a rectifier and a two-transistor inverter to provide high-frequency operation of ballasted discharge lamps from a relatively low frequency power source. An air-core feedback transformer is used to provide high frequency operation of the inverter and voltage-shift-initiated feedback is used to prevent "shoot-through" of the two-transistor inverter. Preferably there is, in series with the load, a series resonant combination having a resonant frequency higher than the inverter frequency, in order to minimize switching losses in the transistor inverter.

3,753,072

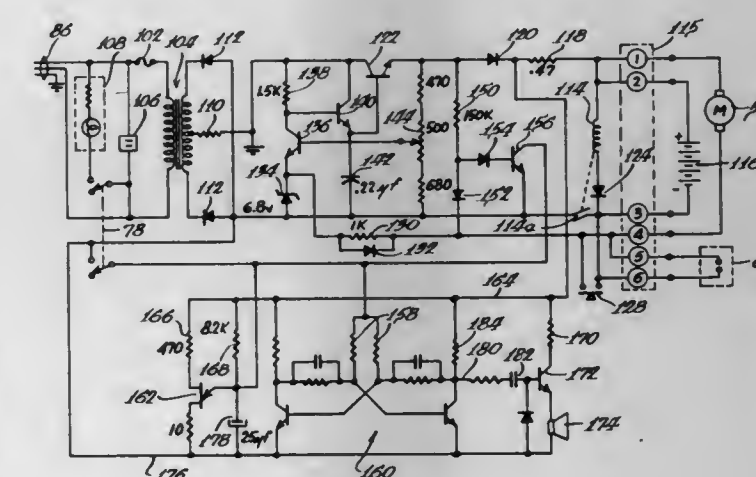
# BATTERY CHARGING SYSTEM

Francis T. Jurgens, Chicago, Ill., assignor to Anthony Peters, Wood Dale, Ill.

Filed Nov. 30, 1971, Ser. No. 203,161  
Int. Cl. H02j 7/10, 9/00

U.S. Cl. 320—39

2 Claims



A battery charging circuit for an auxiliary battery in a sump system having voltage sensing means for cutoff utilizing a line



transistor which is controlled by a charging capacitor. The circuit also includes polarity protection means.

### ERRATUM

For Class 321—2 see:  
Patent No. 3,753,071

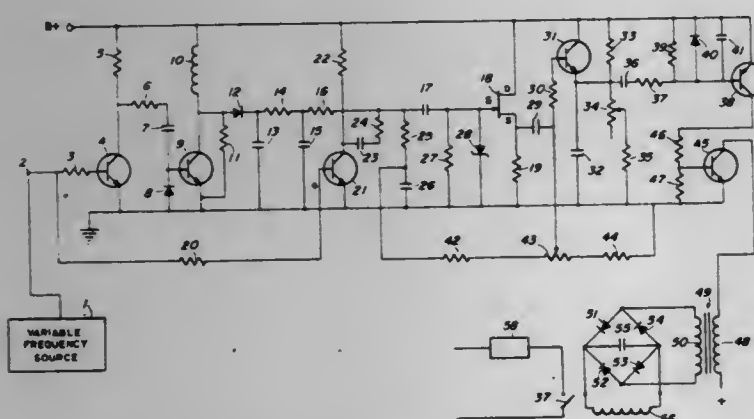
3,753,073

### SIGNAL INTERPRETING CIRCUIT

Wendell G. Rawlins, 913 Croix St., Topeka, Kans.  
Filed Jan. 20, 1972, Ser. No. 219,399  
Int. Cl. H02m 7/00

U.S. Cl. 321—6

12 Claims



A signal interpreting circuit for switching an output load in response to an increasing input frequency, the circuit having a frequency to direct current converter for providing a direct current voltage varying inversely with input frequency, a load controlling circuit for continuously energizing the load as long as the direct current voltage remains the same or increases, and a capacitor-transistor circuit responsive to a decreasing of the direct current voltage for interrupting the continuously energized load.

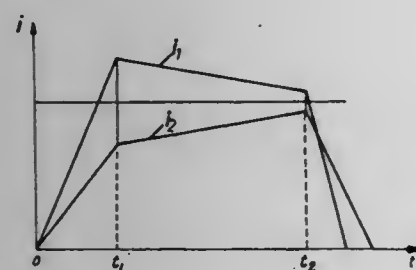
3,753,074

### PARALLEL CONNECTION OF SURGE VOLTAGE-RESISTANT SEMICONDUCTOR ELEMENTS SUCH AS DIODES THYRISTORS HAVING DIFFERING AVALANCHE VOLTAGE

Han Jurg Bossi, Nussbaumen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland  
Filed Feb. 10, 1969, Ser. No. 797,992  
Int. Cl. H02m 1/18

U.S. Cl. 321—11

1 Claim



A plurality of silicon semiconductor components such as diodes and thyristors are connected in parallel to a source of alternating voltage for purposes of rectification. To reduce the stress on the semiconductor components and eliminate the need for wiring capacitors in parallel with the semiconductor components, the component which exhibits the highest avalanche voltage characteristic is placed in the circuit where passage of current in the forward direction through the semiconductor components has its lowest value.

3,753,075

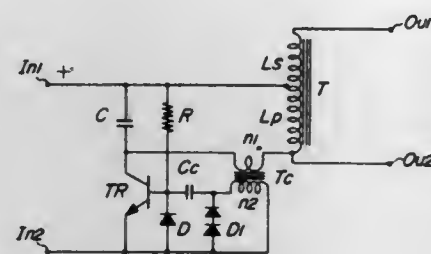
### INVERTER

Teruichi Tomura, and Hiroyuki Iyama, both of Kunitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan  
Filed July 3, 1972, Ser. No. 268,444

Claims priority, application Japan, July 6, 1971, 46/49712  
Int. Cl. H02m; H03b

U.S. Cl. 321—44

21 Claims



An inverter for transforming a d.c. current to an a.c. current comprising, a switching transistor and an output transformer having a primary winding connected to the collector of the transistor, a current transformer having a primary winding connected to the primary winding of the output transformer and a secondary winding connected to the base of the switching transistor, a coupling capacitor inserted between said base of the transistor and the secondary winding of the current transformer, a capacitor parallelly connected to the primary winding of the output transformer, the primary windings of the output and current transformers and said capacitor forming a resonance circuit to control the oscillation.

3,753,076

### INVERTER CIRCUIT AND SWITCHING MEANS

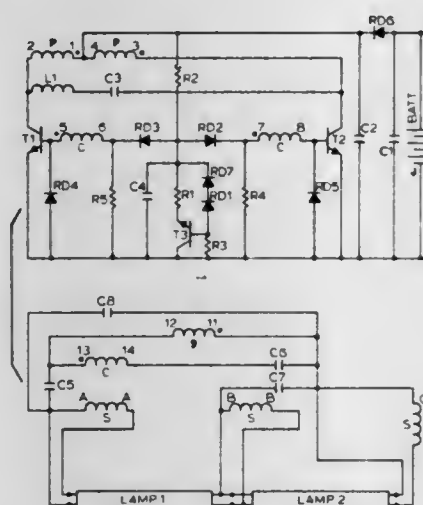
William B. Zelina, Edinboro, Pa., assignor to Lighting Systems, Inc., Erie, Pa.

Filed Apr. 27, 1972, Ser. No. 248,035

Int. Cl. H02m 7/52

U.S. Cl. 321—45 R

23 Claims



An inverter suitable for use as a fluorescent light ballast is disclosed. The inverter has a constant output regardless of load. Good efficiency at high frequency is provided by minimizing the transistor switching losses by means of a resonant storage means and a unique feedback and magnetic structure.

3,753,077

### DIRECT CURRENT CHOPPER CONTROL CIRCUIT

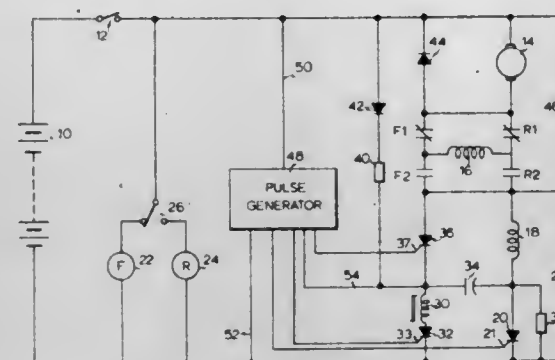
Albert W. Anderson, and Charles E. Konrad, both of Roanoke, Va., assignors to General Electric Company, Salem, Va.

Filed Aug. 31, 1971, Ser. No. 176,569

Int. Cl. H02m 3/32

U.S. Cl. 321—45 C

4 Claims



A control circuit for controlling the effective power to a load from a power source of substantially constant direct current voltage including a first solid state switching device for placing the load and the power source in series. Circuitry including a commutating capacitor chargeable in a first direction, provides that capacitor discharge, initiated by the gating of a second solid state switching device, will terminate conduction of the first switching device. An inductance is provided in series with the load to develop a capacitor voltage in a second direction, related to load current, upon the termination of the conduction period. A series loop is provided including the capacitor, the inductor, and a third solid state switching device to reverse the polarity of the capacitor voltage to the first direction.

### ERRATUM

For Class 322—28 see:  
Patent No. 3,753,080

3,753,078

### FOLDBACK CURRENT CONTROL CIRCUIT

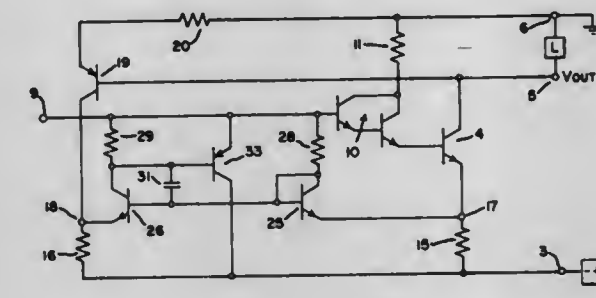
Kurt K. Hedel, Utica, N.Y., assignor to General Electric Company, Utica, N.Y.

Filed May 3, 1972, Ser. No. 250,005

Int. Cl. G05f 1/10

U.S. Cl. 323—9

5 Claims



In a foldback current control circuit, a sensing resistor is connected in series between a source and an output transistor. The sensing resistor biases the emitter of a first transistor of a matched pair included in a comparison circuit. The emitter of the second transistor of the pair is biased by a reference resistor which provides a reference voltage in response to load voltage. When a fault in the load circuit of the output transistor occurs, the reference voltage exceeds a threshold, and the potential at the collector of the second transistor exceeds that of the first in order to turn on a third transistor. The third transistor shunts base drive from the output transistor to prevent damage to the output transistor and load. Self-com-

3,753,079

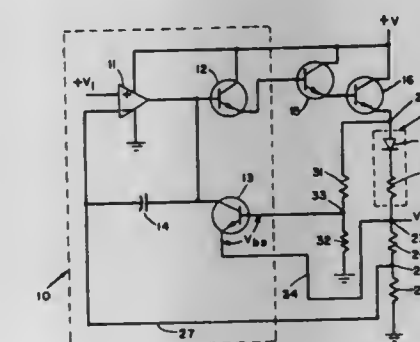
### FOLDBACK CURRENT LIMITER

Ted R. Trilling, Berkshire Rd., R.D. 3, Doylestown, Pa.  
Filed Mar. 8, 1972, Ser. No. 232,791

Int. Cl. G05f 1/58

U.S. Cl. 323—4

8 Claims



A diode providing a current that is an exponential function of the voltage applied across it is inserted in a series circuit carrying the output current of a current limiting device in which the voltage across the diode is reduced upon a short circuit taking place at an output terminal. This reduction in voltage severely limits the current through the diode at an exponential rate thereby affecting a sharp reduction in the short circuit current.

3,753,080

### ELECTRIC CONTROL DEVICE FOR AN ALTERNATOR

Andre Jules, Sartrouville, France, assignor to Compagnie Generale D'Electricite, Paris, France

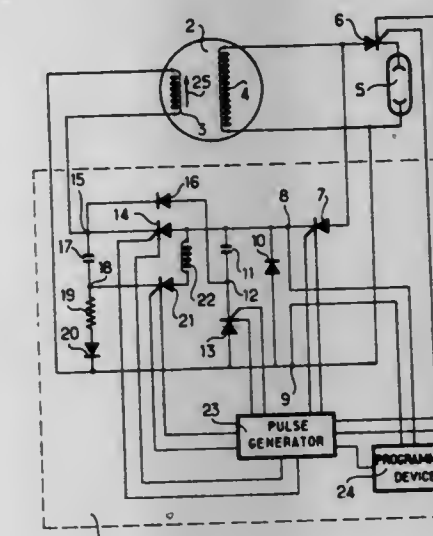
Filed Oct. 17, 1972, Ser. No. 298,221

Claims priority, application France, Oct. 18, 1971, 7137339

Int. Cl. A02p 11/06

U.S. Cl. 322—28

2 Claims



An electric control device for an alternator which produces short high power pulses, comprising an electronic circuit including a capacitor, thyristors and rectifiers, the energizing power of the alternator being stored in the capacitor at the end of each pulse, the power stored in that capacitor being discharged in the energizing winding to effect the priming of the alternator for a succeeding pulse.



3,753,081

## GYROMAGNETIC RESONANCE METHOD AND APPARATUS FOR OBTAINING SPIN-SPIN COUPLING CONSTANTS

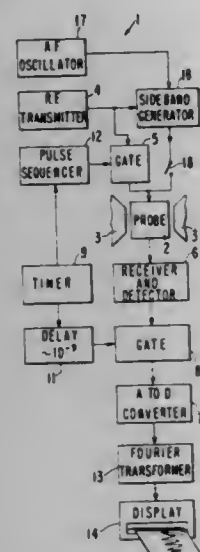
Raymond Freeman, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Dec. 30, 1971, Ser. No. 214,137

Int. Cl. G01n 27/78

U.S. Cl. 324—0.5 R

12 Claims



Spin-spin coupling constants are obtained by exciting and detecting a decaying train of time displaced spin echo resonances of a plurality of spin-spin coupled groups of gyromagnetic resonators, such as a group of chemically shifted homonuclear atomic nuclei, within a sample under analysis. The envelope of the peak amplitude of the train of spin echo resonances decays and is modulated in accordance with the spin-spin coupling constants. The modulated envelope is Fourier analyzed to separate the individual Fourier frequency components, each component corresponding to one-half the sums and differences of the different spin-spin coupling constants, whereby a spectrum of spin-spin coupling constants is obtained which is free of magnetic field inhomogeneity effects and chemical shifts.

3,753,082

## AVERAGE TIMING METHOD AND APPARATUS FOR INTERNAL COMBUSTION ENGINES

Arthur R. Crawford, Columbus; Glenroy W. Barnett, Dublin; Richard E. Porter, Powell, and Joseph R. Pottebaum, Columbus, all of Ohio, assignors to Production Measurements, Hilliard, Ohio

Filed Jan. 20, 1972, Ser. No. 219,416

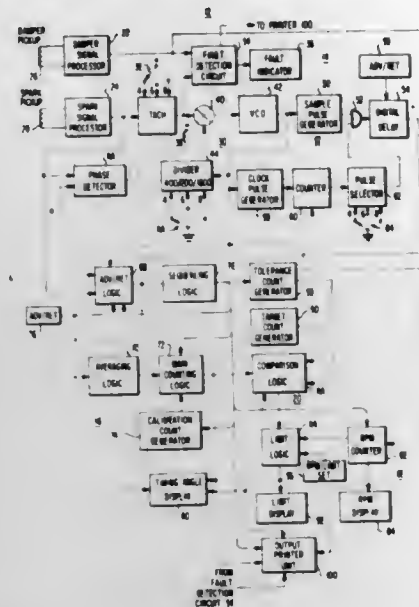
Int. Cl. F02p 17/00

U.S. Cl. 324—16 R

42 Claims

There is disclosed a method and apparatus for internal combustion engine timing based on measurement of the advance or retard of the firing of each spark plug with respect to a reference derived from the top dead center position of the piston for the number one cylinder. The engine timing is adjusted so that the average value of the advance or retard for all plugs equals a predetermined design value. A variable frequency oscillator is phase-locked by signals representing individual spark plug firing to operate at a frequency of 3,600 pulses per engine revolution. A reference related to the top dead center position of piston for the first cylinder is determined by sensing a notch in the engine damper or fan pulley, and is used to produce a series of pseudo damper pulses offset from the top dead center positions of the various pistons by 45 degrees by dividing the output of the variable frequency oscillator and selecting pulses to define the pseudo damper pulse interval based on the number of cylinders in the engine being timed. Timing measurement is achieved by counting the number of pulses between firing of a plug and the associated

pseudo damper pulse over several complete engine operating cycles, averaging the result and removing the 45° offset.



Digital display, printout, upper and lower limit computation and actual engine RPM measurements are also provided.

3,753,083

## SWITCH TESTING APPARATUS

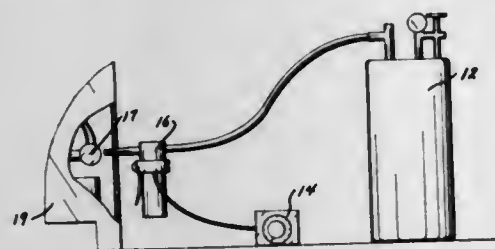
Donald L. Hardesty, 900 Olmstead Ave., Evansville, Ind.

Filed July 6, 1971, Ser. No. 159,931

Int. Cl. G01r 31/02

U.S. Cl. 324—28

2 Claims



A method for testing a thermal-responsive switch which utilizes liquidized nitrogen for lowering the switch to its operational level.

3,753,084

## APPARATUS FOR THE RAPID ELECTROMETRIC DETERMINATION OF ION ACTIVITY

Willy Walter Wirz, Austrasse 9, Meilen, Switzerland

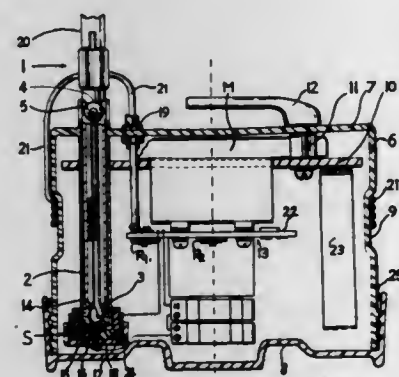
Filed Apr. 26, 1971, Ser. No. 137,437

Claims priority, application Switzerland, Apr. 24, 1970, 6235/70; Germany, Apr. 19, 1971, P 21 18 876.1

Int. Cl. G01n 27/42; B01k 3/00

U.S. Cl. 324—30 C

16 Claims



An apparatus for the rapid electrometric determination of ionic activities, especially the pH-value, p(Me)-value or p(L)-

value of substances, by means of an ion sensitive or ion specific sensor of low or extremely high internal resistance. There is also provided a preferably transistorized amplifier circuit arrangement and an indicator device for the indication of the measurement values in analogue or digital form. According to the invention there is provided as the sensor an electrode measuring chain possessing measuring- and reference electrode means, such electrode-measuring chain exhibiting a clearly defined point of intersection of the isotherms, a constant electrical chain null point, an internal buffer of high buffer capacity and stable slope. A storage vessel is also provided for the measuring chain, and this storage vessel contains an activation solution to maintain said measuring chain under the influence thereof. Fixedly balanced resistor means for said amplifier circuit arrangement control the asymmetrical potential, the electrical null point of the apparatus, the temperature factor of the measuring chain and the amplification factor.

3,753,085

## NON-DESTRUCTIVE TESTING APPARATUS FOR DETECTING BOTH TRANSVERSE AND LONGITUDINAL WELD DEFECTS WITH A SINGLE INSPECTION

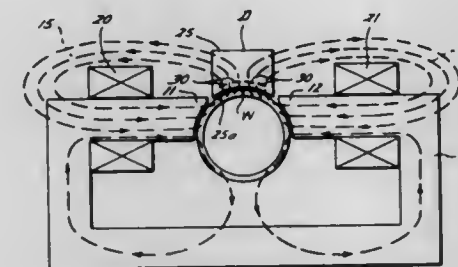
Arthur W. Morton, and Donald Lloyd, both of Houston, Tex., assignors to Tex-Tube Division of Detroit Steel Corporation, Houston, Tex.

Filed Mar. 13, 1972, Ser. No. 234,295

Int. Cl. G01r 33/12

U.S. Cl. 324—37

8 Claims



Non-destructive testing apparatus for locating anomalies or defects in either a longitudinal or circle weld in a pipe, wherein the signal-to-noise ratio is increased by the use of bidirectional magnetization at the area of inspection and by the spacing of the anomaly detector probe off the pipe a predetermined distance, whereby discontinuities or weld anomalies at any point through the weld from the outside diameter to the inside diameter can be detected, and by a predetermined positioning of the coils of the probe, the weld anomalies may be detected whether extending predominantly longitudinally or laterally. The pipe may be inspected as it is run through the pipe mill during its manufacture, without utilizing a separate run of the pipe for the inspection.

3,753,086

## METHOD AND APPARATUS FOR LOCATING AND MEASURING WAVE GUIDE DISCONTINUITIES

William B. Shoemaker, Jr., 1995 Valley Rd., Rt. 1, Box 361 K, Annapolis, Md.

Filed Dec. 9, 1970, Ser. No. 96,512

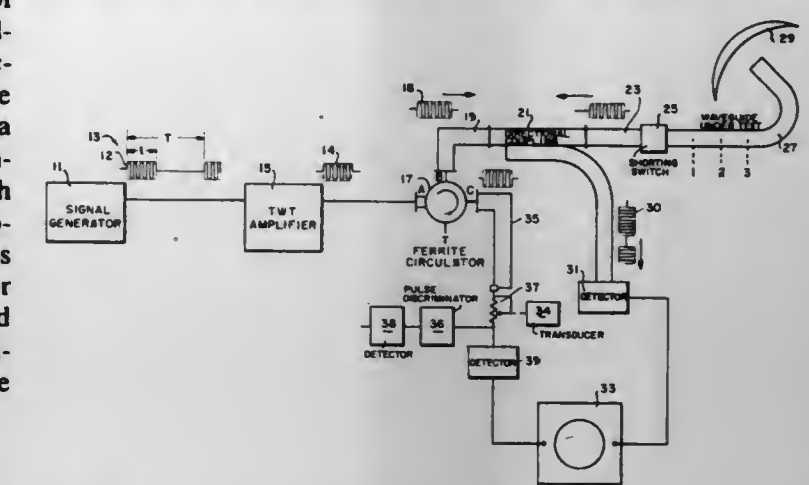
Int. Cl. G01r 31/11, 27/04

U.S. Cl. 324—52

15 Claims

An intermittent pulsed carrier signal having a frequency of approximately 10 gigahertz and on for approximately 10 nanoseconds duration is transmitted through a wave guide. Wave guide discontinuities reflect a portion of the incident pulse, and these reflected signals are detected and compared to the incident pulse relative to time and amplitude differences. The discontinuity point in the wave guide is then directly determined using time domain reflectometry, from

the time interval for the signal to reach the discontinuity and for the reflected wave to travel back along the wave guide and be detected. As the intensity of the reflected signal is func-



tionally related to the magnitude of the fault, a display of the reflected signal magnitude, compared to the incident signal magnitude, will indicate the magnitude of the wave guide discontinuity.

3,753,087

## METHOD FOR TESTING AND LOCATING FAULTS IN INSULATION OF AN ELECTRICAL APPARATUS AND UTILIZATION OF THE METHOD

Tjehing Thian Tan, Baden, Switzerland, assignor to Aktiengesellschaft Brown, Boveri &amp; Cie, Baden, Switzerland

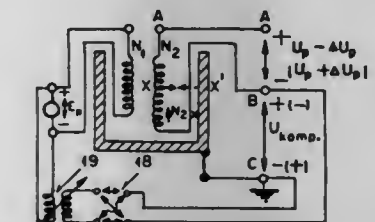
Filed June 1, 1971, Ser. No. 148,535

Claims priority, application Switzerland, June 4, 1970, 8364/70

Int. Cl. G01r 31/10, 31/12

U.S. Cl. 324—52

12 Claims



A method of testing insulation and pinpointing faults in a winding of electrical apparatus wherein by adjusting a test voltage, a change in the potential difference between the winding and an electrically conductive part is brought about. The purpose of this is to effect a striking and extinction of an electrical discharge at a point between the winding and electrical conductive part which exhibits a weak insulating characteristic which is detected by means of a discharge-indicating device.

3,753,088

## DEVICE FOR TESTING THE ADEQUACY OF ELECTRICAL CIRCUIT SUCH AS THE GROUND CIRCUIT OF AN EXTENSION CORD

David J. Ettelman, Cranford, N.J., assignor to Multi-Amp Corporation, Cranford, N.J.

Division of Ser. No. 857,796, Sept. 15, 1969, Pat. No. 3,643,157. This application July 19, 1971, Ser. No. 164,072

Int. Cl. G01r 31/02, 15/12

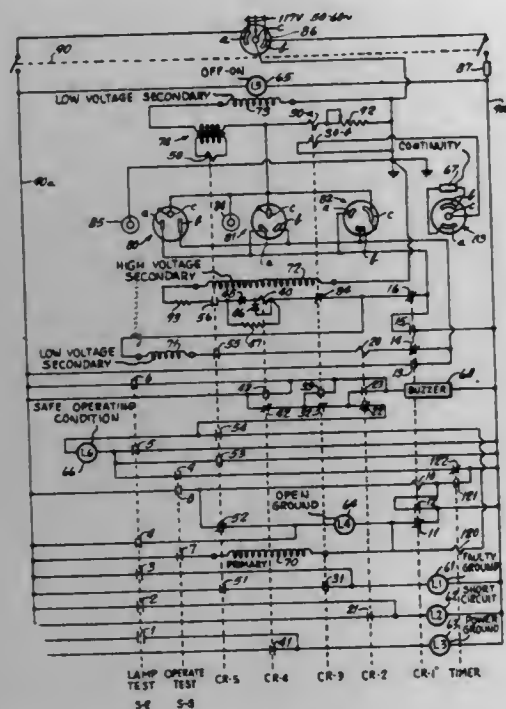
U.S. Cl. 324—51

4 Claims

Device for testing the adequacy of the ground and power circuits of electric tools, extension cord and the like by performing an automated series of individual tests in sequence. The major tests are to determine: open ground circuit, faulty ground circuit, short circuit and poor insulation. If no faults are found by these tests, the circuit under test is next connected to line potential to determine if it operates properly.



During this phase of testing, the potentials and currents associated with the previous tests are discontinued to avoid power drain and heating. A saturating current transformer protects an essential relay from damage from excessive cur-



rent. A long extension cord having a proper ground resistance (in the order of the resistance exhibited by a tool having a faulty ground cord) may be tested by modifying the test currents so that an erroneous faulty ground indication is not given.

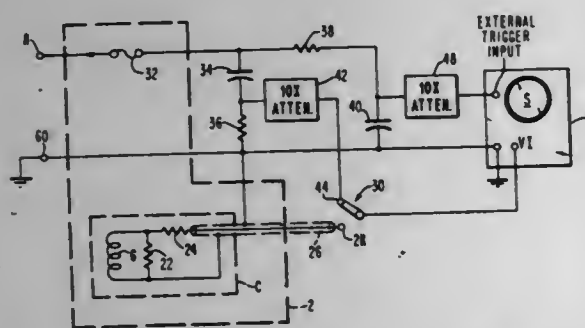
### 3,753,089 ELECTRONIC SWITCHING TRANSIENT DETECTOR AND METHOD FOR LOCATING ELECTRICAL POWER SUPPLY NOISE SOURCES

John B. Gunn, Mount Kisco, and John L. Staples, Pleasantville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1971, Ser. No. 204,881  
Int. Cl. G01r 19/14, 31/08

U.S. Cl. 324—52

4 Claims



A procedure is described for locating the source of electrical noise generated in any branch of an electrical power distribution network. A noise probe, consisting of a small coil mounted in an insulated housing which is held near a power supply line to inductively couple to the magnetic field of the noise current present in that line, is employed to find the source of electrical noise.

### 3,753,090 COMBINATION FLASHLIGHT AND CONTINUITY TESTER HAVING HINGED CONTACT

Harry P. Tomek, 4524 Tennessee, St. Louis, Mo.

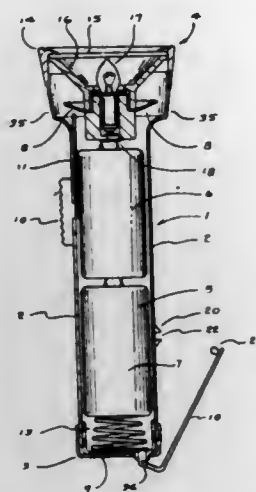
Filed Mar. 7, 1972, Ser. No. 232,486  
Int. Cl. G01r 31/02

U.S. Cl. 324—53

1 Claim

A common flashlight is adapted to either a normal portable lighting function or to use as a continuity tester. Two electrical

conductors, used externally, serve as continuity test probes. One of these conductors is electrically connected through the flashlight bulb to one side of the battery supply. The second



conductor is electrically connected to a second side of the battery supply. Continuity is checked by touching the probes to the circuit to be tested. The bulb glows when the circuit is continuous.

### 3,753,091 METHOD AND DEVICE FOR DETECTING FAULTS IN NON-CONDUCTIVE COATINGS ON UNDER WATER PIPELINES

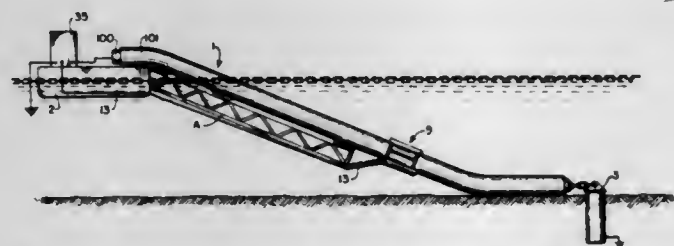
Walter J. Daspit, New Orleans, La., assignor to Submarine Pipeline Technology Inc., New Orleans, La.

Continuation of Ser. No. 847,185, Aug. 4, 1969, abandoned.  
This application Apr. 10, 1972, Ser. No. 242,870

Int. Cl. G01r 31/00

U.S. Cl. 324—54

14 Claims



The method of and apparatus for detecting faults in non-conductive coatings on underwater pipelines as the pipes are being laid by lay barges unto the ocean bottom or after the pipes have been laid on the bottom. The detector of the apparatus comprises in lay barge and jet barge embodiments three electromagnetic pickup coils placed near the pipe surface which detect a change in an electromagnetic field produced by a fault in the non-conducting coating as a low voltage is applied across the pipe. A Wheatstone bridge hookup is provided to maximize the effects of the system. One of the three coils is used as the primary sensing coil while the other two are used to indicate when the electromagnetic field is being unbalanced by the presence of nearby metal objects rather than by a fault in the coating. A simplified hand-held model having one coil is likewise disclosed.

### 3,753,092 LIQUID TESTING DEVICE FOR MEASURING CHANGES IN DIELECTRIC PROPERTIES

Thomas B. Ludlow, St. Paul, and Keith S. Champlin, Minneapolis, both of Minn., assignors to Johanna Plastics, Inc., St. Paul, Minn.

Filed Apr. 8, 1971, Ser. No. 132,299  
Int. Cl. G01r 27/26

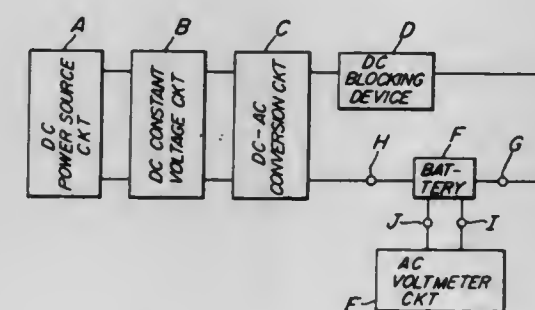
U.S. Cl. 324—61 R

16 Claims

A self-contained apparatus for measuring small changes in the permittivity or dielectric constant of an insulating liquid

such as, e.g., lubricating oil. A few drops of said liquid are placed in an open-type test cell possessing two coplanar electrodes imbedded in a low permittivity, insulating material forming its bottom surface. The electrode configuration is designed such that the electrical capacitance between electrodes is strongly dependent upon the permittivity of the liquid but is virtually independent of the quantity of liquid in the test cell.

The electrodes are connected to a comparison circuit which is designed to be optimally sensitive to small changes in electrical capacitance. The comparison circuit contains a variable



capacitor for balancing the capacitance of the test cell and a null meter for detecting this balance condition. The dial scale attached to the variable capacitor is initially set to zero by balancing the instrument with a standard liquid in the test cell. Measurements on sample liquids thereafter yield readings proportional to the deviation of the permittivity of the sample liquid from that of the standard liquid. In testing the quality of a lubricating oil, unused oil is employed as a standard liquid and the permittivity deviation is directly related to the amount of oxidation and other contamination present in the oil sample.

### 3,753,093 METHOD AND EQUIPMENT FOR THE DETERMINATION OF THE DEGREE OF ABRASIVENESS OF MAGNETIC TAPE

Leslie William Gardner, Clippenham, Slough; Nicholas James Helbren, Cowley, Oxbridge; Duncan Stewart, Slough, and Gwilym Iorwerth Williams, Farnham Royal, Slough, all of England, assignors to Fulmer Research Institute Limited, Buckinghamshire, England

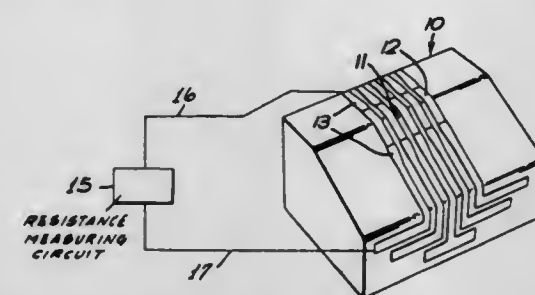
Filed Dec. 29, 1971, Ser. No. 213,594

Claims priority, application Great Britain, Jan. 15, 1971, 2,080/71

Int. Cl. G01r 27/02

U.S. Cl. 324—65 R

10 Claims



A method is described for the determination of the degree of abrasiveness of magnetic tape which method comprises passing the magnetic tape over the working surface of a simulated recording head fabricated of an electrically non-conducting material and geometrically closely approximating the dimensions of an actual recording head, the working surface of the simulated head having deposited thereon one or more thin strips of a magnetic alloy similar to the magnetic alloy used for the actual head, and observing the increase in electrical resistance of the magnetic alloy strip or strips. A device suitable for use in the method is also disclosed.

### 3,753,094 OHMMETER FOR MEASURING THE INTERNAL RESISTANCE OF A BATTERY AND DIRECTLY READING THE MEASURED RESISTANCE VALUE

Haruhisa Furuishi, Suita; Yasunobu Iida, Osaka, and Toshiaki Fukuoka, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Continuation of Ser. No. 48,381, June 22, 1970, abandoned.

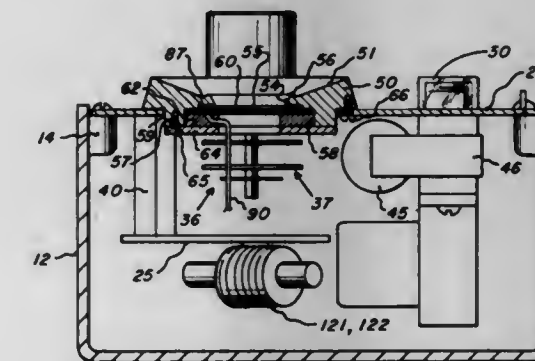
This application July 24, 1972, Ser. No. 274,809

Claims priority, application Japan, July 1, 1969, 44/53589

Int. Cl. G01n 27/46

U.S. Cl. 324—29.5

7 Claims



An ohmmeter for measuring the internal resistance of a battery by an A.C. method. The output of a DC power circuit is converted into an alternating current of prescribed frequency through a DC - AC conversion circuit. The alternating current flows through a battery by way of a DC blocking device and the voltage drop due to the internal resistance of the battery is introduced into an AC voltmeter circuit. The internal resistance of the battery is indicated at the indicating portion of the AC voltmeter circuit so that it is read directly.

### 3,753,095 BATTERY TESTER HAVING A PLIABLE RESILIENT BODY MEMBER FOR ACCOMMODATING THE BATTERY TO BE TESTED

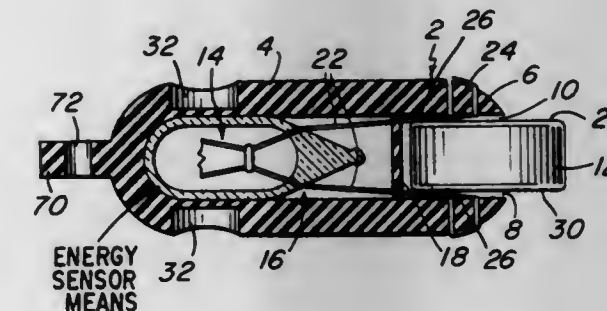
Nathan P. Nichols, 121 Nichols St., Danvers, Mass.

Filed Feb. 16, 1971, Ser. No. 115,261

Int. Cl. H01m 31/04; G01r 31/00

U.S. Cl. 324—29.5

12 Claims



A detectable energy indicating means is disclosed having structure adapted to receive disc or button shaped energy sources such as, for example, those utilized for hearing aids. Encapsulated electrical current visual or audible sensing means serially connected to conductive contact means are assembled in an integral body of durable, pliable, and resilient thermoplastic or rubber materials. Translucent viewing means are defined in the body member to permit observation of the relative intensity of illumination of, for example, a light bulb sensor. Alternative embodiments provide for snap-in mounting of the tester in multiple battery cartwheel type packages for merchandising of the batteries as well as a handy rugged pocket unit for the individual user.



3,753,096

**EDDY CURRENT FLAW DETECTION SYSTEM WITH LEFT OFF COMPENSATION**

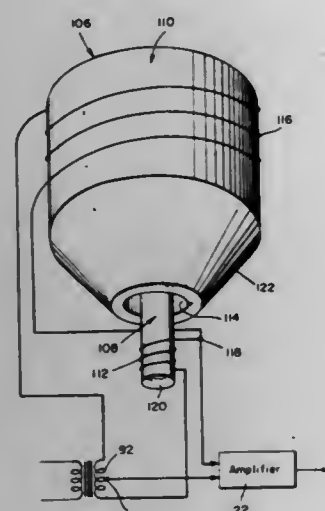
William Charles Wiers, Ann Arbor, Mich., assignor to Automation Industries, Inc., Century City, Calif.

Filed Feb. 4, 1971, Ser. No. 112,710

Int. Cl. G01r 33/12

U.S. Cl. 324-40

7 Claims



A nondestructive testing system of the eddy current variety is disclosed herein for inspecting workpieces for defects. A search unit is provided for use with the system for inducing eddy currents on the surface of the workpiece and sensing the fields reradiated from such currents to produce a corresponding test signal. The search unit includes one or more magnetic cores and one or more windings which are constructed and arranged to improve the response characteristics of the search unit to discontinuities in the surface of the workpiece. Also, they are constructed and arranged to eliminate or at least drastically reduce variations in the search unit response characteristics resulting from variations in the lift-off distance, i.e., the space between the search unit and the surface of the workpiece.

3,753,097

**GYROMAGNETIC RESONANCE SPECTROMETERS**

Jean Jacques Dunand, Paris, France, assignor to Thomson-CSF, Paris, France

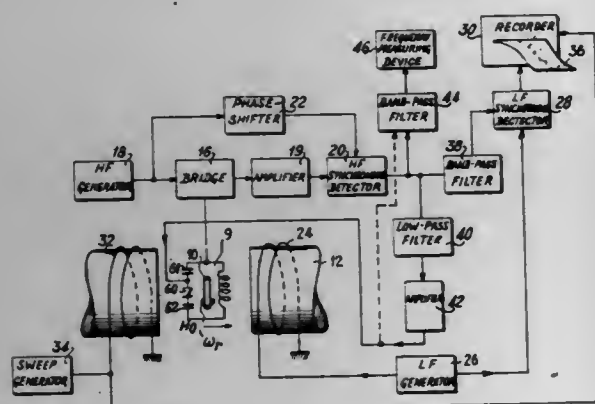
Filed Dec. 3, 1971, Ser. No. 204,485

Claims priority, application France, Dec. 4, 1970, 7043782

Int. Cl. G01n 27/78

U.S. Cl. 324-0.5 R

5 Claims



In a gyromagnetic resonance spectrometer where the specimen is rotated about an axis, and where the polarization field is modulated at a low angular frequency  $\Omega$ , the synchronous detection of the HF components, in phase with the excitation, of the output signals from the resonant detector circuit gives a signal at the frequency  $\Omega$ , a d.c. component, and a component at the rotation speed which, by means of fil-

ters, are respectively directed to the recorder, to a circuit correcting the resonance frequency of, or the coupling in, the resonant detector circuit, and to a rotation speed measurement system.

3,753,098

**GUARDED OIL TEST CELL WITH TRIAXIAL CONNECTOR**

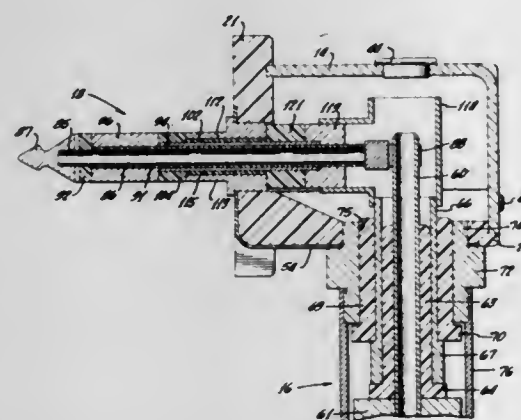
Mahesh K. Sambhu, Wayne, and John J. Hinchey, Jersey City, both of N.J., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed May 8, 1972, Ser. No. 251,381

Int. Cl. G01r 27/02

U.S. Cl. 324-65 P

4 Claims



A guarded test cell for power factor measurement of oil including a connector adapted to receive a triaxial extension cable. The cell includes a housing within which a tubular center electrode, tubular guard electrode and a tubular outer electrode are concentrically and removably mounted. The housing also includes a cover having a removable plug mounted in an opening formed therein in alignment with the axis of the hollow center electrode. A connector, adapted to receive the triaxial extension cable, is also mounted in the housing generally at right angles to the electrodes. The connector is provided with electrically isolated contacts which engage, respectively, the electrodes of the cell. The cell electrodes are adapted to be immersed in oil samples, such as samples of elevated temperature, and the plug in the cover can be removed to permit insertion of a thermometer into the oil within the hollow center electrode. The extension cable allows the cell to be energized from a remotely located measuring unit.

3,753,099

**DEVICE AND METHOD FOR THE QUANTITATIVE MEASUREMENT OF FLUID ON PAPER STRIPS**

Israel Kleinberg; Lorne M. Golub; Samuel M. Borden, and Morris Settler, all of Winnipeg, Manitoba, Canada, assignors to Harco Electronics Ltd., Winnipeg, Manitoba, Canada

Filed Apr. 28, 1972, Ser. No. 248,629

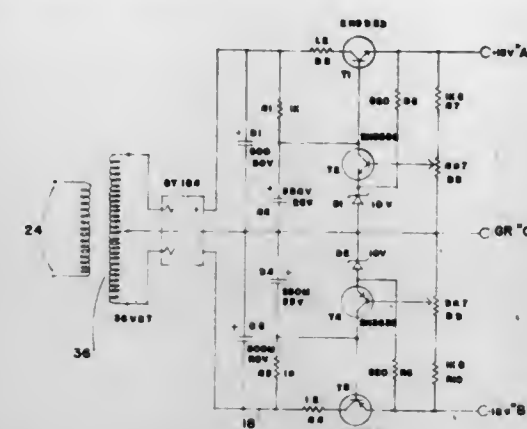
Int. Cl. G01r 27/26

U.S. Cl. 324-61 OS

18 Claims

A fixed and movable jaw form opposing plates of a capacitor with a paper strip carrying micro amounts of fluid being engaged between the jaws and acting as a dielectric whose characteristics (quality factor Q and relative dielectric constant  $E_r$ ) change depending upon the amount of fluid present on the paper between the jaws. This capacitor is connected

with an electronic circuit which includes a digital readout meter. This meter reads the bias current on a transistor, the base



of which is connected in circuit with the capacitor thus enabling the quantity of fluid present on the paper to be read out in microlitres.

3,753,100

**ACTIVE FREQUENCYMETER**

Roger Charbonnier, Meudon, France, assignor to Adret-Electronique, Trappes, France

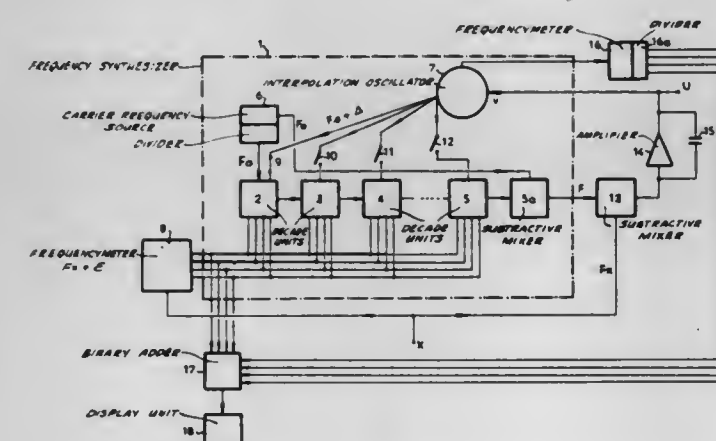
Filed July 16, 1971, Ser. No. 163,154

Claims priority, application France, July 30, 1970, 7028299

Int. Cl. G01r 23/02

U.S. Cl. 324-78 D

4 Claims



Device for measuring frequencies, comprising a frequency meter having a memory and digital outputs which programs an iterative frequency synthesizer. The latter comprises an interpolation oscillator switchable to a plurality of the decade units of the synthesizer. Means are provided for effecting a subtractive mixing of the synthesized frequency and the frequency to be measured and means are provided for controlling the frequency variation of the interpolation oscillator from the output of the mixing means. A second frequency meter which has digital outputs measures the frequency increment of the interpolation oscillator.

3,753,101

**FARADAY EFFECT CURRENT MEASURING DEVICE**

Pierre Aumont, Aix-Les-Bains, France, assignor to Alstom-Savoisienne, Saint-Quen, France

Filed July 5, 1972, Ser. No. 268,978

Claims priority, application France, July 5, 1971, 7124571

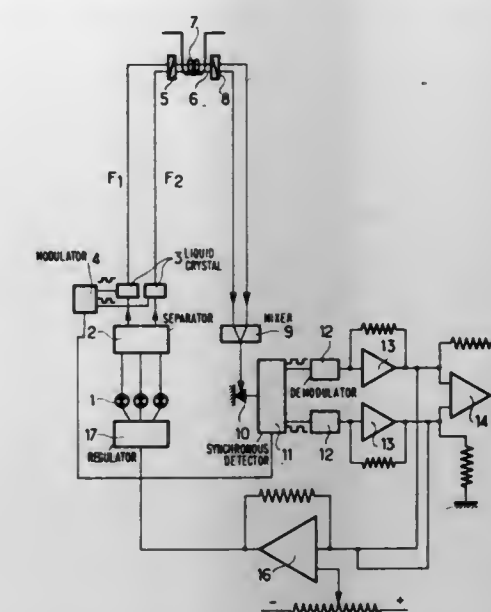
Int. Cl. G01r 31/00

U.S. Cl. 324-96

2 Claims

Faraday effect current measuring devices having two optical paths characterized in that a single photoelectric cell may be used for the two optical paths. Liquid crystal sheets, in the

two optical paths, are rendered alternately transparent and opaque at a very high frequency by an electric field controlled



by a modulator. As a result, a synchronized detector coupled to the output of the photoelectric cell separates the signals from the two optical paths.

3,753,102

**DETECTION OF ELECTROSTATIC CHARGE IN FLOWING MATERIALS**

Maurice Sidney Beck, Bradford 9, Yorkshire, England, assignor to National Research Development Corporation, London, England

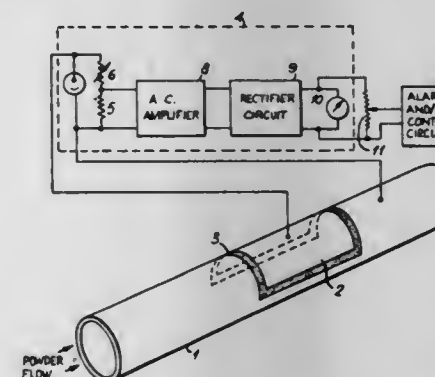
Filed Dec. 11, 1970, Ser. No. 97,182

Claims priority, application Great Britain, Dec. 15, 1969, 61,040/69

Int. Cl. G01r 5/28, 29/12

U.S. Cl. 324-109

12 Claims



Electrostatic charge is detected in a turbulently flowing material by arranging an electrode so that there is induced on it a potential dependent on the charge concentration in the material, and sensing the magnitude of the alternating component of the induced potential due to the turbulence.

3,753,103

**ELECTRICAL CIRCUIT TEST PROBE HAVING SPRING BIASED PROBE ASSEMBLY**

Paul J. Tetreault, Seekonk, and Douglas R. Gobin, Attleboro, both of Mass., assignors to Crystal-Protronics Associates, Pawtucket, R.I.

Filed Nov. 17, 1971, Ser. No. 199,707

Int. Cl. G01r 31/02

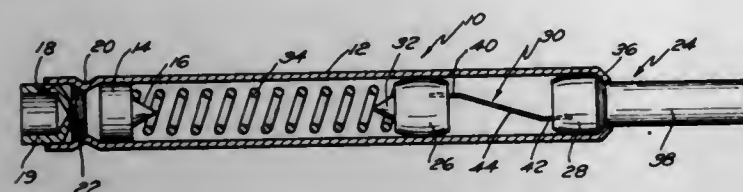
U.S. Cl. 324-72.5

5 Claims

A device for testing electrical circuits including an elongated hollow barrel having a probe assembly mounted for axial movement in an end thereof, the probe assembly being urged outwardly of the barrel by a compression spring located



therein, and further including inner and outer plungers that are interconnected by a leaf spring that provides for firm en-



gagement of the inner plunger with the wall of the barrel, wherein a proper electrical circuit is established from the probe assembly through the barrel.

3,753,104

# **ELECTRICAL CURRENT MEASUREMENT AND RAPIDLY LOCATING AND POSITIVELY IDENTIFYING CATHODES HAVING ABNORMAL ELECTRICAL CONDITIONS ASSOCIATED THEREWITH IN AN ELECTROLYTIC COPPER REFINING PROCESS TANKHOUSE**

Frank D. Shaw, Rumson, N.J., assignor to American Smelting and Refining Company, New York, N.Y.

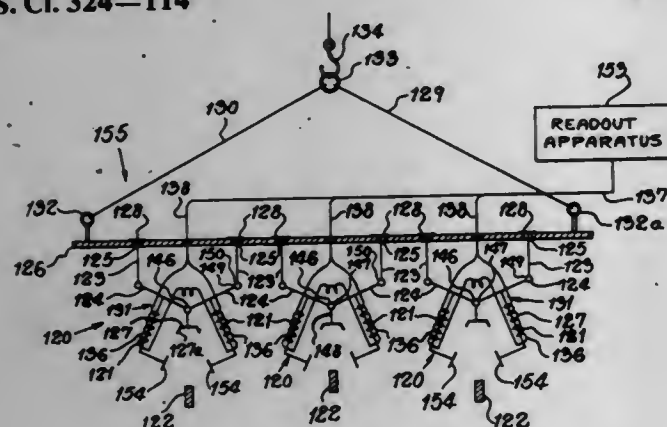
Division of Ser. No. 1,108, Jan. 7, 1970, Pat. No. 3,652,935.

This application Nov. 15, 1971, Ser. No. 198,513

Int. Cl. G01r 33/00, 1/22

U.S. Cl. 324-114

8 Claims



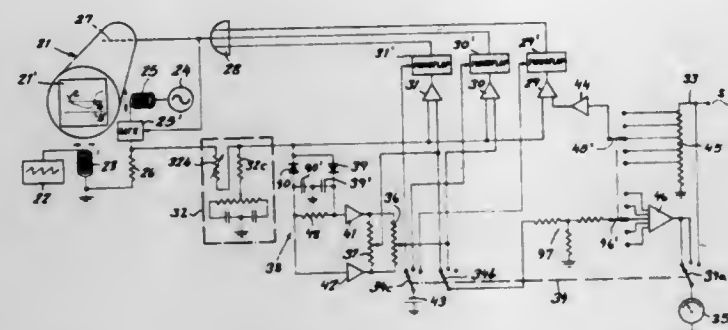
Cathodes having abnormal electrical conditions associated therewith in an electrolytic copper refinery tank-house are rapidly and positively identified to enable the early remedying of the abnormal condition or conditions, for instance short circuited cathodes or poor contacts, by closing the normally open, cathode bar receptive, pivotally mounted, automatically closeable and automatically openable jaws of a sensing head of an electrical current measuring instrument, or of the sensing heads of a plurality of current measuring instrument units depending from a common supporting means of a current measuring apparatus, about one or more of a plurality of spaced apart cathode bars in the tankhouse and from which the cathodes are suspended and immersed in the electrolyte. The sensing head jaws are closed about the cathode bars by lowering the instrument or apparatus whereby shoes of the instrument's operating mechanism are forcefully applied against the cathode bar or bars due to the weight of instrument or apparatus parts, thereby automatically closing the jaws of the sensing head or heads to substantially encompass the cathode bar or bars. The current passing through each cathode bar is measured by utilizing the magnetic field created by the current passing through the cathode bar to induce a measurable e.m.f. and a measurable electrical current in conductive coils on non-magnetic cores of the sensing head jaws in a preferred embodiment. The current measurement value for the cathode bar or each of the cathode bars is compared with a predetermined desired current measurement value for its suspended cathode thereby positively identifying any cathode or cathodes having an abnormal electrical condition or conditions associated therewith.

3,753,105  
**SYSTEM FOR VARYING AN OSCILLOSCOPIC TRACE**  
Peter Harzer, Enningen u.A., Germany, assignor to Wandel & Goltermann, Reutlingen, Germany  
Filed Oct. 22, 1971, Ser. No. 191,921  
Claims priority, application Germany, Oct. 22, 1970, P 20 51 791.3

Int. Cl. G01r 13/20

U.S. Cl. 324-121 R

9 Claims



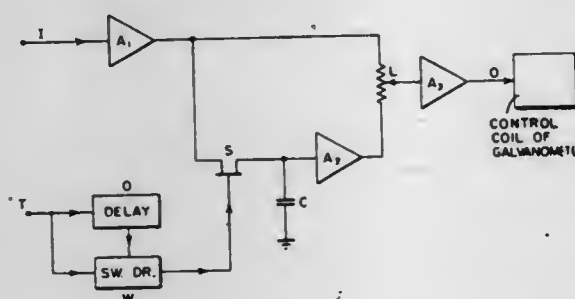
The beam of a cathode-ray tube, normally suppressed, is electromagnetically deflected by a triangular current in the x direction and by a sinusoidal current in the y direction, thereby producing an invisible grid on the oscilloscope screen. Whenever the y-deflection signal matches either an input signal to be visualized or a selected reference signal, the beam is turned on for a small fraction of a y-sweep cycle to produce part of a luminous trace, representing the input signal, and a straight base line corresponding to the reference signal. In order to vary the position and/or the scale of representation of the trace with maintenance of its correct position relative to the base line, the y-deflection signal is subjected to multiplicative and/or additive modification.

3,753,106  
**SYSTEM AND METHOD FOR DYNAMIC CONTROL OF ELECTRICAL ROTARY DEVICES**  
Pierre J. Brosens, Belmont, Mass., assignor to General Scanning, Inc., Watertown, Mass.  
Filed Feb. 25, 1971, Ser. No. 118,640

Int. Cl. G01r 1/14

U.S. Cl. 324-125

6 Claims



A method and system for obtaining precise step-wise motion in an electrical rotary device such as a moving-iron galvanometer, a stepping motor or other electrical device having a linear rotating response controllable by applied electrical pulses. Motion of the device is arrested exactly at the points desired by breaking down the actuating step into a sequence of two steps, the first being applied as the motion-initiating step, and the second being applied at the time of peak overshoot resulting from the first step. The second pulse is of a magnitude to exactly terminate motion at a half-period of resonant oscillation of the system.

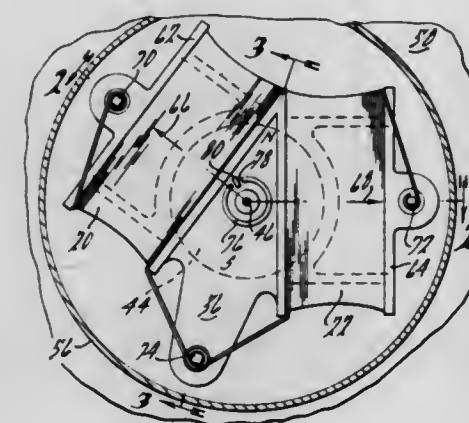
Signal-conditioning circuits for programming the sequence or time of application of the pulses and their amplitude include a storage circuit, an averaging circuit and a timing circuit to control the application of the sequence pulse.

3,753,107  
**MAGNETIC GAUGE WITH TWO V-POSITIONED COILS AND HAVING MAGNETIC RESTORING RING**  
James F. Burgett, Garden City; Gerald A. Gorrell, Dearborn, both of Mich.; Norman D. Mills, Atlantic City, N.J., and Lawrence J. Vanderberg, Ann Arbor, Mich., assignors to Ford Motor Company, Dearborn, Mich.  
Filed June 21, 1972, Ser. No. 265,027

Int. Cl. G01r 1/20, 1/00

U.S. Cl. 324-146

2 Claims



Magnetic gauge in which two electrical coils are positioned to form a V between them such that their axes intersect at a point intermediate and exterior of the coils. A permanent magnet is rotatable on a shaft which carries a pointer. The permanent magnet extends partially into each of the V-positioned coils and the vector resultant of the magnetic fields produced by currents in the coils determines the position of the rotatable magnet and the pointer carried by the shaft. A fixed resistor may be connected in series with one of the coils and a variable resistance may be connected in series with the other coil. A change in the variable resistance alters the current magnitude in its serially connected electrical coil.

3,753,108  
**MEANS AND METHOD FOR NUMERICALLY DISPLAYING THE TIMING OF IGNITION OR OTHER REPETITIVE EVENTS**

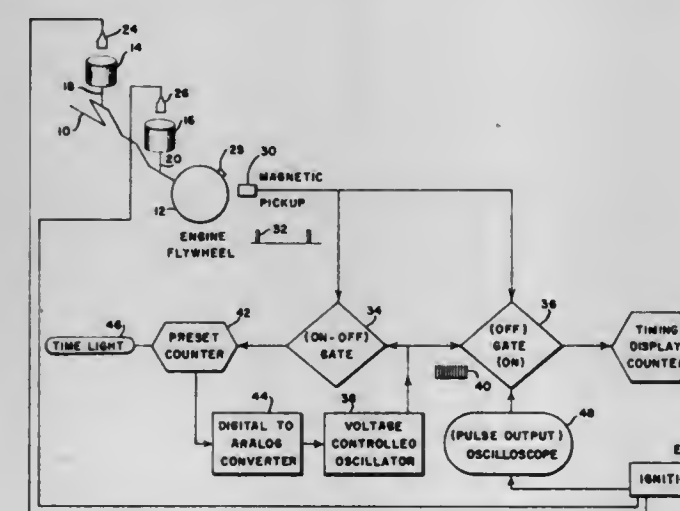
Arthur C. Eberle, Upper Arlington, Ohio, assignor to Columbia Gas System Service Corporation, Wilmington, Del.

Filed Apr. 9, 1971, Ser. No. 132,750

Int. Cl. F02p 17/00

U.S. Cl. 324-16 R

12 Claims



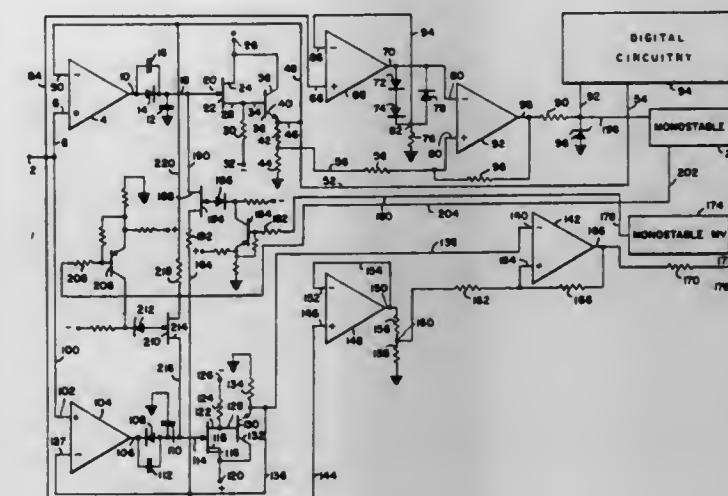
A digital ignition analyzer which calibrates the output frequency of a pulse generator with respect to the rotational speed of an engine, and then uses a counter to count the pulses from the generator during the time between ignition in a selected cylinder and a reference time. The count displayed on the counter gives a direct digital reading of the rotational angle between the reference point and the point of ignition.

3,753,109  
**PEAK DETECTOR**  
Julius Schainbaum, Philadelphia, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.  
Filed Mar. 8, 1971, Ser. No. 121,734

Int. Cl. G01r 19/16

U.S. Cl. 324-103 P

2 Claims



Circuitry is provided for distinguishing peaks in the amplitude of a time-varying signal. The circuitry includes a peak follower comprising a capacitor charged through a diode for storing peak values of the signal. A valley detection circuit is provided for resetting the peak follower following the occurrence of a valley in the signal. This prepares the peak follower for a new peak. A peak is determined to have occurred when the signal drops to an amplitude which is less than a predetermined percentage of the amplitude stored in the capacitor. The percentage is made to drop drastically at low signal levels to prevent noise from resulting in false indications of peaks.

3,753,110  
**TIMING APPARATUS USING ELECTROCHEMICAL MEMORY DEVICE**  
Hironosuke Ikeda, and Yosio Ooe, both of Hirakata-shi, Osaka-fu, Japan, assignors to Sanyo Electric Co., Ltd., Osaka-fu, Japan

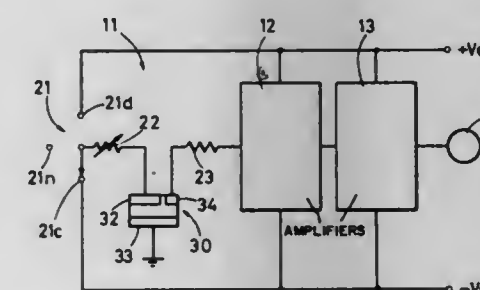
Filed Dec. 22, 1971, Ser. No. 211,022

Claims priority, application Japan, Dec. 24, 1970, 45/127566; Dec. 24, 1970, 45/127567; Nov. 16, 1971, 46/91713

Int. Cl. G04f 9/00; H01g 9/00

U.S. Cl. 324-182

12 Claims



An electrochemical potential memory device comprising a cathode mainly comprising silver, an anode mainly comprising silver chalcogenide, and a silver ion conductive solid state electrolyte sandwiched therebetween is connected to a current source for selectively driving the device in a charging state or discharging state and to a high input impedance direct current amplifier responsive to the terminal voltage of the device, and a timing operation signal proportional to the lapse of the charging or discharging time is obtained from the amplifier.

In a preferred embodiment, the potential memory device comprises a main cathode for supply of the charging or



discharging current and an auxiliary cathode for detecting the terminal voltage of the device, the latter being connected to the high input impedance amplifier. The timing apparatus employing such device eliminates disadvantageous influence caused by an overvoltage as occurs at the time of current conduction in the device.

3,753,111

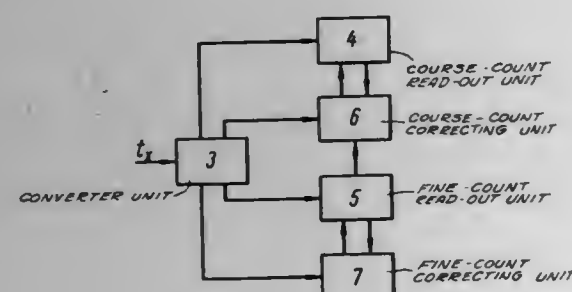
# METHOD FOR MEASURING TIME INTERVALS AND APPARATUS

Stanislav Vladimirovich Denbnovetsky, Brest-Litovsk Prospekt 35, kv. 17; Alexandr Karpovich Kovtun, ulitsa Patrisa Lumumby 13, kv. 57, and Vitaly Petrovich Sigorsky, ulitsa Patrisa Lumumby 13, kv. 62, all of Kiev, U.S.S.R.

Filed July 9, 1971, Ser. No. 161,099  
Int. Cl. G04F 9/00

U.S. Cl. 324-187

12 Claims



A method for measuring time intervals, by which the time interval of interest is coarsely measured by comparing it with a reference scale formed from a series of precisely timed pulses, a fine measurement is then made of its parts contained between the pulses bounding the measured interval and the timed pulses, after which the coarse count is altered according to fine count, the fine count, the fine measurement being taken of the parts of the time interval contained between the pulses bounding it and those timed pulses the time interval between which is a multiple of the number of timed pulses at least equal to the number of possible different coarse counts of the same time interval.

A method for measuring time intervals, by which the time interval of interest is coarsely measured by comparing it with a reference scale formed from a series of precisely timed pulses, and a fine measurement is made of its parts contained between the pulses bounding the measured interval and the timed pulses, after which the coarse count is altered according to the fine count, the fine count being changed by as many units of coarse measurement as will correspond to the change of the time interval between the timed pulses to which fine measurement is made of the carry from the previous measurement, as it is completed to a multiple of the number of timed pulses at least equal to the number of possible different coarse counts of the same time interval, and this adjusted fine count is taken as that fine count which is used as a basis for the adjustment of the coarse count.

A device to realize the former method, comprising a time converter one output of which is connected to the input of a coarse-count readout means and the other output to the input of a fine-count readout means, characterized in that it comprises a coarse-count correcting means the inputs of which are connected to the outputs of the coarse- and fine-count readout means, respectively, and the output is connected to the input of the coarse-count readout means, while an apparatus realize the latter method additionally contains at least one fine-count correcting means whose input is connected to

the output of the time converter and whose output to the input of the fine-count readout means.

## ERRATUM

For Class 324-6 see:  
Patent No. 3,753,134

3,753,112

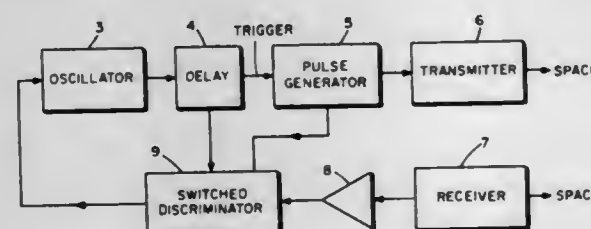
# COMMUNICATION SYSTEM WITH SAME FREQUENCY REPEATER STATION CAPABILITY

John Merle Tewksbury, Baltimore, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 23, 1972, Ser. No. 228,532  
Int. Cl. H04b 7/18

U.S. Cl. 325-13

9 Claims



A communication system with same frequency repeater station capability operates on a single channel and generally includes at least one repeater station which receives and transmits simultaneously on a single frequency, and a plurality of remote receiver transmitting stations, all of which operate on the same frequency as the repeater station. The repeater station includes a continuously operating transmitter, the keying of which is controlled by a local oscillator. Each of the remote stations includes a similar transmitter which is normally quiescent, but which is energized for local modulation and transmission by a push-to-talk button. Each cycle of the repeater station oscillator is modified by pulses received from a remote transmitting station, to reduce or increase the period as needed to produce identical periods and synchronization in each oscillator. The pulses received at the repeater station are not perceptible during its own transmission and hence, no control is then exerted. Hence, an equilibrium condition is immediately established at the repeater station in which the departure from coincidence of transmitted and received pulses at the repeater station is proportioned to its need for control. The transmissions from the repeater station are received by the remote stations not then transmitting. Intelligent modulation of the pulse period at these receiving remote stations is then evident and may be recovered.

3,753,113

# MULTILEVEL CODE SIGNAL TRANSMISSION SYSTEM

Rikio Maruta, and Kiyooki Kawai, both of Minato-ku, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed June 21, 1971, Ser. No. 155,200

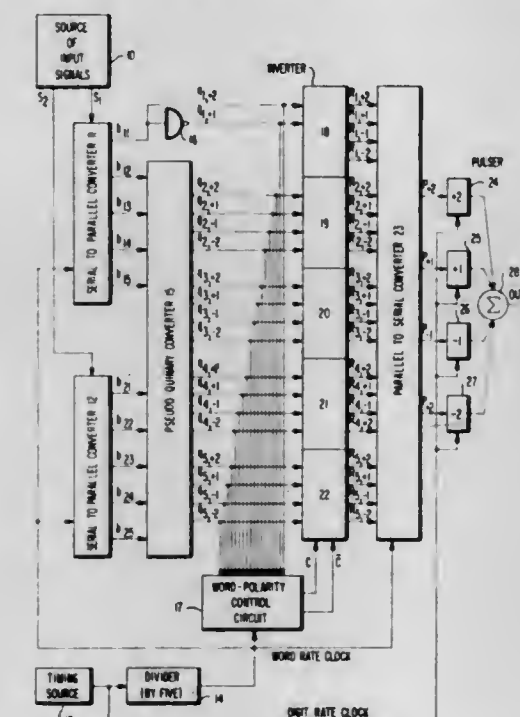
Claims priority, application Japan, June 20, 1970, 45/53615; Jan. 21, 1971, 46/1852; Mar. 22, 1971, 46/16652  
Int. Cl. H04b 1/00

U.S. Cl. 325-38 A

5 Claims

A binary code is converted into a multilevel code having an average value of zero over a period of time. A group of  $n$  multilevel digits is generated representing the same information conveyed by  $m \times n$  binary bits. Each digit is a  $(2^m + k)$ -level digit. One of said  $n$  digits represents the information content of  $m-1$  binary bits as well as polarity inversion and synchronization information. The remaining  $n-1$  multilevel digits represent the information content of the remaining  $m(n-1)+1$  binary bits. The integral of the transmitted  $n$ -digit codes is converged to zero level. The transmitted  $n$ -digit codes

are integrated by continually adding the sum of the levels of the transmitted code to the stored sum to generate a new sum or integral. The sign of the integral is compared with the sign of the sum of levels of the currently generated  $n$ -digit code. If the signs are the same, each digit of the  $n$ -digit code is polarity inverted. The first of the  $n$  digits uses only levels of one polarity when the  $m-1$  binary bits are converted into a single multilevel digit. Consequently, whether or not any given  $n$ -digit code has been polarity inverted can be detected by detecting the polarity of the first digit. Thus, the first digit carries the



total information of  $m$  bits by using one of  $2^m$  levels excluding  $k$  preselected levels. The remaining  $(n-1)$  digits are not inhibited to use those preselected levels. However, the first digit is not at those preselected levels. This feature is used at a receiver to obtain word or block synchronization. At the receiver, a sync pulse is generated for every  $n$  digit received. If the receiver is synchronized properly, the sync pulse will be in time coincidence with the first digit of each  $n$ -digit code. The presence of one of those preselected levels in coincidence with any sync pulse indicates an out of phase condition and the sync pulse is shifted by one digit time.

3,753,114

# METHOD AND APPARATUS FOR THE RECOVERY OF SYNCHRONOUS CARRIER IN A DIGITAL COMMUNICATION SYSTEM

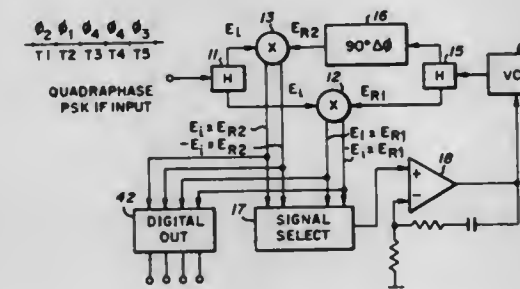
Cameron H. Burley, Sunnyvale, Calif., assignor to Culbertson Industries, Inc., Palo Alto, Calif.

Filed Dec. 2, 1971, Ser. No. 204,059

Int. Cl. H03d 3/06

U.S. Cl. 325-320

8 Claims



A carrier recovery and coherent detection system in a digital communication system having a quadrature or biphase PSK incoming signal, the incoming signal being divided and transmitted to a pair of radio frequency mixers, these mixers receiving their reference inputs from a voltage controlled

oscillator in a phase lock loop, one of the reference signals being phase shifted relative to the other. The outputs of the two mixers are utilized to produce a phase error signal in the phase lock feedback loop to the VCO to synchronize the VCO with the carrier signal. The mixer outputs serve to indicate the proper digital symbol output.

3,753,115

# ARRANGEMENT FOR FREQUENCY TRANSPOSITION OF ANALOG SIGNALS

Petrus Josephus Van Gerwen, and Robert Johannes Sluyter, both of Emmasingel, Eindhoven, Netherlands, assignors to U. S. Phillips Corporation, New York, N.Y.

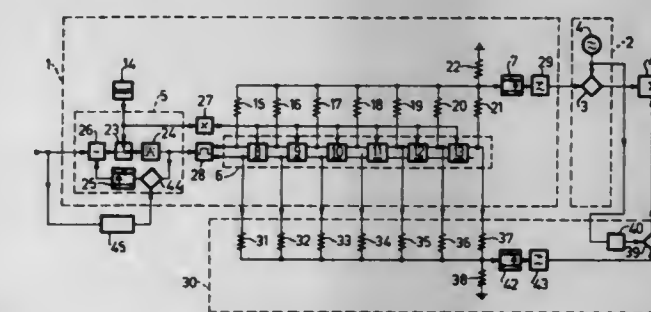
Filed Jan. 4, 1972, Ser. No. 215,334

Claims priority, application Netherlands, Jan. 27, 1971, 7101037

Int. Cl. H04b 1/10

U.S. Cl. 325-323

6 Claims



In an arrangement for transposition of the frequency band of an analog signal the analog signal is first converted into a digital signal in an analog-to-digital converter. The digital output of the converter is connected to a multistage shift register operated with shift pulses having a pulse width less than half the pulse width of the highest frequency analog signal. A first weighting network is connected to each stage of the shift register and multiplies the information in the associated stage by a factor corresponding to a Fourier expansion of a desired transfer function resulting in a digital bandpass filter. The output of the weighting network is combined in a combination network and reconverted into analog form in a digital-to-analog converter. In order to correct for distortions due to the limited number of shift register stages at least one additional weighting network is connected to the shift register stages for providing a transfer function with the same bandwidth as the transfer function provided by the first weighting network, although the transfer function of the additional weighting network is shifted in phase with respect to that of the first weighting network. As with the first weighting network a digital-to-analog converter connected to a combining network for the additional weighting network provides analog signals. The analog signals associated with the first weighting network modulate the output signal of a carrier frequency generator, while the analog signals associated with the additional weighting network modulate a phase shifted version of the output of the carrier frequency generator. The phase shifted modulated carrier is then subtracted from the modulated carrier in an additional combining network thereby removing the objectionable portions of the modulated carrier produced by the distortions from the shift register and first first weighting network.

3,753,116

# POCKET SIZE MICROWAVE RADIATION HAZARD DETECTOR

Richard B. Kolby, Barstow, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Filed Oct. 20, 1970, Ser. No. 82,369

Int. Cl. H04b 1/00

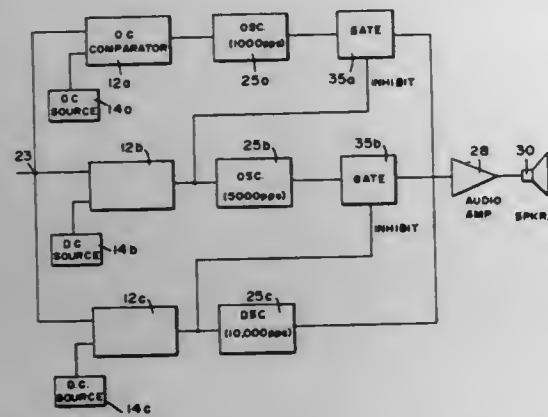
U.S. Cl. 325-363

2 Claims

A microwave radiation hazard detector in which CW radiation is detected and converted into a DC voltage whose level is



a function of the radiation level. This signal's level is compared with an adjustable level of a DC voltage by a comparator to which the signals are DC coupled. Only when the level of the former exceeds the adjustable level is an alarm-indicator output provided by the comparator. This output is used to activate a tone producing unit, lamps or any other indicator which is used to indicate to personnel the fact that they are exposed to radiation above a safe level.



3,753,117

## SEVERE WEATHER WARNING DEVICE

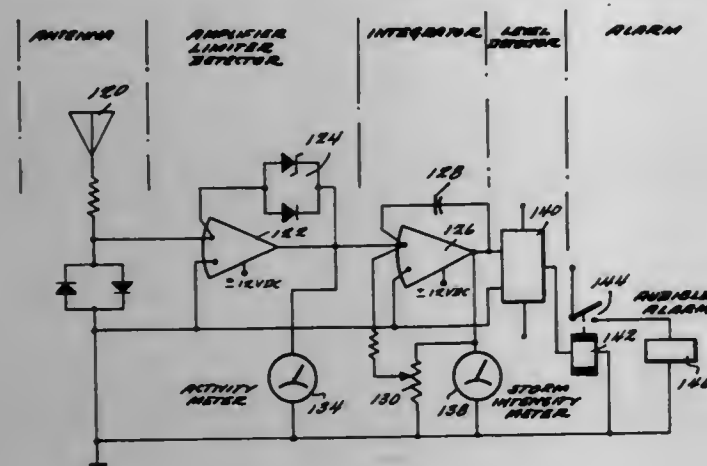
George C. Downing, and Thomas V. McEwen, both of Vicksburg, Miss., assignors to Weather Watch Corporation, Vicksburg, Miss.

Filed Oct. 27, 1971, Ser. No. 192,863

Int. Cl. H04b 1/06

U.S. Cl. 325-364

15 Claims



An apparatus for providing a severe weather warning particularly for providing warning of an imminent tornado, whereby a preferably nonmovable antenna receives electrical signals which result from the electrical activity which accompanies a storm. The signals thus received are amplified, limited in amplitude and integrated to derive a signal which, by its amplitude level, indicates the severity of storm activity. This integrated output signal is preferably applied to a level detector to provide an alarm signal when the integrated output level reaches a pre-determined level and further two meters are preferably connected to the output of the amplifier limiter circuit and the integrating circuit, respectively, for providing both an indication of storm activity and an indication of the severity of that activity. The output of the level detector circuit is preferably connected to an audible alarm which provides an audible alarm signal when the storm severity rises to a level indicating the imminence of a tornado. A non-interruptible power supply, which shifts from A.C. current normally supplied in a house to standby batteries when an outage occurs, preferably supplies the electrical power for the unit, which is self-contained and suitable for use in individual homes and the like.

### 3,753,118 CIRCUIT FOR DETERMINING THE FREQUENCY ASSIGNED TO A MARKABLE INSTANT OF A FREQUENCY-MODULATED TRANSMITTER

Karl Schlosser, Planegg, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

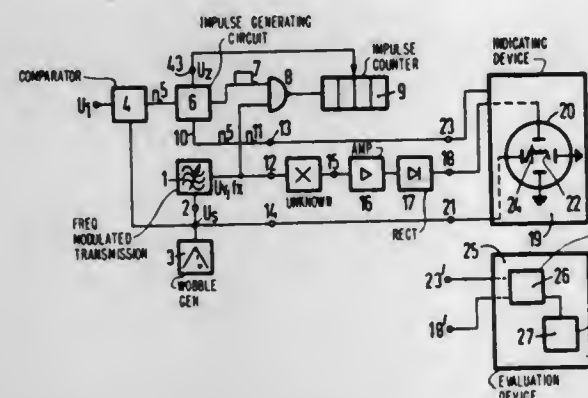
Filed July 9, 1971, Ser. No. 161,014

Claims priority, application Germany, July 22, 1970, P 20 36 449.2; July 22, 1970, P 20 36 412.9

Int. Cl. H04b 1/02

U.S. Cl. 325-134

21 Claims



A circuit for determining the frequency associated with a markable time point during the frequency-modulated transmission of a transmitter, particularly a wobblatable transmitter employing an adjustable auxiliary wobble-control voltage determining the frequency in function of time in which the frequency is determined by a counting operation in which the impulses of the transmission are counted for a predetermined period and in which a comparator impulse produced by comparison between a preset voltage and such auxiliary control voltage, which comparator impulse may be utilized directly or indirectly for marking purposes, is utilized to control the admission of impulses of such transmission to the counter for a predetermined period or periods.

3,753,119

## DIGITAL TUNING INDICATOR

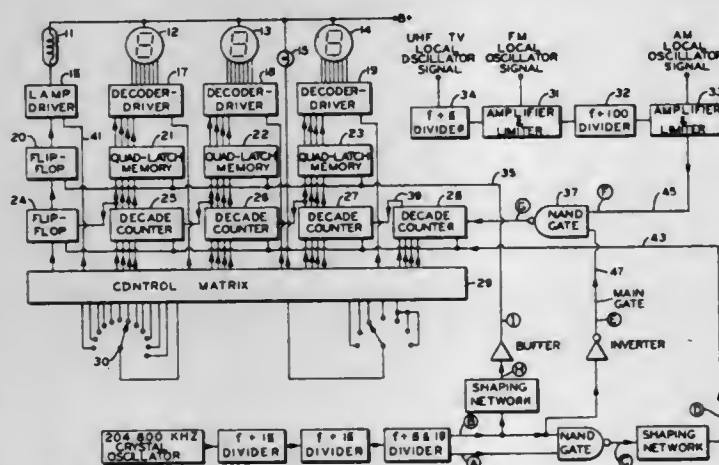
Ernest Frederick Close, Fort Wayne, Ind., assignor to The Magnavox Company, Ft. Wayne, Ind.

Filed Apr. 7, 1971, Ser. No. 132,012

Int. Cl. H04b 1/06

U.S. Cl. 325-455

13 Claims



A digital tuning indicator for a multiple band heterodyne type receiving device is disclosed which is capable of displaying the frequency to which the receiving device is tuned for AM and FM reception in kilohertz to the nearest kilohertz and in megahertz to the nearest one-tenth megahertz respectively, and of displaying the channel to which the device is tuned when receiving UHF television. The indicating system comprises a counter, the contents of which are periodically dis-

played. The counter contents are preset to a value which reflects the intermediate frequency of the particular band and a submultiple of the corresponding local oscillator frequency is gated into the counter for a prescribed time interval whereby the resultant sum in the counter at the end of the prescribed time interval reflects the actual received frequency or the corresponding channel number.

3,753,120

## CONTROL SIGNAL GENERATING CIRCUIT

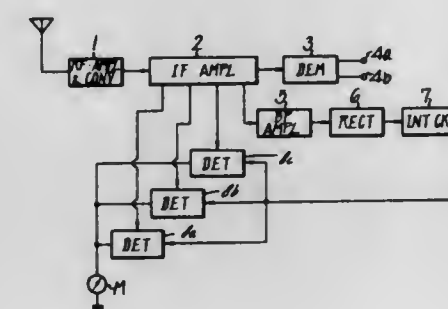
Mitsuo Ohsawa, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 11, 1971, Ser. No. 142,827

Int. Cl. H03j 1/02

U.S. Cl. 325-455

10 Claims



A control signal generating circuit for a frequency modulation receiver having a plurality of intermediate-frequency stages includes: a bandpass amplifier circuit, a circuit for rectifying an output signal of bandpass amplifier circuit to produce a bias signal, and a detector circuit for rectifying an intermediate-frequency signal to produce a control signal. The detector circuit is controlled by the bias signal. The amplitude of the control signal is a function of the intensity of a frequency modulated signal received by the frequency modulation receiver.

3,753,121

## VARIABLY BIASED AUDIO AMPLIFIER

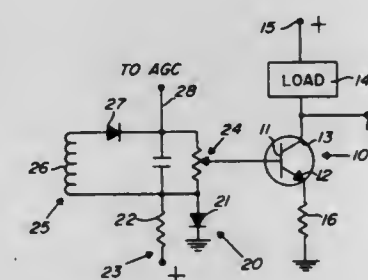
Francis H. Hilbert, Addison, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 3, 1971, Ser. No. 139,474

Int. Cl. H04b 1/16

U.S. Cl. 325-319

3 Claims



There is disclosed an audio amplifying output circuit for a receiver which includes biasing means for operating the out-

put transistor to a minimum operating current level. The circuit is DC coupled to the preceding stage as for example, the IF detector stage, so as to receive the DC component of the detected carrier signal. The DC component of the detected carrier signal is applied directly to the base of the transistor to increase its collector current in accordance with the amplitude of the driving signal thereby preventing transistor cut-off when signals of higher levels are received thereby.

3,753,122

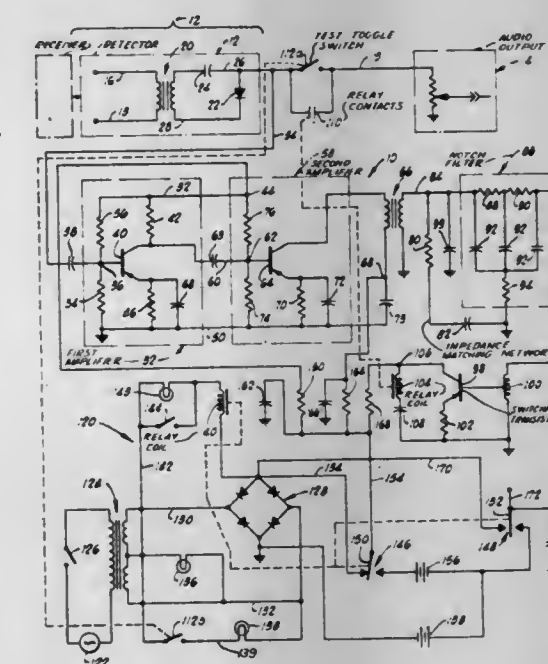
FREQUENCY RESPONSIVE RADIO ACTUATOR FOR  
AUTOMATICALLY CONNECTING THE RECEIVER  
PORTION AND THE AUDIO PORTION

Kenneth C. Shackleford, P.O. Box 777, Camden, Ark.  
Filed Mar. 31, 1971, Ser. No. 129,703

Int. Cl. H04b 1/06

U.S. Cl. 325-466

11 Claims



A radio actuator interposed between the receiver portion and the audio output portion of a radio to automatically establish electrical continuity therebetween when a signal having a predetermined actuating frequency is received by the receiver portion of the radio. The radio actuator has an amplifier network connected to the receiver portion to amplify the received signal, the amplified signal being transferred through an impedance matching network and a notch filter network to a switching transistor, the impedance matching network and the notch filter network cooperating to produce a maximum power transfer or gain thereacross at an actuating power level when the transferred signal has a frequency substantially the same as the actuating frequency. A signal having a power level substantially equal to the actuating power level drives the switching transistor into the saturation region passing current via the collector to a relay coil, thereby energizing the relay coil. The relay coil has a set of cooperating relay contacts interposed between the receiver portion and the audio output portion of the radio, the cooperating contacts being moved to the closed position in the energized position of the relay coil, thereby automatically turning the radio to an "on" position.



3,753,123

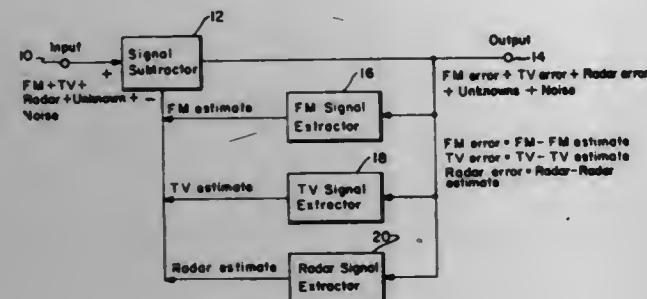
## SIGNAL SORTING SYSTEM

Daniel D. Carpenter, Manhattan Beach; Jean A. Develet, Jr., Palos Verdes Peninsula, and Robert Y. Huang, Palos Verdes, all of Calif., assignors to T. R. W. Inc., Redondo Beach, Calif.

Filed Oct. 16, 1970, Ser. No. 81,194

Int. Cl. H04b 1/16

U.S. Cl. 325-476



A signal sorting system having a signal summer for vectorially subtracting from input signals estimate signals of the input signals to provide error signals at its output, and a plurality of signal extractors connected to the signal summer and responsive to the error signals for providing the estimate signals.

3,753,124

## MANUAL SET SYSTEM FOR SHIFT REGISTER

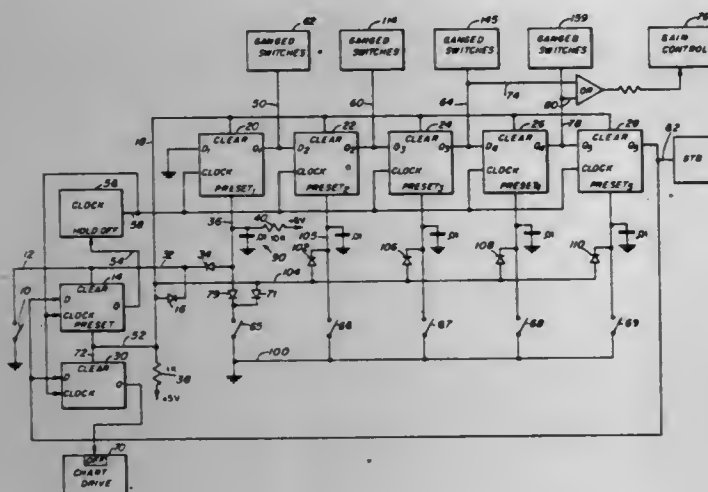
Ernest F. J. Graetz, Derry, N.H., assignor to Parke Davis & Company, Detroit, Mich.

Filed Aug. 16, 1972, Ser. No. 281,075

Int. Cl. G11c 11/00

U.S. Cl. 328-37

8 Claims



The specific disclosure provides a manual set system for a shift register wherein a manually operable switch is moved to a first position to connect both CLEAR and PRESET input terminals of a flip-flop to an activation signal source consisting of either a logical 0 or a logical 1 signal. The switch has a second position for connecting both CLEAR and PRESET terminals to a deactivation signal source which generates either a logical 0 or a logical 1 signal opposite to that of the activation signal source. The circuit also comprises electrically conductive components in circuit between the deactivation signal source and one of the CLEAR and the PRESET input terminals for passively delaying initiation of the deactivation signal thereon. This delay of the deactivation signal latches a logical signal at the output terminal of the flip-flop when the deactivation signal is fully developed at the other of the CLEAR and PRESET input terminals.

3,753,125

## FREQUENCY MULTIPLIER CIRCUIT

Masashi Ishikawa, and Kunihiko Ota, both of Tokyo, Japan, assignors to Nippon Electric Company Limited, Tokyo, Japan

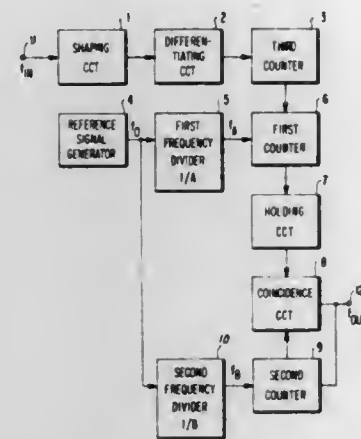
Filed July 27, 1972, Ser. No. 275,668

Int. Cl. H03k 5/13

U.S. Cl. 328-38

6 Claims

Claims priority, application Japan, July 27, 1971, 46/56613



Apparatus for multiplying an input frequency by a number  $A/B$  where  $A$  and  $B$  are integers and  $A > B$ . During one period of the input frequency,  $f_{in}$ , pulses at a rate  $fo/A$  are accumulated and held. Pulses at a rate  $fo/B$  are continuously counted and for each  $P$  pulses of said latter pulses an output pulse is generated. Since  $P$  is the number of  $fo/A$  rate pulses occurring during one period of  $f_{in}$ , the output pulse rate is  $f_{in} \times A/B$ . Additional means are provided for averaging the period of  $f_{in}$  by counting the  $fo/A$  rate pulses for a multiple of periods of  $f_{in}$  and obtaining the number  $P$  occurring during a single period by effectively dividing the accumulated pulses by said multiplier.

3,753,126

## SIGNAL FREQUENCY DIVIDER WITH DUAL PHASE-DISPLACED SIGNAL OUTPUT

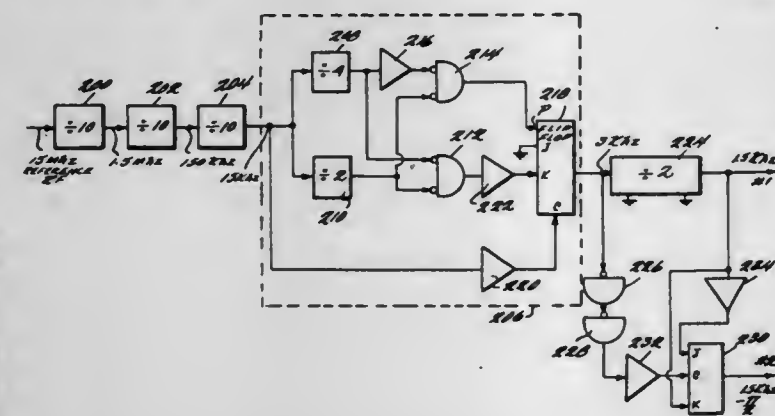
Robin H. Hines; William L. Hollinshead, and Thomas O. Bolden, all of Tullahoma, Tenn., assignors to Laser Systems & Electronics, Inc., Tullahoma, Tenn.

Division of Ser. No. 18,101, March 10, 1970. This application Nov. 19, 1971, Ser. No. 200,532

Int. Cl. H03k 29/00

U.S. Cl. 328-41

1 Claim



Signal frequency divider apparatus is provided which yields a pair of electrical signals having a fixed phase relationship with one another and having a constant frequency ratio with a radio frequency input signal. The resulting phase-displaced signals are useful in deriving a modulating signal of high stability through combination with the original radio frequency signal in double-balanced mixers.

3,753,127

## PSEUDOSYNCHRONOUS COUNTER

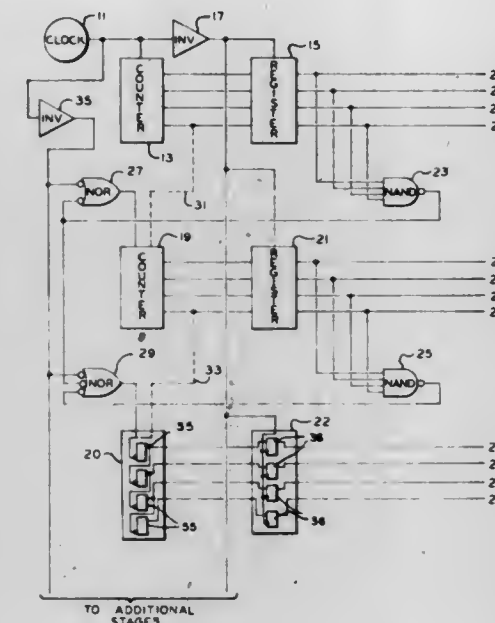
John J. Rowe, Bowie, Md., assignor to The Singer Company, Binghamton, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,031

Int. Cl. H03k 21/10

U.S. Cl. 328-42

5 Claims



The disclosure describes a counter which uses ripple counters but still provides a synchronous output through the use of a buffer stage which is loaded at the end of a clock pulse at which time the count will have settled is shown. Additional stages are provided with inputs from a gate enabled by a count of all ones in the previous buffer to permit the total settling time to equal that of one stage.

3,753,128

## GATED AMPLIFIER CONTROL WITH PROVISION FOR SUPPLEMENTARY CONTROL

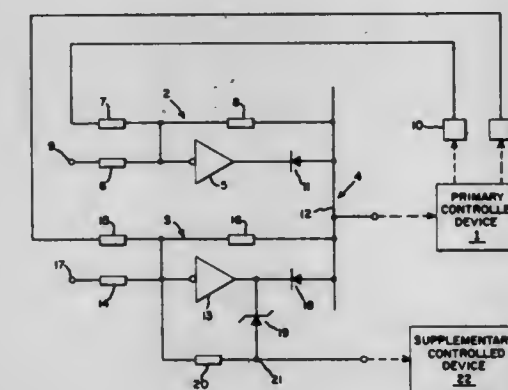
Daniel Johnson, Guilderland, and Arne Loft, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 8, 1972, Ser. No. 250,911

Int. Cl. H03k 17/02

U.S. Cl. 328-71

7 Claims



Two or more operational amplifiers with provision for closed loop feedback control of a primary controlled device are provided with a gating circuit which permits only one of the amplifiers to control at any one time. One or more of the amplifiers further includes a supplementary feedback circuit which becomes operative when the amplifier loses control of the primary device. This places the amplifier in control of a supplementary controlled device.

3,753,129

## STABILIZATION OF PREPARE VOLTAGE OF TRANSMISSION STORAGE TARGET

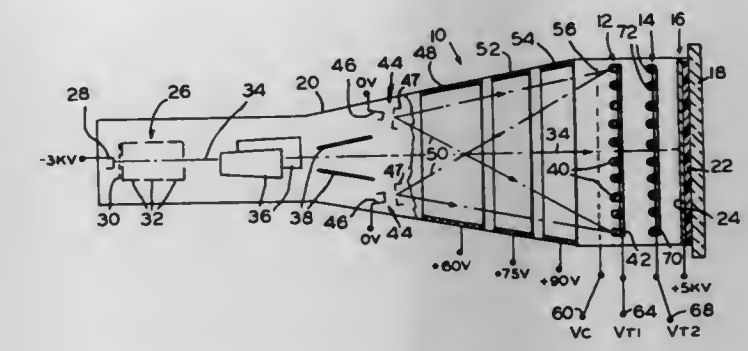
Bozidar Janko, Portland, Ore., assignor to Tektronix, Inc., Beaverton, Ore.

Filed Jan. 24, 1972, Ser. No. 220,060

Int. Cl. G11c 11/26; H01j 29/41

U.S. Cl. 328-123

10 Claims



A method and apparatus for improved operation of a transmission storage tube are described in which the preparation voltage provided on the storage dielectric prior to writing is stabilized to a substantial uniform value slightly positive of the flood gun cathode voltage. This is achieved by applying a plurality of stabilization pulses between the storage target electrode and the flood gun cathode during the bombardment of the storage dielectric by flood electrons, such pulses having a peak voltage greater than the first crossover voltage so the secondary emission ratio is greater than unity and having a quiescent voltage less than such first crossover voltage. In one embodiment, the frequency of the stabilization pulses is increased for a brief period at the beginning of the preparation period. The first target of a charge transfer tube is prepared for writing a charge image thereon by the stabilization pulses of the present invention which increases the quality of the charge image transferred to the second target.

3,753,130

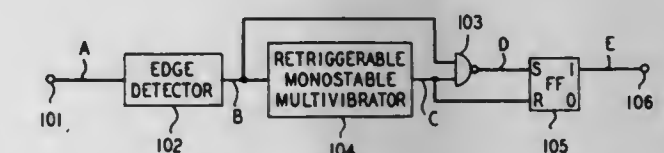
## DIGITAL FREQUENCY COMPARATOR

David August Pezzutti, Eatontown, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Int. Cl. H03k 5/20

U.S. Cl. 328-141

10 Claims



A digital frequency comparator is realized by employing a retriggerable monostable multivibrator in combination with a coincidence gate. The timing interval of the monostable multivibrator is set at a predetermined value corresponding to a desired reference frequency. When the frequency of an applied signal is greater than the reference, the monostable is retriggered prior to timing-out. Consequently, signals applied to the gate are periodically in coincidence, thereby indicating that the frequency of the applied signal is greater than the reference.



3,753,131

**CURRENT SOURCE FOR SUPPLYING A CURRENT HAVING AN EXPONENTIAL WAVE FORM**

Pieter Kramer, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

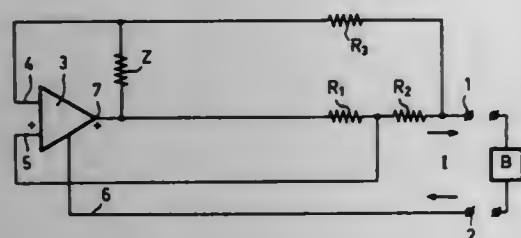
Filed Dec. 30, 1971, Ser. No. 214,286

Claims priority, application Netherlands, Jan. 8, 1971, 7100277

Int. Cl. G06g 7/24

U.S. Cl. 328-145

3 Claims



By using an operational amplifier, a few resistors and a reactance a current source is obtained which supplies a current having an exponential waveform. The current source may be used in analogue computers for operations with logarithms, in apparatus for testing semiconductors and in measuring instruments provided with a logarithmic display.

3,753,132

**SAMPLE-AND-HOLD CIRCUIT**

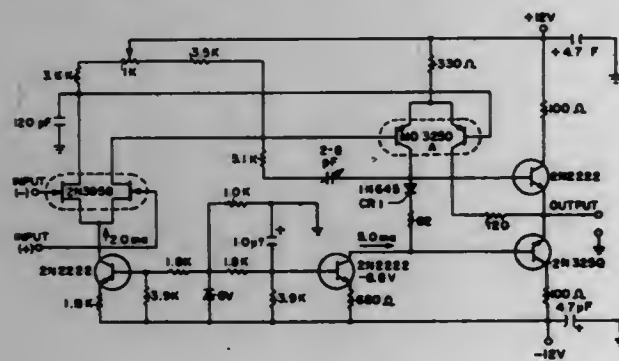
Eugene R. Hill, Thousand Oaks, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Mar. 2, 1972, Ser. No. 231,310

Int. Cl. H03k 5/18, 17/04, 17/08

U.S. Cl. 328-151

5 Claims



A sample-and-hold circuit which comprises a first input amplifier, a switch connecting a second amplifier to the output of the first amplifier and a pair of diodes which prevents saturation of the first amplifier during the hold period by closing a negative feedback path around the first amplifier when the signal level exceeds the diode conduction voltage.

3,753,133

**TRIGGER CIRCUIT FOR RECORDING AND TRANSMITTING SAMPLED ANALOG WAVEFORMS**

Paul William Shumate, Jr., Basking Ridge, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Apr. 5, 1972, Ser. No. 241,204

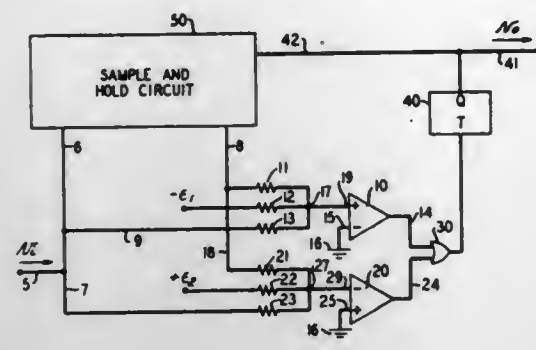
Int. Cl. H03k 5/08, 5/153, 13/17

U.S. Cl. 328-151

10 Claims

A trigger circuit is provided for generating a digital pulse each time the amplitude of an analog input signal increases by an amount greater than a first voltage increment or decreases by an amount greater than a second voltage increment. The

circuit features a sample and hold circuit in combination with a pair of operational amplifiers having current summing points



in their input circuitry for comparing the "last look" value of the input signal, the current value of the input signal, and the first and second voltage increments.

3,753,134

**METHOD OF MAPPING PERMAFROST BY ELECTROMAGNETIC RADIATION TO INDICATE THICKNESS THEREOF**

Robert R. Unterberger, Fullerton, Calif., assignor to Chevron Research Company, San Francisco, Calif.

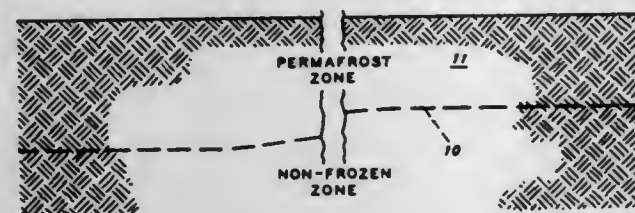
Continuation of Ser. No. 626,084, March 27, 1967,

abandoned. This application Oct. 4, 1971, Ser. No. 186,376

Int. Cl. G01v 3/12, 3/16

U.S. Cl. 324-6

2 Claims



A method for accurately and quickly mapping the thickness of the permafrost zone of an earth formation from a movable vehicle, say an aircraft, by transmitting electromagnetic radiation through the zone from a known geographic location on or above the permafrost's surface, detecting a portion of energy reflected from the remote interface, or bottom, of the permafrost zone, and recording the two-way travel time of the energy reflected from the bottom of the permafrost zone so as to indicate permafrost thickness as a function of the known geographic location of the electromagnetic radiation system.

3,753,135

**PULSE WIDTH DISCRIMINATOR**

Gerhard Kastner, Pfungstadt, and Klaus Lohman, Langen, both of Germany, assignors to Fernseh GmbH, Darmstadt, Germany

Filed Oct. 26, 1971, Ser. No. 192,239

Claims priority, application Germany, Oct. 27, 1970, P 20 52 600.5

Int. Cl. H03k 9/08

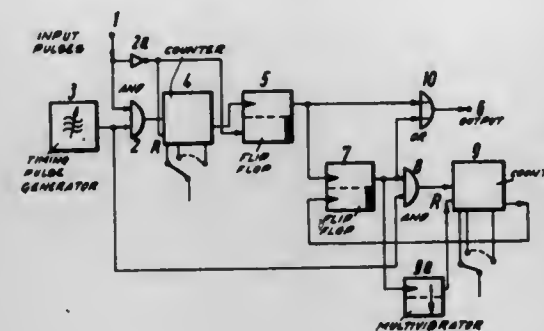
U.S. Cl. 329-106

10 Claims

An output pulse connects a timing pulse source to a first counter. A first flip flop produces a 1 level when a predetermined count is exceeded. A negative transition of the input pulse interrupts the timing pulses, resets the first counter and places the first flip flop at 0.

A second flip flop is shifted to a 1 level by a negative transition of the first flip flop. At the same time a second counter begins counting timing pulses. The second counter resets the second flip flop to zero, when a predetermined count is reached.

1 level outputs of both flip flops are combined in an OR gate.



Short input pulses reset the first counter before any 1 levels are achieved.

Wide input pulses are transmitted, delayed by an interval corresponding to the selection width and to the predetermined count.

3,753,136

**SOLID STATE TRAVELING WAVE AMPLIFYING DEVICE**

Kenji Kumabe, Kodaira, Hiroshi Kanbe, Tanashi, and Riro Nii, Tokyo, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

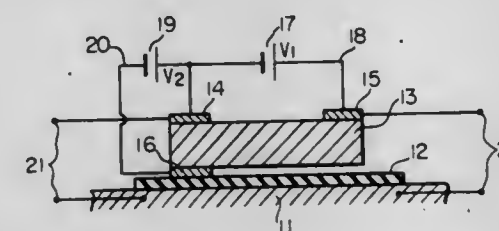
Filed Feb. 12, 1971, Ser. No. 114,970

Claims priority, application Japan, Feb. 24, 1970, 45/15336; Sept. 28, 1970, 45/84546

Int. Cl. H03f 3/04

U.S. Cl. 330-5

9 Claims



This invention relates to a solid state travelling wave amplifying device, utilizing such a semiconductor as n-type GaAs or n-type InP in which average velocity of electrons decreases with increasing electric field strength when an electric field of which field strength being higher than a critical value is applied, said semiconductor is provided with additional ohmic electrode or electrodes at input side and/or output side in addition to main electrodes comprising positive and negative electrodes so that an external DC energy will be supplied through the additional electrode.

3,753,137

**AMPLIFIER**

Johann Mattfeld, Kirchhausen, and Frank Pieper, Schwalgern, both of Germany, assignors to Licentia, Patent-Verwaltungs G.m.b.H., Frankfurt am Main, Germany

Filed Mar. 12, 1971, Ser. No. 123,769

Claims priority, application Germany, Mar. 23, 1970, P 20 12 829.8

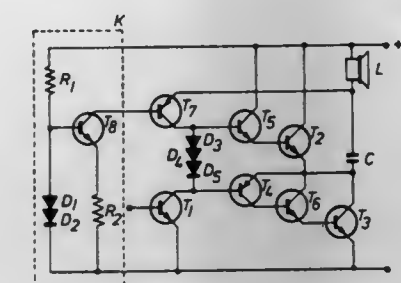
Int. Cl. H03f 3/26

U.S. Cl. 330-15

9 Claims

An amplifier comprises a class-B push-pull transistor output stage controlled by a driver transistor, means for maintaining the quiescent collector current of the output stage transistors

independent of temperature fluctuations in the output stage transistors, the load resistance of the driver transistor being provided by the collector-emitter path of an additional transistor. A constant current supply is connected to the base of the additional transistor such that its collector-emitter volt-



age and thus the load resistance of the driver transistor varies substantially in proportion to the voltage of the supply source whereby the quiescent collector current in the transistors of the output stage is independent of fluctuations in the supply voltage.

3,753,138

**AMPLIFIER SYSTEM WITH CONTINUOUSLY VARIABLE SUPPLY**

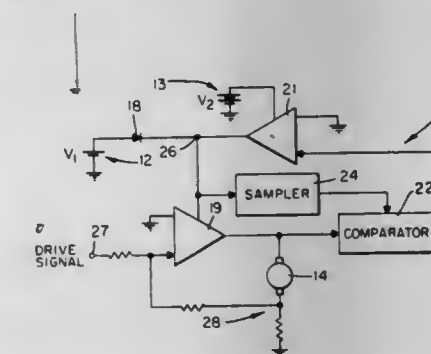
Gordon D. Svendsen, San Carlos, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed June 3, 1971, Ser. No. 149,497

Int. Cl. H03f 3/68

U.S. Cl. 330-30 R

9 Claims



A voltage comparator compares the operating voltage provided to a power amplifier to a voltage representative of that appearing across a load. A unity gain linear amplifier is coupled between a voltage source and the power amplifier that is responsive to the voltage comparator to maintain the operating voltage provided to the power amplifier sufficient to deliver the required current to the load.

3,753,139

**COMBINED TEMPERATURE COMPENSATION AND ZERO-OFFSET CONTROL**

William H. Spencer, Monrovia, Calif., assignor to Bell &amp; Howell Company, Chicago, Ill.

Filed May 13, 1971, Ser. No. 143,024

Int. Cl. H03f 3/36

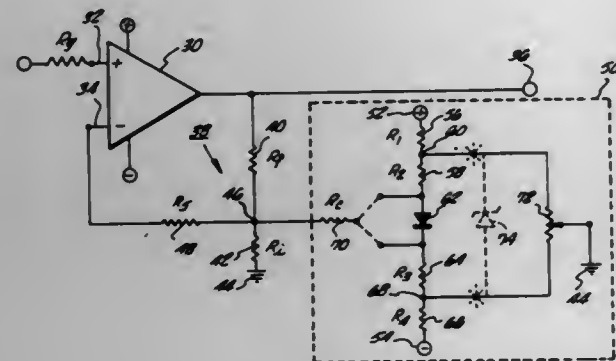
U.S. Cl. 330-69

7 Claims

A temperature compensating and zero-offset control circuit for an operational amplifier includes a floating diode in combination with a potentiometer. The diode exhibits a repeatable temperature coefficient which is a negative one at the anode



and a positive one at the cathode. The zero-offset is accomplished by adjusting the dc level at which the diode floats with



reference to the dc level of the amplifier. The output of the circuit is applied as one of the feedback inputs to the amplifier.

### 3,753,140 EQUALIZING NETWORK

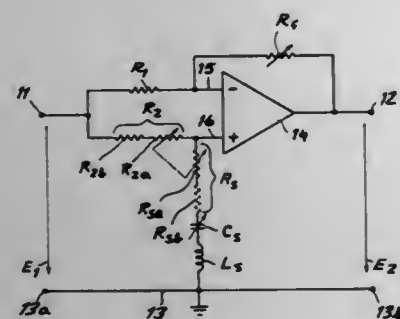
Karl Heinz Feistel, Eningen, Germany, assignor to Wandel & Goltermann, Reutlingen, Germany  
Filed Sept. 7, 1971, Ser. No. 178,182

Claims priority, application Germany, Sept. 9, 1970, P 20 44 553.8

Int. Cl. H03F 1/36

U.S. Cl. 330-109

10 Claims



An equalizing network for correcting phase and amplitude distortions is constructed as a four-terminal T-section with the input-side series arm and the shunt arm composed of passive impedance elements and with the output-side series arm constituted by an operational amplifier having its ungrounded output terminal connected to its inverting input terminal through a resistive feedback path. The inverting and noninverting input terminals of the amplifier are connected to the ungrounded network input through respective branches of the passive series arm. A variable capacitance forming part of a series-resonant circuit in the shunt arm, or a variable inductance forming part of a parallel-resonant circuit in one of the branches of the passive series arm, serves for selection of the frequency of maximum attenuation; the magnitude of this attenuation is controlled by an adjustable resistor in the feedback path. Selection of the phase delay is carried out with the aid of two ganged resistors in the shunt arm and in the series branch feeding the noninverting amplifier input, or by means of a single adjustable resistor common to this branch and the shunt arm.

### 3,753,141 WIDE FREQUENCY RANGE VOLTAGE CONTROLLED OSCILLATOR WITH CRYSTAL CONTROLLED FREQUENCY STABILIZING LOOP

Cornelis Johannes Van Elk; Jacob Frederik Raaijever; Jan Gijsbert Dirk Van Der Lee, and Albertus Marinus Morrien, all of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

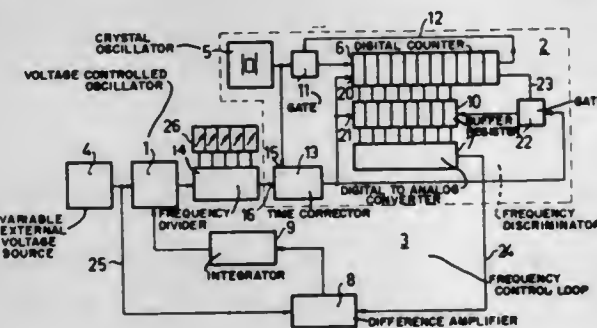
Filed Sept. 20, 1971, Ser. No. 182,067

Claims priority, application Netherlands, Sept. 24, 1970, 7014066

Int. Cl. H03b 3/04

U.S. Cl. 331-1 A

10 Claims



A controllable broad-band frequency generator comprising a voltage-controlled oscillator incorporated in a frequency controlled loop and an external controllable voltage source connected thereto, the control loop furthermore incorporating a digital crystal stable frequency discriminator and a combination device in which the direct voltage value derived from the voltage source is deducted from the output voltage provided by the frequency discriminator to obtain a direct control voltage for frequency controlling the voltage-controlled oscillator.

### 3,753,142 SIGNAL GENERATORS EMPLOYING DIGITAL PHASE LOCKED LOOPS AND COMPENSATING CIRCUITS

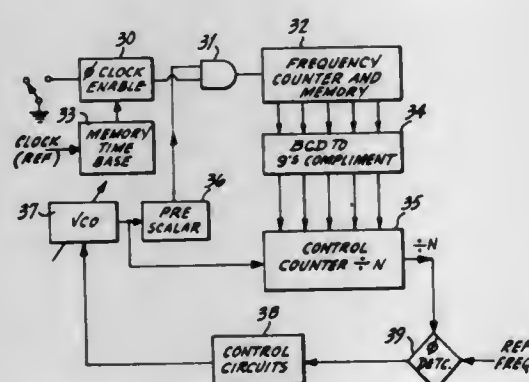
Roy Nardin, Middle Village, and Frank J. Sposato, Huntington, both of N.Y., assignors to Logimetrics Inc., Greenvale, N.Y.

Filed June 12, 1972, Ser. No. 262,248

Int. Cl. H03b 3/04

U.S. Cl. 331-1 A

8 Claims



There is described a signal generator capable of being tuned over a relatively high frequency range. The generator includes a VCO which is controlled in frequency by a phase locked loop. The loop operates to compare a reference frequency from an accurate crystal source with the divided oscillator frequency. The division is afforded by a first frequency counter which controls a programmable divider to cause the same to divide by the correct integer independent of the oscillator tuning. The phase locked loop includes a phase detector responsive to digital waveforms to provide a dual polarity error control signal by combining outputs of the phase detector in a differential operational amplifier. The operational amplifier is further controlled to cancel an error offset voltage so that the final output signal is free from spurious modulation products.

### 3,753,143 PHASE LOCKED OSCILLATOR FOR INTEGER PULSE RATES

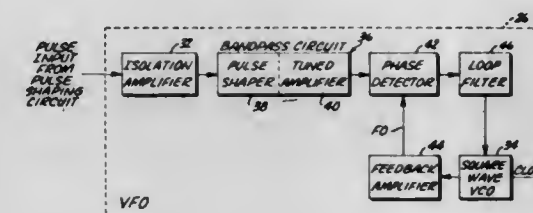
Michael C. Aguirre, Oklahoma City, Okla., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Aug. 5, 1971, Ser. No. 169,195

Int. Cl. H03b 3/04

U.S. Cl. 331-8

11 Claims



A phase locked oscillator for locking to a train of pulse signals where the pulse repetition rates are integer multiples of each other. The input pulse signals are directed to a bandpass circuit, a tuned amplifier, the center frequency of which is selected to be the same as the reference frequency of a phase detector. The output signal of the bandpass circuit is a sinusoidal signal directed to the gated or multiplier phase detector. A square wave voltage controlled oscillator has a portion of its output signal fed back to the phase detector. The output of the phase detector controls the frequency of the voltage controlled oscillator. In the phase locked loop, the square wave voltage controlled oscillator is locked to a reference frequency from the bandpass circuit independent of an integer change in the pulse repetition rate of the input pulse train signals.

### 3,753,144 GAS LASER STRUCTURE

William J. Kearns, 400 N. Old Ranch Rd., and Andrew O. Jensen, 2134 Canyon Rd., both of Arcadia, Calif.

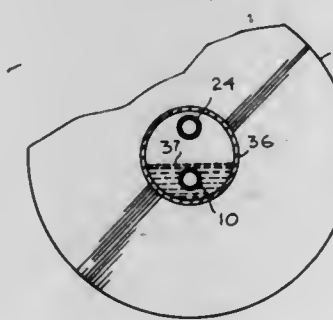
Division of Ser. No. 4,178, Jan. 14, 1970, abandoned, which is a continuation of Ser. No. 503,232, Oct. 13, 1965, abandoned.

This application Oct. 18, 1971, Ser. No. 190,301

Int. Cl. H01s 3/00

U.S. Cl. 331-94.5 O

3 Claims



This application relates to a gas laser structure having an insulating, heat resistant discharge tube having means associated therewith for transferring heat therefrom during lasing operation. In a first embodiment, cooling fins are attached to the outer surface of the discharge tube. In further embodiments, the fins extend through the outer discharge tube wall and are either formed to provide, among the plurality of fins, an inner discharge tube or are connected to substantially cylindrical discharge tube sections. In still a further embodiment, a boiler-condenser—vapor cooling technique structure is disclosed. Means to equalize the pressure between the opposite ends of the laser structure is also disclosed.

### 3,753,145 COMPACT END-PUMPED SOLID-STATE LASER

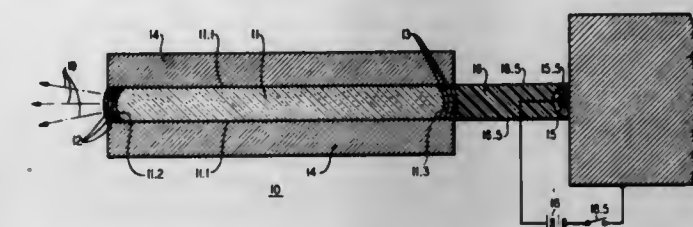
Ronald Benjamin Chesler, Summit, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed June 26, 1972, Ser. No. 265,978

Int. Cl. H01s 3/09

U.S. Cl. 331-94.5

10 Claims



A cylindrically shaped rod of neodymium doped yttrium aluminum garnet (Nd:YAG) is pumped into laser operation by means of an incoherent light emitting semi-conductor diode, or array of such diodes, whose output is compactly coupled to the rod through an end surface of the rod.

### 3,753,146 NOVEL VISIBLE SPECTRUM DYE LASERS

George A. Reynolds; Sam A. Tuccio; Otis G. Peterson, and Donald P. Specht, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

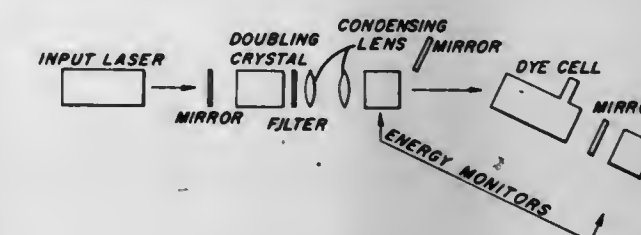
Continuation of Ser. No. 15,489, March 2, 1970, abandoned.

This application Oct. 18, 1971, Ser. No. 190,304

Int. Cl. H01s 3/20

U.S. Cl. 331-94.5

13 Claims



A lasing medium is disclosed containing certain pyrylium and benzopyrylium organic dyes which are capable of laser emission in the 500-600 nanometer region.

### 3,753,147 LASER OSCILLATOR-AMPLIFIER SYSTEM

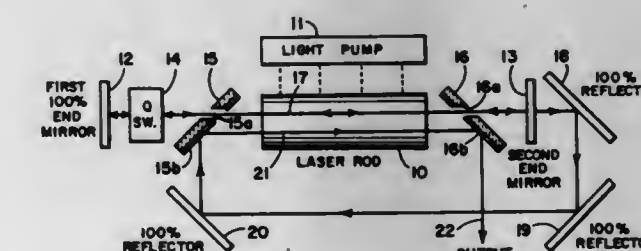
Carl William Schulthess, Pomona, Calif., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 23, 1972, Ser. No. 265,665

Int. Cl. H01s 3/02

U.S. Cl. 331-94.5

8 Claims



An aperture plate having a central aperture and a 100 percent reflecting surface surrounding the central aperture is placed in the optical cavity of a laser rod to thereby confine generation of a laser beam to only a first portion of the rod that is in optical alignment with the central aperture. Laser light is directed through a second portion of the rod spaced from and parallel to the first portion so that it misses the central aperture and is intercepted and reflected by the 100% reflecting surface of the aperture plate, the laser light being



amplified in the second portion so that a method and means are provided for both generation and amplification of laser light in a single laser rod.

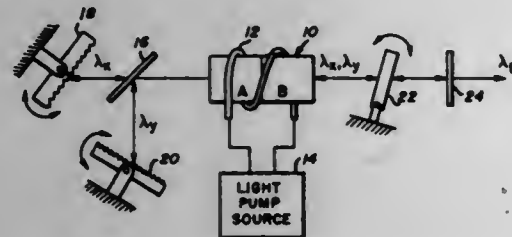
3,753,148

## INFRARED TUNABLE LASER

Kenneth W. Billman, Mountain View, Calif., assignor to the United States of America as represented by the Administration of the National Aeronautics and Space Administration  
Filed Apr. 6, 1972, Ser. No. 241,615  
Int. Cl. H01s 3/10

U.S. Cl. 331-94.5

8 Claims



A tunable laser apparatus including a first wavelength selective reflector and a second wavelength selective reflector forming one end of an optical cavity, a third wavelength selective reflector forming the other end of the optical cavity, a first lasable dye solution for developing radiation of a wavelength selected by the first reflector and a second lasable dye solution for developing radiation of a wavelength selected by the second reflector disposed within the optical cavity, and a non-linear mixing crystal disposed within the optical cavity. The selected radiation is passed through the non-linear mixing crystal causing it to develop radiation of a third wavelength which is transmitted out of the optical cavity through the third reflector.

3,753,149

## GAS LASER

Helmut Kindl, Munich, and Heinz Westemeier, Neubiberg, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

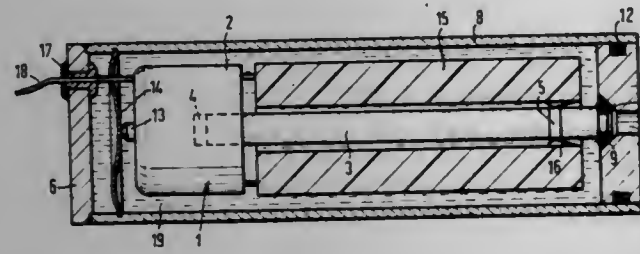
Filed July 29, 1971, Ser. No. 167,295

Claims priority, application Germany, Aug. 11, 1970, P 20 39 947.7

Int. Cl. H01s 3/00

U.S. Cl. 331-94.5 G

10 Claims



A gas laser having both a discharge tube with a capillary tube and an electronic arrangement, which serves as a power supply, sealed in a housing characterized by the housing being a metal tube having each end closed by an end wall to form a sealed chamber which contains the electronic arrangement which is a hollow cylinder that concentrically receives the capillary tube. Preferably, the chamber of the housing is filled with an electrically insulating and heat conducting material which is either a liquid or cast therein. The electronic arrangement preferably comprises the elements of the arrangement embedded in a cast plastic material which is cast in a hollow cylinder. One of the end walls of the housing contains the decoupling window and has a conical recess therearound for receiving a free end of the capillary tube which is sealed by an O-ring sealing ring and which is urged into engagement with the conical recess by a spring plate disposed in the housing.

3,753,150

## LASER MIRROR POSITIONING APPARATUS

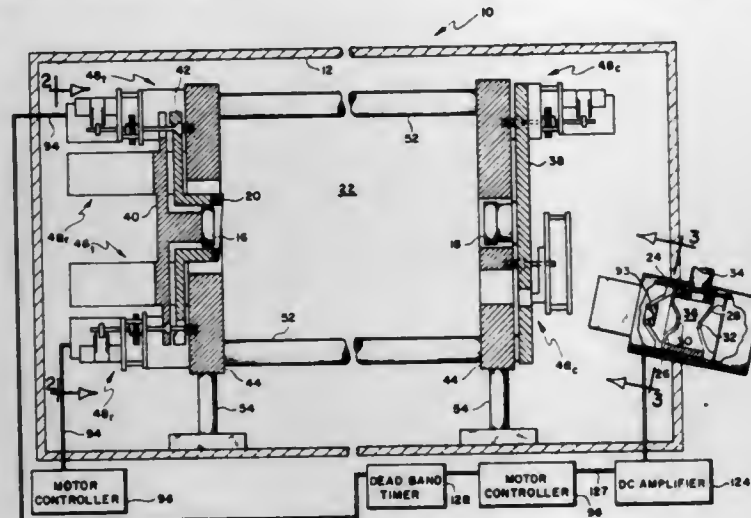
Jacob L. Zar, North Andover, Mass., assignor to AVCO Corporation, Everett, Mass.

Filed Sept. 6, 1972, Ser. No. 286,724

Int. Cl. H01s 3/08

U.S. Cl. 331-94.5

18 Claims



The coupling, return and transfer mirrors within a high-powered laser housing each are mounted to a frame at three stations 120° apart. Step motors at two of the stations are energized from the housing exterior to displace the mirrors and thus vary their orientation. The transfer mirror is oriented to point an output laser beam through an opening in the housing by a control system responsive to the distribution of heat around the opening to control the step motors for the transfer mirror.

3,753,151

## MODE SELECTOR FOR SCAN LASER

Gunter Schulten, Wedel, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

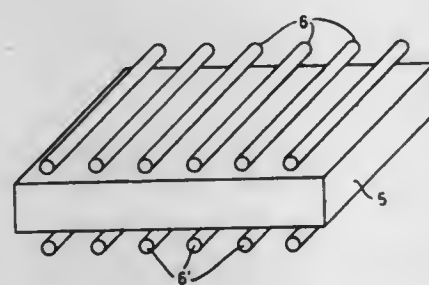
Filed June 2, 1972, Ser. No. 259,191

Claims priority, application Germany, June 3, 1971, P 21 27 463.5

Int. Cl. G02l 1/26

U.S. Cl. 350-160

4 Claims



The invention relates to a mode selector having a plate showing an electro-optical effect in an electric field to control the modes of oscillation in a scan laser. The new mode selector consists of two identical selectors which are rotated relative to each other through 90° and which are each arranged in a focal plane of the laser-resonator and of which one controls the x coordinate and the other controls the y coordinate of the focus, in which a plate-shaped electro-optical KDP material is surrounded by grid-shaped electrodes between which electric fields are produced which, with the exception of a strip-shaped region, everywhere exceed a certain minimum intensity but disappear or are very small in the strip-shaped region. The electrodes are two grids of parallel wires and the individual wires have such a potential that either a transverse or a longitudinal electro-optical effect occurs in the electro-optical material.

3,753,152

## ELECTRICAL WAVE PUMPED PULSED LASER

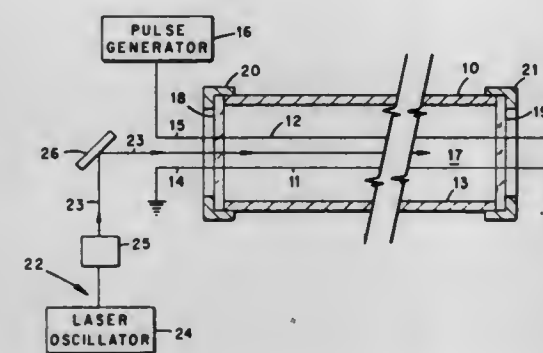
Kenneth J. Pettipiece, Brentwood, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Feb. 2, 1972, Ser. No. 222,785

Int. Cl. H01s 3/09

U.S. Cl. 331-94.5

20 Claims



A pulsed laser wherein emission is generated from a gaseous gain medium, the gain medium being pumped by at least one traveling high voltage electromagnetic pulse having a duration too short for inducing formation of an ionization discharge in the medium. The gaseous gain medium is contained in a vessel having a pair of conductors which provide a waveguide for conducting the electromagnetic pulse through the gaseous gain medium. Pulsed laser emission is obtained in an oscillator mode or in an amplification mode.

3,753,153

## DOUBLE PULSE BIAS STABILIZATION OF A MICROWAVE OSCILLATOR USING AN AVALANCHE DIODE OPERATIVE IN THE ANOMALOUS MODE

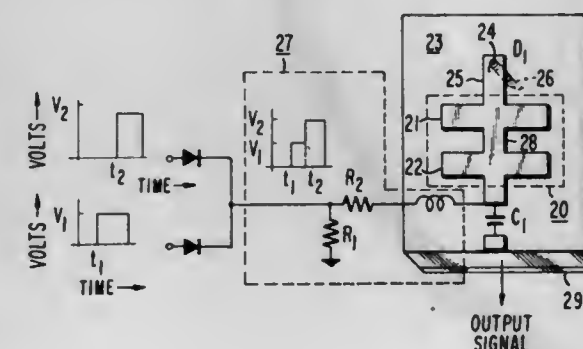
Shing-Gong Liu, Princeton, and John Joseph Risko, Cranbury, both of N.J., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 21, 1972, Ser. No. 246,470

Int. Cl. H03b 7/14

U.S. Cl. 331-107 R

6 Claims



The operation of a microwave oscillator using an avalanche diode operative in the anomalous mode is stabilized by the use of a double pulse, direct current bias signal. The double pulse bias signal first triggers the anomalous mode of diode operation with minimum oscillator instability and reduced oscillator output power, thereafter causing the anomalous mode of diode operation to continue without increasing the oscillator instability but increasing the oscillator output power.

3,753,154

## CRYSTAL-CONTROLLED OSCILLATORS

Jean Pierre A. Moreau, and Georges Schuler, both of Paris 16eme, France, assignors to Sescosem-Societe Europeene de Semiconducteurs et de Microelectronique, Paris, France

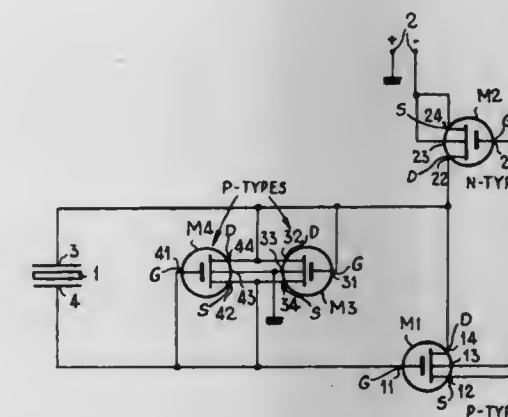
Filed Feb. 2, 1972, Ser. No. 222,778

Claims priority, application France, Feb. 17, 1971, 7105365

Int. Cl. H03b 5/36

U.S. Cl. 331-116 R

6 Claims



A crystal-controlled oscillator of integrated circuit design, comprising, on the one hand, two MOS devices of opposite type, the first one being the load element associated with the second one, between gate and drain of which is connected a crystal wafer, and, on the other hand, a starter device constituted by two other MOS devices, of the same type as the second MOS device, their gates being respectively connected to the drain and to the gate of the second MOS device.

3,753,155

## APPARATUS FOR CENTER-REFERENCED PULSE WIDTH MODULATION

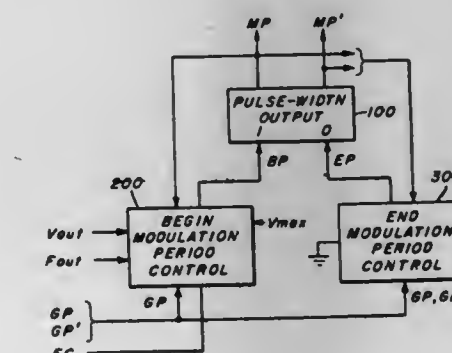
Kenneth E. Opal, Oakmont, and Charles R. Kelly, Murrysville, both of Pa., assignors to Power Control Corporation, Pittsburgh, Pa.

Filed Jan. 21, 1972, Ser. No. 219,732

Int. Cl. H03k 7/08

U.S. Cl. 332-9 R

8 Claims



Center-referenced pulse width modulation is accomplished by turning on a bistable element when an initial step sweep signal reaches a voltage reference level during the ON period of an applied gating pulse and turning the bistable element OFF during the OFF period of the gating pulse after a time interval complementary to the ON period of the bistable element preceding the gating pulse center.



3,753,156

## WIDE-BAND CIRCULATOR

Taro Miura; Kiichi Nakamura, and Tadashi Hashimoto, all of Tokyo, Japan, assignors to TDK Electronic Company, Ltd., Tokyo, Japan

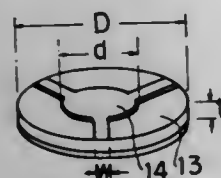
Filed Aug. 5, 1970, Ser. No. 61,272

Claims priority, application Japan, Sept. 13, 1969, 44/72575

Int. Cl. H01p 5/12, 1/32

U.S. Cl. 333-1.1

7 Claims



A wide-band circulator for micro-strip line, which utilizes a magnetic member, is described. A circular conductor having integral, radial extensions is disposed on one surface of said magnetic member, the ratio of the diameter of the magnetized region of said magnetic member to the diameter of said circular conductor being in the range between 1.4 : 1 to 2.1 : 1. The wide-band circulator does not need an impedance transformer as was necessary in the circulators of the prior art, so that it can be miniaturized.

3,753,157

## LEAKY WAVE COUPLERS FOR GUIDED ELASTIC WAVE AND GUIDED OPTICAL WAVE DEVICES

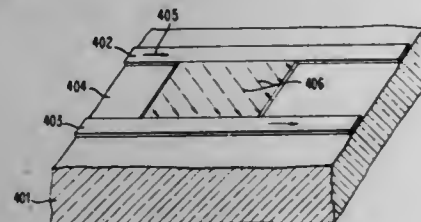
Eric A. Ash, London, England, Mark L. Dakss, Yonkers, and Lawrence Kuhn, Ossining, both of N.Y., assignors to International Business Machine Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,237

Int. Cl. H01p 1/10

U.S. Cl. 333-7 R

8 Claims



Couplers are disclosed for use with guided elastic waves and guided optical waves. The coupling is effected by means of a coupling region having a different phase velocity characteristic than that of the waveguide. The presence of the coupling region causes the waves traveling in the waveguide to become highly leaky. These leaky waves then encounter a second waveguide or transducer and are coupled into it. Utilizing the electro-acoustic effect in the acoustic wave devices and the electro-optic effect in the optical wave devices, the phase velocity characteristic of the coupling region is controllable, permitting switchable couplers.

3,753,158

## MEANS FOR RETAINING GAS-FILLED VIAL IN PRE-TR UNIT

Thomas Gates Prescott, Wenham, Mass., assignor to Varian Associates, Palo Alto, Calif.

Filed June 29, 1972, Ser. No. 267,282

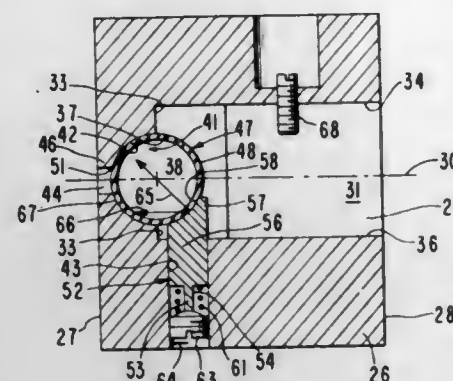
Int. Cl. H01p 1/14

U.S. Cl. 333-13

6 Claims

A TR-limiter apparatus includes a pre-TR unit for response to RF energy of a predetermined minimum level. The unit includes a gas-filled vial mounted between a resonant cavity and a slot for coupling RF energy below the predetermined level to

the cavity and for reflecting RF energy above the predetermined level. A resiliently biased member urges the gas-filled vial firmly against a retaining surface of a housing to maintain the vial at the inner end of a coupling slot through which the



RF energy is supplied. In this manner, the recovery time of the pre-TR unit is minimized and the resonant frequency of the cavity is stabilized despite thermal cycling of the vial and the housing in the operation of the TR-limiter apparatus.

3,753,159

## VARIABLE BANDPASS DYNAMIC NOISE FILTER

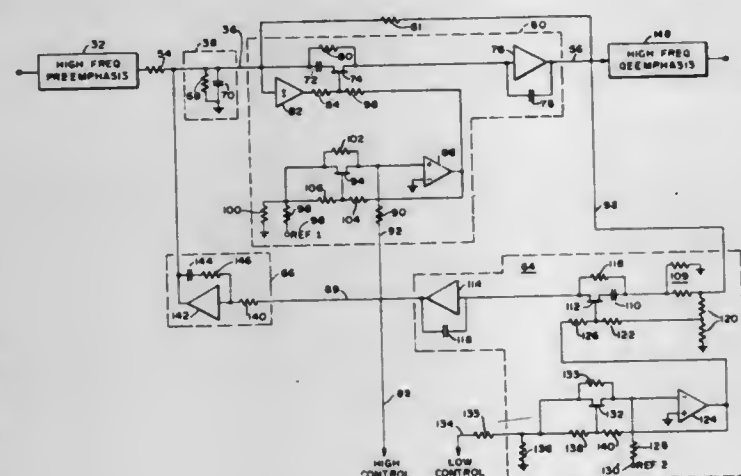
Richard S. Burwen, 12 Holmes Rd., Lexington, Mass.

Continuation-in-part of Ser. No. 86,398, Nov. 3, 1970, Pat. No. 3,678,416. This application July 26, 1971, Ser. No. 166,197

Int. Cl. H03h 7/12

U.S. Cl. 333-17

17 Claims



A variable bandpass filter for a dynamic noise filtering effect that reduces the perceptible noise in an audio reproduction system. The variable bandpass filter responds to peak signal levels in relatively high and relatively low frequency portions of the audio spectrum to automatically and independently vary high and low frequency cutoff points for the filter in correspondence with the level of signals at those frequencies. Low distortion and wide dynamic range is achieved in a filter configuration which comprises a forward signal path and a reverse signal path, each having a variable integration response provided by temperature compensated and linearized field-effect transistor circuits. The integration response of the two paths imparts a high and low frequency filtering effect. A further constant gain feedback path establishes a uniform middle frequency amplification for the variable bandpass filter.

3,753,160

## RECIPROCAL FERRITE PHASE SHIFTER HAVING MEANS DETECTING DEVIATIONS OF THE ENERGY FROM DESIRED LINEAR POLARIZATION

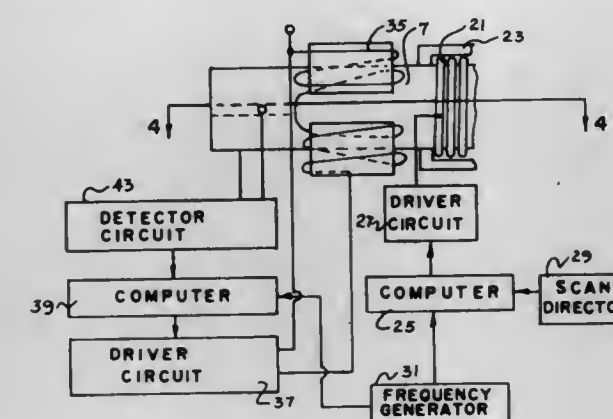
Paul Safran, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 20, 1972, Ser. No. 245,847

Int. Cl. H03h 7/16; H01p 1/18

U.S. Cl. 333-17

15 Claims



A ferrite phase shifter having a pair of nonreciprocal circular polarizers with a nonreciprocal phase shifter between them, including an electronic control for altering the magnetization of the nonreciprocal circular polarizers. This arrangement may be used to compensate for temperature and power changes and may provide a bandwidth substantially equal to the theoretical for a ferrite loaded waveguide of the same configuration. In the preferred embodiment the waveguide is square, the nonreciprocal circular polarizer (NRCP) is of the transversely magnetized quadrupole field type, and electronically controllable electromagnets at each corner of the NRCP sections provide the required level of magnetization to maintain accurate 90° phase shift of orthogonal vector components of the propagating electromagnetic wave. Also in the preferred embodiment, a linear polarizer at one end of the phase shifter includes a resistive film, and a detector diode is attached to the film to detect deviations of the propagating wave from the desired linear polarization. The detector diode is a part of a control circuit which adjusts the NRCP control magnet settings.

3,753,161

## TWO-PORT NETWORK FOR SIGNAL TRANSMISSION CIRCUIT

Takuya Iwakami, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

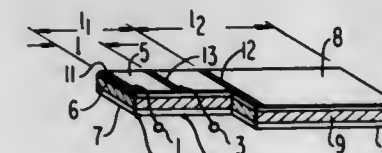
Filed May 4, 1971, Ser. No. 140,228

Claims priority, application Japan, May 15, 1970, 45/41447

Int. Cl. H04b 3/40

U.S. Cl. 333-23

4 Claims



A dummy transmission line having an attenuation characteristic proportional to  $\sqrt{f}$  over the frequency band of interest is constructed from two uniformly distributed RC networks. The characteristic impedances of both networks are identical and the length of the second network is determined by the lowest frequency of interest in using the networks.

3,753,162

## MICROSTRIP FERRITE PHASE SHIFTERS HAVING TIME SEGMENTS VARYING IN LENGTH IN ACCORDANCE WITH PRESELECTED PHASE SHIFT CHARACTERISTIC

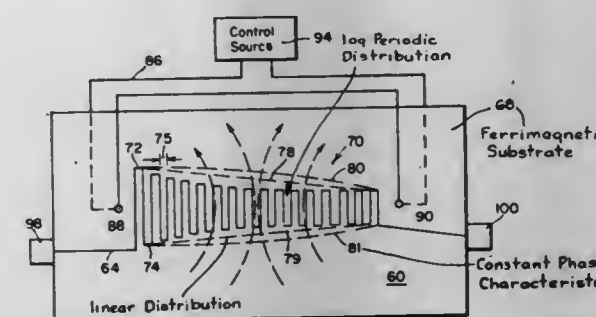
Donald A. Charlton, 21131 Miramar Ln., Huntington Beach, Calif., and William P. Clark, 3934 Greenwood Ave., Orange, Calif.

Filed Sept. 27, 1971, Ser. No. 184,136

Int. Cl. H01p 1/32

U.S. Cl. 333-24.1

3 Claims



An electronically controllable RF (radio frequency) phase shifter that can be designed to provide either true time delay characteristics or constant phase versus frequency characteristics. The non-reciprocal microstrip phase shifters of the invention utilize a ferrimagnetic substrate with a metallized strip conductor on one face and a metallized ground plane on the other face. The strip conductor has a plurality of adjacent line sections selected to provide a circularly polarized RF magnetic field at a point between each two adjacent conductors with the plane of the circularly polarized magnetic field being orthogonal to the plane of a DC magnetic bias field, the latter plane being provided parallel to the face of the substrate. The circularly polarized RF magnetic field is developed by selecting the line sections with a length so that the signals in adjacent lines are 90° out of phase from each other. When either the level or direction of the DC bias is changed, the permeability of the ferrimagnetic material changes causing a change in the propagation constant and a resultant phase shift change. To provide a relatively wide bandwidth to the phase shifter and a desired delay characteristic, the adjacent conductor sections have their line length varied so that different portions of the line effects the phase shift for different frequencies.

3,753,163

## ELECTROMAGNETIC WAVE-ELASTIC WAVE TRANSDUCER AND METHOD

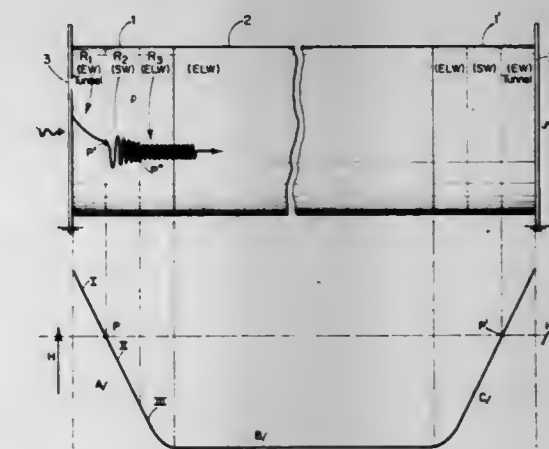
Frederic R. Morgenthaler, Wellesley Hills, Mass., assignor to Chu Associates Inc., Littleton, Mass.

Filed Dec. 27, 1971, Ser. No. 211,976

Int. Cl. H03h 7/30

U.S. Cl. 333-30 R

9 Claims



This disclosure is concerned with converting electromagnetic waves to elastic waves (and vice-versa) in successive re-



gions near an end of a magneto-elastic medium wherein electromagnetic energy tunneling is first forced, spin-wave conversion is then achieved, and finally spin wave-elastic wave conversion is effected such that the elastic waves are propagated in the medium (and vice-versa).

3,753,164

## ACOUSTIC SURFACE WAVE FILTER

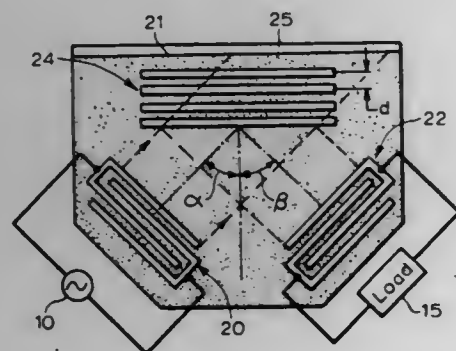
Adrian J. De Vries, Elmhurst, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 10, 1972, Ser. No. 242,703

Int. Cl. H03h 7/10, 7/30; H01v 7/00

U.S. Cl. 333—30 R

21 Claims



A surface-wave filter has an input transducer for launching acoustic surface waves together with an output transducer that responds to those waves for developing an output signal. The input transducer also is capable of producing undesired bulk waves to which the output transducer may also respond. However, such bulk-wave response is prohibited by a diverter, such as a surface coating that modifies the direction of the surface-wave path relative to that of the bulk waves, so that the output transducer may be oriented to respond only to the desired acoustic surface waves.

3,753,165

## TUNABLE VARIABLE BANDWIDTH MAGNETO-ELASTIC FILTER AND METHOD

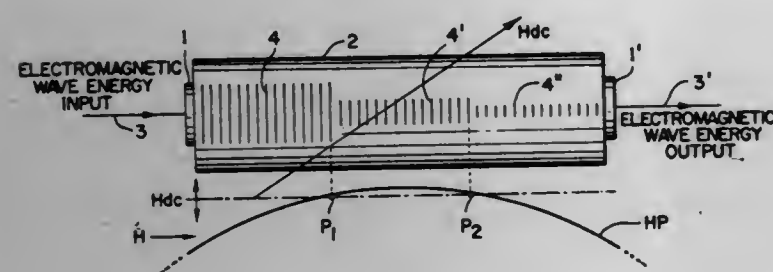
Frederic R. Morgenthaler, Wellesley Hills, Mass., assignor to Chu Associates Inc., Littleton, Mass.

Filed Dec. 27, 1971, Ser. No. 212,008

Int. Cl. H03h 9/34, 7/08

U.S. Cl. 333—71

19 Claims



This disclosure involves one or a plurality of cascaded YIG or similar magneto-elastic media propagating elastic waves transduced from a band of electromagnetic waves and having special magnetic field curved profiles and variable bias magnetic fields applied thereto such as to couple out or absorb the energy of specified variable frequencies to-be-filtered, by effecting conversions of the elastic waves of such specified frequencies only to spin waves. Cascaded units enable a band-pass characteristic to be produced that may be varied in width and center frequency.

### 3,753,166 SURFACE WAVE BANDPASS FILTER WITH NON-LINEAR FM INPUT AND OUTPUT TRANSDUCERS AND DESIGN METHOD THEREFOR

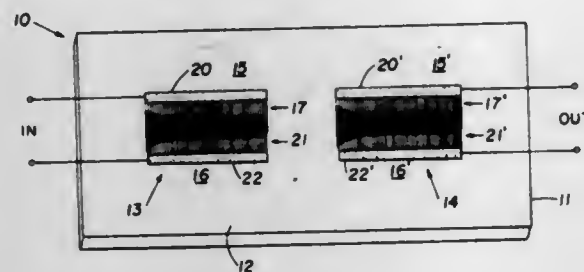
James C. Worley, Sudbury, and Robert Price, Lexington, both of Mass., assignors to Sperry Rand Corporation

Filed Dec. 6, 1971, Ser. No. 204,806

Int. Cl. H03h 7/10, 9/00

U.S. Cl. 333—72

8 Claims



A microwave acoustic surface wave bandpass filter comprises a piezoelectric substrate with interdigital comb input and output transducers on the surface thereof. The spacing of the interdigital fingers of the input transducer is chosen to be a non-linear function of the distance along the transducer. Thus the input transducer is constructed to possess a non-linear frequency versus time response such that the amplitude versus frequency response thereof is the square root of the desired amplitude versus frequency response of the filter. The output transducer is constructed as a translated image of the input transducer thereby providing the matched filter thereof. The desired amplitude versus frequency characteristic of the filter is the square of the amplitude versus frequency characteristic of either of the transducers.

A method for deriving the non-linear FM function that provides the desired amplitude versus frequency characteristic for the filter is disclosed.

3,753,167

## SLOT LINE

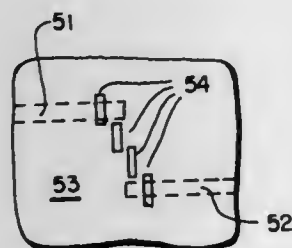
Seymour B. Cohn, Tarzana, Calif., assignor to the United States of America as represented by the Secretary of the Army

Division of Ser. No. 826,314, May 21, 1969, Pat. No. 3,688,225. This application May 4, 1972, Ser. No. 250,456

Int. Cl. H03h 7/02, 7/08; H01p 3/08

U.S. Cl. 333—73 R

2 Claims



This invention relates to a low loss transmission line having a slotted metal deposited or etched on a high permittivity substrate. With various sizes, shapes and configurations of slots, the transmission line may be used as part of components such as hybrid junctions, couplers, filters, mixers, amplifiers, ferrite devices, and resonators. Novel slot/coax and slot/stripline junctions or connections are disclosed as well as novel methods of slot excitation.

3,753,168

## LOW PASS FILTER NETWORK

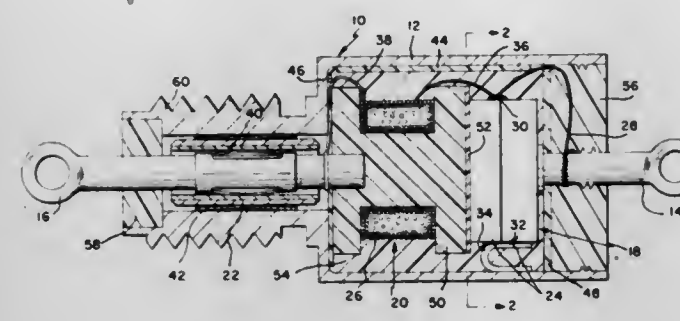
Ferdinand William Schor, Altadena, Calif., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 9, 1972, Ser. No. 233,121

Int. Cl. H03h 7/04

U.S. Cl. 333—70 S

13 Claims



An electrical filter having a first and second terminals extending from opposite ends of a conductive case and a filter network housed within the conductive case. The filter network comprises at least one capacitor connected between the case and the first terminal and an inductive component connected between the first terminal and the second terminal. The filter network further comprises a tubular high frequency filter carried by and connected between the second terminal and the conductive case. The capacitor may extend axially along or transversely across the conductive case and the inductive component may be provided by an inductor or a ferrite bead associated with a terminal member.

3,753,169

## BANDPASS FILTER USING PLURAL COMMUTATING CAPACITOR UNITS

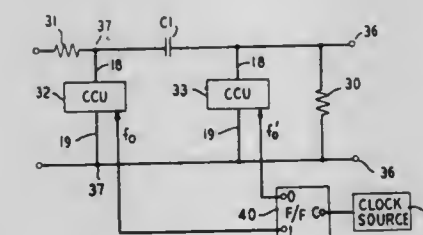
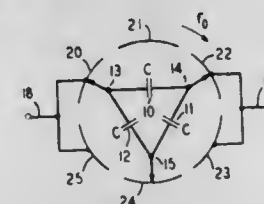
Joseph Henry Condon, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 9, 1972, Ser. No. 279,019

Int. Cl. H03h 7/10, 7/16

U.S. Cl. 333—70 A

8 Claims



Plural commutating capacitor, 2-terminal, impedance devices are substituted for plural inductance-capacitance circuits in shunt branches of a 3-element  $\pi$ -section bandpass filter. Commutation switch drives for the units are provided at 30 electrical degrees phase difference, but at the same frequency.

3,753,170

## STEP ATTENUATOR APPARATUS HAVING ATTENUATOR STAGES SELECTIVELY CONNECTED IN CASCADE BY CAM ACTUATED SWITCHES

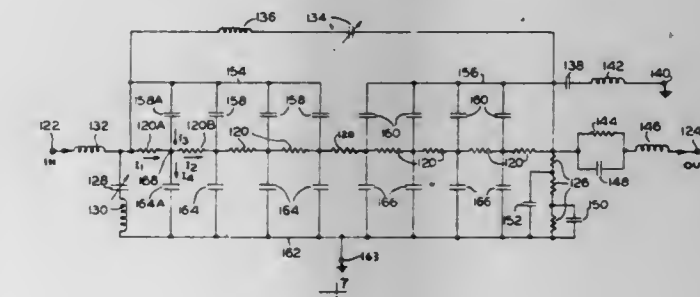
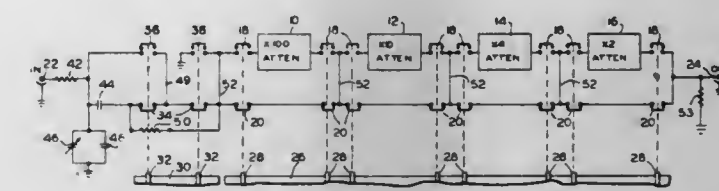
Kenneth C. Holland, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Feb. 10, 1971, Ser. No. 114,273

Int. Cl. H01p 1/22

U.S. Cl. 333—81 A

19 Claims



A step attenuator device has a plurality of attenuator stages interconnected via uniform impedance transmission lines. The attenuator stages are switched in a cascade mode of operation using a high frequency contact arrangement permitting high bandwidths. This mode of operation has the advantage of being adapted for use with both high and low impedance circuitry.

3,753,171

## COMPOSITE MICROWAVE WINDOW AND WAVEGUIDE TRANSFORM

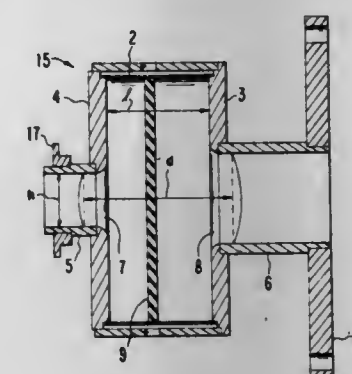
Robert J. Butwell, San Jose, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Apr. 5, 1971, Ser. No. 131,209

Int. Cl. H01p 1/08, 1/00

U.S. Cl. 333—98 P

5 Claims



A section of relatively high impedance waveguide is connected via abrupt waveguide transitions at opposite ends thereof to second and third waveguides having substantially lower characteristic impedance. A gas-tight wave permeable window member is hermetically sealed across the center section of high impedance guide. The second waveguide has a substantially lower characteristic impedance than the third waveguide and the window member is displaced in the high impedance guide toward the low impedance guide to form a relatively broad band impedance match, thereby forming the composite window and waveguide transformer structure.



3,753,172

**VARACTOR TUNING SYSTEM HAVING MEANS TO MAINTAIN TERMINAL VOLTAGE OF VARACTOR BIASING CAPACITOR WITHIN DESIRED RANGE**  
Yoichi Sakamoto, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

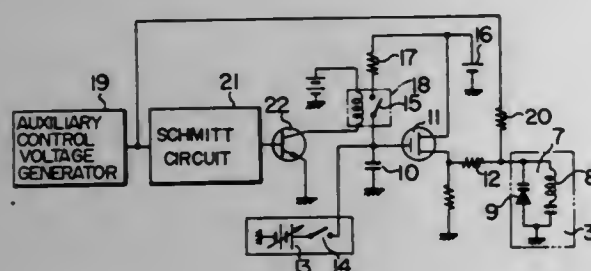
Filed Sept. 11, 1972, Ser. No. 287,919

Claims priority, application Japan, Sept. 14, 1971, 46/71597; Sept. 14, 1971, 46/71598; Sept. 14, 1971, 46/71599

Int. Cl. H03j 5/02; H03b 3/04

U.S. Cl. 334—15

6 Claims



A tuning system in which a tuning voltage is applied from a voltage holding circuit including a capacitor to a tuning circuit using a variable capacitance diode. When the terminal voltage across the capacitor is reduced, the capacitor is charged from a power supply through a switch to compensate the reduction. When the frequency of the tuning circuit is changed to a predetermined extent, the switch is closed to recover the initial level of the voltage of the voltage holding circuit.

3,753,173

**ELECTRICALLY REMOTE CONTROLLED DEVICE ATTACHABLE TO SWITCH BOX FACE PLATE FOR ALTERNATELY ACTUATING AND DEACTUATING THE SWITCH**

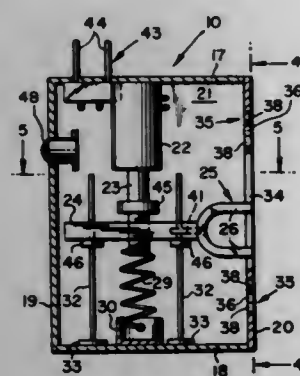
Abraham A. Goldberg, 44 Douglas St., Brentwood, N.Y.

Filed Aug. 11, 1972, Ser. No. 279,926

Int. Cl. H01h 3/02

U.S. Cl. 335—1

15 Claims



A housing containing a solenoid whose plunger has a bar secured thereto is adapted to draw the bar inward upon energization thereof by, for example, an electric timer. The bar has a yoke on one end slidable in a slot in a wall of the housing. Means is provided for attaching the housing to the face plate of a wall switch box with the pivoted switch lever extending into the yoke. A tension spring normally urges the plunger outward from the solenoid and hence the yoke into a position where it holds the lever in the "off" position. Upon energization of the solenoid by the timer, the yoke swings the switch lever into the "on" position. Stop means are provided to limit the movement of the bar and its yoke between the "off" and "on" positions of the switch lever. The switch may be in circuit with any suitable electrical apparatus or equipment which is to be alternately activated and deactivated.

3,753,174

**DEVELOPING UNIT**

George J. Miller, Skokie, Ill., assignor to SCM Corporation, New York, N.Y.

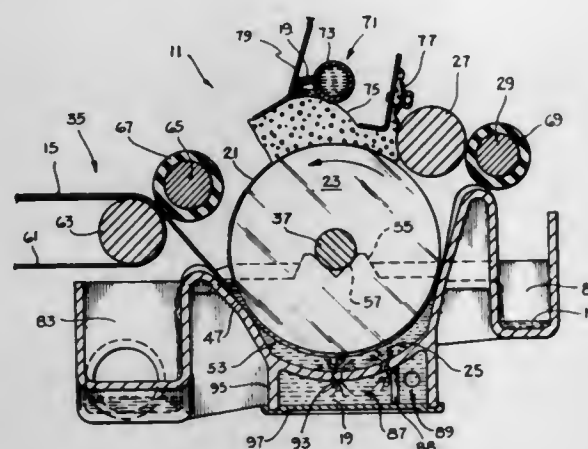
Division of Ser. No. 884,393, Dec. 12, 1969, Pat. No.

3,667,987. This application Feb. 16, 1972, Ser. No. 226,568

Int. Cl. G03g 15/10

U.S. Cl. 355—10

10 Claims



A latent electrostatic image on a surface of a carrier is developed into a visible image by moving the carrier along a developing path with the image-bearing surface contacting a developing liquid in effective field control spacing with an electrically conductive surface of an image intensifier moving along the developing path. Developing liquid is supplied to the surface of the image intensifier by a porous wiper wetted with developing liquid, and an incoming image-bearing carrier is guided along the developing path in contact with the developing liquid by ridges extending along the developing path on an upwardly concave wall which forms a trough through which the image intensifier moves. As the carrier moves through the developing trough, the image-bearing surface is pressed into effective field control spacing with the image intensifier over an elongated distance of the developing path by developing liquid which is received into a chamber and directed against the back side of the carrier by orifices formed in the upwardly concave wall. After passing through the trough, the carrier is guided through a pair of cooperating squeeze rollers which remove excess developing liquid from the carrier.

3,753,175

**CROSSPOINT SWITCH UTILIZING ELECTRICALLY CONDUCTING LIQUID**

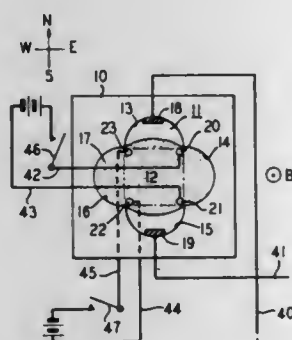
Dean Gillette, Rumson, and Ivan Pelech, Morris Plains, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 13, 1972, Ser. No. 297,498

Int. Cl. H01h 29/04

U.S. Cl. 335—47

11 Claims



A crosspoint switch includes a housing defining an internal chamber having a central area communicating with four lobes

equally spaced thereabout to form a clover-leaf configuration, and a droplet of electrically conductive non-magnetic liquid which can assume either of two stable positions within the chamber. These positions include the central area and opposite lobes in the North-South or East-West directions. When switched from one stable position to the other, the droplet makes or breaks an electrical connection between one or more pairs of signal leads disposed within the chamber. Switching is accomplished by biasing the entire chamber in a magnetic field perpendicular to its plane and by simultaneously applying compressive or tensile forces to the droplet by passing electric currents therethrough via two pairs of activating contacts within the chamber.

3,753,176

**SWITCHING MATRIX CROSSPOINT**

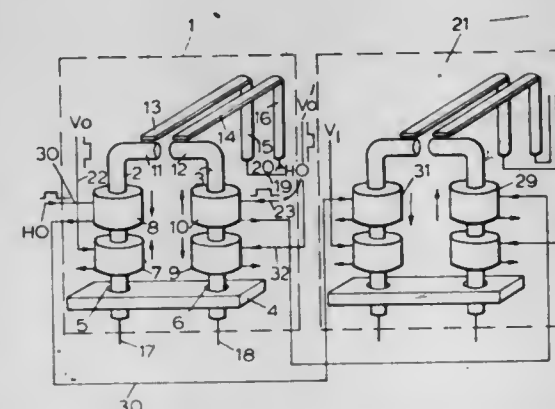
Albert Regnier, Issy-les-Moulineaux, and Fernand Silermé, Cretell, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,468

Int. Cl. H01h 67/26

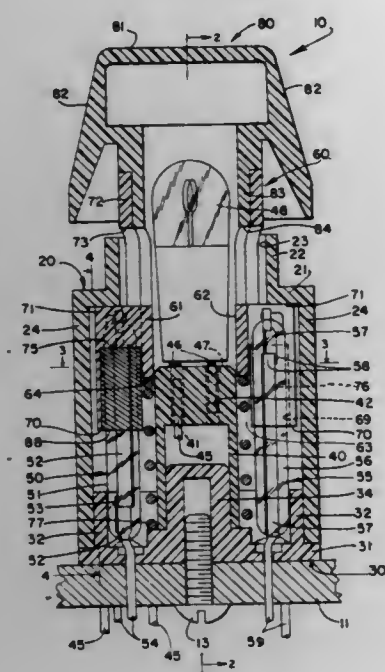
U.S. Cl. 335—112

12 Claims





the magnets, which contacts are switched from one condition to the other in response to movement of the magnets in one



direction and is then switched back to the original condition by movement of the magnets in the other direction.

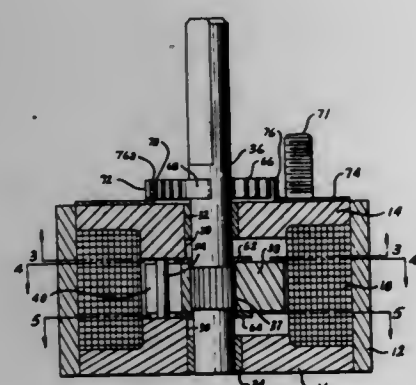
### 3,753,180 ROTARY SOLENOID

William F. Sommer, Brookville, Ohio, assignor to Ledex Inc., Dayton, Ohio

Filed May 23, 1972, Ser. No. 256,173  
Int. Cl. H01F 7/14

U.S. Cl. 335-272

9 Claims



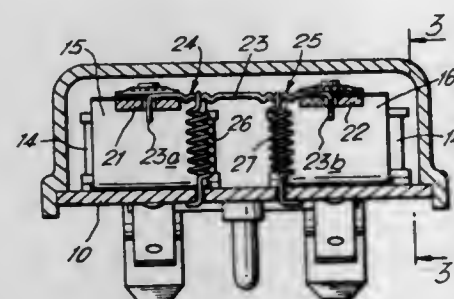
A rotary solenoid comprises a ferromagnetic core assembly flux linked to an electromagnetic coil. The core assembly comprises confronting pole pieces having flat face portions spaced apart to define an air gap. The rotary solenoid includes a rotary assembly comprising a shaft adjacent said pole pieces journaled to said core assembly for rotation about an axis perpendicular to said pole faces. The rotary assembly includes an armature plate fixed to said shaft and projecting outwardly from said shaft for entry into said air gap. The rotary solenoid includes non-magnetic spacer members, one disposed on each side of said armature plate, said spacer members sized with said armature plate for a close fit between said pole faces, said spacer members cooperating with said pole faces to restrain said rotary assembly against axial movements.

3,753,181  
ELECTRO-MAGNETIC RELAY ARRANGEMENT  
Derek Thornley, Nelson, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England  
Filed Mar. 1, 1972, Ser. No. 230,625  
Claims priority, application Great Britain, Mar. 5, 1971, 6,209/71

Int. Cl. H01F 7/08

U.S. Cl. 335-274

5 Claims



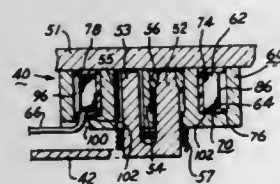
An electro-magnetic relay arrangement in which a pair of spaced electromagnets are supported on a base and a pair of associated armatures are pivoted relative to the electro-magnets about aligned axes. A rigid wire connects the two armatures to extend parallel to the axes and a pair of springs biases the armatures away from the electro-magnets, said pair of springs extending between the base and portions of the rigid wire adjacent the respective armatures.

3,753,182  
ELECTROMAGNET BOBBIN STRUCTURE FOR  
VEHICLE BRAKES CONTAINING AN ABRASIVE WEAR  
SURFACE

Leroy K. Grove, 512 S. Merrifield Ave., Mishawaka, Ind.  
Filed Nov. 10, 1971, Ser. No. 197,329  
Int. Cl. H01F 7/08

U.S. Cl. 335-231

14 Claims



An electromagnet for use in electric vehicle brakes in which a bobbin for the electrical coil contains a flange of a friction material which engages the armature of the brake when the magnet is energized. The bobbin and coil assembly are inserted in the annulus of the housing between the inner and outer poles and the bobbin flange having the friction materials forms a snug fit with the housing and is held firmly in place by an epoxy material in the bottom of the annulus. The bobbin preferably contains a lug which extends into and/or through an opening in the bottom of the housing and protects the leads from the coil. The bobbin and coil assembly can be easily assembled in the annulus by merely pressing the bobbin in place with the flange having the friction material flush with the surface of the two poles, after the epoxy material has been placed in the annulus, thus providing an accurately faced electromagnet after the coil has been assembled therein without machining or grinding.

3,753,183  
METHOD OF FORMING A MAGNETIZED HELICAL  
COIL

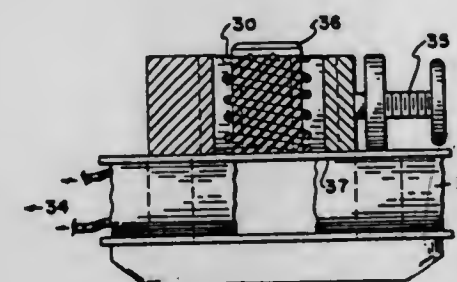
Ronald A. Aspinwall, Detroit, and MacKellar K. Graham, Birmingham, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.

Continuation of Ser. No. 59,773, June 23, 1970, abandoned, which is a continuation of Ser. No. 855,693, Sept. 5, 1969, Pat. No. 3,598,237. This application June 21, 1972, Ser. No. 264,823

Int. Cl. H01F 13/00

U.S. Cl. 335-284

3 Claims



A filter including a cylindrical filter element which is arranged to normally have fluid pass therethrough. A bypass valve is provided to bypass fluid directly to the outlet when the pressure at the inlet becomes excessive. A magnetized helical coil is provided adjacent the filter element to attract metal particles.

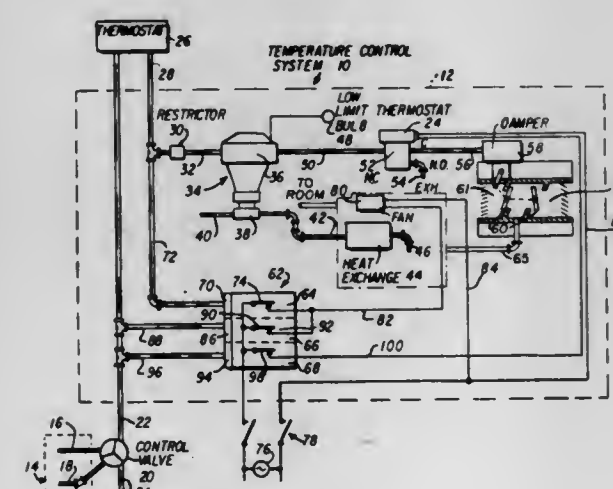
3,753,184  
TEMPERATURE CONTROL SYSTEM  
Thomas M. Holloway, Waukesha, and Robert G. Weeks, Milwaukee, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Mar. 23, 1972, Ser. No. 237,371

Int. Cl. F24F 7/06

U.S. Cl. 236-47

9 Claims

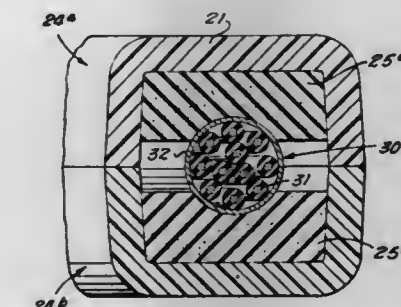


A temperature control system which utilizes a two-level pneumatic pressure source and a control valve operative to selectively subject the control system to either of the two pressure levels or to a pulse of decreased pressure to effect normal night temperature, warm-up period temperature, and normal day temperature modes of operation.

3,753,185  
METAL DETECTOR SEARCH COIL  
William A. Mahan, P.O. Box 451, Dallas, Tex.  
Filed Dec. 5, 1972, Ser. No. 312,286  
Int. Cl. H01F 15/04, 27/02

U.S. Cl. 336-84

11 Claims



A device for detecting metal articles buried beneath the surface for example, includes a search coil at one end of a handle, with the handle carrying the detector circuit components. The search coil is an induction coil enclosed within an annular chamber formed from a plastic housing having the form of a spoked wheel for example, and which is formed from two mating housing halves joined in the plane of the coil chamber. The coil is made up of a number of turns of insulated wire wherein the insulation material has a low coefficient of thermal expansion, with the coil being sheathed in metal foil to provide a Faraday shield. The coil is supported within the housing annular chamber on pads of foam rubber-like material which yieldingly supports and restrains the coil within the housing annular chamber.

3,753,186  
ELECTRICAL DEVICE CASING MATERIALS  
George P. Seitanakis, Natrona Heights, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.  
Division of Ser. No. 849,610, Aug. 11, 1969, Pat. No. 3,629,760. This application May 20, 1971, Ser. No. 145,561  
Int. Cl. H01F 27/02

U.S. Cl. 336-90

2 Claims

An electrical device; e.g., a transformer, with a fluctuating magnetic field, contained within a casing comprised of steel which has a resistivity in excess of about 65 microhm-cm at room temperature and which is substantially nonmagnetic after a cold reduction of up to 65 percent. The steel consists essentially of 0.15-1.1% C, 20-40% Mn, 7-16% Al, up to 10% Ni, balance Fe and incidental impurities.

3,753,187  
ELECTRICAL DEVICE CASING MATERIALS  
George P. Seitanakis, Natrona Heights, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.  
Division of Ser. No. 849,610, Aug. 11, 1969, Pat. No. 3,629,760. This application May 20, 1971, Ser. No. 145,484  
Int. Cl. H01F 27/02

U.S. Cl. 336-90

1 Claim

An electrical device; e.g., a transformer, with a fluctuating magnetic field, contained within a casing comprised of steel which has a resistivity in excess of about 65 microhm-cm at room temperature and which is substantially nonmagnetic after a cold reduction of up to 65 percent. The steel consists essentially of up to 0.08% C, up to 2% Mn, up to 1.00% Si, 16.0-18.0% Cr, 10.0-14.0% Ni, 2.0-3.0% Mo, balance Fe and incidental impurities.



3,753,188

## INDUCTIVE ELECTRIC APPARATUS

Akira Miyoshi; Tomio Nagaoka; Hasaaki Takahashi, and Ken-suke Okuda, all of Tokyo, Japan, assignors to Hitachi, Ltd. and Kureha Industry Co., both of Tokyo, Japan

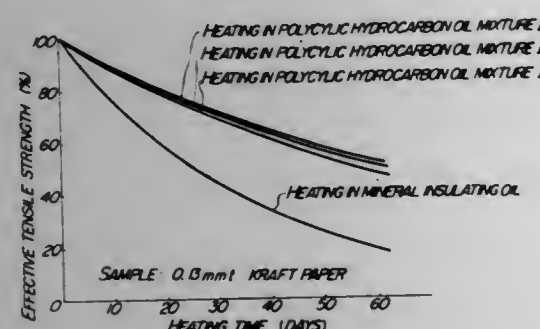
Filed Dec. 28, 1970, Ser. No. 101,686

Claims priority, application Japan, Dec. 29, 1969, 44/1120

Int. Cl. H01f 27/02

U.S. Cl. 336-94

7 Claims



An inductive electric apparatus which comprises a polycyclic hydrocarbon oil mixture having a flash point of more than 150°C and consisting of polycyclic naphthenic hydrocarbons having two to five rings and polycyclic aromatic hydrocarbons having two to four rings, each side chain alkyl group attached to said rings having not more than four carbon atoms, an electroconductive coil and a cellulose insulator in combination. The inductive electric apparatus can have a larger increase in allowable temperature than that of a combination of the ordinary hydrocarbon insulating oil and the cellulose insulator, and accordingly it is possible to make the apparatus smaller and lighter.

3,753,189

## COMBINED ISOLATING AND NEUTRALIZING TRANSFORMER

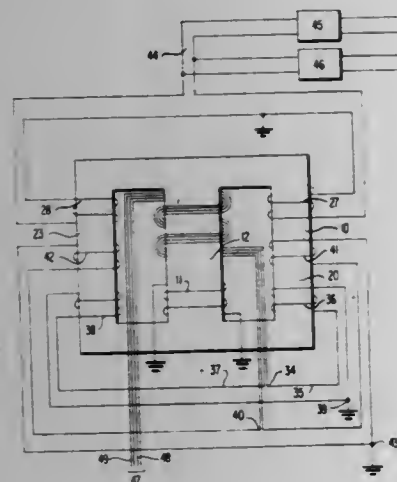
Gordon Y. R. Allen, 4 Ireland Ct., Islington, Ontario, Canada

Filed Mar. 3, 1972, Ser. No. 231,660

Int. Cl. H01f 27/28

U.S. Cl. 336-171

7 Claims



A neutralizing transformer in which the communication frequency input cable comprising one or more twisted pairs of wires has each wire of a twisted pair wound on opposite outer legs of the core of the transformer. A similar pair of isolating windings is wound on the same outer legs.

3,753,190

## CURRENT LIMITING DEVICE

Toshio Ito; Toshio Miyamoto; Yuichi Wada, and Teijiro Mori, all of City of Amagasaki, Hyogo Prefecture, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

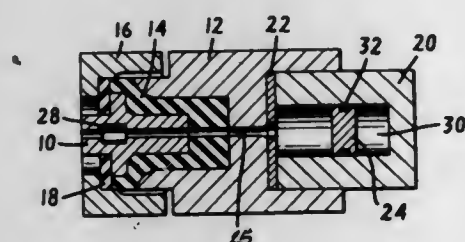
Filed June 9, 1970, Ser. No. 44,785

Claims priority, application Japan, June 10, 1969, 44/45589; Nov. 1, 1969, 44/87749

Int. Cl. H01h 87/00

U.S. Cl. 337-21

3 Claims



Two electrodes are interconnected in spaced opposed relationship through an electric insulation through which a current limiting material of a self-restoring type extends to normally electrically interconnect both electrodes. The insulation is equal to or higher than the current limiting material in thermal conductivity. Alternatively the current limiting material is partly reduced in cross section and coupled to a pressure relief element. The reduced portion of the current limiting material may be encircled with a material higher in electric resistivity than the limiting material and good in arc-proof property.

3,753,191

## LOW PROFILE GLASS ENCLOSED HERMETICALLY SEALED CIRCUIT BREAKER

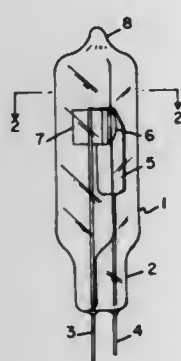
Philip J. Dennis, Cape Elizabeth, Maine, assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Mar. 20, 1972, Ser. No. 235,903

Int. Cl. H01h 45/02

U.S. Cl. 337-112

3 Claims



A circuit breaker comprises a bimetal snap-action element disposed within a hermetically sealed glass envelope. The snap-action element opens an electrical circuit upon thermal or current overload. The glass envelope has two substantially flat parallel sides in order to provide a low profile to the circuit breaker and to improve thermal transfer to the snap-action element.

3,753,192

## PROTECTOR FOR ELECTRIC CIRCUITS

Angelo Urani, St. Louis, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

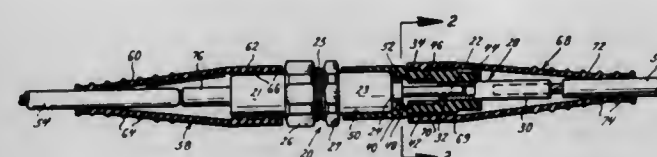
Continuation of Ser. No. 871,233, Nov. 3, 1969, which is a division of Ser. No. 796,520, Feb. 4, 1969, Pat. No. 3,518,600.

This application Nov. 22, 1971, Ser. No. 200,711

Int. Cl. H01h 85/02

U.S. Cl. 337-201

4 Claims



A female connector is connected to a conductor and normally telescopes over a male connector on one end of a fuseholder, but it will respond to a separating force, smaller than the elastic limit of that fuseholder, to release that male connector; and a sleeve of insulating material normally encases and insulates the connection between that male connector and that female connector.

3,753,193

## SOCKET TERMINAL

Wladimiro Teagno, and Luigi Campari, both of Turin, Italy, assignors to AMP Incorporated, Harrisburg, Pa.

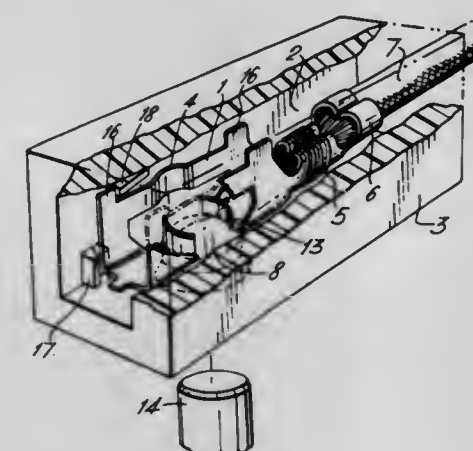
Filed Apr. 17, 1972, Ser. No. 244,744

Claims priority, application Italy, Apr. 27, 1971, 23731 A/71

Int. Cl. H01r 11/22

U.S. Cl. 339-256 R

3 Claims



A socket terminal for releasably receiving a pin and comprising a channel-shaped contact portion for receiving the pin between the channel sides and normally through an aperture in the channel base, the aperture extending throughout the channel width and being elongated lengthwise of the channel; a wire connecting section being formed at an end of the channel-shaped portion, tongues extending integrally from opposite ends of the aperture for engaging diametrically opposite first side portions of the pin, side portions of the channel being arranged to engage diametrically opposite second side portions of the pin orthogonally arranged with respect to the first side portions.

The socket terminals are particularly useful when assembled in cluster blocks of the kind used in connecting through the hermetically sealed enclosures of refrigerator motors where they may be subject to vibration and adverse atmospheric environment but must satisfy stringent reliability requirements.

3,753,194

## TEMPERATURE DIFFERENTIAL MONITOR

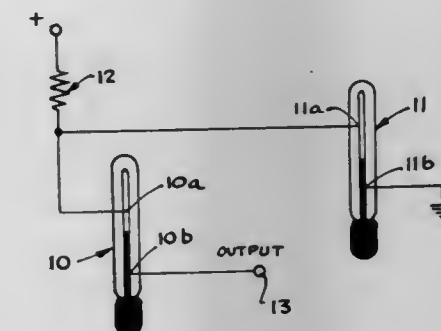
Carl Krisco, Oak Park, Ill., assignor to V.A.C. Industries

Filed July 26, 1972, Ser. No. 275,275

Int. Cl. H01h 29/30

U.S. Cl. 337-331

4 Claims



A thermal switch including first and second electroconductive column type thermostats at different preset temperature settings and a current limiting resistor, all interconnected together, wherein an output voltage is available between the two preset temperature settings of the thermostats.

3,753,195

## THERMOSTATIC SWITCH

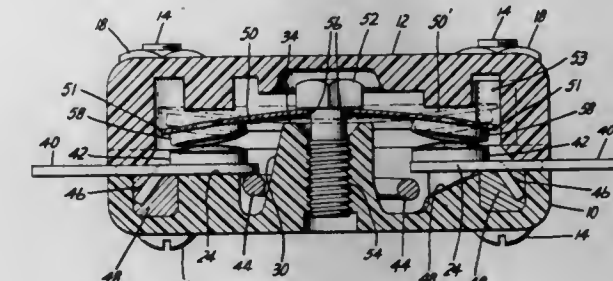
Lee O. Woods, Morrison, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Sept. 20, 1972, Ser. No. 290,570

Int. Cl. H01h 37/20

U.S. Cl. 337-347

10 Claims



A thermostatic switch is disclosed comprising a dielectric housing having a first switch contact mounted within the housing. A thermoresponsive element having a central aperture is provided with a second switch contact mounted to the thermoresponsive element to make and break with the first switch contact upon actuation of the thermoresponsive element. A screw is screwed into the housing with a screw head disposed above an interior surface of the housing and a screw shank passing through the thermoresponsive element central aperture between the screw head and the housing interior surface. The central portion of the thermoresponsive element about the aperture is free to move along the screw shank between the screw head and housing interior surface. With this arrangement the screw provides means for adjusting the disposition of the thermoresponsive element while the screw head and housing interior surface limit movement of the central portion of the thermoresponsive element.



3,753,196

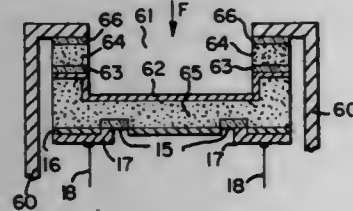
**TRANSDUCERS EMPLOYING INTEGRAL PROTECTIVE COATINGS AND SUPPORTS**

Anthony D. Kurtz, Englewood; Charles L. Cravel, Riveredge, and Joseph R. Mallon, Jr., Wood-Ridge, all of N.J., assignors to Kulite Semiconductor Products, Inc., Ridgefield, N.J.  
Filed Oct. 5, 1971, Ser. No. 186,694

Int. Cl. G011 1/22

U.S. Cl. 338—4

7 Claims U.S. Cl. 338—20



There is disclosed a force transducer fabricated from silicon and having the appearance of an annular disk. Disposed on one surface of said disk are one or more piezoresistive elements which respond to a force applied to a diaphragm portion of said disk which is surrounded by the wall formed by the annular ring. The disk is mounted in a housing with the piezoresistive elements facing away from the applied force surface; this surface of the diaphragm and ring has formed thereon a thin layer of silicon dioxide which serves to protect the disk against deleterious agents present in the force transmitting environment while further serving to eliminate an undesirable bimetallic effect.

3,753,197

**PHOTOCONDUCTIVE CELL**

Norifumi Tachihara, Tokyo, and Hiroshi Yamaguchi, Tokorozawa, both of Japan, assignors to Kabushiki Kaisha Kōparu, Tokyo, Japan

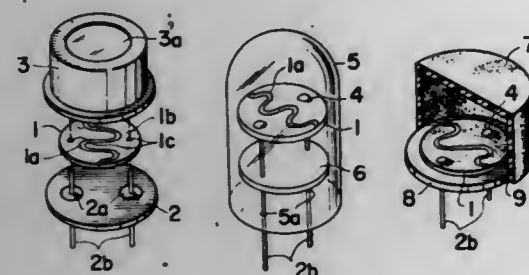
Filed July 14, 1971, Ser. No. 162,560

Claims priority, application Japan, July 20, 1970, 45/63418

Int. Cl. H01c 7/08

U.S. Cl. 338—19

4 Claims



A photoconductive cell comprising an electrically insulated base plate carrying, on one surface, a light-sensitive substance capable of varying its resistance value with the intensity of the light incident thereto and also a conductive substance electrically connected with the light-sensitive substance, terminals connected to the conductive substance, and two sheets of electrically insulated transparent or translucent films bonded tightly to each other forming a sealed envelope sandwiching both the base plate and the terminals between the two films. The sealing of these films is accomplished either by the use of a bonding agent, or by relying on the heat-sealing method, the high frequency wave sealing method or the ultrasonic wave sealing method. Thus, very thin photoconductive cell can be manufactured easily on mass production basis at low cost.

3,753,198  
**VARISTORS**

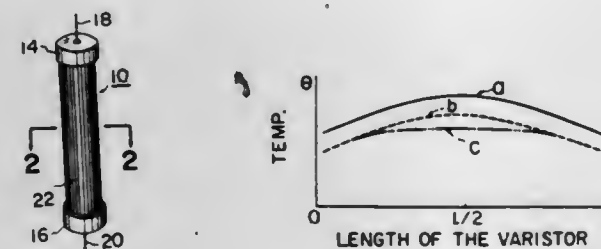
Masao Shimizu, Suginami-ku, Tokyo, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan

Filed Sept. 18, 1970, Ser. No. 73,390

Claims priority, application Japan, Sept. 19, 1969, 44/88857; Sept. 19, 1969, 44/88858

Int. Cl. H01c 7/10

2 Claims



A plurality of heat radiating axial ribs are provided on the surface of a varistor.

For a varistor in the form of a hollow cylinder, such ribs are formed on both or either one of the inner and outer surfaces of the varistor.

3,753,199

**PRESSURE-TO-ELECTRIC TRANSDUCER**

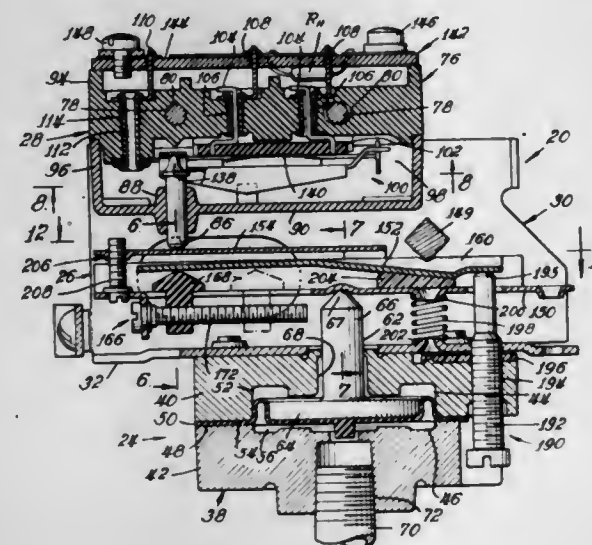
Paul Patrick Rice, R.R. No. 3, Box 411, Elkhart, Ind.

Filed Feb. 24, 1972, Ser. No. 229,123

Int. Cl. H01c 13/00

U.S. Cl. 338—42

17 Claims



A transducer for providing an electrical output voltage linearly proportional to an input pressure is assembled on a frame having a bottom wall and a pair of sidewalls. A pressure diaphragm housing is supported below the bottom wall of the frame and includes a central passageway and an intersecting cavity. A diaphragm member is disposed across said cavity crosswise to the central passageway to define an expandable and collapsible pressure chamber with the lower portion of the cavity. A force transfer member is slidably supported in the upper portion of the central passageway with its lower end abutting against the diaphragm member and its upper end extending above said bottom wall. A pivot member extends between the frame sidewalls and a main lever is supported between the pivot member and the upper end of the force transfer member with a spring means constantly urging the lever towards the force transfer member. Variable resistance means are actuated by the arcuate movement of the main lever to provide an electrical output signal directly propor-

tional to the displacement of the force transfer member in response to changes in the pressure in the pressure chamber.

3,753,200

**SHORT CIRCUIT PROOF LEVEL SENSOR**

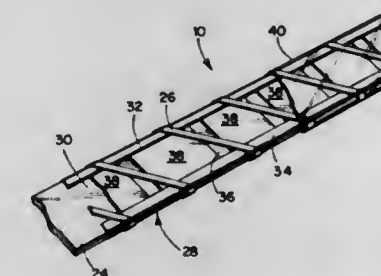
John Niejadlik, Littleton, Mass., assignor to Meritape, Inc., West Concorde, Mass.

Filed May 18, 1972, Ser. No. 254,484

Int. Cl. G01f 23/18

U.S. Cl. 338—42

7 Claims



An elongated continuous sensor adapted for disposition within a fluent material for monitoring the level thereof and operative even in the presence of a short circuit in the electrical winding of such sensor. A resistance winding helically wound around and insulated from a base strip includes portions confronting a surface having discrete conductive areas, each adjacent pair of areas being bridged by a respective turn of the helical winding. In the presence of surrounding pressure caused by the fluent material mass, the bridging turns within the material mass are deflected into engagement with the underlying conductive areas such that the discrete conductive areas within the material mass are effectively interconnected to short circuit that portion of the sensor submerged within the mass, the resistance of the helical winding above the material mass being a direct measure of material level. A short circuit of one or more adjacent turns of the helical winding to the underlying conductive areas causes the short circuiting of only those turns with the result that the sensor remains operative with only a slight error introduced by the number of turns short circuited.

3,753,201

**VARIABLE RESISTANCES FOR AN ELECTRICAL CIRCUIT**

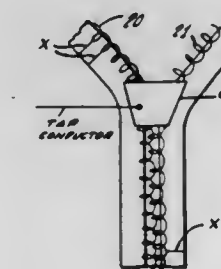
Leo S. Ohman, 1635 Garden Ave., St. Paul, Minn.

Filed Oct. 29, 1970, Ser. No. 85,081

Int. Cl. H01c 5/00, 13/00

U.S. Cl. 338—92

3 Claims



Apparatus for predeterminedly and progressively interconnecting input and output conductors of a multiplicity of supply lines for fluid or electrical sources utilizes a slide fastener or coupling system which utilizes a pair of opposed strip flexible sections carrying adjacent to their opposed longitudinal edges, cooperating interconnecting media. One or more slide members slidable longitudinally of said strips progressively engage portions of said opposed interconnecting media to interlock the same progressively drawing said opposing edges closely

together and in so doing, when slidably applied in one direction, to interconnect predetermined pairs of spaced conductors attached to said strip and having each in communication with an electrical or fluid source whereby when said slide member is actuated in one direction, interconnection of predetermined pairs of conductors is effected and when said slide element is actuated in the opposite direction all of said sets of conductors become disconnected.

3,753,202

**DISPLACEMENT TRANSDUCER**

Shoei Kataoka, Tanashi-shi, Tokyo, and Hideo Yamada, Setagaya-ku, Tokyo, both of Japan, assignors to Kogyo Gijutsuin (a/k/a Agency of Industrial Science and Technology Ministry of International Trade and Industry), Tokyo-To, Japan

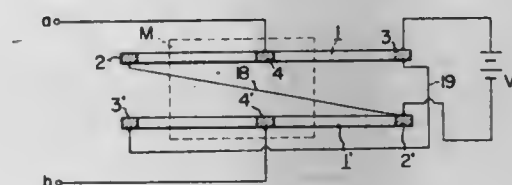
Filed Apr. 29, 1971, Ser. No. 138,508

Claims priority, application Japan, May 1, 1970, 45/37446

Int. Cl. H01c 7/16

U.S. Cl. 338—32 H

10 Claims



A displacement transducer is comprised of an magnetoresistive element, or an elongated semiconductor member having the magnetoresistive effect. A pair of electrodes are affixed at both ends of this magnetoresistive element, and a third electrode at the center. While an electric current is made to flow therethrough from each of the pair of electrodes to the third electrode, an applied magnetic field is moved thereon toward either side of the third electrode to obtain an output voltage due to the magnetoresistive effect of the element. In another embodiment of the invention, wherein a plurality of metal boundaries are formed at intervals between a pair of electrodes at both ends of an magnetoresistive element, a leading end of an applied magnetic field is inclined to such a degree as to extend between at least two adjoining ones of the metal boundaries.

**ERRATUM**

For Class 339—256 R see:  
Patent No. 3,753,193

3,753,203

**SHIELDED HIGH VOLTAGE CONNECTOR**

Edwin A. Link, Waukesha, Wis., assignor to RTE Corporation, Waukesha, Wis.

Filed June 30, 1971, Ser. No. 158,159

Int. Cl. H01r 3/06

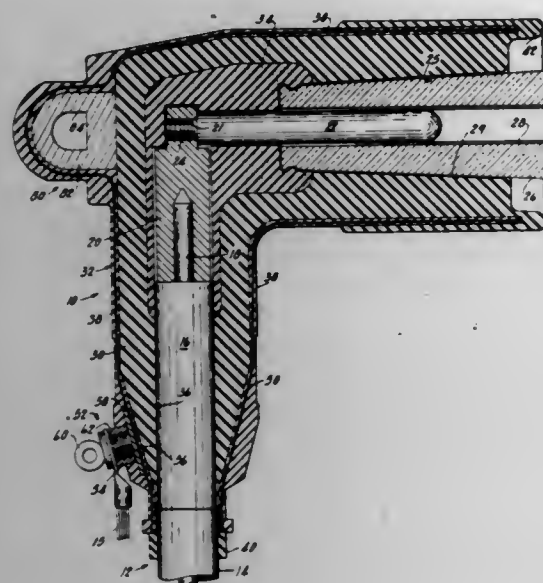
U.S. Cl. 339—14 L

4 Claims

A shielded electrical connector for a high voltage cable having a section of the cable insulation removed to expose a conductor, the connector including an electrically insulating member surrounding the cable insulation and conductor, and an electrically conductive shield surrounding said insulating member. The conductive shield is formed from a layer of elec-



trically conductive material and a metallic mesh, the shield being bonded to the outer surface of the insulating member. A

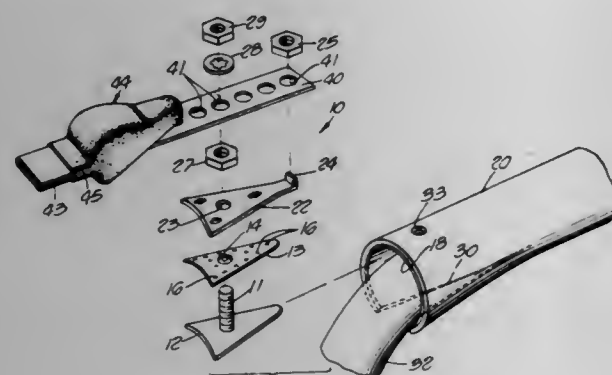


disconnect assembly can be provided for selectively connecting and disconnecting the shield to the cable.

### 3,753,204 SOLDERLESS CONNECTOR ASSEMBLY FOR CABLE SHIELDING JACKETS AND METHOD OF INSTALLING THE SAME

John T. Thompson, 244 Loring St., Los Angeles, Calif., and George W. Gillemot, 2231 20th St., Santa Monica, Calif.  
Continuation of Ser. No. 12,820, Feb. 2, 1970. This application Dec. 27, 1971, Ser. No. 212,399

Int. Cl. H01r 13/50, 3/06  
U.S. Cl. 339—14 R 31 Claims



A connector assembly and method of making a strong mechanical, solderless, electrical connection to the thin shielding jacket underlying a cable sheath. When employed in combination with a tension strip the connector assembly provides both a grounding connection for the shield and a load transmitting member for the major load forces acting lengthwise of the cable. The connector assembly includes a threaded fastener inserted through aligned holes in the shield and sheath and is employed to clamp the shield and sheath between a pair of wide area shoes with the inner one pressed into firm contact with the shield. Similar connector assemblies anchored to the cable shield and sheath to either side of a splice zone are interconnected by an insulated conductive tension strip to interconnect the two shields and to transfer load forces across the splice zone.

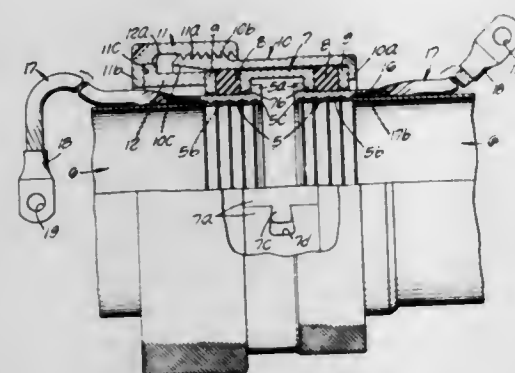
### 3,753,205 COUPLER DEVICE FOR TUBING ENDS PROVIDING MECHANICAL AND ELECTRICAL CONNECTIONS THEREWITH

William H. Tuger, Huntington Beach, Calif., assignor to E. B. Wiggins, Inc., Los Angeles, Calif.

Filed June 7, 1971, Ser. No. 150,353  
Int. Cl. H01r 3/04

U.S. Cl. 339—15

3 Claims



A unique coupler device for effecting mechanical and electrical connections with the coupled ends of fluid conducting tubing, which utilizes a flanged ferrule swaged to each coupled end of the tubing, with the ferrules in each case serving the double purpose of a mechanical connecting component of the coupler, and a permanent securement component for anchoring one end of an electric conductor cable to the tubing end to provide an electrical connection with the tubing.

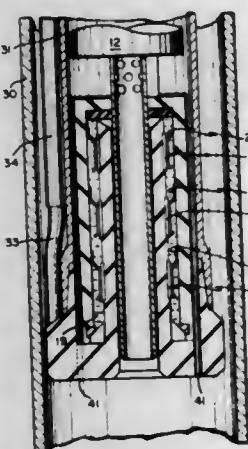
### 3,753,206 ELECTRICAL CONNECTOR WITH COAXIAL CONTACTS

Henry L. Busuttil, Chatsworth; Sol S. Kreisler, Downey; James R. McGibbeny, Marina Del Rey, and Russell O. Pearson, Redondo Beach, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 9, 1971, Ser. No. 206,284  
Int. Cl. H01r 3/04

U.S. Cl. 339—16 C

16 Claims



An electrical connector especially suitable for subsea and oil well applications is disclosed. One member of the connector is movably associated with submersible equipment and as described for oil well applications includes a cylindrical shell with a center post depending within the shell permissive of acting as an alignment guide and a flow passage. The other member of the connector is permanently positioned subsurface on a subsea structure or within an oil well production tubing where it receives the one member. A tubular member carries a number of ring contacts that engage tubular contacts in the first member. To purge hostile fluids, a viscous dielectric

grease is packed in the shell of the movable member and is partially expelled as the connector members are engaged. The configuration is particularly permissive of removing a downhole oil well pump without reeling in an electrical cable and of thereafter passing servicing tools through the subsurface member.

body structure are appropriate stator body sections embodying the same principles.

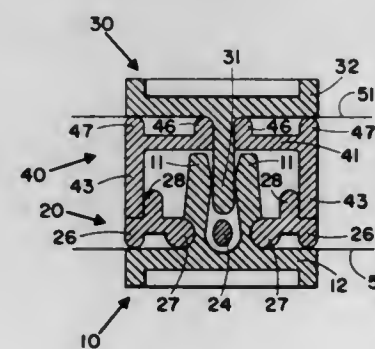
### 3,753,207 CONNECTOR FOR THE ELECTRICAL CONNECTION OF FLEXIBLE CONDUCTORS

Peter Francis Maheux, Kanata, and Robert Maarten Van Dyk, Dunrobin, Ontario, both of Canada, assignors to Bell Canada - Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed Oct. 7, 1971, Ser. No. 187,385  
Int. Cl. H05k 1/02

U.S. Cl. 339—17 F

3 Claims



A connector for and method of connecting a flexible conductor, such as a flat flexible cable or flexible circuits, in which the flexible conductor is flexed over at least one rib, the conductor held in position over the rib by a retaining member. In a particular example, a first conductor is flexed over a single rib while a second conductor is flexed over and down between two parallel ribs, both conductors held in place by retaining members. The first conductor and its supporting rib is then inserted between the parallel ribs and the two conductors are electrically connected.

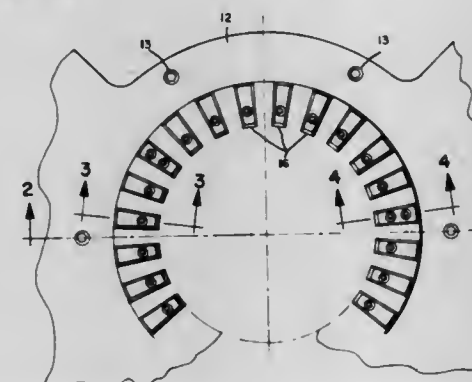
### 3,753,208 VARIABLE LENGTH ROTOR APPARATUS

Philip J. Bochicchio, Ellicott City, Md., assignor to the United States of America as represented by the Secretary of the Army

Filed Dec. 17, 1970, Ser. No. 97,449  
Int. Cl. H01r 25/00

U.S. Cl. 339—18 P

4 Claims



A variable length rotor apparatus, including a rotor body having a plurality of insertable segments arranged around the periphery of the rotor body, the number of the segments being selected to coincide with the number of contacts desired, giving the rotor a variable length capability. The segments are held in position in the rotor by clamping rings, each segment having pin connections which enable it to function as a separate contact in the rotor body. Associated with the rotor

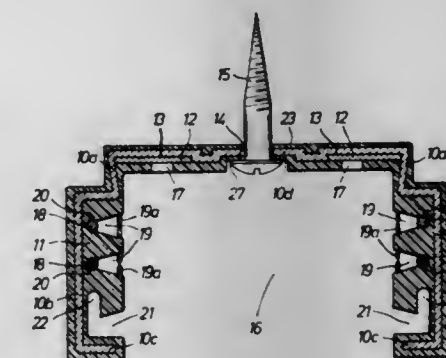
### 3,753,209 CURRENT DISTRIBUTOR RAIL

Kurt Hesse, Lemgo-Lippe, Germany, assignor to Staff & Schwarz GmbH, Lemgo-Lippe, Germany

Filed Jan. 5, 1971, Ser. No. 104,105  
Int. Cl. H01r 13/60

U.S. Cl. 339—21 R

8 Claims



A current distributor rail for current consumers such as lamps, electrical appliances or the like including a rail member adapted to be severed to any required length and having a constant cross-section over its whole length, the rail member defining a receiving space for an adapter which is open at one end of the rail member, the receiving space having two opposite fixing grooves extending over the whole length of the rail for adapter mounting, at least two oppositely located electric conductors extending over the whole length of the rail and, at least one earthing conductor the earthing conductor being accessible for tapping current from the receiving space and a cover means located at each end face of the rail member and covering the conductors to make them inaccessible.

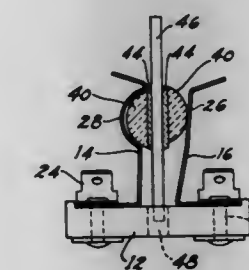
### 3,753,210 ELECTRICAL CONNECTOR AND MOUNTING MEANS FOR CERAMIC GLOW IGNITERS

Hugo H. Speth, St. Louis, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Sept. 20, 1971, Ser. No. 181,894  
Int. Cl. H01r 13/20, 13/64, 13/20, 13/64

U.S. Cl. 339—65

2 Claims



A spring clip connector and mounting device for a ceramic glow igniter including a pair of spaced, upstanding, resilient, conductive legs engaging the opposite arcuate surfaces of adjacent and connected semicylindrical end portions of a ceramic loop, one leg being arcuate and the other straight so that they may receive between them and securely support and electrically connect an igniter in which the connected semicylindrical end portions thereof are misaligned.



3,753,211

## CONNECTING MEANS FOR CERAMIC SUBSTRATE PACKAGE

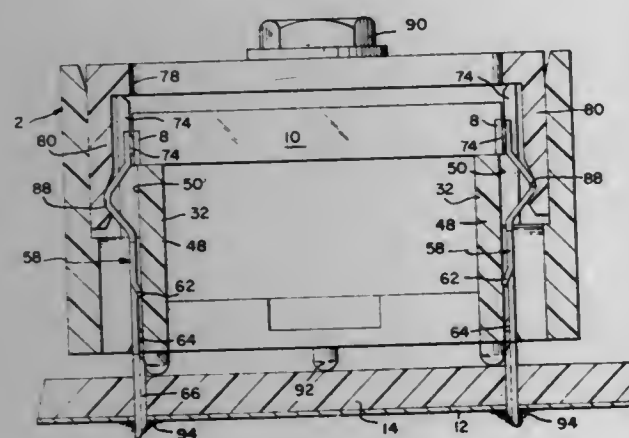
William Vito Pauza, Palmyra, Pa., and John Franklin Smith, III, Menlo Park, Calif., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 6, 1971, Ser. No. 186,876

Int. Cl. H01r 13/54

U.S. Cl. 339-75 MP

8 Claims



Multi-contact connector for ceramic substrate integrated circuit assembly comprises a housing, adapted to receive the substrate, and a cover member. The housing contains two rows of contact terminals and supporting surface portions for supporting the substrate between the two rows of terminals. The cover member, when assembled to the housing, causes the contact portions of the terminals to move to and fro across the terminal pads on the substrate thereby to achieve a wiping action at the electrical interface.

3,753,212

## MULTI-TERMINAL CONNECTOR ASSEMBLY

Shoji Yamada, and Yoshiaki Kawaguchi, both of Gotenba, Japan, assignors to Yazaki Corporation, Tokyo, Japan

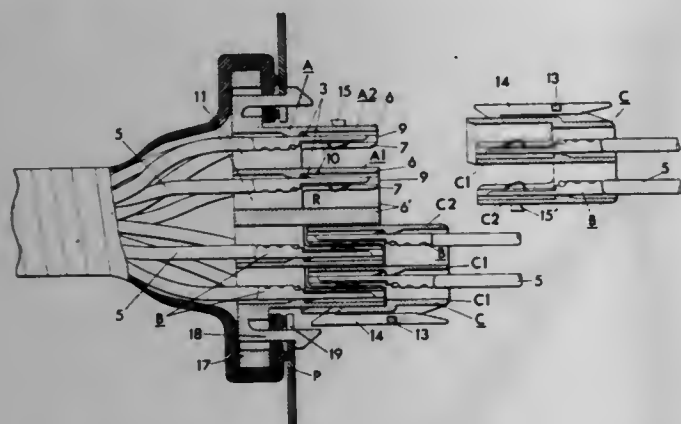
Filed Jan. 20, 1971, Ser. No. 107,934

Claims priority, application Japan, Jan. 21, 1970, 45/006110 (utility model); Jan. 26, 1970, 45/007386 (utility model)

Int. Cl. H01r 13/54; H02b 1/02

U.S. Cl. 339-91 R

11 Claims



A multi-terminal connector assembly which comprises a panel connector element including a plurality of blocks with a desired number of terminal plates; an attachable connector element corresponding to each of said blocks; said panel connector being provided with a flange adapted to be fitted to an intercepting wall around its opening; thereby systematically connecting wiring harnesses on the both sides of said wall. Such a multi-terminal connector assembly can be simply and air-tightly attached to an intercepting wall such as a dash panel of a motor-car, and effectively shut off poisonous gases, noises etc.

3,753,213  
METHOD AND MEANS FOR CONNECTING TO A METALLICALLY SHEATHED CABLE

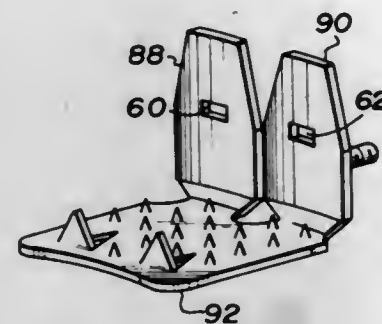
William G. Frey, Union, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Jan. 7, 1972, Ser. No. 216,192

Int. Cl. H01r 11/20

U.S. Cl. 339-97 R

1 Claim



A connector and method for rapidly and conveniently connecting the sheath of a metallically sheathed cable to a further conductive member and including in one embodiment, a body member having at least a pair of hinged coupled, superpositionally disposable arms at least one of which is provided, on its interior face, with insulation piercing teeth and at least one elongate member serving as a locking tab, and the other of which is provided with a mating tab receiving aperture to facilitate the interlocking of said arms, and coupling means preferably for attaching the connector to a conductive strap or lead. The connector may be integrally formed to provide a unitary foldable cliplike structure readily securable about a selectively exposed portion of the metallic cable sheath. The coupling means may include a threaded extension, deformable projections, or apertured tongue formed integrally with, or suitably attached to, the connector body member.

3,753,214

## ELECTRICAL CONDUCTORS

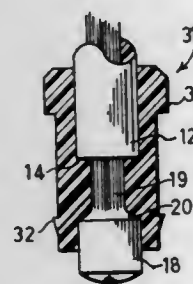
Gideon A. DuRocher, and Ellsworth S. Miller, both of Mt. Clemens, Mich., assignors to Essex International Inc., Detroit, Mich.

Filed June 1, 1971, Ser. No. 148,786

Int. Cl. H01r 13/58

U.S. Cl. 339-102 R

8 Claims



An electrical conductor composed of either stranded or solid wire has at least at one end thereof a terminal the cross-sectional area of which is greater than that of the wire, the terminal constituting an integral part of the wire and being formed by axial and lateral deformation of the wire end. The terminal may be formed either by spinning or swaging, or both simultaneously, the wire end in a die having a forming chamber into which a swaging or spinning member may be thrust so as to deform the free end of the wire both axially and radially. The terminal and the adjacent portion of the wire are surrounded by an insulating sleeve adapted for insertion in an

opening formed in a connector body in such manner that the terminal is exposed for electrical connection to another conductor which may be supported in another connector body. A compressible, elastomeric pad having conductive particles therein preferably is interposed between the confronting conductors of the connector parts so as to assure the establishment of a conductive path between adjacent conductors even though there may be some differences in the levels of the conductors in their respective connector parts.

3,753,215

## CABLE CONNECTOR

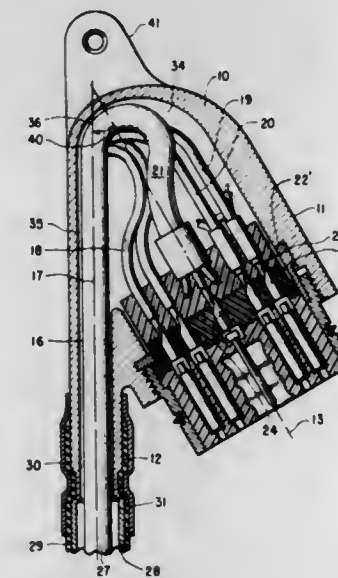
Stuart I. Moore, West Covina, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 12, 1971, Ser. No. 133,091

Int. Cl. H01r 13/72

U.S. Cl. 339-136 M

4 Claims



The invention disclosed herein provides a unique connector for making electrical contact by providing within the connector housing a storage area for enough additional cable to allow for installation variations in production line items.

3,753,216

## HIGH VOLTAGE TERMINAL STRIP

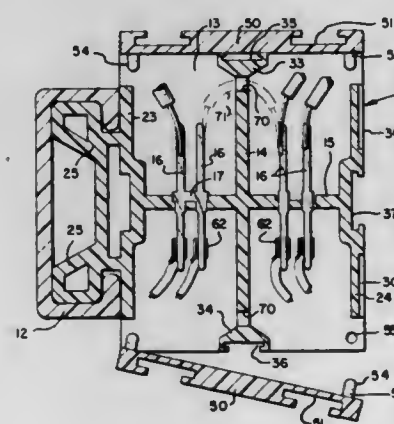
Erlon Fitch Johnson, and Donald Eugene Crabb, both of Elizabethtown, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 14, 1971, Ser. No. 189,420

Int. Cl. H01r 9/00

U.S. Cl. 339-198 GA

6 Claims



A terminal strip to provide for varying numbers and combinations of connections between input conductors and output conductors is disclosed. The strip is built up of any desired

number of insulating block elements, each of identical structure, all mounted on a channel shaped track between end stops. The block elements have interlocking means, and they define plural cavities with sets of contact terminals inside the cavities to which the conductors are terminated in desired patterns. Barrier wall sections subdivide the cavities and separate sets of terminals. High voltage surge conditions can be successfully withstood due to cavity spacings, post spacings, presence of barrier walls, and use of insulating material for all elements except the contact terminals. Access cover means and cavity identifying marker means are also provided.

3,753,217

## SINGLE RECESSED BASE LIGHT

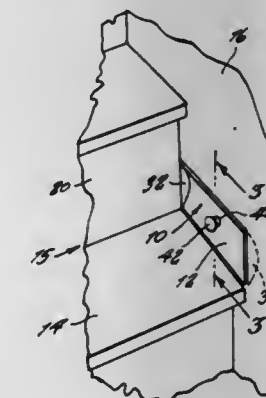
Erich Willfurth, 31 W. Chestnut St., Farmingdale, N.Y.

Filed Aug. 31, 1971, Ser. No. 176,514

Int. Cl. E04f 19/00; F21v 33/00

U.S. Cl. 240-2 W

10 Claims



A recessed light primarily for use in a staircase to be positioned within a recess in the baseboard or wall at one side of the staircase to illuminate a tread of the staircase. There may be one such light for each tread or they may be spaced in any desired manner to illuminate selected treads. The recessed light is formed as an open housing from a section of a sheet metal reentrant face with upper and lower lips to engage the upper and lower edges of a recess into which the housing snugly fits. The lips may be secured to said recess edges by nailing or by a suitable adhesive and may also be formed with integral projecting teeth or prongs to be driven into the recess edge portions for securing the housing in place. Provided centrally of the concave face of the housing is an opening for an electric light bulb. Each end of the housing is provided with an end wall so as to completely close off the recess. The housing may also take the form of a square-shaped frame at the outer edge of the concave face, the sides of the frame forming lips engageable with the outer side edge portions of the recess into which the housing is fitted.

3,753,218

## ELECTRO-MECHANICAL ACOUSTIC FILTER

Otto H. Hill; Herbert V. Hillery, both of Austin, Tex., and George B. Thurston, Stillwater, Okla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 21, 1956, Ser. No. 611,395

Int. Cl. H04r 23/00

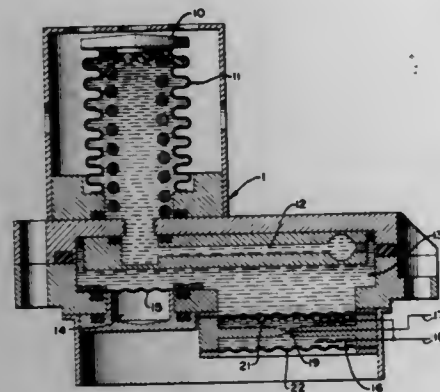
U.S. Cl. 340-8 R

4 Claims

1. A passive hydro-acoustic device for providing band pass filtering and detection of low frequency acoustic pressure signals transmitted through water and with said filtering occurring prior to transduction of said signals into electrical energy signals, which comprises input coupling means disposed to provide coupling of acoustic pressure signal intelligence from an external underwater sound field to the interior of said device, a fluid filled housing adapted to be closed by said input coupling means, a hydraulic tube disposed within



said housing and in fluid communication with said input coupling means, means in said housing for providing a substantially enclosed air volume in hydraulic shunt relation to said input coupling means, an electrolytic detector cell for providing an electrical signal output and disposed in fluid



communication with the end of said hydraulic tube remote from said input coupling means and a fluid filled chamber of substantial capacity disposed in said housing for providing said fluid communication between said hydraulic tube, said detector cell and said air volume means.

3,753,219

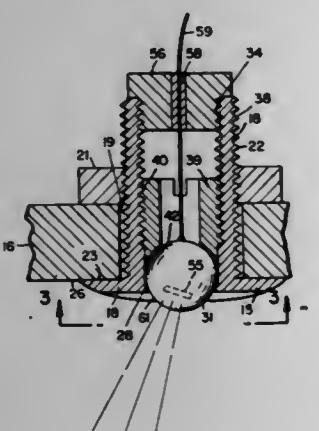
## TRANSDUCER MOUNTING ASSEMBLY

John L. King, Jr., P.O. Box 64, Sausalito, Calif.  
Filed Sept. 30, 1971, Ser. No. 184,997

Int. Cl. H04b 11/00

U.S. Cl. 340-5 R

3 Claims



A through-hull fitting having a spherical socket into which an electrical transducer mounted within a ball can be adjusted to position the transducer in a vertically aligned axis.

3,753,220

## AUXILIARY FLIGHT INSTRUMENT

Jean Rene Noel Lavarenne, Villecresnes, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France  
Filed Jan. 21, 1972, Ser. No. 219,675

Claims priority, application France, Jan. 28, 1971, 7102892

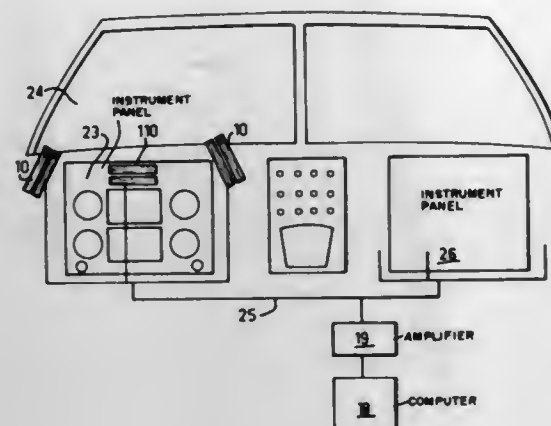
Int. Cl. G01d 7/02

U.S. Cl. 340-27 R

9 Claims

Auxiliary flight instrument, particularly a blind flying instrument comprising a rotating member bearing on one of its surfaces a pattern which through a stroboscopic effect is either visible or invisible depending on the rotation speed of said

member, said pattern being devised so as to provide the pilot, when lacking exterior visual references, with a reflex-prompt-



ing display under blind flying conditions similar to when visual piloting conditions obtain.

3,753,221

## ACOUSTIC CONTROL SYSTEM

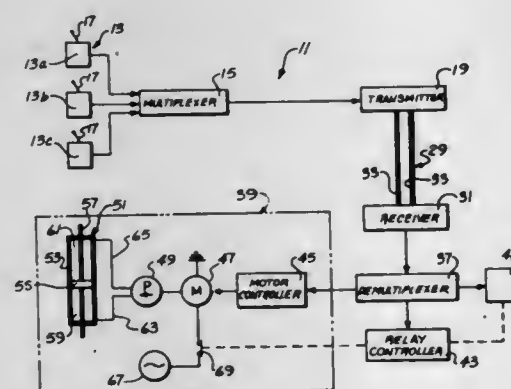
Curtis E. Stevens, Irvine, Calif., assignor to Berteau Corporation, Irvine, Calif.

Filed Aug. 5, 1971, Ser. No. 169,345

Int. Cl. G08b 13/16

U.S. Cl. 340-15

15 Claims



A control system including an input device for providing a plurality of variable input signals. The input signals are combined in a multiplexer and transmitted acoustically through a sound pipe to a receiver. The signals are then separated and transmitted to one or more actuators or other devices for performing a control function.

3,753,222

## THREE DIMENSIONAL COMMON DEPTH POINT EXPLORATION

Maurice E. Trostle, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 853,897, Aug. 28, 1969, abandoned. This application May 22, 1970, Ser. No. 39,867

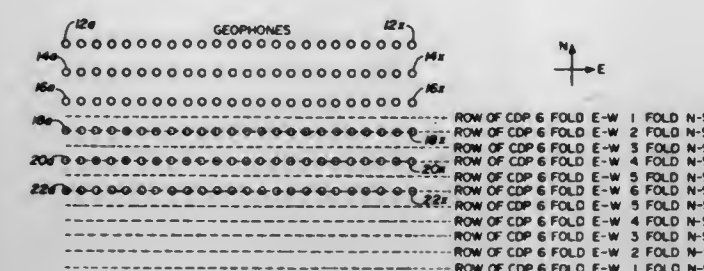
Int. Cl. G01v 1/20

U.S. Cl. 340-15.5 MC

21 Claims

Seismic wave detectors are located along a plurality of spaced apart parallel detecting lines. A plurality of seismic wave transmitting stations are located along a plurality of transmitting lines which are substantially perpendicular to the

detecting lines at one end thereof. Seismic waves are generated from sequential ones of the transmitting lines and



are received by the detectors to provide three-dimensional common depth point coverage of the earth's subsurface.

3,753,223

## SYSTEM TO DETERMINE THE DIRECTIONAL MODE OF TRAVEL OF VEHICLES ON A ROADWAY

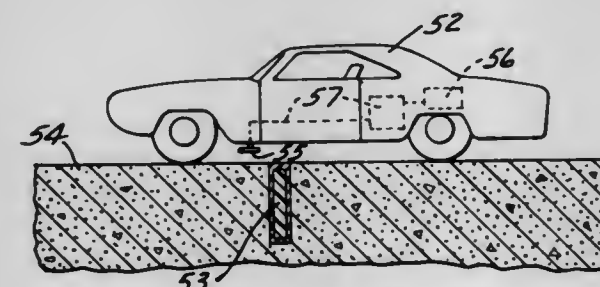
Richard E. Fayling, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 819,588, April 28, 1969, abandoned. This application Aug. 16, 1971, Ser. No. 171,904

Int. Cl. G08g 1/09

U.S. Cl. 340-32

15 Claims



Method and apparatus for automatically determining within a vehicle the directional mode of the vehicle on a roadway, directional mode being a description of the direction the vehicle is traveling and/or the orientation of the vehicle. The method distinguishes between at least two directional modes, using one or more discrete magnetic-field-producing means installed on roadways and magnetic-flux-sensors in vehicles. The flux-sensors develop a standard first electric signal by travel of the vehicles in a first directional mode over the magnetic-field-producing means and a second electric signal different from the first signal by travel of the vehicles in a second directional mode over the magnetic-field-producing means. Electric circuitry in the vehicles distinguishes between the first and second signals and actuates mechanism in the vehicles that registers the directional mode in which the vehicles are traveling on the roadways. One use of the invention is to limit wrong-way travel on one-way roadways, the second electric signal occurring only when the vehicles are traveling in the wrong direction and the registering mechanism taking the form of travel-inhibiting mechanism that warns a driver or automatically stops the vehicle.

3,753,224

## LAMP FAILURE WARNING SYSTEM FOR ROAD VEHICLES

Rex Martin, Blackburn, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

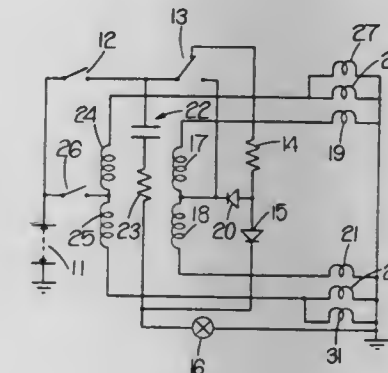
Filed Apr. 21, 1971, Ser. No. 135,889

Claims priority, application Great Britain, May 2, 1970, 21,208/70

Int. Cl. B60q 1/44

U.S. Cl. 340-80

3 Claims



A lamp failure warning system for a road vehicle includes a pair of lamps the failure of which is to be monitored, and a switch for energising the lamps. Current sensing means is provided in series with the lamps for detecting failure of one lamp or the other, and when the switch is off current is passed through both lamps without illuminating them, and a warning is given if both lamps have failed.

3,753,225

## COMMUNICATION TECHNIQUE

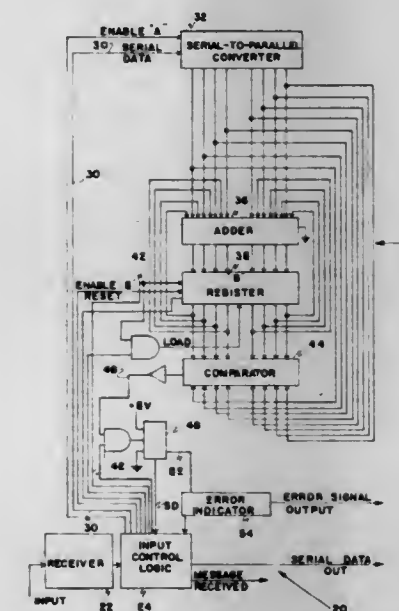
Arlyn G. Liddell, Bountiful, Utah, assignor to Eaton Corporation, Cleveland, Ohio

Filed Nov. 19, 1971, Ser. No. 200,371

Int. Cl. G06f 11/10

U.S. Cl. 340-146.1 AJ

7 Claims



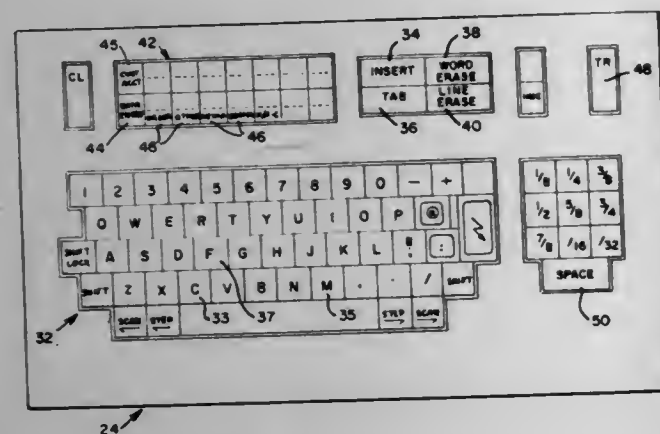
A technique for communicating binary data comprising adding the transmitted data signals to develop a check sum, transmitting the check sum immediately following the "end-of-transmission" signal, receiving the transmitted data signals together with said check sum, adding the data signals received to develop a received signal sum, and comparing said received signal sum with said check sum to verify message integrity. Both method and apparatus are disclosed.





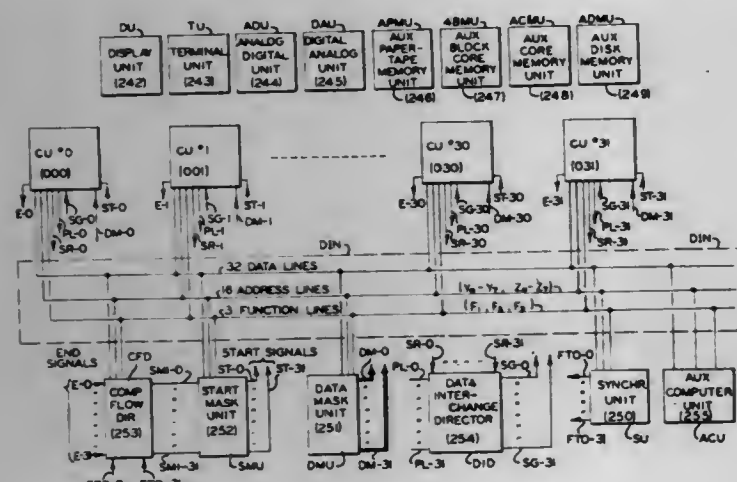


the display is a cathode ray tube. Each format guidance mask incorporates alternative fields or words for the most often required information in the data entry requested. Alternative words are displayed in groups on the same line and are normally arranged from left to right according to their descending frequency of use. A data entry is composed by erasing the words in each line that do not apply and tabbing over the word or words that do apply. To this end the display is provided with a cursor or place marker and the keyboard of the invention



comprises a word erase key for erasing words one at a time, a tab key for tabbing over words one at a time, and a line erase key for erasing the remaining portion of a line. Thus, the most frequent keyed sequence is tabbing over the first and most frequently desired alternative word and line erasing the remainder of the line. The word erase key is only used if a less frequently chosen alternative is desired. A stock securities order data entry system is disclosed in detail.

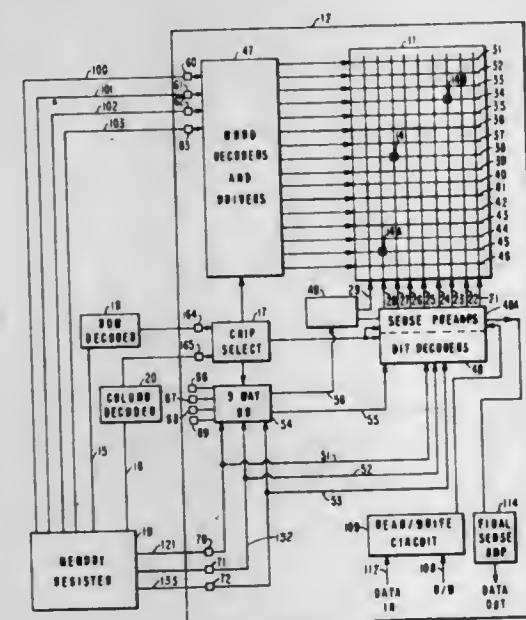
**3,753,234**  
**MULTICOMPUTER SYSTEM WITH SIMULTANEOUS DATA INTERCHANGE BETWEEN COMPUTERS**  
Edward O. Gilbert, Elmer G. Gilbert, Edward J. Fadden, and Thomas D. Berge, all of Ann Arbor, Mich., assignors to Reliance Electric Company, Ann Arbor, Mich.  
Continuation of Ser. No. 791,064, Jan. 14, 1969. This application Feb. 25, 1972, Ser. No. 229,575  
Int. Cl. G06f 15/16  
U.S. Cl. 340—172.5 10 Claims



A multicomputer system including a plurality of stored program digital computer units which are enabled to commu-

nicate directly with each other over one or more data interchange network means to allow a plurality of such computer units to simultaneously execute different programs to solve different portions of a problem which cannot conveniently be divided into independent programs. In one embodiment the starting and stopping of the various computer units and some data transmission between various computer units is governed by a computational flow director and a data mask unit to which each computer unit is connected. Use of a single data interchange network allows one computer to receive data from a single other computer unit, or transmit data to a selected group of other computer units, at any given time. In a further embodiment shown using serial data transmission, many computer units simultaneously man both send and receive data to and from many other computer units. In a further preferred embodiment shown using parallel data transmission, starting and stopping of computer units and data routing to the various units is controlled over the same data interchange network over which data is routed, eliminating the requirement for the computational flow director and various other equipment. The use of plural data interchange networks is shown, with conflict-determining circuitry to prevent a computer from being addressed simultaneously by more than one other computer unit.

**3,753,235**  
**MONOLITHIC MEMORY MODULE REDUNDANCY SCHEME USING PREWIRED SUBSTRATES**  
James M. Daughton, Essex Junction; James J. Tomczak, Burlington, and Francis W. Wiedman, III, Essex Center, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.  
Filed Aug. 18, 1971, Ser. No. 172,838  
Int. Cl. G06f 13/00  
U.S. Cl. 340—172.5 4 Claims

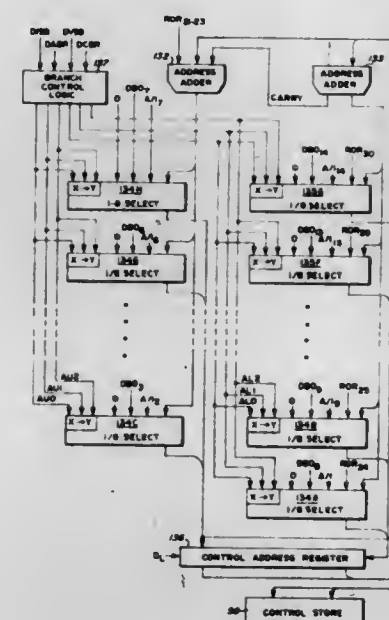


A monolithic memory module for memory systems capable of utilizing both good chips and partially defective chips. Each chip is provided with an extra bit line of storage cells that can be substituted for failing cells and a comparator circuit having pads that can be contacted externally by pre-wired substrates.

The pre-wired substrates are designed in different combinations to contact selected numbers of the pads and thus act as constant output read only memories to the chips mounted thereon. That is, each substrate contains connecting wiring for

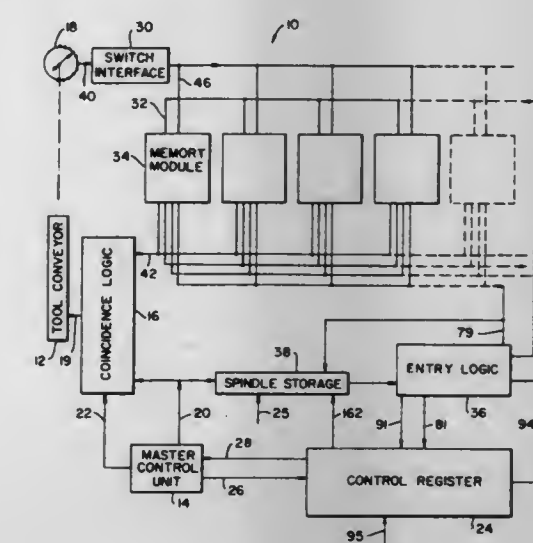
selectively contacting the pads of the comparator circuit either to identify the defective line and substitute for it the redundant line or to disable the redundant line when its use is unnecessary.

**3,753,236**  
**MICROPROGRAMMABLE PERIPHERAL CONTROLLER**  
Richard Thomas Flynn, and Marion Gene Porter, both of Phoenix, Ariz., assignors to Honeywell Information Systems, Inc., Waltham, Mass.  
Filed Mar. 31, 1972, Ser. No. 240,064  
Int. Cl. G06f 9/10  
U.S. Cl. 340—172.5 5 Claims



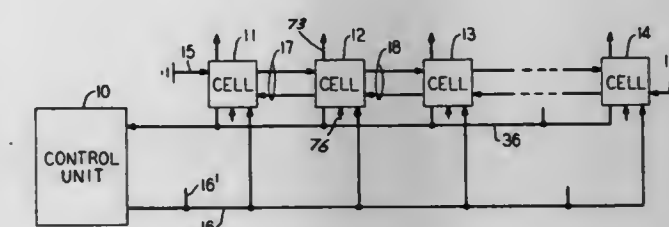
A microprogrammable peripheral controller is provided in which the control store microinstruction format is compatible with the read/write memory data word format and the architecture is compatible with character oriented peripheral data formats. The controller is provided with a processor which enables word transfers in a single operation. The processor also has the capability of performing a large repertoire of arithmetic and logic microinstructions, but this is made economical by limiting such operations, in general, to byte length operands. With this processing capability, the primary controller control functions can be performed economically for a wide range of peripherals. A common interface is provided for data and control information transfers between the controller and both peripheral devices and central processor ports. In general, adaptor units are required to provide compatibility between the controller and the CPU ports and peripheral interfaces, to provide data buffering, to support multiplexing and for any other special functions. The primary feature to which this disclosure is directed is processor architectural features which effectively eliminate processor execution time for performing branching operations whereby processing speed is effectively increased by a factor of more than one third for many if not all control store programs. controller economy and reliability is further advanced by the use of dual arithmetic/logic modules which serve as redundant elements for byte operations and word transfer elements for word transfer operations.

**3,753,237**  
**ELECTRONIC STRUCTURE FOR AND METHOD OF RANDOM TOOL SELECTION**  
James L. Koontz; James D. Lewelling, both of Birmingham; Drake C. Fink, Ann Arbor, and Robert S. Sutton, Franklin, all of Mich., assignors to Ex-Cell-O Corporation, Detroit, Mich.  
Filed June 23, 1971, Ser. No. 155,732  
Int. Cl. G06k 17/00; B65g 47/34, 47/48  
U.S. Cl. 340—172.5 10 Claims



A completely electronic circuit for and method of random selection of a tool from a conveyor for use in a machining operation.

**3,753,238**  
**DISTRIBUTED LOGIC MEMORY CELL WITH SOURCE AND RESULT BUSES**  
David Morris Tutelman, Eatontown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.  
Filed Aug. 27, 1971, Ser. No. 175,477  
Int. Cl. G06f 7/00  
U.S. Cl. 340—172.5 15 Claims



A distributed logic memory cell for a parallel cellular logic processor has a selectable-logic-operation circuit for coupling signals from a single-conductor source bus to a single-conductor result bus. Equally ranked control flip-flop circuits are also selectable for coupling signals in the opposite direction between the buses, as well as cooperating with instruction signals from a central control to determine whether or not a particular cell will be allowed to respond to other signals applied from the central control unit to all cells of the processor. Control signals are provided on a binary coded basis and decoded within each cell.



3,753,239

## DATA FLOW IN A MACHINE LOG SYSTEM

Royce D. Lindsey, and Larry G. Smith, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,347

Int. Cl. G06f 7/00; G11c 7/00

U.S. Cl. 340-172.5

5 Claims

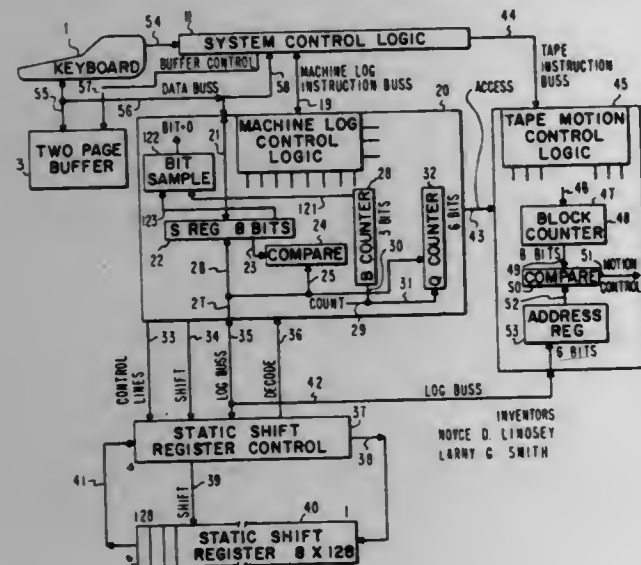
3,753,240  
DATA ENTRY AND RETRIEVAL COMPOSITE DISPLAY SYSTEM

Roy L. Merwin, Jordon, Minn., assignor to Dynamic Information Systems, Inc., Burnsville, Minn.

Filed Mar. 8, 1971, Ser. No. 122,003

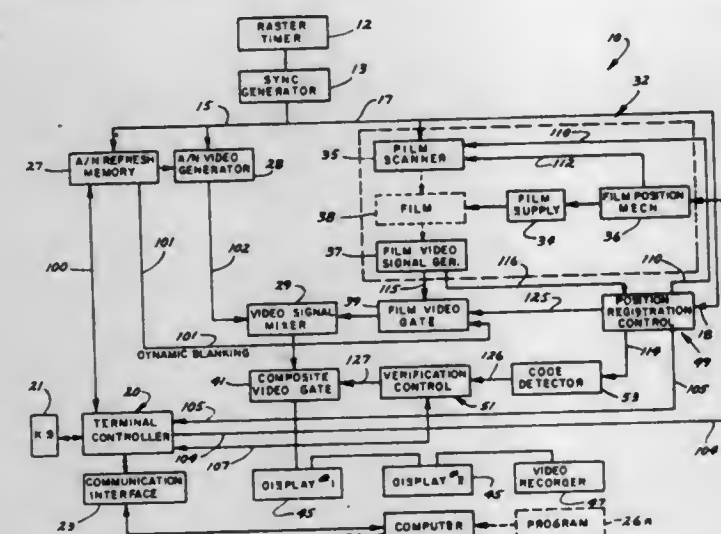
Int. Cl. H01j 31/10

10 Claims



An efficient system is disclosed for utilization in the storage address log portions of a typewriting system including a multi-page buffer and a substantially larger serial bulk memory. A keyboard-printer is connected to a multi-page buffer. Also connected to the multi-page buffer is a magnetic tape cassette. The operator can temporarily store textual characters in the multi-page buffer and can transfer the buffer contents to the tape in the tape cassette for permanent storage. An address logging system is provided for assigning storage blocks on the tape for reading or recording. Included in this address logging system is an electronic static shift register (SSR) having stored therein indicia representative of the availability or unavailability for storage of each storage block on the tape. Also stored in the SSR of the address logging system are job identifying codes input by the operator from the keyboard as well as storage block address codes corresponding to the particular storage blocks on which are recorded textual characters included in a particular job. After each store or delete operation on one of the storage blocks on the tape, the contents of the SSR are recorded on the first storage block on the tape. Thus, the contents of the log stored on the tape, in the event of power failure which would destroy the contents of both the multi-page buffer and the SSR, are current up to the last completed job.

An efficient system is disclosed herein whereby the equal bit length job identifying codes and block address codes are distinguished from each other by the provision of a particular bit position in each code which is automatically set if the code is a job identifying code and automatically reset if the code is a block address code. Further, another bit position of a particular job identifying code and the block address codes associated with that job is automatically set upon the operator's inputting the particular job code from the keyboard. The availability or unavailability for storing characters on the storage blocks as well as the address of a particular block is determined by the set or reset status of a sequence of separate bits, with each bit individually representing a storage block on the tape.



A data entry and retrieval composite display system which by electronic means transforms film, microfiche, transparent slides, video tape data and like data into a video signal and combines the same with computer originated data reduced to a video signal and displays the combined signals as a composite video display embodying the use of integrated electronic control and operating apparatus and programming, providing for selective electronic blanking and substitution of data, for electronic verification of identity of data and for electronic registration of position of data.

3,753,241

## SHIFT REGISTER HAVING INTERNAL BUFFER

John Wallace Bayne, Earley, England, assignor to Sperry Rand Limited, New York, N.Y.

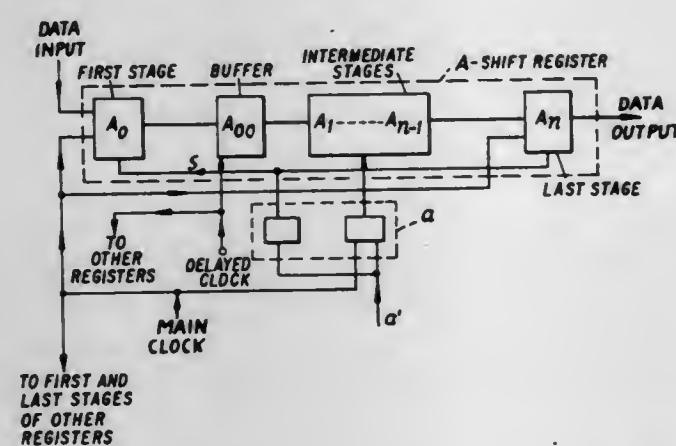
Filed Nov. 18, 1971, Ser. No. 199,955

Claims priority, application Great Britain, Nov. 26, 1970, 56,189/70

Int. Cl. G06f 5/00; H03k 5/13

U.S. Cl. 340-172.5

9 Claims



A shift register which includes an internal buffer for eliminating clock skew. The first and last cells of the register are driven by common clock pulses and the intermediate cells thereof and the buffer are driven by second and third clock pulses, respectively, having the same nominal rate as the common clock pulses. A plurality of such registers may be utilized in a digital data processing system where the first and last cells of the registers are all driven by the common clock pulses.

3,753,242

## MEMORY OVERLAY SYSTEM

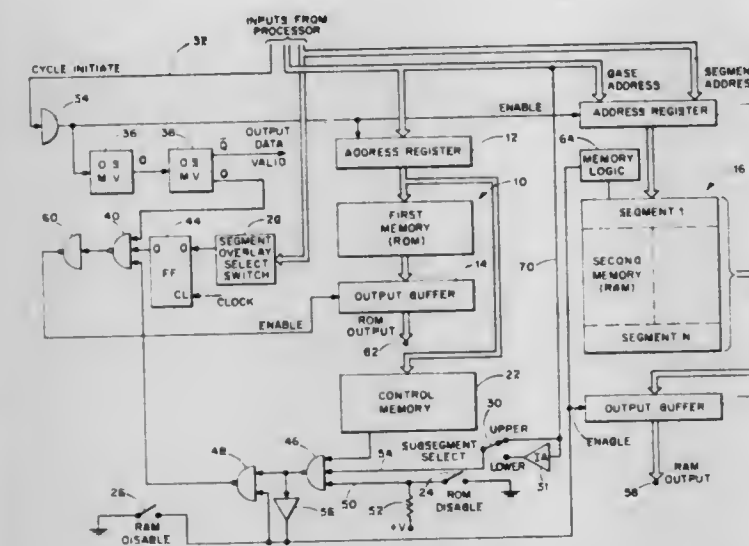
James F. Townsend, Framingham, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 16, 1971, Ser. No. 208,787

Int. Cl. G11c 7/00

U.S. Cl. 340-172.5

15 Claims



A read only memory (ROM) and a random access memory (RAM) overlaid to provide for three modes of operation: (1) ROM enabled, RAM disabled except as indicated by a control memory; (2) ROM disabled, normal RAM operation, and/or (3) ROM enabled, RAM disabled regardless of indication from control memory.

3,753,243

## PROGRAMMABLE MACHINE CONTROLLER

Alan W. Ricketts, Jr., Derry, N.H.; Allan T. Devault; Russell C. Doane, both of Framingham, Mass.; John M. Dumser, Jr., Harvard, Mass., and John M. Holzer, Jr., Bogota, Colombia, assignors to Digital Equipment Corporation, Maynard, Mass.

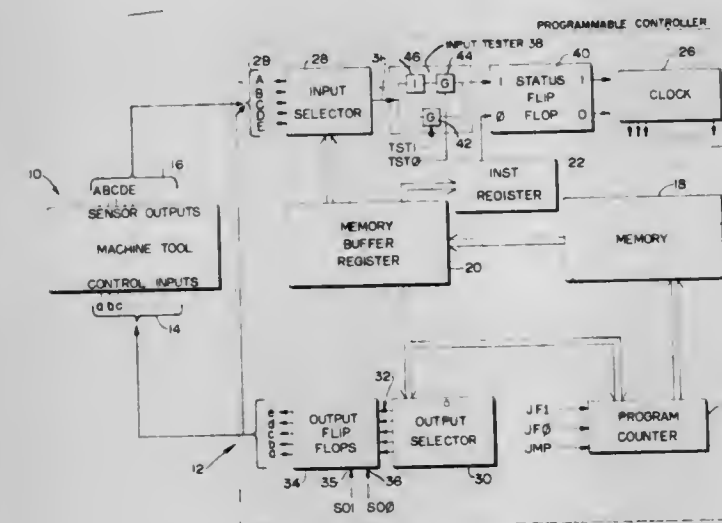
Continuation of Ser. No. 789,585, Jan. 7, 1969, abandoned.

This application Apr. 20, 1972, Ser. No. 170,266

Int. Cl. G05b 11/00

U.S. Cl. 340-172.5

25 Claims



A controller for initiating and terminating the operations of a machine in response to the conditions of various sensors on the machine incorporates a data processor, which stores Boolean expressions governing the relationships between the sensor conditions and the machine operations. The processor sequentially compares the values of the individual independent variables of these expressions with the conditions of the corresponding sensors. Whenever a set of sensed conditions

meets the criteria of one of the stored expressions, the processor emits a signal causing the machine to take the action governed by the expression.

3,753,244

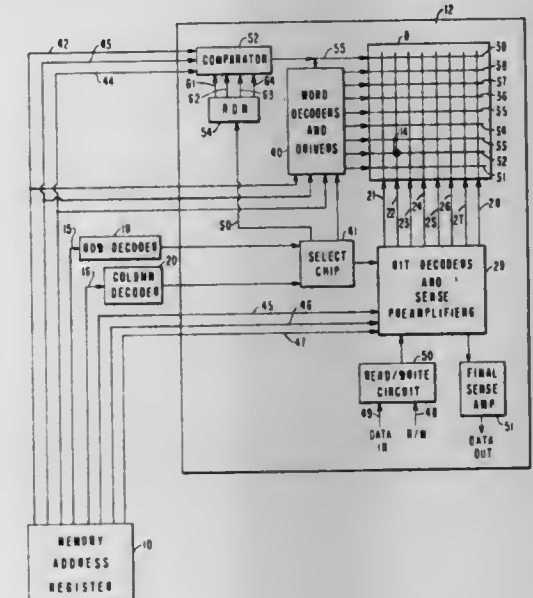
John W. Sumilas, Williston, and Norbert G. Vogl, Jr., Colchester, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1971, Ser. No. 172,800

Int. Cl. G06f 13/00

U.S. Cl. 340-172.5

7 Claims



A memory storage system utilizing a plurality of storage devices, each of which contains redundancy and each of which is functionally organized on e.g. a single semiconductor chip with its own decoders. This redundancy in each device is provided by placing an extra line of cells on the chip together with a defective address store and a comparator circuit for disabling a defective line of cells and replacing it with the extra line of cells.

3,753,245

## RECORD READING SYSTEM

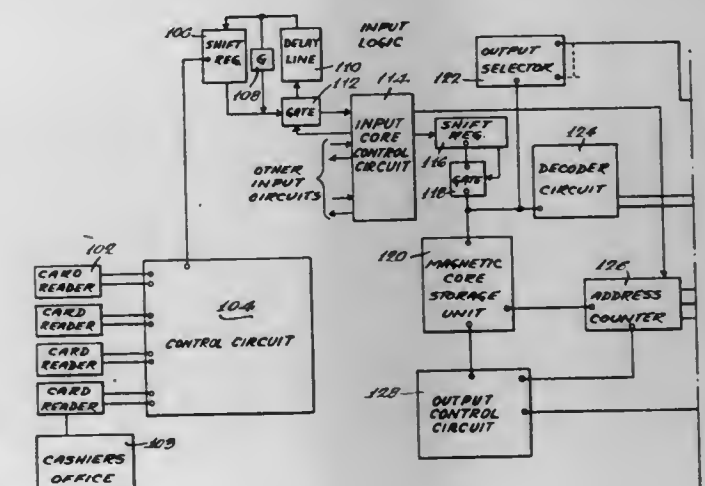
Louis E. Philipps, Addison, Ill., and Eugene A. Stanis, Wheeling, Ill., assignors to Medelco, Incorporated, Wood Dale, Ill.

Division of Ser. No. 761,043, Sept. 20, 1968, Pat. No. 3,597,742. This application Mar. 8, 1971, Ser. No. 121,994

Int. Cl. G06f 3/06

U.S. Cl. 340-172.5

6 Claims



A hospital data handling system transmits and receives all message information normally required in hospital operations.



The system input is derived from permanent punch cards containing all message and control information and disposable punch cards containing variable data, such as patient identifying cards made, for instance, when a patient is admitted. A card reader located at each message originating location or station in the hospital provides messages which are placed in a delay line input storage time divided into slots so that a single delay line is shared by a group of card readers. The data in the delay line is erased as it is transferred out to system recorders and a central processor. The time slots in the delay line are permanently assigned to different card readers to permit continuous random access to the delay line. A control circuit automatically adds synchronizing signals when lacking from the input record and stores source identifying data, such as nurse identification, at a particular location in storage in conjunction with each message.

3,753,246

### PRINTER ADAPTED FOR OPERATION WITH A PROGRAMMABLE CONTROLLER

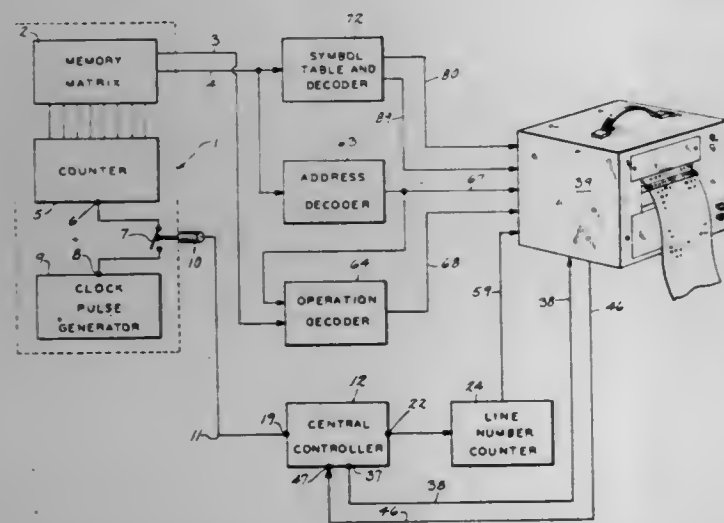
William W. Kiffmeyer, Milwaukee, and David J. Sackman, West Milwaukee, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Aug. 27, 1971, Ser. No. 175,624

Int. Cl. G06k 15/02

U.S. Cl. 340—172.5

4 Claims



A printer is attached to a programmable controller to read and record the program stored in its memory. The clock pulse generator in the programmable controller is disabled and clock pulses are generated by a central controller in the printer. Each clock pulse reads an instruction from the controller memory which instruction is decoded by the printer to select symbols on a digital printer. The digital printer visually records the instruction in response to a print command signal from the central controller, after which another clock pulse is generated to read the next instruction from memory. A line number counter selects symbols which are recorded with each instruction to indicate its location in the memory and a symbol table and decoder circuit selects symbols which are recorded with each instruction to indicate the device acted upon by the instruction.

3,753,247

### ARRAY OF DEVICES RESPONSIVE TO DIFFERENTIAL LIGHT SIGNALS

Jan Aledsander Rajchman, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 22, 1971, Ser. No. 136,328

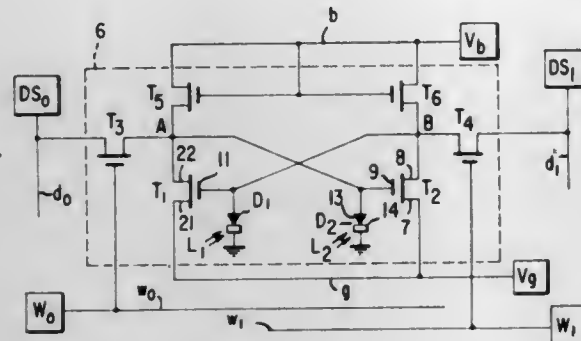
Int. Cl. G11c 11/42, 11/40

U.S. Cl. 340—173 LS

7 Claims

An array of memory elements is disclosed in which each memory element includes a bistable circuit having a differential input circuit including a pair of spaced photosensors.

The bistable circuit is set to one or the other of its two states in accordance with which photosensor of the pair receives the greater amount of input light. The pairs of photosensors are arranged in interlaced herringbone fashion in the array so that every photosensor of a pair is positioned equidistant from the two photosensors of one adjacent pair of photosensors. The



memory elements in the array may be densely packed because the effect of input light intended for one photosensor of a pair which may spill over to the equidistant photosensors of the adjacent pair of photosensors is cancelled in the differential input circuit connected to the adjacent pair of photosensors.

3,753,248

### TWO-TERMINAL NONDESTRUCTIVE READ JFET-NPN TRANSISTOR SEMICONDUCTOR MEMORY

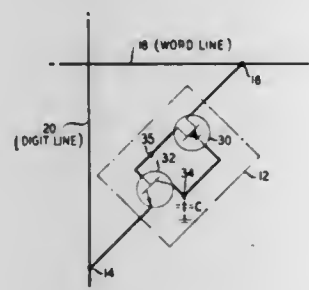
Dennis Joseph Lynes, Madison, N.J., and Peter Theodore Panousis, Salisbury Twp., Lehigh County, Pa., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 9, 1972, Ser. No. 261,417

Int. Cl. G11c 11/40

U.S. Cl. 340—173 R

7 Claims



A semiconductor memory array contains memory cells, each having only two terminals and each comprising a P-channel, a JFET and an NPN transistor. The gate and drain of the JFET are respectively coupled to the collector and base of the NPN transistor. Bit information is written into the cell by causing or inhibiting conduction in the NPN transistor in order to set the potential of the gate of the JFET to one of two values which represent a "1" and a "0," respectively. A positive polarity voltage pulse applied to the source of the JFET causes nondestructive readout of information previously stored in the cell.

3,753,249

### INFORMATION SYSTEMS USING ARRAYS OF MULTIPLE SPOT PATTERNS

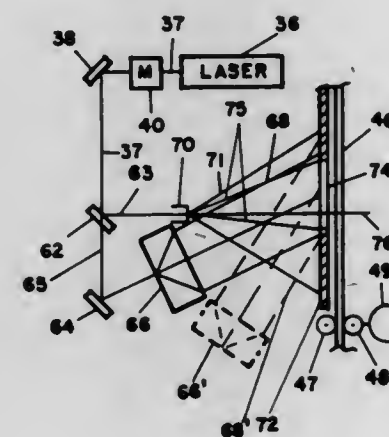
Daniel Silverman, 5969 S. Birmingham, Tulsa, Okla.

Continuation of Ser. No. 67,135, Aug. 26, 1970, abandoned, which is a continuation-in-part of Ser. Nos. 612,698, Jan. 30, 1967, Pat. No. 3,550,085, and Ser. No. 721,998, April 17, 1968, Pat. No. 3,560,072. This application Aug. 9, 1972, Ser. No. 278,979

Int. Cl. G11c 13/00

U.S. Cl. 340—173 R

26 Claims



The systems of this invention involve the storage of information on a record medium in the form of patterns of spots arrayed along one or more tracks, the patterns are spaced apart a distance which is a fraction of the length of the pattern so that there is partial overlap of the patterns along the track. The patterns may be uniformly or non-uniformly spaced spots, and the patterns can be sequentially the same or different patterns. All of the spots in the patterns have the same character, and are presented to a reading means sequentially. The spacing of patterns along the track may be uniform or variable. Each pattern may represent a single bit, or a single character.

3,753,250

### CYLINDRICAL MAGNETIC DOMAIN PROPAGATING CIRCUIT AND LOGIC CIRCUIT

Fumio Yamauchi, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo-to, Japan

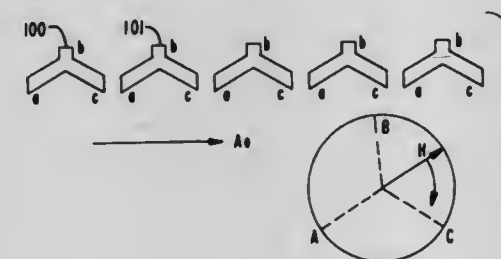
Filed Jan. 25, 1972, Ser. No. 220,665

Claims priority, application Japan, Feb. 1, 1971, 46/3876

Int. Cl. G11c 11/14, 19/00; H03k 19/168

U.S. Cl. 340—174 TF

4 Claims



A cylindrical magnetic domain propagating and logic circuit capable of retaining and propagating domains in response to a rotating magnetic field, in which the propagating and logic circuit comprises an arrangement of Y-shaped patterns of thin film soft magnetic material. The Y-shaped patterns have various size strokes and are positioned to effect various logic functions depending on the particular positions of the Y-shaped patterns and the relative size of the strokes.

3,753,251

### BIPOLAR DRIVING METHOD AND DEVICE FOR A MAGNETIC THIN FILM MEMORY

Nobuo Saito, Mikaka; Kiyoo Ito, Kodaira; Yutaka Watanabe, Hatano, and Kunihiro Yamaguchi, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

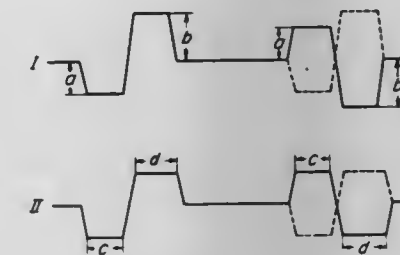
Filed Feb. 23, 1971, Ser. No. 117,908

Claims priority, application Japan, Feb. 27, 1970, 45/16837

Int. Cl. G11c 11/14, 11/04

U.S. Cl. 340—174 PW

10 Claims



A method for driving a digit line of a magnetic thin film memory by a bipolar digit current in order to write an information in the memory, characterized in that the bipolar digit current is purposely unbalanced in regard to the amplitude and/or the pulse width whereby the insusceptibility of the magnetic record to interference pulses is remarkably enhanced.

3,753,252

### DISK PACK ASSEMBLY AND METHOD OF MAKING

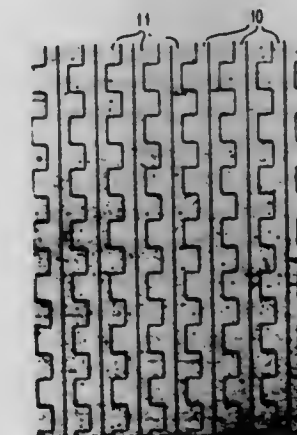
Armin R. Tietze, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 28, 1971, Ser. No. 157,201

Int. Cl. H01f 10/00

U.S. Cl. 340—174.1 G

22 Claims



A process for selectively affecting the magnetic properties in a magnetic particulate/resin material, such as an iron oxide-epoxy base coating as utilized on magnetic disks, disk pack assemblies and tapes, by creating an irreversible differential magnetic particle distribution in the surface of the material while maintaining the original surface topography, comprising the steps of exposing at least one preselected area of the surface for reaction with a reagent capable of converting the magnetic particulate material to a non-magnetic form, apply-



ing the reagent to the exposed areas, and removing the reagent from the preselected area of surface after a length of time sufficient to effect such conversion in the areas exposed, the reagent having the property of being substantially unreactive with the resin for the length of time of exposure.

3,753,253

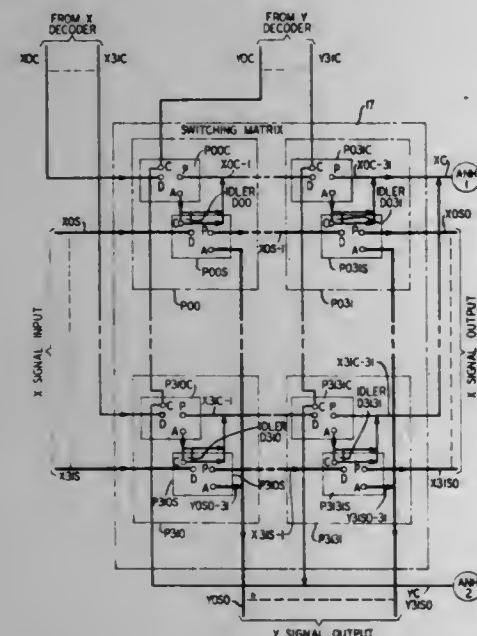
# MAGNETIC DOMAIN SWITCHING MATRIX AND CONTROL ARRANGEMENT

Robert McKee Smith, Holmdel, N.J., assignor to Bell Telephone Laboratories Incorporated, Berkeley Heights, N.J.

Filed Sept. 13, 1971, Ser. No. 179,831  
Int. Cl. G11c 11/14, 5/02, 19/00

U.S. Cl. 340—174 TF

20 Claims



A magnetic domain switching matrix arrangement is realized by a magnetically soft overlay geometry which controls the movement of single wall domains in a slice of magnetic material in response to a reorienting magnetic field. The overlay geometry defines a switching matrix for domains propagated along a horizontal path, which domains are selectively transferred to an intersecting vertical path under control of a domain positioned in proximity to the selected intersection between the respective paths. A separate control grid is utilized to position the control domain at the desired intersection point. Also realized are arrangements for controllably delaying and for selectively routing the control domains in accordance with information domains propagated in, separate control channels in a flow chart arrangement.

3,753,254

# THERMAL EXPANSION COMPENSATION FOR DISC DRIVE MEMORY

Frank D. Ruble; Terence H. West, and Frank J. Sordello, all of San Jose, Calif., assignors to Information Storage Systems, Inc., Cupertino, Calif.

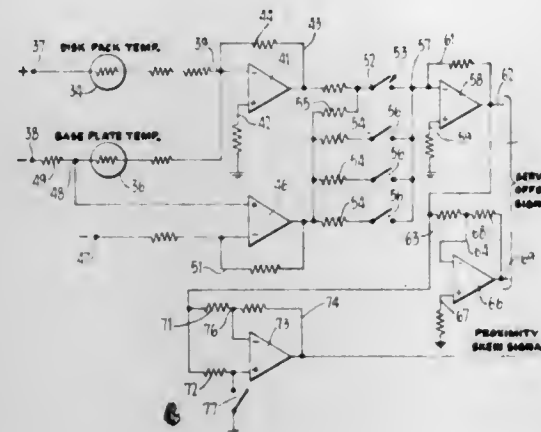
Filed Aug. 19, 1971, Ser. No. 173,033  
Int. Cl. G11b 5/56

U.S. Cl. 340—174.1 B

10 Claims

Apparatus for a disc drive memory is described for continuously compensating for the effects of thermal expansion on

the positioning of read/write heads with respect to a disc pack. The apparatus includes a thermistor which is positioned to register temperature changes occurring in air which has passed in heat conducting relationship over a disc surface, as well as a thermistor for measuring a temperature representative of the average temperature of the support structure extending



between the read/write heads and the disc pack. Changes in temperature detected by the thermistors are compared with one another and to a set reference temperature in order to generate a compensation signal for super-imposition on the positioning signal which regulates the head position controller so that a correction is made for the effect of thermal expansion on the positioning of the heads.

3,753,255

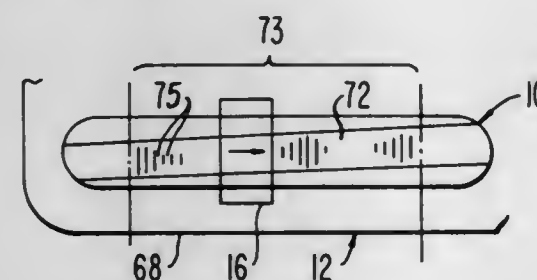
# TRANSDUCING APPARATUS FOR SCANNING DATA RECORDABLE MAGNETIC STRIPES

Hilliard R. Di Veto, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 4, 1971, Ser. No. 186,203  
Int. Cl. G06k 7/015, 19/00; G11b 5/48

U.S. Cl. 340—174.1 M

5 Claims



Relates to magnetic transducing apparatus for reading from and writing upon magnetic stripes secured to the outer surfaces of bank passbooks and the like and includes a traveling magnetic transducing head arranged to engage each magnetic stripe and read from or record data thereon as it is moved therealong. The magnetic stripe serves to store data and is oriented with respect to the path of travel of the transducing head, so as to biasedly extend at an acute angle thereto. The transducing head has a lateral extent greater than the width of the magnetic stripe and such that it will overlie the full width of the magnetic stripe throughout its engagement therewith, thus spreading the wear to which the head is subjected as the result of such engagement. The data bearing area of the stripe is preferably spaced from and between the side edges and opposite ends of a patch adhering to the outer surface of a documentary member, such as a bank passbook. The biased relationship of the stripe to the read head will provide a broader engageable surface area to the transducing tip of the head, thereby spreading the wearing area and reducing the amount of material of the tip of the head which is worn away by repetitious engagements with magnetic stripes.

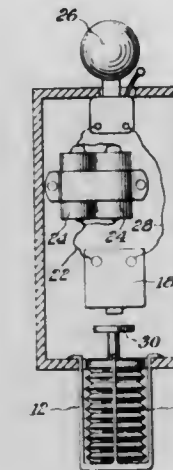
3,753,256  
FIRE ALARM SYSTEM

Grover C. McDonald, Knoxville, Tenn., assignor to The Raymond Lee Organization, Inc., New York, N.Y.  
Continuation of Ser. No. 831,537, June 9, 1969, abandoned.

This application Aug. 31, 1971, Ser. No. 176,726  
Int. Cl. G08b 21/00; H01h 25/32

U.S. Cl. 340—227.1

1 Claim



A portable battery powered fire alarm device employing a bellows charged with a substance which causes expansion of the bellows. This expansion actuates a battery powered alarm.

3,753,257

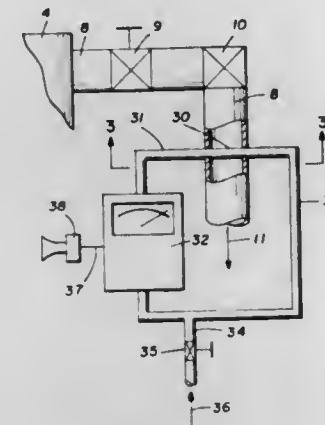
# WELL MONITORING FOR PRODUCTION OF SOLIDS

Thomas Ben Arnold, Dallas, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Feb. 28, 1972, Ser. No. 229,885  
Int. Cl. G08b 21/00

U.S. Cl. 340—236

21 Claims



A method and apparatus for determining when solid particles are produced with a well fluid by utilizing a conductive means which is immersed in the produced well fluid and which is in a known conductive state, said conductive means being adversely affected as to its conductive state when exposed to solid particles such as sand in the well fluid.

3,753,258  
FIRE ALARMING SYSTEM

Yukio Honda, Nakano-ku, Tokyo, Japan, assignor to Nittan Company Limited, Tokyo, Japan

Filed Mar. 10, 1971, Ser. No. 122,956  
Claims priority, application Japan, Mar. 31, 1970, 45/26844; Mar. 31, 1970, 45/26843

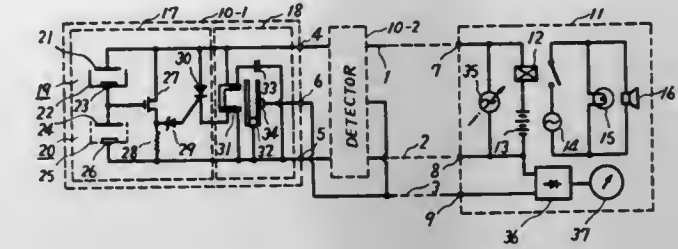
Int. Cl. G08b 25/00

U.S. Cl. 340—228 R

4 Claims

A fire alarm system having a plurality of fire detectors connected in parallel to a transmission line, each detector having a band pass filter resonating at a specific individual frequency.

A receiver is connected to the transmission line and generates a plurality of frequencies corresponding to the frequencies of



the detectors and has means for detecting specific frequencies returned thereto when one or more of the detectors are activated by fire, thus enabling detection and location of a fire.

3,753,259

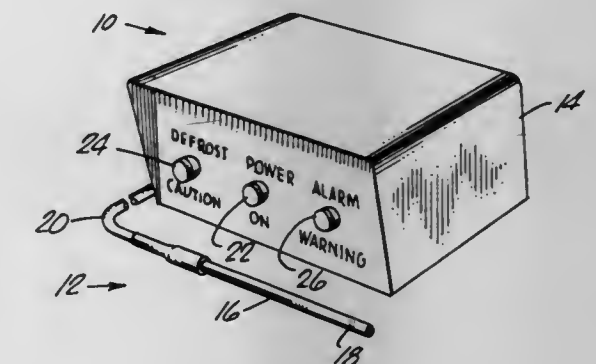
# COOLER AND FREEZER FAILURE WARNING SYSTEM

Raymond L. Donovan, 1027-20th St., Santa Monica, Calif.

Filed Aug. 30, 1971, Ser. No. 175,976  
Int. Cl. G08b 21/00, 23/00

U.S. Cl. 340—228 R

14 Claims



Cooling failure warning system for a refrigerated food case or the like, including a source of a rectified, pulsating, supply signal, a source of a lower regulated signal supplied by the supply signal source, a temperature sensor installed in a selected location of the food case and responsively variable in resistance according to its sensed temperature, means responsive to the sensor resistance for producing a switch signal at a predetermined overtemperature condition, means responsive to the switch signal for producing a delayed switch signal, a temperature alarm device, and an alarm switch responsive to the delayed switch signal for applying the supply signal to energize the temperature alarm device. The warning system further includes fail-safe provisions for producing an alarm in the event of sensor failure. A power failure alarm device responsive to a loss of the regulated signal can also be included in the warning system.

3,753,260

# PULSE REFLECTION TEST MEANS FOR BALANCED PRESSURE SURVEILLANCE DETECTOR

Arthur Nelkin, and Frederick G. Geil, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 4, 1971, Ser. No. 186,109  
Int. Cl. G08b 21/00

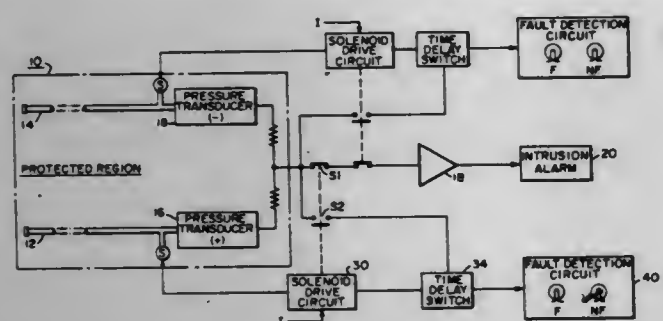
U.S. Cl. 340—242

5 Claims

In a buried hose pressure responsive detection system for monitoring intrusion of a designated area, a combination of a pressure transducer means and a pulse reflection test means for determining the integrity of the buried hose is positioned at

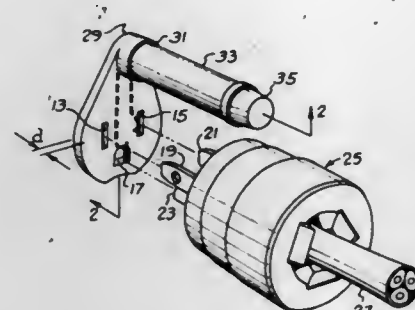


a common location in the hose for monitoring both intrusion of the designated area as well as providing random determination of the integrity of the hose. The pulse reflection test means functions to transmit a pressure pulse from the common location to a remote end of the hose and the pressure transducer means responds to the return of an unaltered pressure pulse reflected from the hose end as an indication of a no-fault hose condition. If however a hose fault condition exists,



i.e. a hose break, the travel of the pressure pulse is foreshortened and an air pocket present in the hose at the fault location reflects an inverted version of the pressure pulse back to the pressure transducer means. The pressure transducer means generates a first level dc signal in response to an unaltered pressure pulse indicative of a no-fault hose condition and a second level dc signal in response to an inverted pressure pulse indicative of a fault hose condition.

3,753,261  
CONTINUOUS GROUND AND POLARITY MONITOR  
Keith R. Thaxton, 12671 Volti Ln., Mountain View, Calif.  
Filed Dec. 9, 1971, Ser. No. 206,288  
Int. Cl. G08b 21/00  
U.S. Cl. 340-252 P 7 Claims

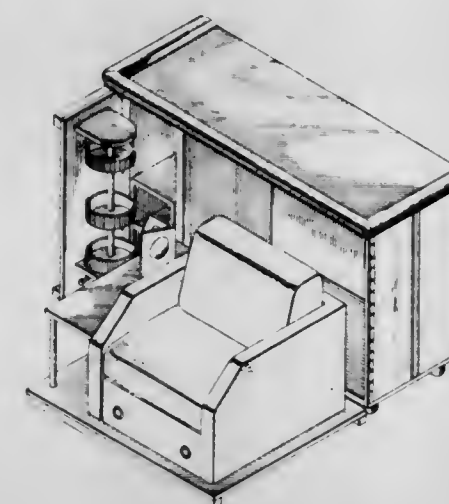


A disk has three apertures therein for receiving the hot, neutral and ground prongs of an a.c. line plug. In use the disk is slipped onto the prongs and positioned between the body of the line plug and a mating electrical outlet socket. An indicator lamp is fixedly attached to the disk and electrically coupled across the hot and ground prongs by friction tight contact at the corresponding apertures in the disk. The indicator lamp glows as long as a ground connection and proper polarity are maintained in the electrical outlet.

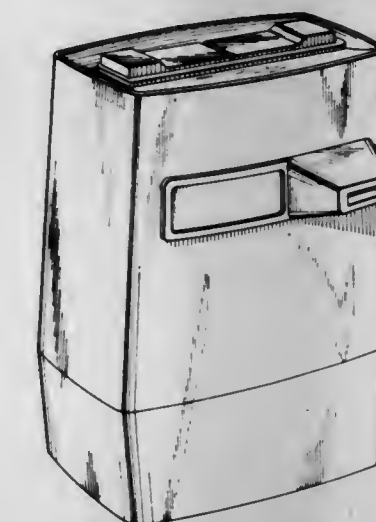
## DESIGNS

AUGUST 14, 1973

228,103  
COMBINED BAR, CHAIR AND SIDE TABLE UNIT  
Stanley H. Skalka, Springfield, Va., and Melvin R. Jones, Baltimore, Md., assignors to Victor Stanley, Inc., Dunkirk, Md.  
Filed Mar. 20, 1972, Ser. No. 236,573  
Term of patent 14 years  
Int. Cl. D6-06  
U.S. Cl. D6-4



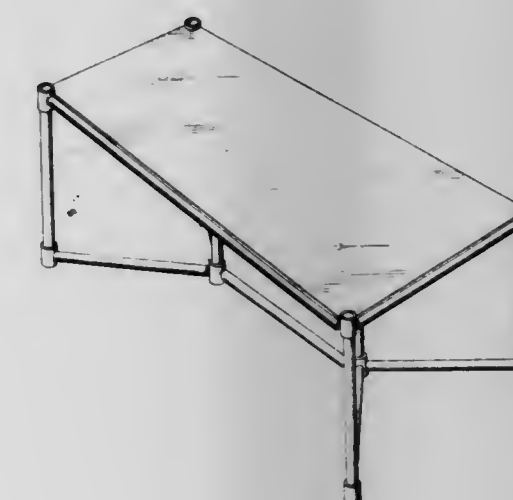
228,105  
HEATED SHAVE CREAM DISPENSER  
William J. Cook, Trumbull, Conn., assignor to General Electric Company  
Filed Jan. 31, 1972, Ser. No. 222,450  
Term of patent 7 years  
Int. Cl. D6-06  
U.S. Cl. D6-95



228,104  
SEATING UNIT  
Leif Blodde, Holland, Mich., assignor to American Seating Company, Grand Rapids, Mich.  
Filed Feb. 14, 1972, Ser. No. 226,397  
Term of patent 14 years  
Int. Cl. D6-01  
U.S. Cl. D6-41



228,106  
TABLE  
Jack Klotz and Louise Klotz, Los Angeles, Calif., assignors to Environmental Concepts Products Co., Inc., Beverly Hills, Calif.  
Filed Nov. 24, 1971, Ser. No. 202,053  
Term of patent 14 years  
Int. Cl. D6-03  
U.S. Cl. D6-117





228,107  
DESK

Jack Klotz and Louise Klotz, Los Angeles, Calif., assignors to Environmental Concepts Products Co., Inc., Beverly Hills, Calif.

Filed Nov. 24, 1971, Ser. No. 202,056

Term of patent 14 years

Int. Cl. D6—03

U.S. Cl. D6—177



228,109  
ADJUSTABLE RECORD HOLDER

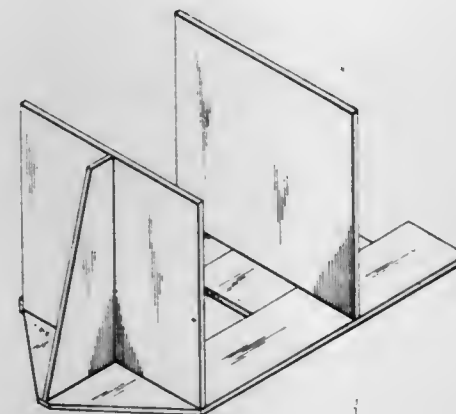
Matthew B. Woods, Madley Road, Lebanon, Conn. 06249

Filed Feb. 10, 1972, Ser. No. 225,372

Term of patent 14 years

Int. Cl. D6—04

U.S. Cl. D6—185



228,108  
PHONOGRAPH RECORD DISPLAY UNIT

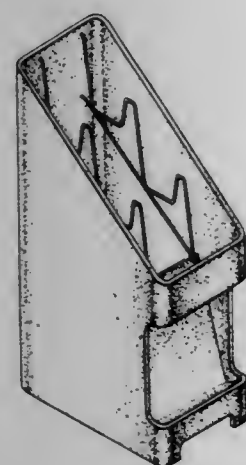
Wilbur J. Kerman, St. Louis, Mo., assignor to Cubicon Corporation, St. Louis, Mo.

Filed Feb. 10, 1972, Ser. No. 225,366

Term of patent 3½ years

Int. Cl. D6—04

U.S. Cl. D6—185



228,110  
MERCHANDISE DISPLAY UNIT

Wilbur J. Kerman, St. Louis, Mo., assignor to Cubicon Corporation, St. Louis, Mo.

Filed Feb. 10, 1972, Ser. No. 225,371

Term of patent 3½ years

Int. Cl. D6—04

U.S. Cl. D6—186



228,111  
DECORATIVE PANEL

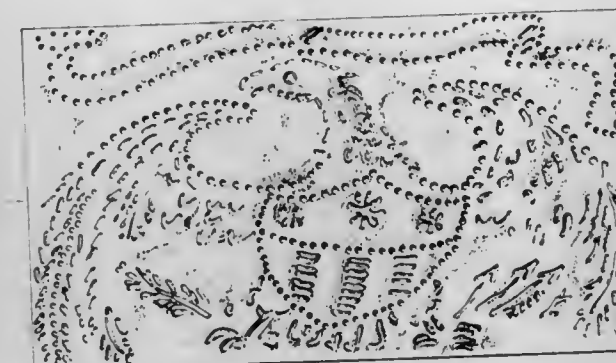
Herbert P. Lee, Brodbeck, Pa., assignor to Wilton/Lee, Ltd., Columbia, Pa.

Filed Aug. 17, 1971, Ser. No. 172,614

Term of patent 14 years

Int. Cl. D6—06

U.S. Cl. D6—192



228,112  
PEDESTAL FOR FURNITURE

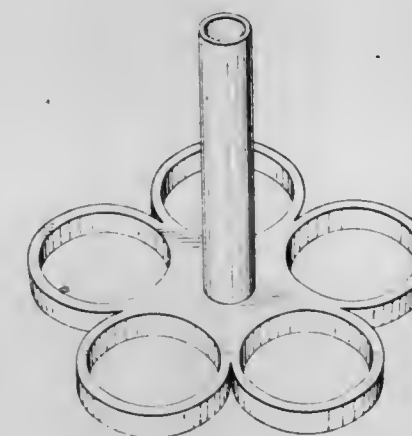
Thomas Fedor, 125 Birch Ave., Hamilton, Ontario, Canada

Filed Mar. 24, 1972, Ser. No. 238,021

Term of patent 14 years

Int. Cl. D6—06

U.S. Cl. D6—194



228,113  
PICTURE FRAME

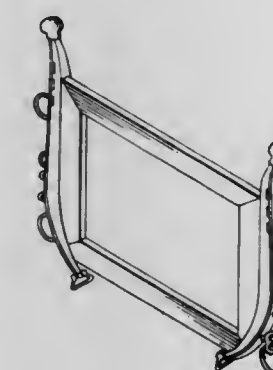
George A. Romancky, St. Helen, Mich. 48656

Filed Mar. 13, 1972, Ser. No. 234,448

Term of patent 14 years

Int. Cl. D6—07

U.S. Cl. D6—244



228,114

TORTILLA SERVING DISH

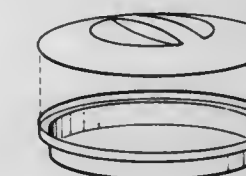
Richard De La Rosa, Hacienda Heights, Calif., assignor to ETL Corporation, San Jose, Calif.

Filed July 2, 1971, Ser. No. 159,161

Term of patent 14 years

Int. Cl. D7—01

U.S. Cl. D7—17



228,115  
COMBINED HANDLE AND LOCK HOUSING

William P. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.

Filed July 7, 1972, Ser. No. 269,797

Term of patent 14 years

Int. Cl. D8—06

U.S. Cl. D8—138



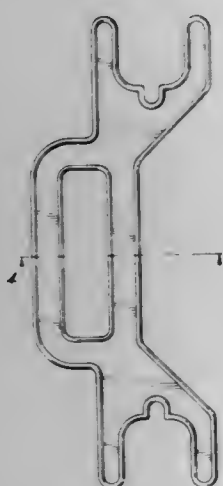


**228,116**  
**COMBINED PANIC DEVICE, HANDLE, AND LOCK HOUSING SET**  
 William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.  
 Original design application Sept. 30, 1970, Ser. No. 25,284. Divided and this application Dec. 22, 1971, Ser. No. 211,165

Term of patent 14 years  
 Int. Cl. D8—06  
 U.S. Cl. D8—149

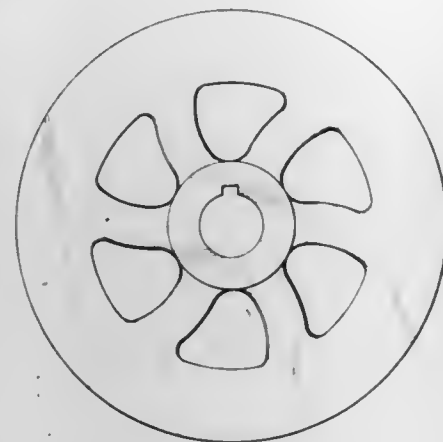


**228,117**  
**SKI ROPE HOLDER**  
 Ronald P. Turner, Southfield, Mich., assignor to Master Industries, Inc., Ansonia, Ohio  
 Filed May 30, 1972, Ser. No. 258,238  
 Term of patent 14 years  
 Int. Cls. D8—08, D22—05, D8—06  
 U.S. Cl. D8—158



**228,118**  
**REVERSIBLE FEED LOADER DRIVE PULLEY**  
 Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341  
 Filed June 26, 1972, Ser. No. 266,489  
 Term of patent 14 years  
 Int. Cl. D8—99

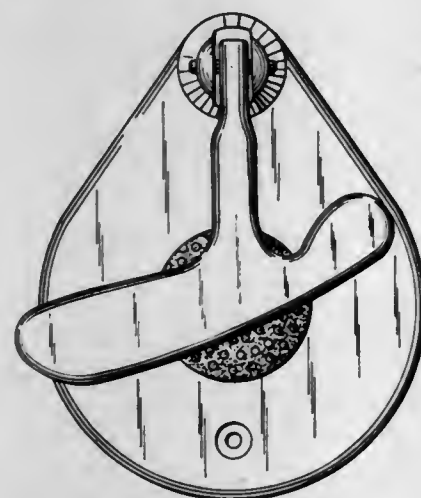
U.S. D8—220



**228,119**  
**INSERT HOLDER SUPPORT DEVICE**  
 Robert N. Cox, Cranbury, N.J., assignor to Stamco Industries, Belleville, N.J.  
 Filed Feb. 18, 1972, Ser. No. 227,707  
 Term of patent 14 years  
 Int. Cl. D8—08  
 U.S. Cl. D8—254



**228,120**  
**DOOR KNOCKER**  
 Claudette A. LaBonte, 647 Gleneagle, New Seabury, Mass. 02649  
 Filed June 14, 1972, Ser. No. 262,502  
 Term of patent 14 years  
 Int. Cl. D8—09  
 U.S. Cl. D8—277



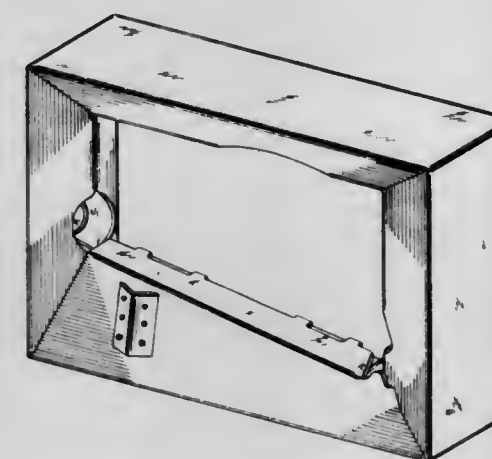
**228,121**  
**DISPENSING CONTAINER**  
 Boris Sway, 7201 W. Aracoma Drive, Cincinnati, Ohio 45237  
 Filed Mar. 8, 1972, Ser. No. 232,989  
 Term of patent 14 years  
 Int. Cl. D9—01

U.S. Cl. D9—2

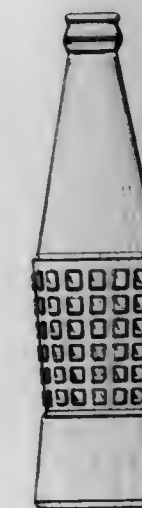


**228,122**  
**COMBINED PACKAGING AND DISPLAY CARTON FOR A POWER TOOL OR THE LIKE**  
 Arthur L. Shreve III, Butler, Lyell Bayne Norris, Jr., Phoenix, and Robert W. Beichler, Baltimore, Md., said Shreve and said Norris assignors to The Black and Decker Manufacturing Co., Towson, Md.  
 Original design application June 23, 1969, Ser. No. 17,834, which was a division of Ser. No. 11,599, Apr. 24, 1968. Divided and this application June 8, 1970, Ser. No. 23,362

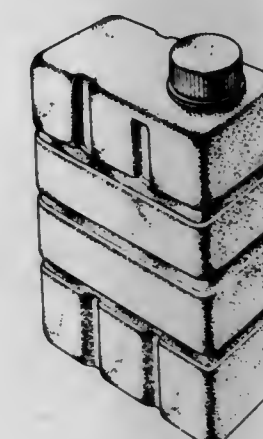
Term of patent 14 years  
 Int. Cl. D9—03  
 U.S. Cl. D9—191



**228,123**  
**BOTTLE**  
 Joachim Besler, an der Favorite 6, 6500 Mainz, Germany  
 Filed Nov. 9, 1970, Ser. No. 25,896  
 Term of patent 14 years  
 Int. Cl. D9—01  
 U.S. Cl. D9—127



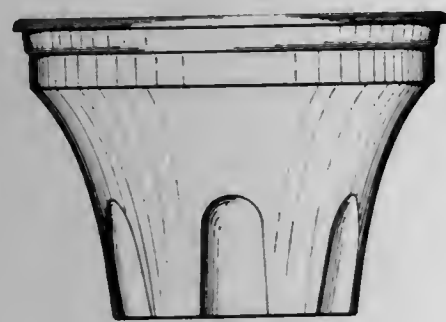
**228,124**  
**BOTTLE**  
 Hitoshi Yamakawa, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan  
 Filed Feb. 15, 1972, Ser. No. 226,653  
 Claims priority, application Japan Aug. 26, 1971  
 Term of patent 3½ years  
 Int. Cl. D9—01  
 U.S. Cl. D9—168





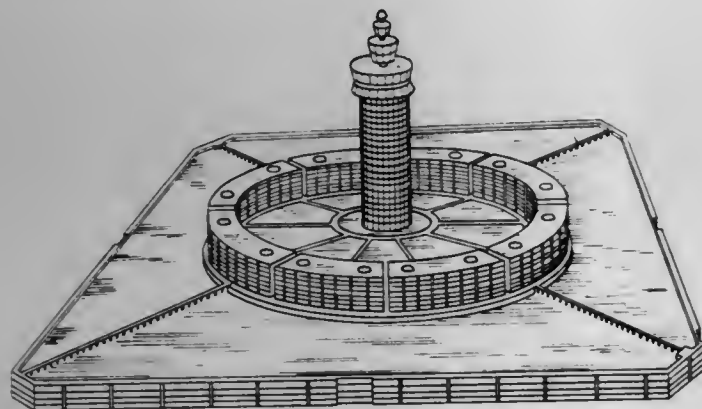
**228,125**  
**PACKAGING CUP OR THE LIKE**  
 Franklin W. Welss, 321 Ardsley Road,  
 Longmeadow, Mass. 01106  
 Filed Nov. 17, 1971, Ser. No. 199,834  
 Term of patent 14 years  
 Int. Cl. D9—03

U.S. Cl. D9—220



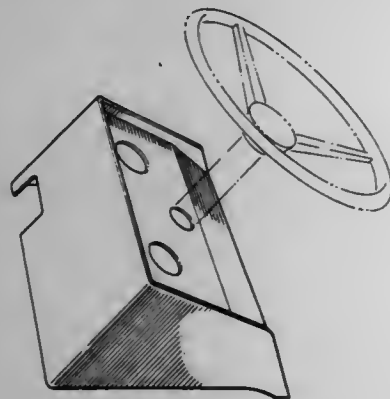
**228,126**  
**AIRPORT**  
 John W. Magill, 664 N. Michigan Ave.,  
 Chicago, Ill. 60611  
 Filed June 14, 1972, Ser. No. 262,760  
 Term of patent 14 years  
 Int. Cl. D25—03

U.S. Cl. D13—1 R



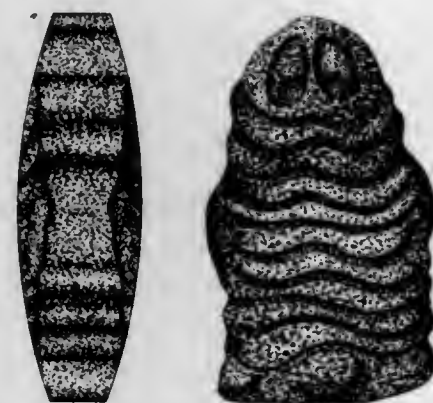
**228,127**  
**CONTROL PANEL**  
 Mario F. Fernandez, Minneapolis, Minn., and Ronald  
 E. Lewis, Hanover, N.H., assignors to The Toro Com-  
 pany, Minneapolis, Minn.  
 Filed Oct. 25, 1972, Ser. No. 300,835  
 Term of patent 14 years  
 Int. Cl. D12—16

U.S. Cl. D14—6 P



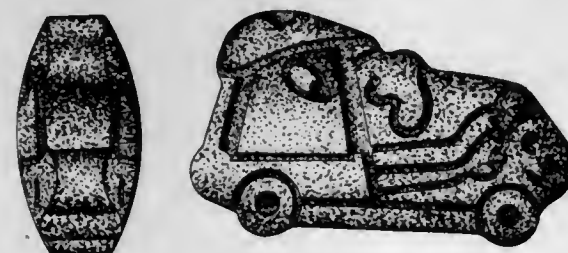
**228,128**  
**VITAMIN TABLET OR SIMILAR ARTICLE**  
 Ian C. Modelevsky, Pleasantville, Benjamin S. DeYoung,  
 Sands Point, and Donald Nevins, East Elmhurst, N.Y.,  
 and Morley A. Stern, Mexico City, Mexico, assignors  
 to Bristol-Myers Company, New York, N.Y.  
 Filed June 27, 1972, Ser. No. 266,760  
 Term of patent 14 years  
 Int. Cl. D1—01; D28—01

U.S. Cl. D16—3



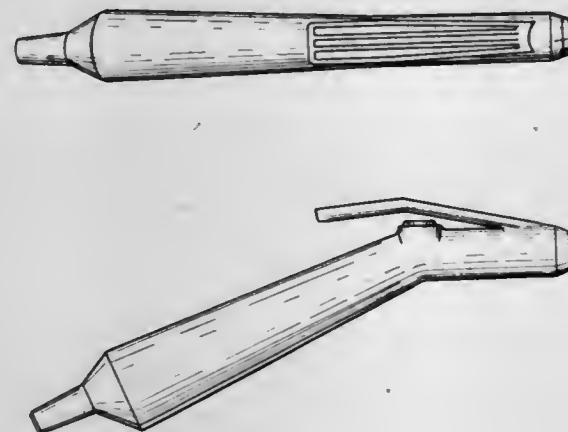
**228,129**  
**VITAMIN TABLET OR SIMILAR ARTICLE**  
 Ian C. Modelevsky, Pleasantville, Benjamin S. DeYoung,  
 Sands Point, and Donald Nevins, East Elmhurst, N.Y.,  
 and Morley A. Stern, Mexico City, Mexico, assignors  
 to Bristol-Myers Company, New York, N.Y.  
 Filed June 27, 1972, Ser. No. 266,773  
 Term of patent 14 years  
 Int. Cl. D1—01; D28—01

U.S. Cl. D16—3



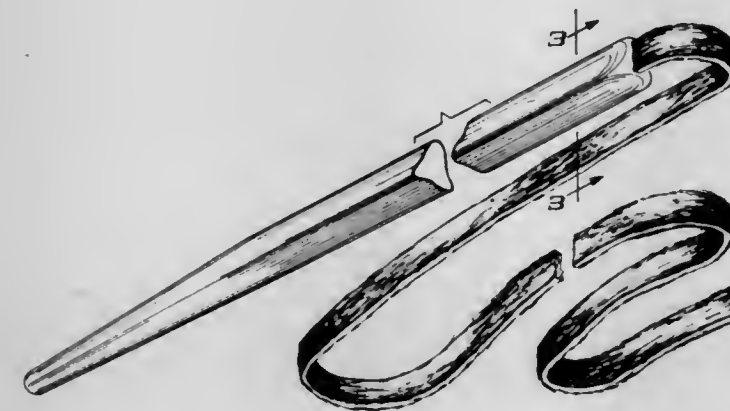
**228,130**  
**DENTAL ASPIRATOR CONTROL**  
 Eli Schachet, and Denis H. Nelson, St. Louis, Mo., as-  
 signors to Sherwood Medical Industries Inc., St. Louis,  
 Mo.  
 Filed Apr. 22, 1971, Ser. No. 136,626  
 Term of patent 14 years  
 Int. Cl. D24—02

U.S. Cl. D24—1 D



**228,131**  
**COMBINED DENTAL FLOSS STRIP AND  
 MOLDED PICK END**  
 Richard L. Wells, 4503 N. 32nd St.,  
 Phoenix, Ariz. 85018  
 Filed July 14, 1972, Ser. No. 271,774  
 Term of patent 14 years  
 Int. Cl. D24—99

U.S. Cl. D24—1



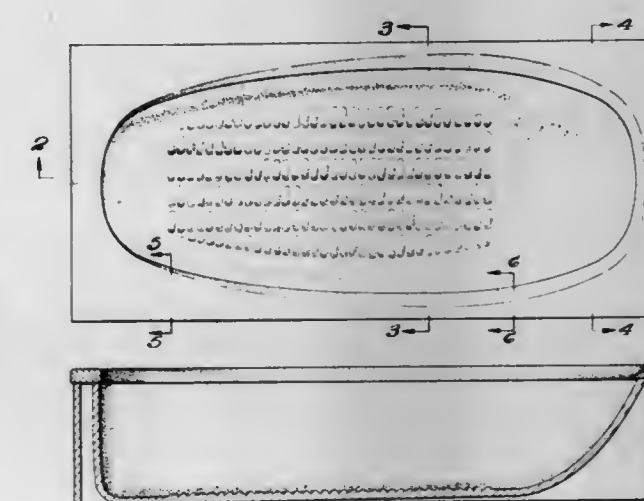
**228,132**  
**WALL EASEL**  
 Dieter Fichtel, Muskegon, Mich., assignor to American  
 Store Equipment Corporation, Muskegon, Mich.  
 Filed Apr. 29, 1971, Ser. No. 138,864  
 Term of patent 14 years  
 Int. Cl. D19—07

U.S. Cl. D25—1 R



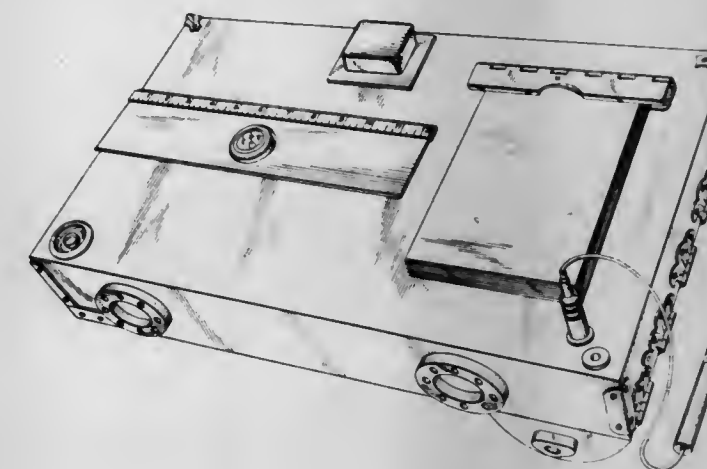
**228,133**  
**BATHTUB**  
 Wayne M. Lippert, 2615 N. 75 St., Wauwatosa, Wis.  
 53215, and William L. Lippert, 398 Wildwood Ridge,  
 Colgate, Wis. 53017  
 Original design application Mar. 16, 1971, Ser. No.  
 125,001. Divided and this application May 30,  
 1972, Ser. No. 257,994  
 Term of patent 14 years  
 Int. Cl. D23—02

U.S. Cl. D23—55



**228,134**  
**TEACHING DEVICE**  
 Gerald J. O'Brien, 33 Pamrapo Ave.,  
 Jersey City, N.J. 07307  
 Filed Nov. 3, 1971, Ser. No. 195,537  
 Term of patent 14 years  
 Int. Cl. D19—07

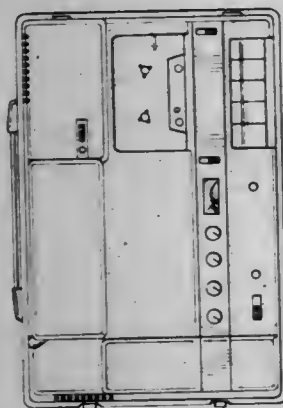
U.S. Cl. D25—1R





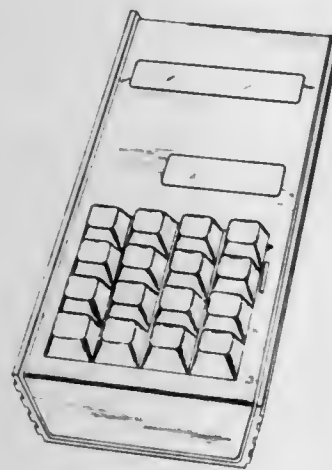
**228,135**  
**HOUSING FOR TEACHING MACHINE**  
 Robert E. Haueter, Minneapolis, Minn., assignor to  
 The Telex Corporation, Tulsa, Okla.  
 Filed Dec. 3, 1971, Ser. No. 204,802  
 Term of patent 14 years  
 Int. Cl. D19—07

U.S. Cl. D25—1 R



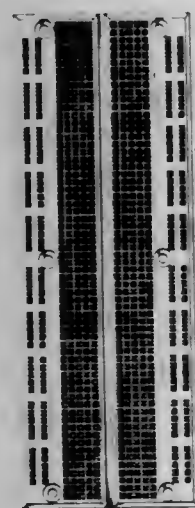
**228,137**  
**DATA ENTRY UNIT**  
 George E. Chadima, Jr., 3624 Skylark Lane SE.,  
 Cedar Rapids, Iowa 52403  
 Filed Feb. 4, 1971, Ser. No. 112,837  
 Term of patent 14 years  
 Int. Cl. D14—02

U.S. Cl. D26—5 C



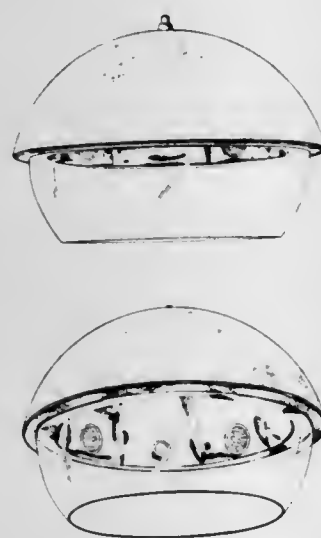
**228,136**  
**BREADBOARD FOR ELECTRONIC COMPONENTS OR THE LIKE**  
 Ronald J. Portugal, North Haven, Conn., assignor to  
 El Instruments Incorporated, Derby, Conn.  
 Filed Dec. 1, 1971, Ser. No. 203,938  
 Term of patent 14 years  
 Int. Cl. D13—03

U.S. Cl. D26—1 R



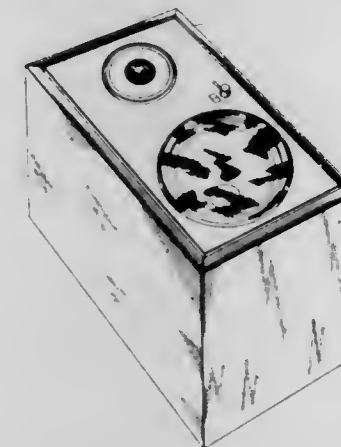
**228,138**  
**HEAD-PHONE**  
 Minoru Ohwada, Osaka, Hironosuke Kouda, Kyoto, and  
 Masaaki Miyamoto, and Takeyoshi Kawano, Osaka,  
 Japan, assignors to Matsushita Electric Industrial Co.,  
 Ltd., Osaka, Japan  
 Filed Dec. 16, 1971, Ser. No. 209,022  
 Term of patent 14 years  
 Int. Cls. D14—03; D25—99

U.S. Cl. D26—14 A



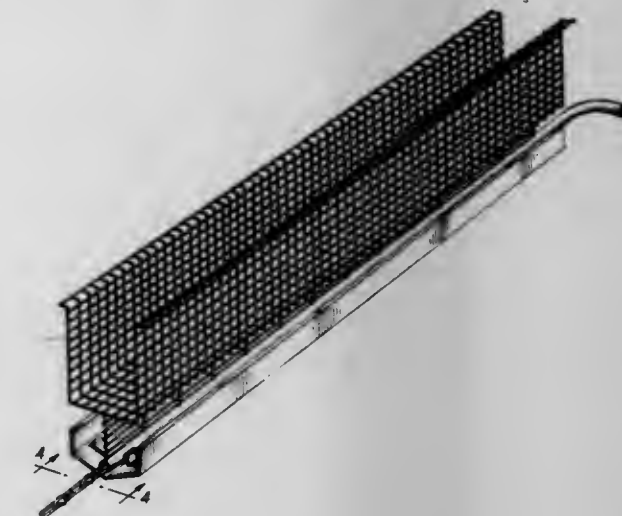
**228,139**  
**SPEAKER CABINET**  
 Haruo Ishikawa, Tokyo, Japan, assignor to Kuraisura  
 Denki Kabushiki Kaisha, Tokyo, Japan  
 Filed May 23, 1972, Ser. No. 256,218  
 Claims priority, application Japan Nov. 30, 1971  
 Term of patent 14 years  
 Int. Cl. D14—01

U.S. Cl. D26—14 G



**228,141**  
**POULTRY CAGE FEEDER**  
 Gerald L. Kitson, 9709 Belding Road,  
 Rockford, Mich. 49341  
 Filed Mar. 11, 1971, Ser. No. 123,494  
 Term of patent 14 years  
 Int. Cl. D30—03

U.S. Cl. D30—13



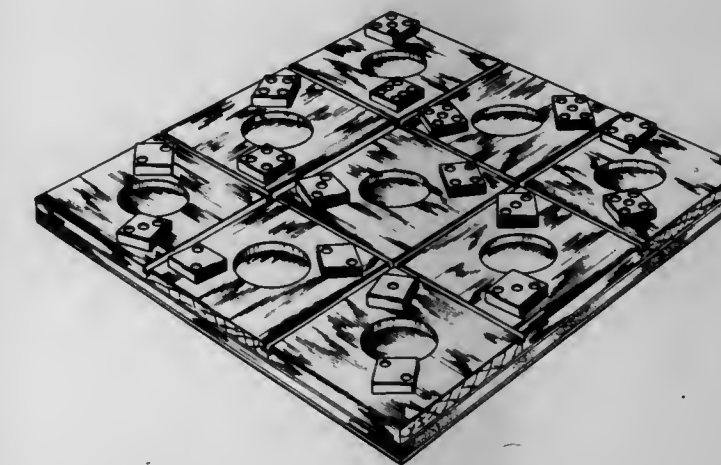
**228,140**  
**COMBINED FLAG AND HOLDER THEREFOR**  
 Victor J. Richter, P.O. Box 50, Golden Valley Star Rte.,  
 Kingman, Ariz.  
 Continuation-in-part of design application Ser. No.  
 25,961, Sept. 13, 1970. This application Jan. 24,  
 1972, Ser. No. 220,545  
 Term of patent 14 years  
 Int. Cl. D11—05

U.S. Cl. D29—17 A



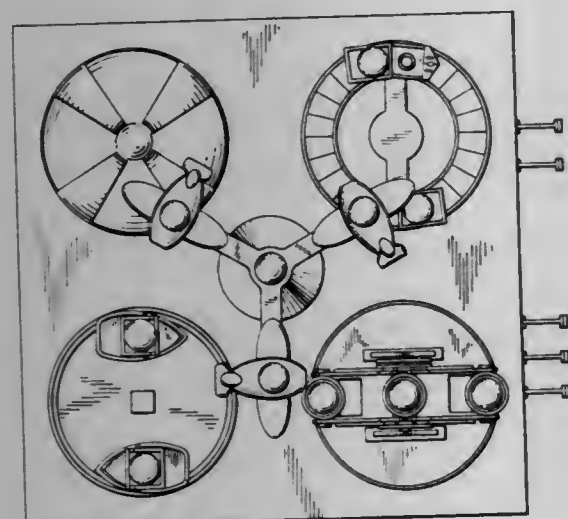
**228,142**  
**PLAY BOARD FOR A GAME**  
 Joseph P. Mannina, 853 N. 5th St.,  
 San Jose, Calif. 95112  
 Filed Apr. 7, 1972, Ser. No. 242,286  
 Term of patent 14 years  
 Int. Cl. D21—01

U.S. D34—5 SS

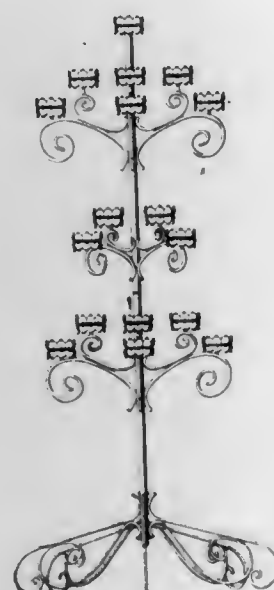




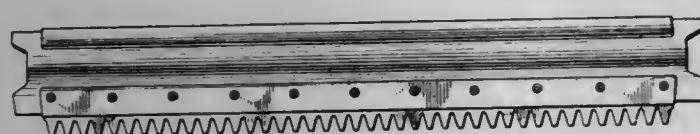
**228,143**  
**TOY AMUSEMENT PARK**  
 Norman Spiegel, New York, N.Y., assignor to  
 NASTA Industries, Inc.  
 Filed Jan. 12, 1972, Ser. No. 218,665  
 Term of patent 14 years  
 Int. Cl. D21—01  
 U.S. Cl. D34—15 Q



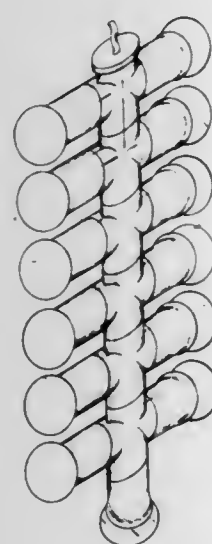
**228,145**  
**CANDELABRA**  
 Robert L. Gordon, 3957 Drake's Branch Road,  
 Nashville, Tenn. 37218  
 Filed Apr. 10, 1972, Ser. No. 242,910  
 Term of patent 3½ years  
 Int. Cl. D26—01  
 U.S. Cl. D48—2



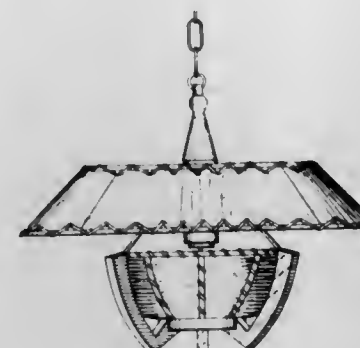
**228,144**  
**COMB FOR TURF MACHINES AND THE LIKE**  
 William C. Lindquist, Merton F. Snyder, and Dale A.  
 Klemenhagen, Minneapolis, Minn., assignors to Toro  
 Manufacturing Corporation, Minneapolis, Minn.  
 Filed May 21, 1971, Ser. No. 145,991  
 Term of patent 14 years  
 Int. Cl. D15—03  
 U.S. Cl. D40—1 R



**228,146**  
**DECORATIVE LAMP**  
 Randall H. Schwartz, 555 Cherokee Blvd.,  
 Knoxville, Tenn. 37919  
 Filed Apr. 3, 1972, Ser. No. 240,901  
 Term of patent 14 years  
 Int. Cl. D26—05  
 U.S. Cl. D48—20 E



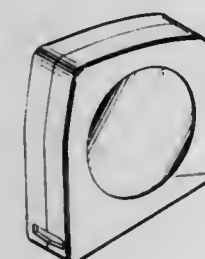
**228,147**  
**LAMP**  
 Yedidya Boros, 15 Pinsker St., Rishon Le Zion, Israel  
 Filed Oct. 18, 1971, Ser. No. 190,443  
 Term of patent 14 years  
 Int. Cl. D26—05  
 U.S. Cl. D48—23 R



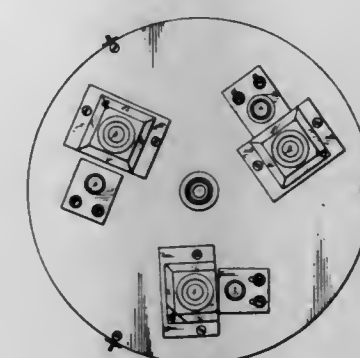
**228,148**  
**VACUUM CLEANING NOZZLE**  
 Ake Sigurd Bertil Kramer, Grev Magnigatan 5,  
 Stockholm, Sweden  
 Filed Mar. 24, 1971, Ser. No. 127,857  
 Term of patent 14 years  
 Int. Cl. D15—05  
 U.S. Cl. D49—17



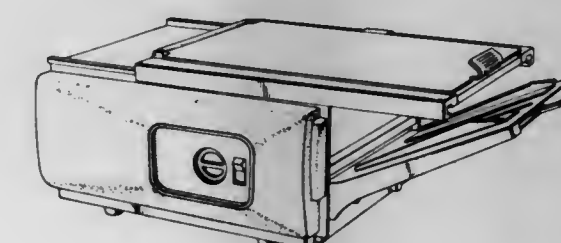
**228,149**  
**CASING FOR A TAPE MEASURE**  
 Robert A. Bennett, Shelton, Conn., assignor to  
 Waterbury Lock & Specialty Co., Milford, Conn.  
 Filed Sept. 20, 1971, Ser. No. 182,298  
 Term of patent 14 years  
 Int. Cl. D10—04  
 U.S. Cl. D52—1 R



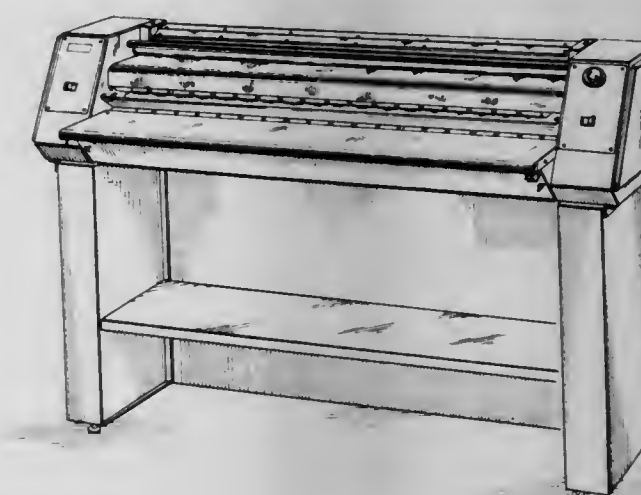
**228,150**  
**LENS CLUSTER UNIT FOR PHOTOPRINTING**  
 Richard M. Artz, 3092 Silverton Road, NE.,  
 Salem, Oreg. 97308  
 Original design application May 28, 1970, Ser. No.  
 23,198. Divided and this application June 28, 1971,  
 Ser. No. 157,812  
 Term of patent 14 years  
 Int. Cl. D16—03  
 U.S. Cl. D61—1 Q



**228,151**  
**ELECTROSTATIC COPIER**  
 Koji Hikawa, Tokyo, Japan, assignor to  
 Kabushiki Kaisha Ricoh, Tokyo, Japan  
 Filed Mar. 28, 1972, Ser. No. 238,995  
 Claim priority, application Japan Sept. 29, 1971  
 Term of patent 7 years  
 Int. Cl. D16—03  
 U.S. Cl. D61—1 Q



**228,152**  
**DIAZO COPYING MACHINE OR  
 SIMILAR ARTICLE**  
 Paul Matwey, Binghamton, N.Y., assignor to  
 GAF Corporation, New York, N.Y.  
 Filed May 22, 1972, Ser. No. 255,923  
 Term of patent 14 years  
 Int. Cl. D16—03  
 U.S. Cl. D61—1 Q

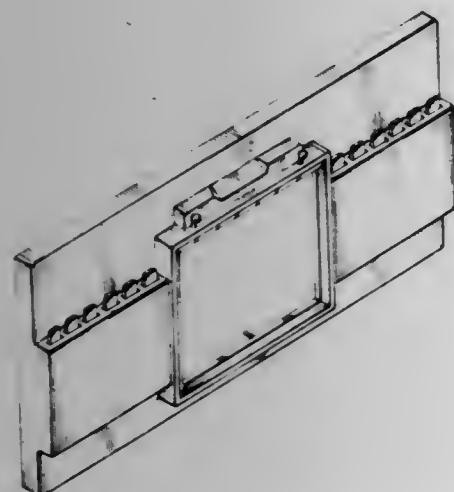




228,153

**PERPETUAL CALENDAR HOLDER**  
Oscar Leighton Hilbert, 15610 NE. 35th Ave.,  
Seattle, Wash. 98155  
Filed Feb. 8, 1971, Ser. No. 113,781  
Term of patent 14 years  
Int. Cl. D19—03

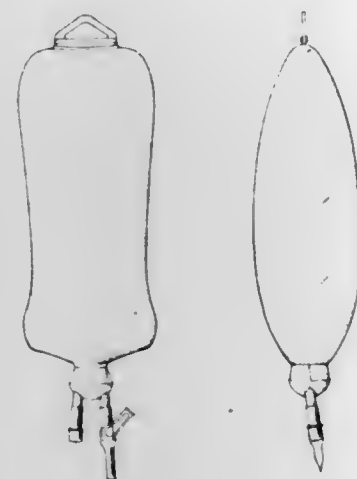
U.S. Cl. D74—5 R



228,155

**SEALED CONTAINER FOR STORING PAREN-  
TERAL AND OTHER SOLUTIONS**  
Philip G. Ralston, Jr., Buffalo Grove, Ill., assignor to  
Baxter Laboratories, Inc., Morton Grove, Ill.  
Filed Sept. 20, 1971, Ser. No. 182,290  
Term of patent 14 years  
Int. Cl. D24—02

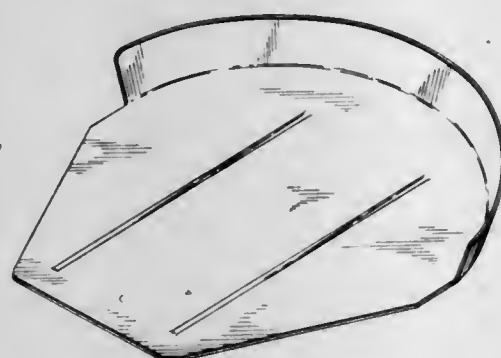
U.S. Cl. D83—1 U



228,156

**BIOPSY TRAY**  
Donald R. Antaya, 1656 Ebbets Drive,  
Campbell, Calif. 95008  
Filed Dec. 10, 1971, Ser. No. 206,975  
Term of patent 14 years  
Int. Cl. D24—02

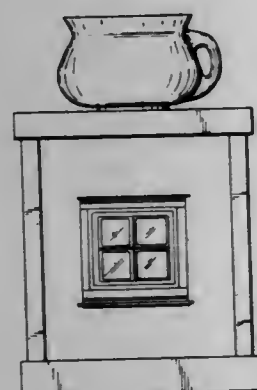
U.S. Cl. D83—1 U



228,154

**BASE FOR A PEN HOLDER OR THE LIKE**  
Harland J. Hunter, Oak Grove, Oreg.  
(3007 Penzance, Milwaukie, Oreg. 97220)  
Filed July 24, 1972, Ser. No. 274,640  
Term of patent 14 years  
Int. Cl. D19—02

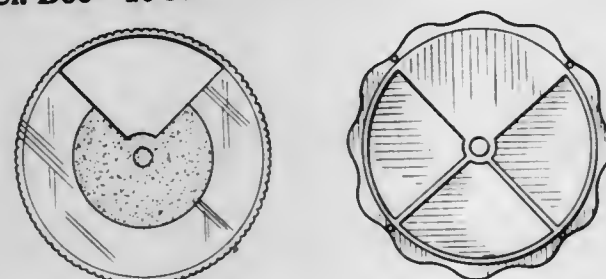
U.S. Cl. D74—5 A



228,157

**COMPACT**  
Morris Sussman, Freeport, N.Y., assignor to  
Shore Plastics Inc., Freeport, N.Y.  
Filed Nov. 22, 1971, Ser. No. 201,267  
Term of patent 14 years  
Int. Cl. D3—02

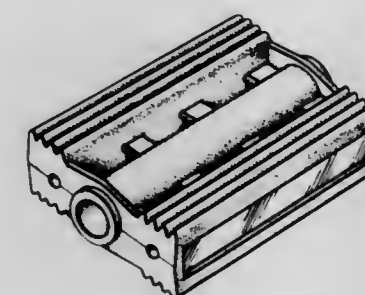
U.S. Cl. D86—10 N



228,158

**PLASTIC REFLECTOR PEDAL**  
Carlton P. Pawsat, Maysville, Ky., assignor to Wald  
Manufacturing Company, Incorporated Maysville, Ky.  
Filed May 22, 1972, Ser. No. 255,936  
Term of patent 14 years  
Int. Cl. D12—11

U.S. Cl. D90—14



228,159

**SAFETY RAZOR**  
Leopold K. Kuhn, Stratford, Conn., assignor to  
Warner-Lambert Company, Morris Plains, N.J.  
Filed Nov. 26, 1971, Ser. No. 202,740  
Term of patent 14 years  
Int. Cl. D28—03

U.S. Cl. D95—3 A





# LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 14TH DAY OF AUGUST, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Aaron, Marvin Robert; and Kaneko, Hisashi, to Bell Telephone Laboratories, Incorporated. Digital attenuator. 3,752,970, Cl. 235-152.000.
- Abcor Inc.: *See—*  
Ryan, James M.; and Richardson, Carl, 3,751,966.
- Abe, Masaaki: *See—*  
Kurahashi, Koichiro; Nakada, Masanori; Sato, Harunori; Nishimura, Koichi; and Abe, Masaaki, 3,752,918.
- Abolafia, Oscar Robert, to International Business Machines Corporation. Method of producing positive images from epoxy compositions and compositions therefor. 3,752,669, Cl. 96-36.200.
- Abushanab, Elie, to Pfizer Inc. 2-Trifluoromethylquinoxaline-di-N-oxides. 3,752,812, Cl. 260-250.00r.
- Achterberg, Dieter Christian. Electrical alternating contact switch. 3,752,945, Cl. 200-166.0bb.
- Ackerman, Philip W.: *See—*  
Cohen, Peter J.; and Ackerman, Philip W., 3,752,933.
- Acme Paper Products Company Limited: *See—*  
Lynch, Albert A., 3,752,388.
- Adams, Phillip: *See—*  
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- Addressograph-Multigraph Corporation: *See—*  
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- Adelliker, Hans Peter: *See—*  
Diamantoglou, Michael; Adelliker, Hans Peter; Staub, Alfred; Bosshard, Hans; and Karlen, Urs, 3,752,831.
- Adiska, Gary R.: *See—*  
Sargent, Charles L.; Miller, Marshall W.; and Adiska, Gary R., 3,751,735.
- Adret-Electronique: *See—*  
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- AGA Aktiebolag: *See—*  
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- Agarwal, Paul D.; Johnston, Richard W.; Neuman, John G.; Preiser, Mark E.; Traub, Norman L.; and Schroeder, Thaddeus, to General Motors Corporation. System for controlling the torque output of an induction motor. 3,753,064, Cl. 318-227.000.
- Agfa-Gevaert Aktiengesellschaft: *See—*  
Schultes, Herbert; and Schlagheck, Norbert, 3,751,874.
- Aguirre, Michael C., to Honeywell Information Systems Inc. Phase locked oscillator for integer pulse rates. 3,753,143, Cl. 331-8.000.
- Ahlstrand, Richard G. Model house. 3,751,848, Cl. 46-19.000.
- Aikoh Co., Ltd., *mesne: See—*  
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- Air Cushion Equipment Limited: *See—*  
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- Aisin Seiki Kabushiki Kaisha: *See—*  
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- Sakakibara, Naoji, 3,752,252.
- Akachi, Yuichi: *See—*  
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- Akatake Engineering Company, Limited: *See—*  
Watanabe, Akira, 3,752,446.
- Akatsu, Mitsuhiro: *See—*  
Yamamoto, Hisao; Inaba, Shigeho; Hirohashi, Toshiyuki; Yamamoto, Michihiro; Ishizumi, Kikuo; Akatsu, Mitsuhiro; Maruyama, Isamu; Kume, Yoshiharu; Mori, Kazuo; and Izumi, Takahiro, 3,752,806.
- Aktiebolaget Electrolux: *See—*  
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- Hughes, George Leslie, 3,751,881.
- Aktiengesellschaft: *See—*  
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- Aktiengesellschaft Brown, Boveri & Cie: *See—*  
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- Bossi, Hans Jurg, 3,753,074.
- Huwyler, Ernst; and Wenzel, Heinrich, 3,751,854.
- Tan, Tu-hing Thian, 3,753,087.
- Akzo N.V.: *See—*  
Van Duuren, Antony, 3,752,612.
- Alburger, James R. Inspection penetrant process and composition for aiding removal of excess penetrant from test part surfaces. 3,751,970, Cl. 73-36.000.
- Alcan Research and Development Limited: *See—*  
Spoel, Han, 3,752,662.
- Alder, Hanspeter, to Du Pont de Nemours, E. I., and Company. Self-sealing battery with nonaqueous electrolyte. 3,752,704, Cl. 136-6.00b.
- Alef, Philip M. Masking devices. 3,752,304, Cl. 206-58.000.
- Alfa Romeo S.p.A.: *See—*  
Garcea, Giampaolo, 3,751,917.
- Alfa-Laval AB: *See—*  
Nilsson, Vilgot Raymond, 3,752,389.
- Allan, Donald R. Microfilm transport and enlarger for making prints and plates. 3,752,578, Cl. 355-63.000.
- Allegheny Ludlum Industries, Inc.: *See—*  
Seitanakis, George P., 3,753,186.
- Sitanakis, George P., 3,753,187.
- Allen, Gordon Y. R. Combined isolating and neutralizing transformer. 3,753,189, Cl. 336-171.000.
- Allen, Melvin K.; and Eschenbrucher, H. Peter, to Technical Devices Company. Soldering apparatus. 3,752,383, Cl. 228-37.000.
- Allen-Bradley Company: *See—*  
Kiffmeyer, William W.; and Radtke, Joseph D., 3,752,969.
- Kiffmeyer, William W.; and Sackman, David J., 3,753,246.
- Allied Chemical Corporation: *See—*  
Chlanda, Frederick P.; Gregor, Harry P.; and Liu, Kang-Jen, 3,752,749.
- Degginger, Edward R.; and Stealman, Thomas R., 3,752,234.
- Little, Edwin D., 3,752,660.
- Moore, William Percy, Jr., 3,752,883.
- Nueller, Max B.; Salatiello, Peter P.; and Sawhney, Dulari L., 3,752,796.
- Oxenrider, Bryce C.; Woolf, Cyril; Dear, Robert E. A.; and Beyleveld, Wilhelmus M., 3,752,840.
- Psaras, John Dimocritos, 3,751,775.
- Allington, Robert W., to Instrumentation Specialties Company. Apparatus for reducing the dissolved gas concentration in a liquid. 3,751,879, Cl. 55-158.000.
- Allis-Chalmers Corporation: *See—*  
Finke, Albert, 3,752,087.
- Allison, Rudolph L.; and Goellner, Willy J., to Paramount Textile Machinery Co. Cutting apparatus and method. 3,752,023, Cl. 83-27.000.
- Allmanna Svenska Elektriska Aktiebolaget: *See—*  
Larker, Hans, 3,752,456.
- Nilsson, Jan, 3,751,957.
- Nilsson, Jan; and Larker, Hans, 3,751,958.
- Stromblad, Ingemar, 3,751,955.
- Allstar Verbrauchsguter GmbH & Co. KG: *See—*  
Krusch, Kurt; and Zimmermann, Hubert, 3,751,752.
- Alstom-Savoisienne: *See—*  
Aumont, Pierre, 3,753,101.
- Alth, Max. Self-starting, single-phase, single-coil induction and synchronous motor. 3,753,017, Cl. 310-163.000.
- Altshuler, Yakov Avranovich. Method of making thermopiles of foil. 3,751,798, Cl. 29-573.000.
- Altunin, Yury Fedorovich: *See—*  
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- AMBAC Industries, Inc.: *See—*  
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- Ambrose, William J.; and Mc Erlane, James F., to Du Pont de Nemours, E. I., and Company. Apparatus and method for fluid handling and sample. 3,752,197, Cl. 141-1.000.
- Amemiya, Youichi: *See—*  
Inaba, Seiueemon; Ito, Kohei; Shimizu, Kanryo; and Amemiya, Youichi, 3,752,038.
- Inaba, Seiueemon; Ito, Kohei; Shimizu, Kanryo; and Amemiya, Youichi, 3,752,001.
- American Air Filter Company, Inc.: *See—*  
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- American Cyanamid Company: *See—*  
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- Roscoe, Henry George; Blickens, Donald Arthur; and Kupfer, David, 3,752,893.
- Singh, Balwant, 3,752,671.
- American Cystoscope Makers, Inc.: *See—*  
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- American Filtrona Corporation: *See—*  
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- American Hospital Supply Corporation: *See—*  
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- American Smelting and Refining Company: *See—*



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 Ameron, Inc.: See—  
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 Ametek, Inc.: See—  
 Buss, Benjamin Alvin; and Buss, Donald C., 3,752,470.  
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 Amon, Max: See—  
 National Aeronautics and Space Administration, 3,752,559.  
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 Anderson, Albert W.; and Konrad, Charles E., to General Electric Company. Direct current chopper control circuit. 3,753,077, Cl. 321-45.00g.  
 Anderson Development Company: See—  
 Thompson, John F.; and Porter, Townsend H., 3,752,768.  
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 Anderson, Howard R., to Caterpillar Tractor Company. Inertial air cleaner for gas turbine. 3,751,907, Cl. 60-39.09p.  
 Anderson, Walter R.: See—  
 Hamilton, Robert M.; and Anderson, Walter R., 3,752,175.  
 Ando, Shizuo. Telephone speech recording device. 3,752,930, Cl. 179-6.00r.  
 Andrews, Harry N.: See—  
 Frisch, Erling; and Andrews, Harry N., 3,752,737.  
 Andrews, Holt; and Bedrosian, Sirvart K., to Lipton, Thomas J., Inc. Green pea soup mix and method for making the same. 3,752,677, Cl. 99-124.000.  
 Aneja, Rajindra; and Chadha, Jaswinder Singh, to Lever Brothers Company. Phosphatide separation. 3,752,833, Cl. 260-403.000.  
 Anhang, William: See—  
 Morton, Arthur Francis; Belanger, Francois; and Anhang, William, 3,751,960.  
 Anken Industries: See—  
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 Anpa: See—  
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 Anstalt Europäische Handelsgesellschaft, mesne: See—  
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 Arfert, Horst F. W., to Reynolds Metals Company. Sealed container same. 3,752,387, Cl. 229-43.000.  
 Arganbright, Robert P., to Petro-Tex Chemical Corporation. Process for the isomerization of olefins. 3,752,864, Cl. 260-683.200.  
 Arlt, Dieter; Bertram, Hans-Herwig; Pedain, Josef; Zankl, Erich; deceased (by Zankl, Helga); Zankl, Walter; and De Ramis, Angelika Zankl; heirs, to Bayer Aktiengesellschaft. Powdered coating materials. 3,752,793, Cl. 260-78.50t.  
 Armstrong, Phillip E.; Kaiser, Webster L., Jr.; Nichols, Newlin S.; Schmidt, John E.; and Stephenson, Orlando W., III, to BASF-Wyandotte Corporation. Anode mounting for electrolytic cell. 3,752,756, Cl. 204-252.000.  
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 Asher, John W.; and Herczog, Andrew, to Corning Glass Works. Frit capacitor. 3,753,057, Cl. 317-258.000.  
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 Ashmore, Benson Pease & Company Limited: See—  
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- Borden, Clarence W., to Goodall Rubber Company. Method of making hose or other tubular bodies of curable elastomeric material. 3,752,719, Cl. 156-84.000.
- Borden, Samuel M.: See—  
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- Borg-Warner Corporation: See—  
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- Bosch, Robert, Fernschamlozen Gesellschaft mit beschränkter Haftung: See—  
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- Bosworth, Donald Frederick, to Desoutter Brothers Limited. Press-tool sets. 3,752,540, Cl. 308-4.00c.
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- Boyer, Jean-Jacques. Method for treating household refuse. 3,752,059, Cl. 100-37.000.
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- Brandstadter, Jack M. Fluid-mechanical suspension system. 3,752,499, Cl. 280-124.00f.
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Nelson, Hersey B.: See—  
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- Newton, Alwin B., to Borg-Warner Corporation. Start-up system for inverter driven motor including inverter bypass circuitry. 3,753,069, Cl. 318-440.000.
- Nichols, Nathan P. Battery tester having a pliable resilient body member for accomodating the battery to be tested. 3,753,095, Cl. 324-29.500.
- Nichols, Newlin S.: See—  
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- Niejadlin, John, to Metritape, Inc. Short circuit proof level sensor. 3,753,200, Cl. 338-42.000.
- Niemeyer, Lois. Hamper cart. 3,752,550, Cl. 312-237.000.
- Niemiec, Albin J.; and Pettibone, Raymond B., to Sperry Rand Corporation. Vane pump with fluid-biased end walls. 3,752,609, Cl. 418-133.000.
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- Nilsson, Jan, to Allmanna Svenska Elektriska Aktiebolaget. Press for hydrostatic extrusion of tubes. 3,751,957, Cl. 72-60.000.
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- Nitto Electric Industrial Co., Ltd.: See—  
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- Norbeck, Dean K., to Borg-Warner Corporation. Refrigeration system PRV motor control system. 3,751,940, Cl. 62-217.000.
- Nordell, Randy J.; and Kimball, Harold C. Mechanical latch. 3,752,519, Cl. 292-111.000.
- Nordgren, Alfred A., to New York Wire Mills Corporation. Apparatus for cage rolling and welding. 3,752,949, Cl. 219-56.000.
- Nordskog, Robert A. Self venting valve. 3,752,177, Cl. 137-216.000.
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- Norman, David; and Soane, Keith, to Ronson Corporation. Unitary fingerpiece and ignition actuator. 3,752,637, Cl. 431-274.000.
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- North American Rockwell Corporation: See—  
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- Northern Electric Company, Limited: See—  
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- Northrup, King & Co.: See—  
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- Notbohm, Willard C., to Black Clawson Company, The. Multi-ply paper machine. 3,752,734, Cl. 162-123.000.
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- Nypaver, Leonard P.: See—  
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- Oakley, John Richard; and Kearns, Shaun. Carton flap sealing. 3,751,876, Cl. 53-375.000.
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- Obayashi, Nobuharu, to Kabushiki Kaisha Kawai Gakki Seisakusho. Electronic musical instrument. 3,752,898, Cl. 84-1.010.
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- Obermann, George: See—  
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- Odenweller, Joseph D., to Ethyl Corporation. Phenol nitration process. 3,752,858, Cl. 260-622.00r.
- Oehler, Carl W., to Oehler Steel Company, mesne. Pull trailer and load lift means. 3,752,502, Cl. 280-440.000.
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- O'Hern, Harold A., Jr.; and Olson, Kermit E., to Owens-Illinois, Inc. Process for increasing reaction rate in conversion of sulfides and hydrosulfides. 3,752,875, Cl. 423-201.000.
- Ohman, Leo S. Variable resistances for an electrical circuit. 3,753,201, Cl. 338-92.000.
- Ohno, Kiyomitsu. Article dispensing device with sequentially releasable hinged shelves. 3,752,358, Cl. 221-90.000.
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- Ohsawa, Mitsuo, to Sony Corporation. Control signal generating circuit. 3,753,120, Cl. 325-455.000.
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- Oil Recovery Systems, Inc., mesne: See—  
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- Ojha, Narayanlal D.: See—  
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- Okada, Kazuo; Wade, Takeo; and Furuoya, Itsuo, to Takeda Chemical Industries, Ltd. Method for the production of isoprene. 3,752,863, Cl. 260-681.000.
- Okamoto, Takafumi: See—  
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- Okanao, Takeshi: See—  
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- Oki Electric Industry Co., Ltd.: See—  
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- Okubo, Tsuneo: See—  
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- Oldenburg, Kenneth F., to Litton Business Systems, Inc. Business machines. 3,752,392, Cl. 235-7.00r.

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- Di Padova, Sergio; and Musso, Pietro, 3,752,379.
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- Olliges, William E.; Polanek, Edward L.; and Gurney, Robert, to Universal Research Laboratories, Incorporated. Tape cassette changer system. 3,752,483, Cl. 274-4.00f.
- Olmo, Harold P.; and Studer, Henry E., to University of California, The Regents of the. Raisin grape spreader. 3,751,821, Cl. 34-93.000.
- Olson, John E., to Hyster Company. Multiple State crane boom. 3,752,327, Cl. 212-55.000.
- Olson, Kermit E.: See—  
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- Olympus Optical Co., Ltd.: See—  
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- O'Nan, Thomas C.; Walters, Charles W.; and Booc, James M., to Mallory, P. R., & Co., Inc. Method of making a capacitor having a self-depolarizing electrolyte. 3,751,797, Cl. 29-570.000.
- O'Neil, Wilbert O., to Vendo Company, The. Selective dispensing apparatus having door interlock structure. 3,752,546, Cl. 312-35.000.
- O'Neill, Feiten Michael. Envelope window punch. 3,752,026, Cl. 83-589.000.
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- Ono, Sokki Co., Ltd.: See—  
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- Opal, Kenneth E.; and Kelly, Charles R., to Power Control Corporation. Apparatus for center-referenced pulse width modulation. 3,753,155, Cl. 332-9.00r.
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- Orlett, Michael J., to Lilly, Eli, and Company. Dinitrophenylazides as herbicides and their preparation. 3,752,661, Cl. 71-125.000.
- Ory, Gaston C. Forging machine. 3,751,959, Cl. 72-237.000.
- Oser, Stephen S., to Sperry Rand Corporation. Augmented washout circuit for use in automatic pilots. 3,752,420, Cl. 244-77.00d.
- Osero, Norman H.: See—  
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- Osmundsen, Norman K.; Harder, John E.; and Nitta, Tohei, to Westinghouse Electric Corporation. Shielded metal enclosed lightning arrester. 3,753,045, Cl. 317-62.000.
- Ost, Walter; Thomas, Klaus; Jerchel, Dietrich; and Appel, Karl-Richard, to Boehringer, C. H., Sohn. N-( $\beta$ -cyano-ethyl)-N,N-bis-(1-amido-2,2,2-trichloro) ethyl) alkylendiamines. 3,752,842, Cl. 260-465.400.
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- Otsuka Kagaku Yakuhin Kabushiki Kaisha: See—  
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- Otsuka, Masatomi; Hirose, Yoshio; Kinoshita, Tsukuru; and Misawa, Takesi, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Manufacture of levulinic acid. 3,752,849, Cl. 260-531.00r.
- Ott, Arnold C. Axle-mounted wheel exercising device with spring resistance located centrally within the wheel. 3,752,475, Cl. 272-83.00a.
- Ottinger, August F.: See—  
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- Owen, William L., Jr.; and Woods, William L., Jr., to Western Electric Company, Incorporated. Multi-directional indexing apparatus. 3,751,997, Cl. 74-89.000.
- Owens, William A., to Electric Systems, Inc. Control circuit for AC motor. 3,753,061, Cl. 318-212.000.
- Owens-Corning Fiberglas Corporation: See—  
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- Owens-Illinois, Inc.: See—  
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- Oxenrider, Bryce C.; Woolf, Cyril; Dear, Robert E. A.; and Beyleveld, Wilhelmus M., to Allied Chemical Corporation. Process for preparing fluoroperhaloalkyl nitriles. 3,752,840, Cl. 260-465.700.
- Oxford Industries, Inc.: See—  
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- Paar, Alois; and Konig, Fritz, to Losenhausen Maschinenbau AG, mesne. Method and apparatus for compacting the placement material in road building. 3,752,592, Cl. 404-102.000.
- Pace, Edwin L., to General Electric Company. Bucket vibration damping device. 3,752,599, Cl. 416-190.000.
- Pace Incorporated: See—  
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- Pajevic, Paul. Measuring device. 3,751,811, Cl. 33-141.00r.
- Pal, Ajoy Kumar, to Portec, Inc. Train detector. 3,752,426, Cl. 246-249.000.
- Palles, Sam W., 20% to Lee, Raymond, Organization Inc., The. Cat litter box. 3,752,120, Cl. 119-1.000.
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- Parke Davis & Company: See—  
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- Parker, Earl R.: See—  
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- Parmeggiani, Paolo; Nicita, Domenico; and D'Alo, Bruno, to Snia Viscosa Societa' Nazionale Industria Applicazioni Viscosa. Method and equipment for continuously spinning and stretching synthetic filaments. 3,752,457, Cl. 214-210.00f.
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- Patrick, John. Tape cutter. 3,751,806, Cl. 30-294.000.
- Pauza, William Vito; and Smith, John Franklin, III, to AMP Incorporated. Connecting means for ceramic substrate package. 3,753,211, Cl. 339-75.0mp.
- Pawloski, James A.; and Williams, Grahame I. Multi-piston power pack unit for fluid actuated tool. 3,752,040, Cl. 91-411.00a.
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- Payne, Linwood K., Jr.: See—  
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- Pedersen, Paul K.; Wagstaff, Robert A.; and Waldrop, Thomas W., to Sperry Rand Corporation. Forage harvester knife sharpener with a rotary abrasive wheel. 3,751,859, Cl. 51-249.000.
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- Pennwalt Corporation: See—  
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- Pensabene, Saverio F., to General Electric Company. High capacity rechargeable sealed cell. 3,752,705, Cl. 136-13.000.
- Peripheral Systems Corporation: See—  
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- Perot, Joseph Charles, to Brown & Root, Inc. Apparatus for trenching submerged elongate structures. 3,751,927, Cl. 61-72.400.
- Perreau, Pierre, to Schlumberger Instruments et Systemes. Color motion-picture projection system. 3,752,568, Cl. 352-66.000.
- Pertot, Alfred G. Centrifugal casting machine having molten metal level detector. 3,752,214, Cl. 164-156.000.
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- Petersen, Gerald A. Spread-legged staple retainer for excavating tooth. 3,751,834, Cl. 37-142.00r.
- Petersen, Kenneth C., and Blowers, Charles A., to Schenectady Chemicals Incorporated. Halogenated methylol phenols. 3,752,780, Cl. 260-25.000.
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- Peterson, Donald E., to Amana Refrigeration, Inc. Magnetron starting circuit. 3,752,948, Cl. 219-10.550.
- Peterson, Donald W., and Wyczalek, Floyd A., to General Motors Corporation. Vehicle fuel tank venting system. 3,752,135, Cl. 123-136.000.
- Peterson, Lenart A., and Finley, John G., to Phillips Petroleum Company. Reusable, tear-resistant polyolefin-paper laminate. 3,752,732, Cl. 161-165.000.
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- Pettibone, Raymond B.: See—  
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- Pettinga, Robert: See—  
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- Pettipiece, Kenneth J., to United States of America, Atomic Energy Commission. Electrical wave pumped pulsed laser. 3,753,152, Cl. 331-94.500.
- Pezzutti, David August, to Bell Telephone Laboratories, Incorporated. Digital frequency comparator. 3,753,130, Cl. 328-141.000.
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Yamaguchi, Goro; Nishikawa, Yasuo; Yoshizaki, Kazuhiro; and Komatsu, Susumu, to Kyushu Taika Renga Kabushiki Kaisha. Catalyst for oxidation and a method for producing the same. 3,752,775, Cl. 252-464.000.  
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Yamauchi, Fumio, to Nippon Electric Company, Limited. Cylindrical magnetic domain propagating circuit and logic circuit. 3,753,250, Cl. 340-174.00f.  
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Zamist, Sophie. Toga-like disposable garments. 3,751,730, Cl. 2-114.000.  
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08/14/73; and Finelli, Anthony F., to Goodyear Tire & Rubber Company, The. Coated polyurethane foam having an integral skin. 3,752,695, Cl. 117-98.000.



# LIST OF DEFENSIVE PUBLICATIONS

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Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Arnold, Thomas B., and D. R. Patterson. Method and apparatus for determining solids production from a well. T913,010, 8-14-73, Cl. 250-308.  
Beausoleil, William F., to International Business Machines Corp. Dynamic shift register with static regeneration. T913,008, 8-14-73, Cl. 307-221.  
Burpitt, Robert D., and R. H. Hasek. Process for the preparation of 2-styrylbenzoxazoles and 2-styrylbenzothiazoles. T913,001, 8-14-73, Cl. 260-240.  
Carmichael, Keith S. Friction-welded bottom seals on thermoplastic bottles. T913,002, 8-14-73, Cl. 264-68.  
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Lynch, Michael A., to E. I. du Pont de Nemours and Co. Antioxidant dispersion and process. T913,006, 8-14-73, Cl. 260-17.  
McKellar, Archie C., to International Business Machines Corp. Sort process. T913,007, 8-14-73, Cl. 444-1.  
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Petke, Frederick D., and P. M. Grant. Process for electrostatic deposition. T913,009, 8-14-73, Cl. 156-283.  
Siple, James C., to United States Steel Corp. Ternary metal bath composition. T913,003, 8-14-73, Cl. 117-51.  
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Pensak, Richard W. T913,011.  
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## LIST OF REISSUE PATENTEEES

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Johnson, Lloyd E., deceased; by W. T. Arnold, executor, to Johnson Diversified, Inc. Fishing reel drive. Re. 27,729, 8-14-73, Cl. 64-30.  
Kim, Charles W., and S. D. Samluk, to Hercules Inc. Method for making yarn by fibrillation of ribbons of plastic material. Re. 27,727, 8-14-73, Cl. 225-3.  
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NOTE.—First number, class; second number, subclass; third number, patent number

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2.1A	3,751,727	25.15	3,751,779	19	3,751,848	288	3,751,917	423R	3,751,990				1.5	3,752,668				1.5	3,752,668
3R	3,751,728	90R	3,751,781	40	3,751,849	289	3,751,916	425.4R	3,751,986				36.2	3,752,669				36.2	3,752,669
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	3,751,730		3,751,782	206	3,751,851	324	3,751,921	518	3,751,993				91N	3,752,671				91N	3,752,671
227	3,751,731	156.4R	3,751,784			330	3,751,918			CLASS 74			100	3,752,672				100	3,752,672
230	3,751,732	157.4	3,751,783	34.13	3,751,852	349	3,751,922	53	3,751,996				108	3,752,674				108	3,752,674
		182.5	3,752,655			359	3,751,923	89	3,751,997				140	3,752,673				140	3,752,673
		267	3,751,785			405	3,751,912	89.15	3,751,998										
1.1	3,751,733	401R	3,751,786	197FM	3,752,659	485	3,751,924	190.5	3,752,000				114	3,752,055				114	3,752,055
		421R	3,751,787	206	3,752,658			404	3,752,002				115LH	3,752,056				115LH	3,752,056
10	3,751,735	423	3,751,788			CLASS 49		IF	3,751,925										
100	3,751,736	434	3,751,789	89.15	3,751,999	36R	3,751,926	434	3,752,003				91	3,752,675				91	3,752,675
146	3,751,737	455	3,751,790	127	3,751,853	42	3,751,929	443	3,752,004				100P	3,752,676				100P	3,752,676
197	3,751,738	469	3,751,791	260	3,751,854	46.5	3,751,930	480R	3,752,005				124	3,752,677				124	3,752,677
247	3,751,739	471.1	3,751,792			53	3,751,931	489	3,752,006				136	3,752,678				136	3,752,678
		472.7	Re.27,733			72.1	3,751,932	492	3,752,007				348	3,752,057				348	3,752,057
12R	3,751,739	515	Re.27,735	5	3,751,855	72.4	3,751,927	501R	3,752,008										
37	3,751,740	523	3,751,793	100R	3,751,856	72.5	3,751,928	645	3,752,009				32	3,752,058				32	3,752,058
317R	3,751,742	526	3,751,794	215H	3,751,857			687	3,752,010				37	3,752,059				37	3,752,059
343	3,751,741	558	3,751,795	238GG	3,751,858	29	3,751,933	731	3,752,011				38	3,752,060				38	3,752,060
		559	3,751,796	249	3,751,859	41	3,751,934						49	3,752,061				49	3,752,061
14.6	3,751,743	570	3,751,797	289R	3,751,860	75	3,751,935	732	3,752,012				93PB	3,752,062				93PB	3,752,062
		573	3,751,798	316	3,751,861	84	3,751,936	745	3,752,014				97	3,752,063				97	3,752,063
		574	3,751,799			126	3,751,938	869	3,752,015				98R	3,752,064				98R	3,752,064
21C	3,752,645	589	3,751,800	2	3,751,862	137	3,751,939						123	3,752,065					
	3,752,646	600	3,751,802	79	3,751,864	217	3,751,940						192	3,752,066					
	3,752,647	603	3,751,803	92	3,751,865			CLASS 64		3,751,941									
130.1	3,752,648	628	3,751,801	111	3,751,863	30E	3,751,941	30L	Re.27,729				135	3,752,665					
169	3,752,649			149	3,751,866			CLASS 81											
183	3,752,650	169	3,751,804	223	Re.27,732			9.5B	3,752,017				123	3,752,070					
		220	3,751,805	426	3,751,867			64	3,752,016				125	3,752,071					
78.13	3,751,837	294	3,751,806	650	3,751,869	14	3,751,942	147	3,752,018				211	3,752,072					
				656	3,751,870	64	3,751,944												
				731	3,751,868	86A	3,751,937												
1A	3,751,744	52	3,751,807			CLASS 53													
				26	3,751,871														
10	3,752,895	27C	3,751,813	32	3,751,872														
18	3,752,896	75R	3,751,808	59R	3,751,873														
20	3,752,897	80	3,751,809		3,751,874														
		86	3,751,810	180	3,751,875														
		141R	3,751,811	375	3,751,876														
		143M	3,751,814			CLASS 54													
1	3,751,746	146	3,751,815	6	3,751,877														
SOR	3,751,747	178R	3,751,812			CLASS 55													
92	3,751,749	183	3,751,745	58	3,751,878														
183	3,751,745	184.5	3,751,817	158	3,751,879														
192	3,751,751	185R	3,751,818		3,751,880														
220A	3,751,750	375	3,751,819	236	3,751,882														
230.11	3,751,748	389		248	3,751,883														
231	3,751,752			267	3,751,884														
237	3,751,753			318	3,751,885														
250.42	3,751,754			367	3,751,886														
302	3,751,755				3,751,881														
306A	3,751,756					CLASS 56													
				8	3,751,887														
				13.6	3,751,889														
				16.4	3,751,890														
				130	3,751,888														
				228	3,751,891														
				344	3,751,892														
						CLASS 57													
				34HS	3,751,894														
				34R	3,751,893														
				52	3,751,895														
				87	3,751,896														
				144	3,751,897														
				156	3,751,898														
						CLASS 58													
				23TF	3,751,899														
				24R	3,751,900														
				58	3,751,901														
						CLASS 59													
				71	3,751,902														
						CLASS 60													
				19	3,751,903														
				24	3,751,904														
				39.02	3,751,906														
				39.05	3,751,907														
				39.09P	3,751,909														
				39.17	3,751,909														
				39.43	3,751,908														
				39.65	3,751,910														
					3,751,911														
					3,751,919														
					3,751,913														
					3,751,920														
				54.5P															
				215															
				282															



373	3,752,771	681	3,752,863	60	3,752,522	235R	3,753,055		3,753,146		3,753,245
448	3,752,772	683.2	3,752,864	89	3,752,523	258	3,753,057		3,753,147		3,753,246
454	3,752,773	848	3,752,865		CLASS 294		CLASS 318		3,753,148	173LS	3,753,247
462	3,752,774	860	3,752,866	25	3,752,524	118	3,753,058		3,753,150	173R	3,753,248
464	3,752,775	869	3,752,867	74	3,752,525	139	3,753,059		3,753,152		3,753,249
465	3,752,776	876R	3,752,868		CLASS 296		3,753,061		3,753,153	174PW	3,753,251
	CLASS 254	936	3,752,870	19	3,752,526	225R	3,753,062		3,753,154	174TF	3,753,250
62	3,752,440	938	3,752,871	20	3,752,527	227	3,753,060		3,753,160		3,753,253
88	3,752,441	943	3,752,869	23R	3,752,528		3,753,063		3,753,161	174.1B	3,753,254
185R	3,752,442			24R	3,752,529		3,753,064		3,753,162	174.1M	3,753,255
	CLASS 259	39B	3,752,451	35R	3,752,530	257	3,753,065		3,753,163		3,753,255
1R	3,752,443	39R	3,752,450	64	3,752,531	305	3,753,066		3,753,164	190	Re.27,728
2	3,752,444	41B	3,752,454		CLASS 297	314	3,753,067		3,753,165	227.1	3,753,256
3	3,752,445	52	3,752,452		440	338	3,753,068		3,753,166	228R	3,753,258
7	3,752,446	94	3,752,453	440	3,752,532	440	3,753,069		3,753,167		3,753,259
10	3,752,447			445	3,752,533	472	3,753,070		3,753,168	236	3,753,257
186	3,752,448				CLASS 299		CLASS 320		3,753,169	242	3,753,260
191	3,752,449	78	3,752,873	10	3,752,534	39	3,753,072		3,753,170	252P	3,753,261
	CLASS 260	176F	3,752,874		CLASS 303		CLASS 321		3,753,171		CLASS 350
2A	3,752,777			6C	3,752,535		3,753,071		3,753,172	3.5	3,752,555
2.5R	3,752,784			21F	3,752,536	2	3,753,073		3,753,173		3,752,556
22TN	3,752,778	3R	3,752,458		3,752,537	6	3,753,074		3,753,174		3,752,557
23H	3,752,779				3,752,538	11	3,753,075		3,753,175	6	3,752,558
25	3,752,780	23H	3,752,460	68	3,752,539	44C	3,753,077		3,753,176	95	3,752,559
29.4R	3,752,781				CLASS 307	45R	3,753,076		3,753,177	96R	3,752,561
29.6AN	3,752,782	113	3,752,461	9	3,753,000		CLASS 322		3,753,178	113	3,752,562
29.6F	3,752,783	140	3,752,462	10R	3,753,001	28	3,753,080		3,753,179	151	3,752,563
32.8A	3,752,785			87	3,753,002		CLASS 323		3,753,180	160	3,753,151
33.4VR	3,752,786			117	3,753,003	4	3,753,079		3,753,181	162SF	3,752,564
41B	3,752,788	32	3,752,463	121	3,753,004	9	3,753,078		3,753,182	255	3,752,565
47UA	3,752,789	93	3,752,465	213	3,753,005		CLASS 324		3,753,183		CLASS 351
	3,752,789	201	3,752,466	214	3,753,006		3,753,081		3,753,184		3,752,566
77.5AM	3,752,790	321F	3,752,467	217	3,753,014	5R	3,753,082		3,753,185	5	3,752,567
77.5AP	3,752,792			247A	3,753,007		3		3,753,186		CLASS 352
78SC	3,752,791	57	3,752,468	247R	3,753,011	6	3,753,134		3,753,187	66	3,752,568
78.5T	3,752,793	61	3,752,469	270	3,753,008	16R	3,753,082		3,753,188	139	3,752,569
88.1PA	3,752,794	80	3,752,470	279	3,753,009	28	3,753,083		3,753,189	172	3,752,570
88.2R	3,752,795			293	3,753,010	29.5	3,753,084		3,753,190		CLASS 353
92.1	3,752,796	4	3,752,471		3,753,012		3,753,095		3,753,191	19	3,752,574
93.7	3,752,797				CLASS 308	30C	3,753,084		3,753,192	38	3,752,575
112.5	3,752,799			4C	3,752,540	37	3,753,085		3,753,193		CLASS 355
	3,752,800	60	3,752,472	6C	3,752,541	40	3,753,096		3,753,194	3	3,752,571
112.7	3,752,798	62	3,752,473	9	3,752,542	51	3,753,088		3,753,195		3,752,572
146T	3,752,801	80	3,752,474	187.2	3,752,543	52	3,753,086		3,753,196	10	3,752,573
192	3,752,802	83A	3,752,475		3,752,544		3,753,087		3,753,197	11	3,752,574
210.5	3,752,803				CLASS 310	53	3,753,089		3,753,198	15	3,752,575
211.5R	3,752,804	1.5A	3,752,476	54	3,753,013	54	3,753,090		3,753,199	36	3,752,576
	3,752,805	1.5R	3,752,477	64	3,753,015	61QS	3,753,091		3,753,200	112	3,752,577
239.3D	3,752,806	73H	3,752,478	90	3,753,016		3,753,092		3,753,201	101	3,752,578
239.57	3,752,807	106A	3,752,479	163	3,753,017	61R	3,753,093		3,753,202	97	3,752,579
240A	3,752,809	109	3,752,480		CLASS 312	65P	3,753,098		3,753,203		CLASS 356
246B	3,752,811	131BA	3,752,481	13	3,752,545	65R	3,753,093		3,753,204	2	3,752,580
247.5R	3,752,812	176B	3,752,482	35	3,752,546	72.5	3,753,103		3,753,205	5	3,752,581
249.5	3,752,808			107	3,752,547	78D	3,753,100		3,753,206	102	3,752,582
250R	3,752,812	4A	3,752,487	107	3,752,547	96	3,753,101		3,753,207		CLASS 408
256.4F	3,752,816	4C	3,752,486	140.4	3,752,548	103P	3,753,109		3,753,208	23	3,752,583
267	3,752,813	4E	3,752,488	236	3,752,549	109	3,753,102		3,753,209	74	3,752,584
268PE	3,752,814	4F	3,752,483	237	3,752,550	114	3,753,104		3,753,210	98	3,752,585
	3,752,815		3,752,484	245	3,752,551	121R	3,753,105		3,753,211	106LR	3,752,586
279R	3,752,817		3,752,485	258	3,752,552	125	3,753,106		3,753,212	152	3,752,587
287R	3,752,818			330	3,752,553	146	3,753,107		3,753,213	153	3,752,588
294.8B	3,752,820				CLASS 313	125	3,753,107		3,753,214	172	3,752,589
295R	3,752,819	64	3,752,489	25	3,753,018	182	3,753,110		3,753,215	176	3,752,590
309.5	3,752,821	140	3,752,490	27C	3,753,025	187	3,753,111		3,753,216	217	3,752,591
312R	3,752,856			47	3,753,019		CLASS 325		3,753,217		CLASS 404
315	3,752,822	11.35K	3,752,491	60	3,753,020	13	3,753,112		3,753,218	102	3,752,592
	3,752,823	18	3,752,492		3,753,021	38A	3,753,113		3,753,219		CLASS 408
326S	3,752,824	43.21	3,752,493	78	3,753,022	134	3,753,118		3,753,220		3,752,593
326.11	3,752,825	47.26	3,752,494	103	3,753,023	319	3,753,121		3,753,221	35	3,752,594
326.3	3,752,826	80R	3,752,495	217	3,753,024	320	3,753,114		3,753,222	1	3,752,595
327TH	3,752,827	81R	3,752,496	318	3,753,026	323	3,753,115		3,753,223	234	3,752,596
343	3,752,828	112A	3,752,497		3,753,027	363	3,753,116		3,753,224		CLASS 415
343.6	3,752,829	124F	3,752,498	346R	3,753,028	364	3,753,117		3,753,225	152	3,752,597
345.2	3,752,830		3,752,499		CLASS 315	455	3,753,119		3,753,226	173	3,752,598
376	3,752,831	150AB	3,752,500	3	3,753,029		3,753,120		3,753,227		CLASS 416
398.5	3,752,832		3,752,501	3.6	3,753,030	466	3,753,122		3,753,228	190	3,752,599
403	3,752,833	440	3,752,502	5.39	3,753,031	476	3,753,123		3,753,229	219	3,752,600
429.5	3,752,834				3,753,032		CLASS 328		3,753,230		CLASS 417
429.7	3,752,835	17	3,752,503	18	3,753,033	37	3,753,124		3,753,231	300	3,752,601
438.5R	3,752,836			29	3,753,034	38	3,753,125		3,753,232	310	3,752,602
446	3,752,837	29B	3,752,504	31R	3,753,035	41	3,753,126		3,753,233	424	3,752,603
453R	3,752,841			60	3,753,036	42	3,753,127		3,753,234	511	3,752,604
455A	3,752,838			99	3,753,037	71	3,753,128		3,753,235		CLASS 418
465.4	3,752,842	5	3,752,505	169TV	3,753,038	123	3,753,129		3,753,236		3,752,605
465.7	3,752,840	12	3,752,507		3,753,041	141	3,753,130		3,753,237	8	3,752,606
465.8R	3,752,839	149	3,752,506		3,753,041	145	3,753,131		3,753,238	97	3,752,607
465.9	3,752,843	307	3,752,508	227	3,753,039	151	3,753,132		3,753,239	124	3,752,608
470	3,752,844	334.4	3,752,510	241S	3,753,040	155	3,753,133		3,753,240	131	3,752,609
475P	3,752,846				CLASS 316		CLASS 329		3,753,241		CLASS 423
482C	3,752,845			19	3,752,554		3,753,135		3,753,242	201	3,752,877
485F	3,752,847	2	3,752,511		CLASS 317		CLASS 330		3,753,243	240	3,752,878
526N	3,752,848	20.94	3,752,512	11A	3,753,042	5	3,753,136		3,753,244	343	3,752,879
531R	3,752,849	52.9R	3,752,515	13A	3,753,043	15	Re.27,730		3,753,245	263	3,752,880
544F	3,752,850	52.08	3,752,513	33SC	3,753,044		3,753,137		3,753,246	315	3,752,881
553DA	3,752,851	53R	3,752,514	62	3,753,045	30R	3,753,138		3,753,247	463	3,752,882
566A	3,752,852			101CM	3,753,046	69	3,753,139		3,753,248	365	3,752,883
583NH	3,752,853			101DH	3,753,048	109	3,753,140		3,753,249	410	3,752,884
584B	3,752,854	17	3,752,516	107	3,753,047		CLASS 331		3,753,250	483	3,752,885
586H	3,752,855				3,753,049	1A	3,753,141		3,753,251	522	3,752,886
604HF	3,752,859			141S	3,753,050		3,753,142		3,753,252	588	3,752,887
615B	3,752,857	42	3,752,518	230	3,753,051						



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226	3,752,890	6	3,752,610	133	3,752,617	262	3,752,626	461	3,752,635	56	3,752,640
244	3,752,892	7	3,752,611	134	3,752,618	298	3,752,627		CLASS 431	57	3,752,641
249	3,752,891	66	3,752,612	174.2	3,752,619	302B	3,752,628	95	3,752,636	58	3,752,645
250	3,752,888	78	3,752,622	192	3,752,620	305B	3,752,629	274	3,752,637	59	3,752,639
270	3,752,893	80	3,752,613	206	3,752,621	324	3,752,631	353	3,752,634	66	3,752,642
273	3,752,889	113	3,752,614	224	3,752,623	325	3,752,630		CLASS 432	120	3,752,646
	3,752,894	130	3,752,615	249	3,752,624	331	3,752,632	4	3,752,638	222	3,752,643
	CLASS 425	131	3,752,616		3,752,625	343	3,752,633				3,752,644

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D 7—	10	228,114	191	228,122		228,134	1	228,144		228,107	228,152
D 8—	138	228,115	220	228,125	D26—	228,135	2	228,145	185	228,108	D74— 5 228,153
	149	228,116	1	228,126		228,136	20	228,146		228,109	228,154
	158	228,117	D13—	6	228,127	5	228,137	23	228,147	186	228,110 D83— 1 228,155
	220	228,118	D14—	6	228,127	14	228,138	17	228,148	192	228,111 228,156
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									D61—	1	228,150

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1 : 3,751,765	3,752,110	3,752,587	3,753,167	3,752,965	3,752,356
3,751,884	3,752,113	3,752,603	3,753,168	3,752,978	3,752,362
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19 : 3,751,763	3,753,043	3,752,401	3,753,023	3,752,933	3,751,859
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3,752,948	3,753,163	3,753,047	3,753,130	3,753,089	3,751,940
20 : 3,752,237	3,753,165	3,753,068	3,753,133	3,753,128	3,751,963
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3,752,889	3,751,754	3,752,309	3,753,248	3,752,190	3,752,087
3,753,073	3,751,789	3,752,328	3,753,253	3,752,262	3,752,088
21 : 3,752,039	3,751,794	3,752,376	3,751,869	3,752,337	3,752,116
3,752,055	3,751,809	3,752,535	3,752,536	3,752,430	3,752,139
3,752,439	3,751,816	3,752,546	3,751,730	3,752,838	3,752,147
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23 : 3,752,205	3,752,032	3,751,879	3,751,864	3,752,028	3,752,359
3,752,212	3,752,060	3,752,182	3,751,878	3,752,036	3,752,411
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3,751,900	3,752,130	3,753,062	3,751,961	3,752,157	3,752,482
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3,753,022					

3,752,761	3,753,260	3,751,932	3,752,542	50 : 3,751,799	3,751,991
3,752,816	3,751,774	3,751,964	3,752,687	3,752,035	3,752,066
3,752,826	3,751,781	3,751,978	3,752,748	3,752,204	3,752,103
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3,752,878	3,751,979	3,752,111	3,752,864	3,751,768	3,752,422
3,752,917	3,752,347	3,752,153	3,752,988	3,751,775	Re.27,732
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3,753,071	3,752,269	3,752,240	3,753,222	3,752,731	3,752,281
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3,753,186	3,753,256	3,752,329	3,752,145	3,752,903	3,752,754
3,753,187	3,751,762	3,752,329	3,752,077	3,752,909	3,752,820
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## PATENT OFFICE NOTICES

### Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before September 7, 1973.

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Chairman, Committee on Enrollment.

### Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,661,084, J. J. Steffan, DOOR FRAMES; 2,678,843, same, KEEPER MECHANISM; 2,765,884, same, DRY WALL JAMB; 3,194,363, Steffan and Williams, DOOR FRAMES; 3,265,427, J. L. Williams, METAL DOOR JAMB STRIKE PLATE ASSEMBLIES, filed June 29, 1971, D.C., E.D. Mo. (St. Louis), Doc. 71C401(A), Dolores Williams, also known as Dolores Rollhaus v. Jellico Mfg. Co. and Jellico Tool and Mfg. Co. Judgment filed and entered, Count 2 of complaint dismissed without prejudice, as well as defendants' first counterclaim for lack of jurisdiction. Count 1 of complaint found in favor of defendants and 2nd and 3rd counterclaims found in favor of plaintiff, Mar. 1, 1972. Alleged infringements stricken as to 2,765,884 and 3,265,427, by the plaintiff, Jan. 16, 1973.

2,678,843. (See 2,611,084.)

2,685,536, Starkey and Ransburg, METHOD FOR ELECTROSTATICALLY COATING ARTICLES; 2,794,417, same, APPARATUS FOR ELECTROSTATICALLY COATING ARTICLES; 2,893,893, W. W. Crouse, METHOD AND APPARATUS FOR ELECTROSTATIC COATING; 2,893,894, E. M. Ransburg, METHOD AND APPARATUS FOR ELECTROSTATICALLY COATING, filed Apr. 24, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c991, Ransburg Electro-Coating Corp. v. King Industries Enameling Division. Patents valid, parties agree King's use of a modified Ionic Model 25 equipment, wherein a ring type electrode was substituted for the original equipment cone-shape grid, did directly infringe United States Letters Patent Nos. 2,685,536, 2,794,417, 2,893,893 and 2,893,894. Defendant permanently enjoined. This judgment is entered on Ransburg's complaint against King. King's counterclaims against Ransburg are dismissed with prejudice. Cause of action set forth in the third-party complaint on file in this case, is dismissed without prejudice, Dec. 22, 1972.

2,761,177, B. Walters, MANUFACTURE OF ORNAMENTAL AND DISPLAY PLASTIC SHEETS, filed Feb. 7, 1973, D.C., S.D. Fla. (Miami), Doc. 73-212-C-JE, Ben Walters v. Rotocast Plastic Products, Inc.

2,765,884. (See 2,661,084.)

2,787,343, M. E. Mitchell, APPARATUS FOR SERVICING OVERHEAD EQUIPMENT; 3,095,945, same, OVERHEAD SERVICE UNIT, filed Feb. 13, 1973, D.C., S.D. Ind. (Indianapolis), Doc. IP73-C-72, Lift-A-Loft Corporation v. Hubbard Mfg. Co., Inc. and John S. Hubbard.

2,790,516, Wright and Butler, VEHICLE DISC BRAKE ASSEMBLY; 2,921,650, H. J. Butler, DISC BRAKE, filed Feb. 8, 1973, D.C., N.D. Ind. (South Bend), Doc. 73-S-20, Dunlop Holdings Limited v. The Bendix Corporation. Same, filed Feb. 7, 1973, D.C., E.D. Mich. (Detroit), Doc. 39637, Dunlop Holdings Limited v. General Motors Corporation.

2,794,417. (See 2,685,536.)

2,817,737, W. W. Morris, ELECTRICAL RESISTANCE NETS, filed July 31, 1970, D.C.N.J. (Newark), Doc. 1030-70,

Newweld Corporation and The Connecticut Development Credit Corp. v. Cooper Electroheat Limited. Consent judgment, patent valid and infringed, May 23, 1972

2,893,893. (See 2,685,536.)

2,893,894. (See 2,685,536.)

2,921,650. (See 2,790,516.)

2,968,164, A. W. Hanson, METHOD OF GENERATING SNOW, filed Feb. 16, 1973, D.C., E.D. Mich. (Bay City), Doc. 3260, Alden W. Hanson v. Alpine Valley Ski Area, Inc. and Hedco, Inc.

2,979,387, Easley and Hopkins, ETCHING, filed Feb. 7, 1973, D.C., S.D. Ind. (Indianapolis), Doc. IP73-C-58, Dow Chemical Company v. Ball Corporation.

2,994,237, H. Pelphrey, TOOTH FORMING TOOL; 3,015,243, J. C. Drader, TOOL FOR PRESSURE FORMING TOOTHED ELEMENTS, filed Nov. 27, 1970, D.C., E.D. Mich. (Detroit), Doc. 35712, Michigan Tool Co. v. Rendall Tool Co., and Rendall Tool & Gage Co. Consent judgment: plaintiff is owner of patent, defendant permanently enjoined, Jan. 31, 1973.

3,015,243. (See 2,994,237.)

3,095,945. (See 2,787,343.)

3,129,456, L. C. Renfro, METHOD OF EVISCERATING SCALLOPS; 3,177,522, same, APPARATUS FOR EVISCERATING SCALLOPS; 3,528,124, Wenstrom and Gorton, Jr., METHOD OF SHUCKING SHELLFISH; 3,662,432, Wenstrom and Gorton, Jr., APPARATUS FOR EVISCERATING SCALLOPS; 3,665,554, same, METHOD OF EVISCERATING SHELLFISH, filed Jan. 17, 1973, D.C., M.D. Fla. (Orlando), Doc. 73-10-Orl-C, Slade Gorton & Co., Inc. v. Robert A. and Walter G. Peavler and King & Co. Inc.

2,682,092, F. A. Quiroz, FRUIT JUICE EXTRACTION; 3,162,114, Breton and Beck, APPARATUS FOR CORING AND PRESSING JUICE FROM FRUITS HAVING A RIND, filed Feb. 1, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-218-RJK, Federated Machinery, Inc., Juice Tree, Inc. and Francisco A. Quiroz v. John Natalicio.

3,177,522. (See 3,129,456.)

3,177,703, Waters, Helfer and Jones, METHOD AND APPARATUS FOR RUNNING AND TESTING AN ASSEMBLY FOR SEALING BETWEEN WELLHEAD CONDUITS; 3,179,448, M. R. Jones, WELLHEAD APPARATUS; 3,419,071, Williams and Gruller, UNDERWATER WELLHEAD APPARATUS; 3,481,396, same, CONNECTOR FOR UNDERWATER PIPELINES, filed Feb. 10, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72-313-CC, Vetco Offshore Industries, Inc. and Vetco Offshore, Inc. v. Cameron Iron Works, Inc. Dismissal with prejudice as to U.S. Patents 3,177,703 and 3,179,448 and without prejudice as to Patents 3,419,071 and 3,481,396, Dec. 12, 1972. Same, filed Oct. 21, 1971, D.C., S.D. Tex. (Houston), Doc. 71-H-1153, Cameron Iron Works, Inc. v. Vetco Offshore Industries, Inc. and Vetco-Texas, Inc. Joint motion to dismiss complaint and order of dismissal filed and entered, Dec. 15, 1972.

3,179,448. (See 3,177,703.)

3,194,363. (See 2,661,084.)

3,265,427. (See 2,661,084.)

3,370,479, A. J. Van Noord, REMOTE CONTROL MIRROR; 3,407,684, same filed Jan. 31, 1973, D.C., E.D. Mich. (Detroit), Doc. 39588, Andrew J. Van Noord, doing business as Kent Engineering v. Jervis Corporation.

3,407,684. (See 3,370,479.)

3,419,071. (See 3,177,703.)

3,481,396. (See 3,177,703.)

3,528,124, Wenstrom and Gorton, Jr., METHOD OF SHUCKING SHELLFISH; 3,662,432, same, APPARATUS FOR EVISCERATING SCALLOPS; 3,665,554, same, METHOD OF EVISCERATING SHELLFISH, filed Jan. 17, 1973, D.C., M.D. Fla. (Orlando), Doc. 73-10-Orl-C, Slade Gorton & Co. Inc. v. Robert A. and Walter G. Peavler and King & Co. Inc. Same, filed Dec. 27, 1972, D.C., M.D. Fla. (Orlando), Slade Gorton and Company, Inc. v. Willis Brothers of Florida, Inc.

3,528,124. (See 3,129,456.)

AUGUST 21, 1973

U. S. PATENT OFFICE

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3,662,432. (See 3,129,456.)

3,662,432. (See 3,528,124.)

3,665,554. (See 3,129,456.)

3,665,554. (See 3,528,124.)

3,682,092. (See 3,162,114.)

D. 222,352, Ferro and Brown, DISPOSABLE VIAL FOR BLOOD CELL COUNTING; Reg. No. 908,324 (ACCUVETTE), Coulter Diagnostics, Inc., filed Jan. 11, 1972, D.C. Mass. (Boston), Doc. 72-135-J, Coulter Diagnostics, Inc. v. Eikay Products, Inc. Consent judgment entered on Jan. 31, 1973.

Reg. No. 908,324. (See D. 222,352.)



## National Technical Information Service

## GOVERNMENT-OWNED INVENTIONS

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Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at \$0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,  
Patent Program Coordinator,  
National Technical Information Service.

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE  
National Institutes of Health, Chief, Patent Branch,  
Westwood Building, Bethesda, Md. 20014

Patent application 348,673. Ammonium Ion Specific Electrode. Filed Apr. 6, 1973. PC \$3.25/MF \$0.95.

Patent application 354,673. Respirator. Filed Apr. 26, 1973. PC \$3.75/MF \$0.95.

Patent application 347,702. Electrode Insertion Device for Neuroelectrical Recordings. Filed Apr. 4, 1973. PC \$3/MF \$0.95.

U.S. DEPARTMENT OF THE INTERIOR  
Branch of Patents, 18th and C Sts. NW.,  
Washington, D.C. 20240

Patent application 350,421. Process for Recovering Elemental Sulfur From Aqueous Suspensions. Filed Apr. 12, 1973. PC \$3/MF \$1.45.

Patent application 350,444. Determination of Sulfate Using Ferri Ion-Selective Electrode. Filed Apr. 12, 1973. PC \$3/MF \$1.45.

Patent 3,733,255. Conversion of Municipal Refuse, Sewage Sludge and Other Wastes to Heavy Oil or Bitumen. Filed Oct. 30, 1970. Patented May 15, 1973. Not available NTIS.

Patent 3,733,187. Process for Converting Solid Wastes to Pipeline Gas. Filed June 7, 1971. Not available NTIS.

Patent 3,726,689. Animal Food From Raw Whole Fish. Filed Nov. 18, 1970. Patented Apr. 10, 1973. Not available NTIS.

Patent 3,730,728. Animal Food From Raw Whole Fish. Filed Nov. 18, 1970. Patented May 1, 1973. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—

Code GP-2, Washington, D.C. 20546

Patent application 242,662. Optical Instruments. Filed Apr. 10, 1972. PC \$3/MF \$1.45.

Patent application 359,957. Noise Suppressor. Filed May 14, 1973. PC \$3/MF \$1.45.

Patent application 198,885. Ophthalmic Method and Apparatus. Filed Nov. 15, 1971. PC \$3/MF \$1.45.

Patent application 345,372. High Isolation RF Signal Selection Switches. Filed Mar. 27, 1973. PC \$3/MF \$1.45.

Patent application 359,039. Coherent Receiver Employing Non-linear Coherence Detection for Carrier Tracking. Filed May 10, 1973. PC \$4/MF \$1.45.

Patent application 348,787. Voltage Monitoring System. Filed Apr. 6, 1973. PC \$3/MF \$1.45.

Patent application 353,162. Correlation Type Phase Detector. Filed Apr. 20, 1973. PC \$3.25/MF \$0.95.

Patent application 359,157. An Inverter Ratio Failure Detector. Filed May 10, 1973. PC \$3.75/MF \$1.45.

Patent application 359,156. A Device for Use in Loading Tension Members. Filed May 10, 1973. PC \$3/MF \$1.45.

Patent application 346,372. Signal Conditioner Test Set. Filed Mar. 30, 1973. PC \$3/MF \$1.45.

Patent application 347,952. Variable Resistance Constant Tension and Lubrication Device. Filed Apr. 4, 1973. PC \$3/MF \$1.45.

Patent application 348,422. Cermet Composition and Method of Fabrication. Filed Apr. 5, 1973. PC \$3.75/MF \$1.45.

Patent application 356,664. System for Depositing Thin Films. Filed May 2, 1973. PC \$3/MF \$1.45.

[FR Doc. 73-15675; Filed 7-31-73; 8:45 am]

## Certificates of Correction for the Week of Aug. 21, 1973

D. 225,067	3,691,557	3,710,537	3,719,963
D. 225,712	3,692,442	3,710,718	3,720,175
Re. 27,447	3,692,536	3,710,757	3,720,303
Re. 27,632	3,692,668	3,710,763	3,720,321
	3,693,182	3,710,775	3,720,695
	3,474,625	3,710,823	3,720,883
	3,486,912	3,710,926	3,720,886
	3,565,901	3,711,002	3,721,148
	3,567,450	3,711,220	3,721,211
	3,576,182	3,711,285	3,721,373
	3,578,115	3,711,315	3,721,442
	3,578,128	3,711,397	3,721,567
	3,602,418	3,711,410	3,721,592
	3,607,311	3,711,476	3,721,677
	3,607,866	3,711,530	3,721,719
	3,607,904	3,711,576	3,721,786
	3,607,909	3,711,592	3,721,832
	3,609,728	3,711,622	3,722,214
	3,610,742	3,711,945	3,722,634
	3,617,263	3,712,031	3,722,946
	3,619,415	3,712,535	3,723,001
	3,624,129	3,712,640	3,723,008
	3,625,779	3,712,804	3,723,070
	3,625,951	3,712,804	3,723,147
	3,629,024	3,712,935	3,723,165
	3,630,050	3,713,249	3,723,322
	3,630,359	3,713,294	3,723,322
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	3,637,840	3,713,666	3,723,761
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	3,681,406	3,717,791	3,727,144
	3,682,960	3,717,899	3,727,844
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	3,691,184	3,719,492	3,730,317
	3,691,544	3,719,772	3,740,541

## PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF AUGUST 4, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	5-30-72
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—J. MARCUS, Director.....	8-01-72
Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Acting Director.....	7-03-72
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director.....	6-01-72
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director.....	3-23-72
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	12-27-72
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director.....	11-07-72
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	10-02-72
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING AND MEASURING, GROUP 240—L. FORMAN, Director.....	2-23-72
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	11-17-72
Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 290—R. L. CAMPBELL, Director.....	11-17-71
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. BUCHLER, Acting Director.....	11-01-72
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Apparatuses; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	7-05-72
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director.....	10-18-72
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director.....	9-25-72
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director.....	9-01-72
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

**Expiration of patents:** The patents within the range of numbers indicated below expire during August 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 263. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,757,378 to 2,761,141, inclusive  
Plant Patents..... Numbers 1,505 to 1,508, inclusive



# REISSUES

AUGUST 21, 1973

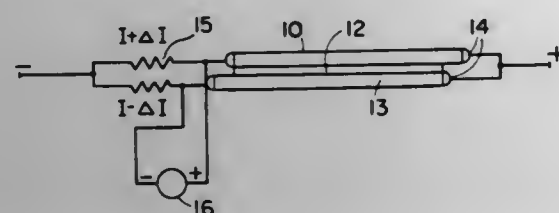
Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

**27,736**  
**METHOD OF SHAPING THE END OF A PIPE OF THERMOPLASTIC MATERIAL INTO A BELL**  
 Karl Muhlner, and Karl Jirka, Munich, and Johann Gutlhuber, Irlbach, Germany, assignors to Kunststoffwerk Gebruder Anger GmbH & Co., Munich, Germany  
 Original No. 3,520,047, dated July 14, 1970, Ser. No. 568,508, July 29, 1966. Application for reissue Apr. 11, 1972, Ser. No. 243,094  
 Int. Cl. B23p 11/02, 17/00; B29c 19/00  
 U.S. Cl. 29—423 **7 Claims**



This disclosure relates to a mode of elastically deforming a thermoplastic pipe end to form an internal groove therein and assemble packing and supporting rings in the groove.

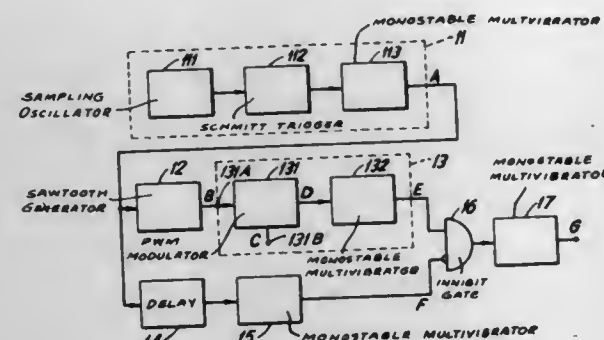
**27,737**  
**LIGHT SCANNING DEVICE UTILIZING PIEZO-ELECTRIC SEMICONDUCTOR MATERIAL**  
 Yoh Mita, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan  
 Original No. 3,582,658, dated June 1, 1971, Ser. No. 841,904, July 15, 1969. Application for reissue Dec. 12, 1971, Ser. No. 211,129  
 Int. Cl. H01j 39/14  
 U.S. Cl. 250—211 R **3 Claims**



A solid-state light scanning device includes two rodlike crystal of piezoelectric semiconductor material disposed substantially parallel and offset with respect to one another, each provided with electrodes at the opposite ends, and a photoconductor sandwiched between the two crystals to form an integrated unit. Means are also provided to initiate electric fields in said crystals with a predetermined time difference.

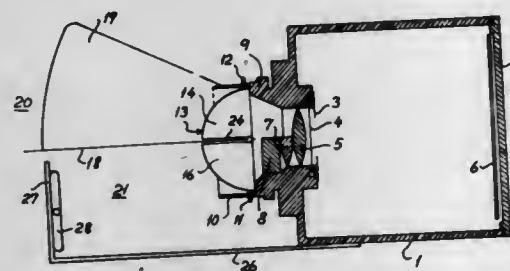
**27,738**  
**PULSE POSITION MODULATION COMMUNICATIONS SYSTEM INCLUDING MEANS FOR SUPPRESSING ZERO-MODULATION SIGNAL COMPONENTS**  
 Takamichi Honma, Yasuhiro Toshitsuna, and Saburo Aoki, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan  
 Original No. 3,562,671, dated Feb. 9, 1971, Ser. No. 718,146, Apr. 2, 1968. Application for reissue Dec. 22, 1971, Ser. No. 210,717  
 Int. Cl. H03k 7/04  
 U.S. Cl. 332—9 R **10 Claims**  
 An improved pulse position modulator is described wherein selected pulses ordinarily representative of the

zero signal level of the information to be transmitted are deleted. Deletion is accomplished by generating a pulse position modulated signal representative of the information signal and having a preselected pulse repetition rate,



with selected portions of the pulses therefrom deleted by use of another pulse train of the same repetition rate but delayed in time by an amount corresponding to the position of the pulse to be deleted.

**27,739**  
**APPARATUS FOR MEASURING THE SPEED OF AN AUTOMOBILE**  
 Carl Pedersen, Morsovej 8B, 2720 Vanlose, Denmark  
 Original No. 3,532,042, dated Oct. 6, 1970, Ser. No. 748,389, July 29, 1968. Application for reissue Apr. 27, 1972, Ser. No. 248,326  
 Int. Cl. G03b 17/24, 19/02  
 U.S. Cl. 95—36 **2 Claims**



The speed of a car is measured by exposing a film twice by means of a camera, viz, when the car is in a first and a second position respectively. During the first exposure only the area of the film upon which the car and its nearest surroundings are projected is exposed and during the second exposure the remaining area of the film is exposed, viz, by projecting the car and its new surroundings upon the remaining area of the film. However, the two areas of the film overlap each other so that a photograph is obtained showing the car in two different positions driving on a lane wherein the lane appears as if it were photo-

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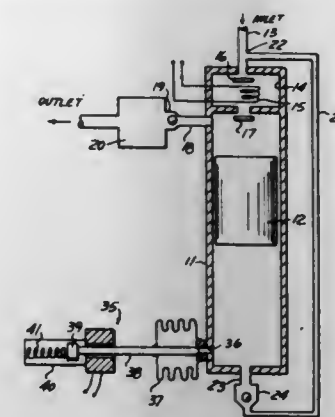
797

graphed in the normal way and on which the distance between the two positions of the car can be measured. During both exposures a watch is projected upon the film in order to record the time for the exposures.

**27,740**  
**OSCILLATING FREE PISTON PUMP**  
 Mark Schuman, 101 G St. SW., Washington, D.C. 20024  
 Original No. 3,489,335, dated Jan. 13, 1970, Ser. No. 749,130, July 31, 1968. Application for reissue Jan. 12, 1972, Ser. No. 217,347  
 Int. Cl. F04b 19/24

**U.S. Cl. 417—207 46 Claims**  
 A thermal powered pump formed of a cylinder, containing a free, oscillating piston, and having a heating chamber for providing above the piston, heated, expanding gases to be pumped for moving the piston downwardly to compress the gas located beneath it which, in turn raises piston so that the piston oscillates up and down, and with the pump outlet located above the piston for expelling the

the piston for maintaining the center of oscillation of the piston with respect to the cylinder.





# PLANT PATENTS

GRANTED AUGUST 21, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,385

## ASH TREE

Carl H. Klehm and Roy G. Klehm, Arlington Heights, Ill., assignors to Klehm Properties, Inc., Arlington Heights, Ill.

Filed Aug. 11, 1971, Ser. No. 170,935  
Int. Cl. A01h 5/12

U.S. Cl. Plt.—51

1 Claim

1. A new and distinct variety of ash tree, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a rapid, vigorous, uniform and seedless habit of growth which requires no staking and only limited pruning, a wide angle crotch-habit of the lateral branches, combined with a strong terminal leader, distinctive, narrow, lanceolate leaves which present a lacy appearance, an extremely waxy and shiny leaf cuticle which is thick and scorch resistant, and good winter hardiness as observed at Barrington and Arlington Heights, Ill.

3,386

## DOGWOOD TREE

Mary B. Wakefield, 1465 Brush Hill Road, Milton, Mass. 02186

Filed Jan. 4, 1972, Ser. No. 215,441  
Int. Cl. A01h 5/12

U.S. Cl. Plt.—51

1 Claim

1. A new and distinct variety of dogwood tree of the Japanese dogwood type, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an upright and compact habit of growth which requires very little, if any, pruning or maintenance, attractive dark green neat foliage which turns in color to wine red in the fall (usually in the month of November in Milton, Mass.), attractive white flowers of medium size and having a greater bract count, varying from 6 to 9 bracts per flower, than is normal for the species, large edible fruit which turn from green to yellow to clear bright red in color and which particularly tend to attract birds, a distinctive golden brown winter color of the smooth bark of the twigs and young branchlets which are quite ornamental, and especial suitability for street, park and garden plantings.

3,387

## DOGWOOD TREE

Mary B. Wakefield, 1465 Brush Hill Road, Milton, Mass. 02186

Filed Jan. 20, 1972, Ser. No. 219,582  
Int. Cl. A01h 5/12

U.S. Cl. Plt.—51

1 Claim

1. A new and distinct variety of dogwood tree of the Japanese dogwood type, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a relatively small and dainty tree habit, with a flat-topped but generally upright form of slender, gracefully sweeping branches, an exceptionally heavy floriferousness, with pure white blooms being borne mostly in triple clusters and occasionally in double clusters or sometimes singly, thereby giving the tree a striking and massive pure white color effect like a mantle of snow, an unusually heavy, prolonged and showy fruiting habit, with the fruit being borne mostly in loose triple clusters which ripen in succession over a period of 6 weeks or more (well into November in Massachusetts) and which give the tree a striking bright red overall color as the fruit matures, excellent hardiness

to at least -20° F. without injury, and especial suitability for foreground accent of massed plantings of trees and shrubs, as well as for use near buildings and for lawn, courtyard and garden plantings and the like.

3,388

## PEACH TREE

Arley H. Sylvester, deceased, late of Hotchkiss, Colo., by Roderick N. Stewart, Delta, Colo., executor, assignor to Stark Bros. Nurseries & Orchards Co., Louisiana, Mo.

Filed Feb. 8, 1972, Ser. No. 224,631  
Int. Cl. A01h 5/03

U.S. Cl. Plt.—43

1 Claim

1. A new and distinct variety of peach tree of the yellow-fleshed, freestone, fruit-bearing type, substantially as herein shown and described, characterized particularly as to novelty by its general resemblance to its parent variety "Elberta," but being principally distinguished therefrom by the unique combination of a later fruit ripening habit usually ranging from about 10 to 14 days later than "Elberta," firm, clear yellow fruit flesh, with only a trace of pink color on the surface of the pit cavity, and complete absence of red color in the flesh as compared to the heavily stained red flesh near the pits of the fruit of "Elberta," an excellent fruit flavor, with less bitterness than the flavor of "Elberta" fruit, and good shipping qualities of the fruit.

3,389

## KALANCHOE PLANT

James T. Irwin, Canyon, Tex., assignor to Irwin Greenhouses, Inc., Canyon, Tex.

Filed Feb. 16, 1972, Ser. No. 226,995  
Int. Cl. A01h 5/00

U.S. Cl. Plt.—68

1 Claim

1. A new and distinct variety of kalanchoe plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a highly branched, sturdy, compact and upright habit of growth, medium sized, flexible foliage of moss green to fern green color, a consistent plant height ranging from about 12 to 15 inches tall under greenhouse conditions and a uniform blooming date, an ability to initiate and develop flower buds under high night temperatures of summer when other varieties fail, a profuse blooming habit, with the ability to respond to short day treatment, and with consequent capability of year-around flowering, a distinctive, attractive and uniform buttercup yellow flower color, superior resistance to root rot as compared with most other kalanchoe varieties, and long-lasting qualities as a potted plant.

3,390

## APPLE TREE

Walter E. Raikes, Okanogan Mission, British Columbia, Canada, assignor to Columbia & Okanogan Nursery Co., Inc., Wenatchee, Wash.

Filed Feb. 28, 1972, Ser. No. 230,166  
Int. Cl. A01h 5/03

U.S. Cl. Plt.—34

1 Claim

1. A new and distinct variety of apple tree, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an upright or columnar and exceptionally open habit of tree growth, with limited main limb development confined to a few limbs which have a very limited, if any, side shoot development, while providing an exceptionally strong tree framework capable of sustaining heavy loads

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U. S. PATENT OFFICE

799

of fruit without bending, splitting, breaking or other damage attributable to the heavy weight of fruit borne thereby, a somewhat drooping leaf habit, with the leaves being somewhat larger in size, more abundant in number and deeper green in color (near Ivy Green) than those of the parent variety, a spur type fruiting habit, with the spurs being more numerous per unit length of wood and more extensively distributed throughout the tree than in any other known spur type apple tree variety, a remarkably large fruit size in relation to heaviness of fruit crop to an exceptional degree not found in other spur type apple varieties, with the fruit being borne closer together and virtually completely covering each limb along substantially the full length thereof, a good blushed solid bright red fruit color (Amaranth Red) generally comparable to the fruit of the parent variety, "Red McIntosh" (Summerland Strain), extremely good productivity evidenced by heavy fruit crops consistently produced annually even when "Red McIntosh" and other sports thereof bear poorly or almost no fruit at all on occasion in the same orchard, and superior frost resistance of the fruit buds.

3,391

## CARNATION PLANT

Leonard E. Carrier, 1911 Sheridan Road, Encinitas, Calif. 92024

Filed Mar. 9, 1972, Ser. No. 233,366  
Int. Cl. A01h 5/00

U.S. Cl. Plt.—72

1 Claim

1. A new and distinct variety of carnation plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a very vigorous and free-breaking plant habit, with strong and straight stems, superior resistance to soil-borne diseases such as *Fusarium oxysporium* and *roseum* and other root-rots such as damping off and water molds and the like, large, serrated flowers which open fully without bursting the calyx and causing "splits," a distinctive and attractive pink flower color which fades evenly and beautifully, a distinctive and pleasing rose-type flower fragrance, and good heat tolerance which is superior to that of the parent lines and the so-called "Sim" varieties.

3,392

## POINSETTIA PLANT

Paul Ecke, Jr., Encinitas, Calif., assignor to Paul Ranch Ecke, Encinitas, Calif.

Filed Mar. 30, 1972, Ser. No. 239,831  
Int. Cl. A01h 5/00

U.S. Cl. Plt.—86

1 Claim

1. A new and distinctive variety of poinsettia plant, substantially as herein shown and described, character-

ized particularly as to novelty by the unique combination of a short-growing and compact plant habit, a uniform and fast rooting habit, a self-branching habit resulting in multiple blooms without pinching off the terminal buds as required for other poinsettia varieties, attractive green foliage of lighter color than the foliage of such varieties as "Paul Mikkelsen" (Plant Pat. No. 2,328), a distinctive, attractive and more brilliant red bract color than the bracts of the variety "Annette Hegg" (Plant Pat. No. 2,962), and long-lasting plant qualities.

3,393

## POINSETTIA PLANT

Paul Ecke, Jr., Encinitas, Calif., assignor to Paul Ranch Ecke, Encinitas, Calif.

Filed Mar. 30, 1972, Ser. No. 239,832  
Int. Cl. A01h 5/00

U.S. Cl. Plt.—86

1 Claim

1. A new and distinct variety of poinsettia plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a short-growing and compact plant habit, a uniform and fast rooting habit, a self-branching habit resulting in multiple blooms without pinching off the terminal buds as required for other poinsettia varieties, attractive green foliage of lighter color than the foliage of such varieties as "Paul Mikkelsen" (Plant Pat. No. 2,328), a distinctive and attractive pink on white marbled bract color, and long-lasting plant qualities.

3,394

## POINSETTIA PLANT

Paul Ecke, Jr., Encinitas, Calif., assignor to Paul Ranch Ecke, Encinitas, Calif.

Filed Mar. 30, 1972, Ser. No. 239,833  
Int. Cl. A01h 5/00

U.S. Cl. Plt.—86

1 Claim

1. A new and distinct variety of poinsettia plant, substantially as herein shown and described characterized particularly as to novelty by the unique combination of a general resemblance to the variety known as "Annette Hegg" (Plant Pat. No. 2,962), but having a very short growth habit, with very thick stems, a uniform and fast rooting habit comparable to "Annette Hegg," fewer stems and bracts than "Annette Hegg," larger and fleshier leaves of a much darker green color than those of "Annette Hegg," a good bright red bract color, with some bluish tones, a more rounded bract form, very large and more prominent cyathea, and long-lasting plant qualities.



# PATENTS

GRANTED AUGUST 21, 1973

## GENERAL AND MECHANICAL

3,753,262

### GERM PROTECTOR TOILET SEAT COVER

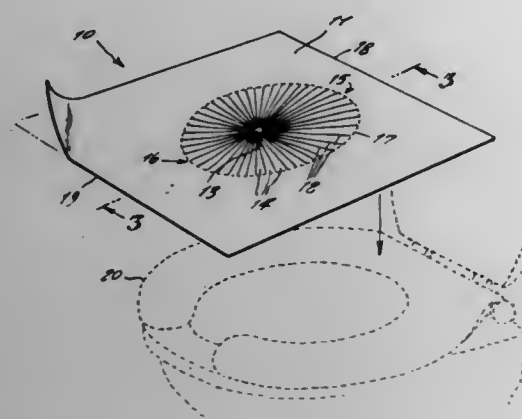
Benjamin Watsky, 150-15 79th Ave., Flushing, N.Y.

Filed Jan. 19, 1972, Ser. No. 218,901

Int. Cl. A47k 13/14, 13/16

U.S. Cl. 4-243

2 Claims



A disposable toilet seat cover of improved design so to prevent contact of a person's body with the toilet seat on which he sits, the cover consisting of a tissue paper panel for placement upon the toilet seat, and a center of the panel having a large number of radially extending slits so to form a great many triangular tabs that hang down into the toilet bowl and which thus cover the inner periphery of the toilet seat, while at the same time forming a central oval shaped opening.

3,753,263

### PILLOW CONSTRUCTION

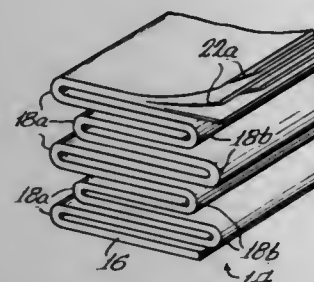
Arnold L. Willis, Chicago, Ill., assignor to MSL Industries, Inc., Chicago, Ill.

Filed Mar. 4, 1971, Ser. No. 121,102

Int. Cl. A47g 9/00; A47c 27/00

U.S. Cl. 5-337

11 Claims



A polygonal pillow tick having a polygonal batt of corresponding configuration enclosed therein and the pillow tick and batt cooperate to produce a three-way or four-way taper on the pillow. The pillow batt includes a plurality of layers of material arranged in superimposed layers with at least some of the layers terminating at a location spaced from a first of the edges of the tick so as to produce a taper adjacent the first edge of the pillow. Each of the layers of material forming the batt includes a plurality of plies of a web of compressible material with at least some of the plies terminating at a location spaced from a second edge adjacent the first edge to produce a taper adjacent the second edge.

In one embodiment, the pillow has four sides and the third side has several of the plies of each layer spaced therefrom

while all of the layers are located in a substantial common plane along the fourth edge to produce a pillow having a wedge-shaped configuration in one transverse dimension and an oval configuration in a second perpendicular dimension. In a second embodiment, the pillow has four edges and some of the plies of each layer are spaced from the third edge as well as the first edge while some of the layers are spaced from the fourth edge as well as the first edge to produce an oval cross-sectional configuration in two perpendicular directions transverse to the thickness of the pillow.

3,753,264

### SCALP RELAXATION PILLOW

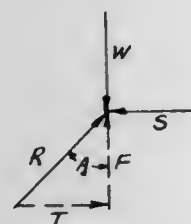
George H. Grenier, 1019 Michigan Ave., Ann Arbor, Mich.

Filed Sept. 28, 1971, Ser. No. 184,433

Int. Cl. A47g 9/00

U.S. Cl. 5-338

7 Claims



Based upon the principle that the continual and prolonged downward pull by the neck muscles, facial muscles and facial skin upon the scalp constricts the scalp blood vessels which nourish the hair roots, this hollow pillow in response to the weight of the user's head sets up a counter-acting upward force which counteracts the downward pull of the facial skin and consequently reduces the constriction of these blood vessels which feed the scalp and hence nourish the hair roots therein. To this end, the pillow is made of resilient foam plastic material with laterally-extending parallel air chambers separated from one another by laterally-disposed upwardly and rearwardly-inclined yielding partition walls. The weight of the user's head produces a downward force which causes the slanting front and rear walls and partition walls to be tilted downwardly and rearwardly thereby producing an upwardly and rearwardly-inclined force which includes a horizontal component acting toward the top of the head and thereby counteracting the pull of the neck muscles, facial muscles and facial skin toward the chin of the user.

3,753,265

### TRANSLATABLE SUCTION CLEANING VEHICLE

Stanley S. Wuk, 1027 Washington Ln., Rydal, Pa.

Continuation-in-part of Ser. No. 124,318, March 15, 1971, Pat. No. 3,676,885. This application Sept. 10, 1971, Ser. No. 179,515

Int. Cl. E04h 3/20; A47i 5/00

U.S. Cl. 15-1.7

8 Claims

An improved translatable suction cleaning vehicle which is adapted to moveably interface with a bottom surface of a pool and remove extraneous particulates therefrom. The improved cleaner incorporates suction inlet mechanisms, driving and sensing means for cooperation with logic and control mechanisms within a control box located external to and substantially displaced from the main body of the cleaner vehicle.

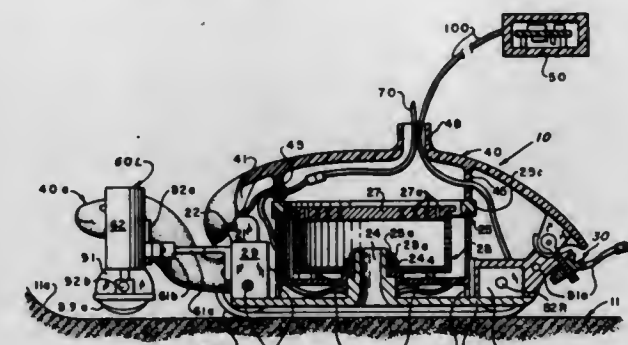
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GENERAL AND MECHANICAL

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An improvement to the cleaning vehicle provides for a plurality of mercury switches to act as the sensing means. When an obstacle is struck, the mercury switches are inclined and actuate the remotely positioned logic and control mechanisms. A

mounting the cleansing pad at one end of the handle to pivot about its diametrical axis with sufficient frictional engagement to hold the cleansing pad at any selected angle with respect to the handle when not acted upon by external forces.



3,753,268

### VACUUM CLEANER SUCTION TOOL WITH OPPOSITELY ROTATING PILE AGITATORS FOR CLEANING DEEP PILE SHAG RUGS

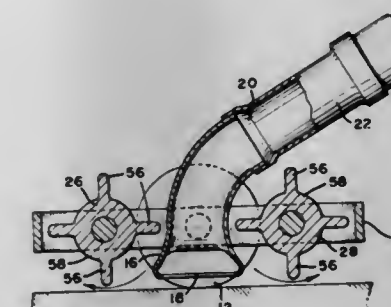
Frank K. Bayless, Darlen, Conn., assignor to Consolidated Foods Corporation, Greenwich, Conn.

Filed Dec. 3, 1971, Ser. No. 204,548

Int. Cl. A47i 9/04

U.S. Cl. 15-377

4 Claims



further improvement to the vehicle provides for a driving mechanism which is manually controlled by an operator wherein the appropriate logic circuitry is removed from the logic and control mechanism.

3,753,266

### EDUCATIONAL ORAL HYGIENE DEVICE FOR YOUNG CHILDREN

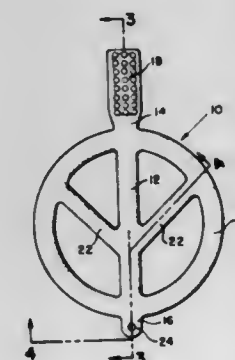
Robert C. Cenkeros, 10 Hazel St., Larkspur, Calif.

Filed Aug. 3, 1971, Ser. No. 168,696

Int. Cl. A46b 15/00; A61j 17/00

U.S. Cl. 15-110

2 Claims



In accordance with the present invention there is provided a suction cleaning tool having an elongated suction nozzle on either side of which and closely adjacent thereto, is a rotatably mounted member for contacting the pile of the rug. These members are caused to rotate in mutually opposite directions with their lower sides turning away from the nozzles.

The nozzle and rotating members depend from a base which is provided with means, such as wheels or runners at opposite ends thereof, for movably supporting the tool on the rug. The rotating members may be driven by an electric motor or by the wheels through suitable drives which rotate them in opposite directions.

An oral hygiene device is provided with a handle member, a tooth cleaning portion and a teether member. Support members may be provided intermediate the handle member and the teether member.

3,753,267

### CLEANING MOP

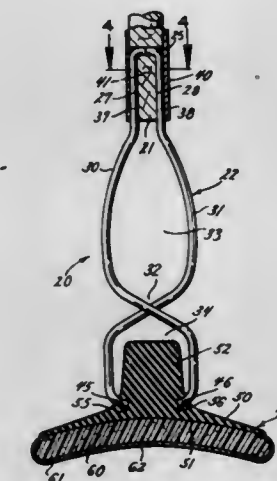
John W. Johnson, Sr., 7515 State St., East St. Louis, Ill.

Filed Mar. 22, 1971, Ser. No. 126,806

Int. Cl. A47i 17/02; B25g 3/38

U.S. Cl. 15-210 R

6 Claims



A cleaning mop for cleaning bathtubs and the like including a handle, a flexible cleansing pad, and means for releasably

3,753,269

### ABRASIVE CLOTH CLEANER

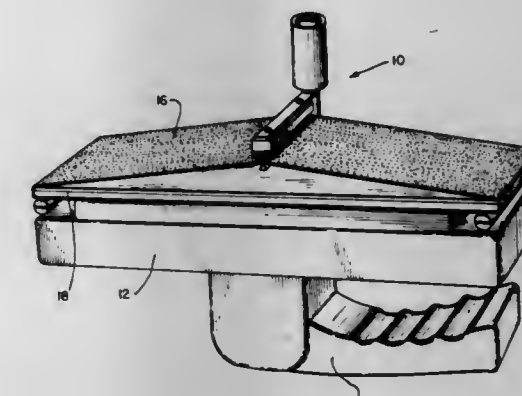
Ronald R. Budman, 31 Walnut St., Milton, Pa.

Filed May 21, 1971, Ser. No. 145,643

Int. Cl. B24b 53/02, 53/10

U.S. Cl. 15-160

5 Claims



A tool for cleaning abrasive paper. A bar having a narrow top edge is fixed to a handle, the handle also carrying a brush. The bar is inserted beneath abrasive paper to open the clogged areas, the brush then displacing the debris between the abrasive particles.



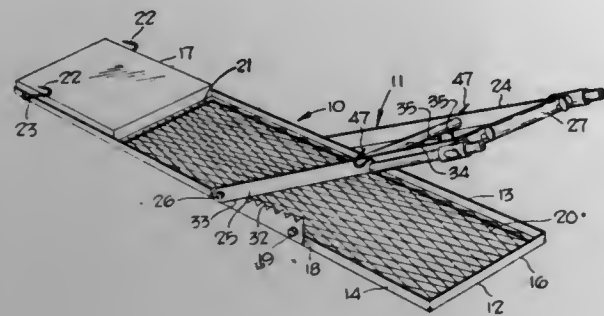
3,753,270

**FISH AND GAME HOLDING BOARD**

Werner J. Hellebusch, Rt. 2, Box 30, Marthasville, Mo.  
Filed Sept. 7, 1971, Ser. No. 178,181  
Int. Cl. A22c 25/00

U.S. Cl. 17-70

5 Claims



This holding board includes a base frame having parallel sides supporting a removable platform therebetween. The arms of a U-shaped clamping frame are pivotally connected to the sides of the base frame for angular movement of the clamping frame toward the base frame. A clamping bar extends between the arms of the clamping frame and is adapted to clamp fish to the platform. One of the sides of the base frame and an associated arm of the clamping frame provide scissor action cutting edges for sectioning fish and game. The base frame and the clamping frame include selectively spaced hooks which are attachable to opposite ends of a carcass to extend said carcass for skinning.

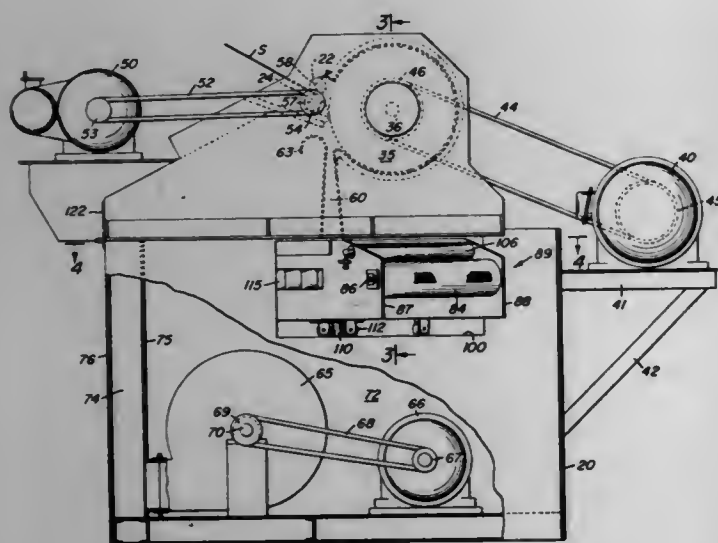
3,753,271

**FLUFFING MACHINE FOR PRODUCING WEBS OF VARIOUS WIDTHS**

Douglas M. McBean, Pittsford, N.Y., assignor to Surgical Specialties Corporation, East Rochester, N.Y.  
Filed May 10, 1971, Ser. No. 141,766  
Int. Cl. D01g 25/00

U.S. Cl. 19-156.3

5 Claims



A random web forming machine having a lickierin and a condenser designed to produce a web of one width is constructed so as to produce a web of any desired narrower width. The fibers are doffed from the lickierin into a duct, which is of the same width as the lickierin but which delivers the doffed fibers onto an endless foraminous condenser belt that is mounted so that the direction of travel of the belt can be ad-

justed angularly with reference to the mouth at the discharge end of the duct. Different widths of webs can be produced by varying the direction of travel of the belt with reference to the discharge opening of the duct.

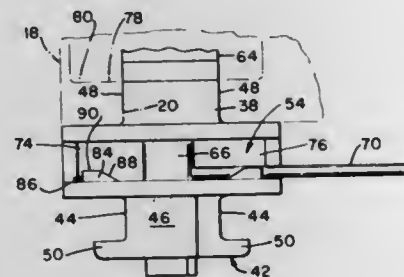
3,753,272

**RELEASABLE CONTAINER INTERLOCK**

William S. Laidley, Piedmont, Calif., assignor to Vulcan Steel Foundry Co., Oakland, Calif.  
Filed Mar. 13, 1972, Ser. No. 233,973  
Int. Cl. B65j 1/04

U.S. Cl. 24-81 E

18 Claims



Apparatus for releasably locking large ocean-type vertically stacked cargo containers to each other. A body is disposed between the containers, spaces the containers apart and is fitted with a cone that can be rotated from an open position into a locked position in which the cone engages an undercut in corner fittings of the container by actuating a handle that protrudes horizontally through a slot-like opening in a side of the body. The body is also fitted with means to secure it to a corner fitting of the lower container at least while the cone locks the upper container to the body.

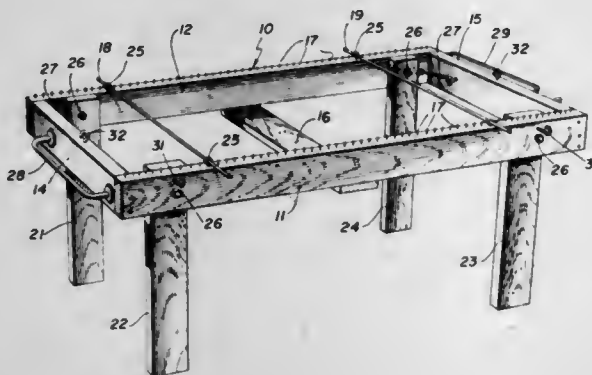
3,753,273

**RUG FRAME**

Minnie M. Roberts, Quaker Hwy., Rt. 146A, Uxbridge, Mass.  
Filed Sept. 23, 1971, Ser. No. 183,043  
Int. Cl. D03d 29/00

U.S. Cl. 28-15

8 Claims



A rug frame for making a rug from elongated strips of flexible material, the frame having rods and a series of pins for arranging twine in rows between the rods on which the strips of material are twisted.

3,753,274

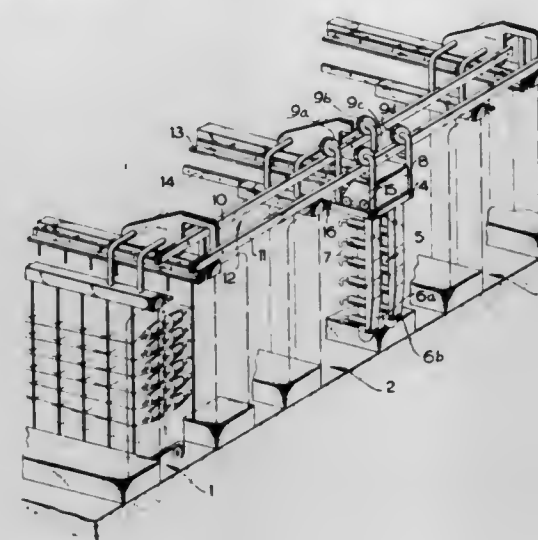
**CREEL FOR TEXTILE MACHINES**

Gerhard Koslowski, Rheydt-Odenkirchen, Germany, assignor to W. Schlafhorst & Co., Monchengladbach, Germany  
Filed Oct. 1, 1971, Ser. No. 185,569  
Claims priority, application Germany, Oct. 2, 1970, P 20 48 529.4

U.S. Cl. 28-34

Int. Cl. D03j 1/16

4 Claims



A creel has a dolly for receiving a tying device on the way from one creel to another. The dolly transports the tying device to other creels.

3,753,275

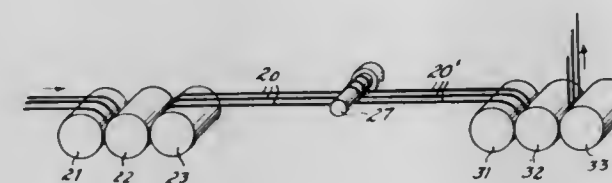
**DRAW-CRIMPING TEXTILE FILM STRANDS**

Robert K. Stanley, 620 Meadowvale Ln., Media, Pa.  
Continuation-in-part of Ser. No. 822,429, May 7, 1969, Pat. No. 3,570,083, which is a continuation-in-part of Ser. Nos. 678,428, Pat. No. 3,462,814, and Ser. No. 302,758, Pat. No. 3,376,622, Continuation-in-part of Ser. No. 846,457, July 31, 1969, which is a continuation-in-part of Ser. No. 835,883, June 9, 1969, Pat. No. 3,551,254, which is a continuation-in-part of Ser. No. 650,762, July 3, 1967, abandoned, which is a continuation-in-part of Ser. No. 349,338, March 8, 1964, Pat. No. 3,348,283. This application Mar. 15, 1971, Ser. No. 124,213

U.S. Cl. 28-72.14

Int. Cl. D02g 1/12

9 Claims



Drawable textile film strands are treated by drawing the same to increased length and compressively crimping the drawn material, both steps being carried out in essentially continuous manner with a minimum of time and space therebetween.

3,753,276

**CALENDER ROLL COVER**

Kenneth E. Reisch, 200 Princeton Ave., Reading, Pa.  
Continuation-in-part of Ser. No. 18,380, March 13, 1970, abandoned, which is a continuation of Ser. No. 686,422, Nov. 29, 1967, abandoned. This application Dec. 27, 1971, Ser. No. 212,613

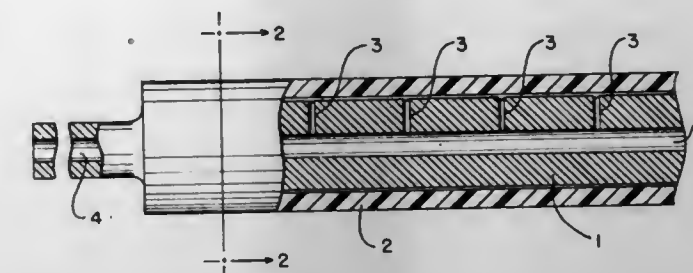
U.S. Cl. 29-129.5

Int. Cl. B21b 31/08

5 Claims

A calender roll comprising a polymeric roll cover adapted

to be secured in frictional engagement with a rigid mandrel under static conditions is provided that will permit relative



movement between the roll and the cover under operating conditions.

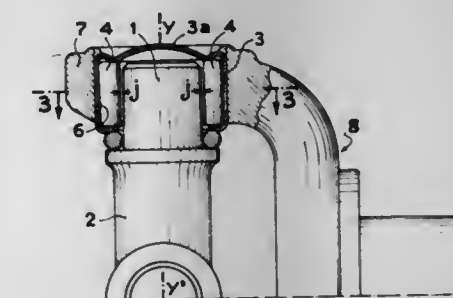
3,753,277

**METHOD OF MAKING UNIVERSAL JOINTS**

Alfred Pitner, Paris, France, assignor to Nadella, Rucl-Malmaism, France  
Division of Ser. No. 883,147, Dec. 8, 1969, Pat. No. 3,660,989. This application May 4, 1972, Ser. No. 250,135  
Claims priority, application France, Jan. 24, 1969, 6901314  
Int. Cl. B23p 11/00

U.S. Cl. 29-148.4 A

11 Claims



Universal joint in which the needle bearing cup surrounding each trunnion of the cross member of the joint has a non-circular cross-sectional shape so that the passage for the needles is smaller in the zones in which the forces are transmitted by the joint than in the rest of the passage for the needles. This is achieved by an interaction between the branch of the material of the yoke surrounding the bore and the cup which deforms the cup in the desired manner. A method is disclosed for achieving this result.

3,753,278

**SOLDER COATED WIRE**

Hachiro Hamaguchi; Misao Sakashita, and Mamoru Koyama, all of Osaka-shi, Japan, assignors to Tatsuta Electric Wire & Cable Co., Ltd., Osaka City, Japan  
Division of Ser. No. 22,016, March 23, 1970, Pat. No. 3,644,115. This application Nov. 18, 1971, Ser. No. 200,044  
Int. Cl. B32b 15/02, 15/20

U.S. Cl. 29-197

1 Claim

Tin-lead alloys used for soldering and plating metal wires are improved in their resistance to oxidation when they contain a small amount of aluminum.

3,753,279

**TERMINAL FORMING & TERMINATING APPARATUS**

Daniel Eppler, Toms River, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.  
Filed Apr. 13, 1971, Ser. No. 133,555  
Int. Cl. H01r 43/04

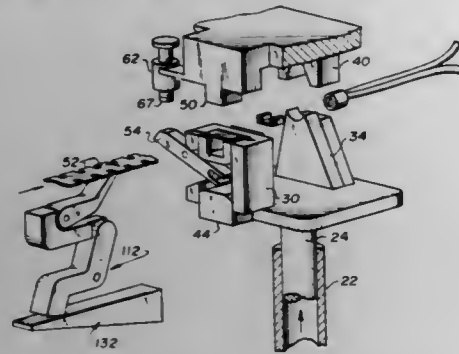
U.S. Cl. 29-203 D

19 Claims

A compact, conveniently manipulable, multistage terminating apparatus arranged to successively selectively form ter-



minating devices from generally flat, pre-blanked, deformable, interconnected elements readily storable therewithin. A first die stage is arranged to suitably deform a portion of a flat element fed thereto into a wire receiving ferrule which may then be crimped about an article inserted therein at a second or terminating die stage. Guide and feed means are ap-



propriately disposed adjacent the reciprocally operable, progressive die sets for directly advancing a length of the deformable elements therethrough. Severing means are provided for separating a selective one of the terminated elements from the remainder thereof. The elements may be conveniently stored in and dispensed from storage means disposed adjacent the guide means.

3,753,280

#### INSULATION STRIPPING DEVICE ADAPTED FOR USE WITH TERMINAL ATTACHING MACHINE

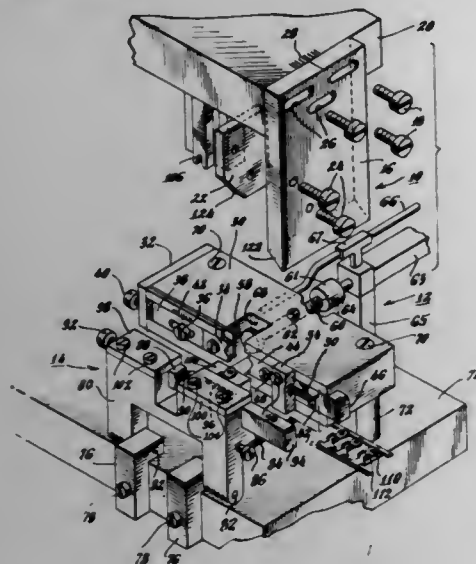
Hurley J. Blakeney, Gilbertsville; Harold V. Lowe, Kirkwood, and Gunther W. Ottens, Deposit, all of N.Y., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Dec. 17, 1971, Ser. No. 209,226

Int. Cl. H01r 43/04

U.S. Cl. 29—203 D

12 Claims



A device for stripping a selected length of insulation from a conductor which device is adapted for use with a machine for attaching terminals to the conductor. A pair of camming elements, such as inclined planes, are mounted for movement with a terminal applying member. As the member moves toward a terminal applying position, a first of the inclined planes is operative to actuate an insulation cutting means and a conductor gripping means. Further movement of the terminal applying member moves the second inclined plane into a position to transfer the gripping means away from the cutting means, effectively stripping the severed insulation from the conductor and positioning the bare end of the conductor to be attached to a terminal by the terminal applying member. On the return cycle of the terminal applying member, a pneumatic mechanism is actuated to release the severed piece of insulation and to remove the insulation from the mechanism.

#### 3,753,281 MEANS AND METHOD FOR ALIGNING MOTOR ASSEMBLY

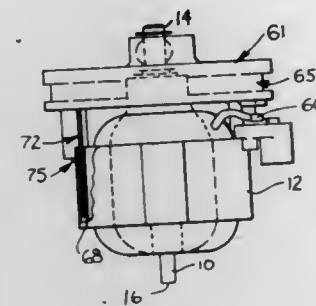
Robert G. Arlt, and Timothy W. Hennessey, both of Springfield, Ohio, assignors to Robbins & Myers, Inc., Springfield, Ohio

Filed Oct. 23, 1970, Ser. No. 83,430

Int. Cl. H02k 15/02

U.S. Cl. 29—205 R

5 Claims



Means for aligning the rotating shaft with the outside diameter of the stator of an electric motor subassembly comprising positioning the stator in a unique fixture, applying an adhesive to the mating surface of the stator, placing the head assembly which has been provided with an opening for receiving said shaft onto said stator in aligned relation thereto until said adhesive sets or cures.

3,753,282

#### MEMBER FOR USE IN THE SHAPING OF COIL ENDS OF STATOR WINDINGS DISPOSED IN SHEET METAL STATOR ASSEMBLIES OF ELECTRICAL MACHINES

Klemens Wiehl, Nuernberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

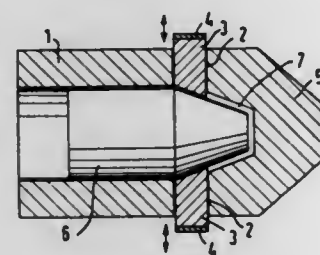
Filed Mar. 3, 1972, Ser. No. 231,483

Claims priority, application Germany, Mar. 15, 1971, G 71 09 670.3

Int. Cl. H02k 15/00; B23p 17/00

U.S. Cl. 29—205 D

5 Claims



A member for use in the shaping of coil ends of stator windings disposed in sheet metal stator assemblies of electrical machines employing a hollow body member which carries at least one, preferably a plurality of radially extensive and retractable arms which may be moved radially outwardly, for example, by means of an axially movable plunger engageable with such arms whereby the same may be disposed in close relation to the ends of the coil to be formed, at least the outer portions of such arms comprising a material of good electrical conductivity with the radial thickness of such material corresponding at least to the depth of penetration of induced eddy currents resulting from current flow through the winding, induced, for example, by a capacitive discharge.

3,753,283

#### ELECTRODE TIP EXTRACTING TOOL

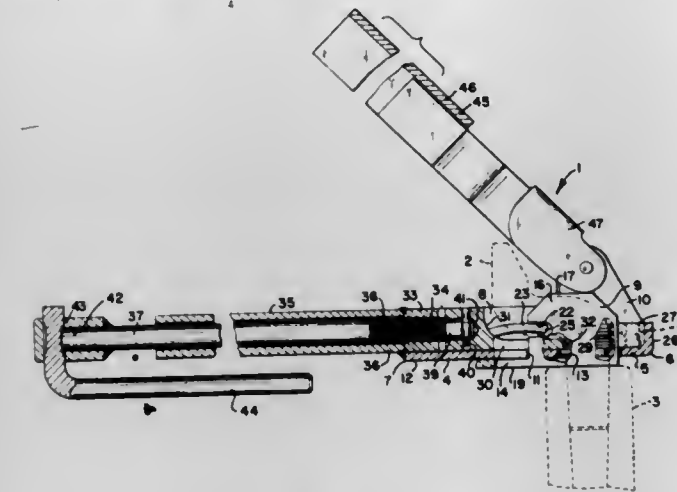
Rex H. Dyer, Independence, Mo., and Lauren W. Burnett, Dubuque, Iowa, assignors to Dyer Weld Tool Corp., Lexington, Mo.

Filed Apr. 24, 1972, Ser. No. 246,612

Int. Cl. B23p 19/04

U.S. Cl. 29—267

9 Claims U.S. Cl. 29—425



A tool for extracting electrode tips from the holder of a welding machine includes clamping jaws cooperating with a rigid jack-saddle which is forced away from the jaws by a pair of cams simultaneously actuated by an elongated handle. An upwardly open cavity bounded by the cams contains the jaws and is adapted to receive either straight or off-set electrode tips for extraction.

3,753,284

#### METHOD FOR REPAIRING INSULATED HIGH VOLTAGE LINE

Willi Olsen, and Klaus Schlosser, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

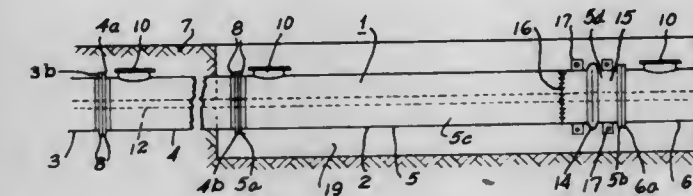
Filed Sept. 15, 1971, Ser. No. 180,614

Claims priority, application Germany, Sept. 30, 1970, P 20 49 013.5

Int. Cl. H02g 1/00; F16l 55/18

U.S. Cl. 29—401

7 Claims



Simple and efficient repair of a gas insulated high voltage line, wherein the high voltage line and the surrounding insulating gas are encased by a plurality of rigid, tubular, gas tight, metallic casing sections generally fixed in position and arranged in end to end abutment, is made possible by the method of severing one of the casing sections into several pieces by such means as to allow removal of the severed section from between the adjacent abutting sections and replacing the severed casing section with a replacement section having a deformable portion which allows variation in the length of that section over the range of free play required for insertion between the fixed adjacent sections. The high voltage line will be disconnected to allow removal of the severed section. A replacement section comprises a tubular member having ends interconnectable with adjacent mating end portions of an opened line and having a deformable circumferentially extending wall section displaced radially from the surface of said section. A repair piece including the deformable portion may be attached to a piece of the severed section to make up the replacement section.

3,753,285

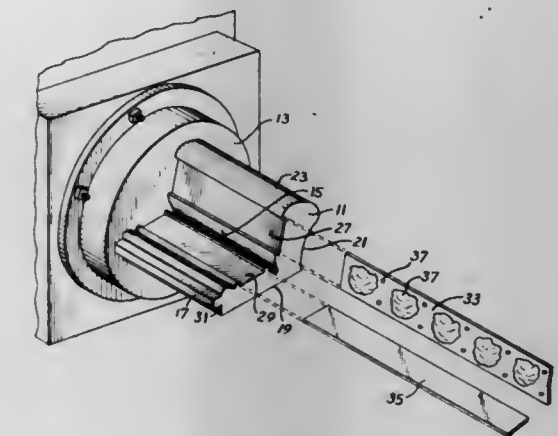
#### METHOD OF FORMING A DECORATIVE PICTURE FRAME

Harry R. Gewertz, Whittier, Calif., assignor to Intercraft Industries Corporation, Chicago, Ill.

Filed Feb. 23, 1972, Ser. No. 228,520

Int. Cl. B23p 17/00

4 Claims



A method of forming a decorative picture frame including the steps of extruding an elongated thermoplastic molding having a formed longitudinal groove, providing an elongated strip having a decorative surface and adapted to be received in the groove, attaching the decorative strip to the molding, cutting the molding into predetermined lengths and assembling the lengths into a frame.

3,753,286

#### LOW SPEED FRICTION WELDING

Rodger H. Lilly, Cambridge, and Colin R. G. Ellis, Newton, both of England, assignors to The British Aluminum Company, Limited, London, England

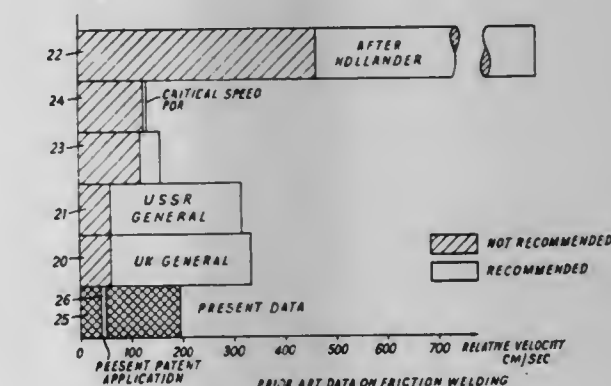
Filed Aug. 5, 1970, Ser. No. 61,076

Claims priority, application Great Britain, Apr. 11, 1970, 17,776/70; Aug. 21, 1969, 39,919/69

Int. Cl. B23k 27/00

U.S. Cl. 29—470.3

18 Claims



This disclosure relates to the friction welding of dissimilar metals, and provides a method of friction welding together two faces of two members formed of dissimilar metals, the method comprises causing relative rotation between the two faces while applying load between the two faces in a direction axial of the rotation and maintaining that axial load and rotation for a determined period of time, wherein the maximum relative velocity between the faces during the rotation is below 60 centimeters per second.



3,753,287

## METHOD OF INTERCONNECTING TWO COAXIAL TUBE SYSTEMS

Gerhard Ziemek, Hannover, and Friedrich Schatz, Langenhagen, both of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshütte Aktiengesellschaft, Hannover, Germany

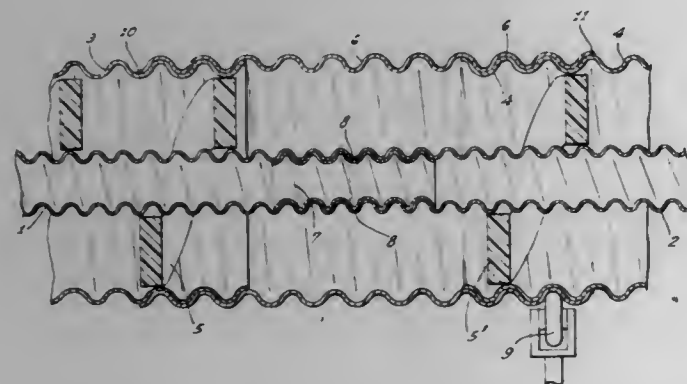
Filed Sept. 15, 1971, Ser. No. 180,796

Claims priority, application Germany, Sept. 21, 1970, P 20 46 331.4

Int. Cl. B23k 31/02

U.S. Cl. 29—470.5

10 Claims



Method of interconnecting two coaxial tube systems, each having at least two corrugated coaxial tubes, by providing innermost tubes of the two systems to be interconnected and at slightly smaller or larger diameter, respectively in or on the end portions of the said two innermost tubes in corrugation contour matching and fitting relation; bonding the axial ends of the first sleeve or of the two innermost tubes respectively to the two innermost tubes or both first sleeves; telescoping a second sleeve of slightly smaller or larger diameter than the next, outer tubes of each system in corrugation receiving relation to the axially displaced ends of the outer tubes, bonding the second sleeve to the outer tubes.

3,753,288

## METHOD OF PROVIDING METAL SLABS FROM A METAL PRODUCTION FACILITY

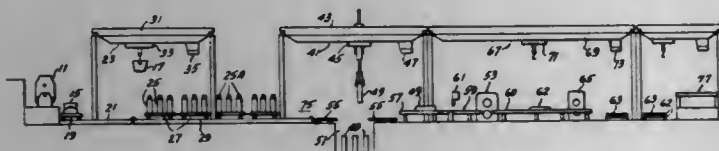
Jacob J. Orbon, Sr., Towson, Md., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 28, 1971, Ser. No. 213,058

Int. Cl. B23k 19/00; B23p 17/00

U.S. Cl. 29—527.7

6 Claims



Expeditious delivery of plates and slabs from a metal slab producing facility is obtained by teeming a series of ingots to substantially the same height from a molten steel supply, determining a number of already ordered tailored slabs which can be made from each respective ingot leaving over an amount of metal within a predetermined range sufficient to form a single usable stock slab from each ingot for inventory, rolling said tailored slabs into plates for immediate delivery and placing said stock slab in inventory either as a stock slab or stock plate for subsequent delivery on an order for such stock slab or plate.

3,753,289

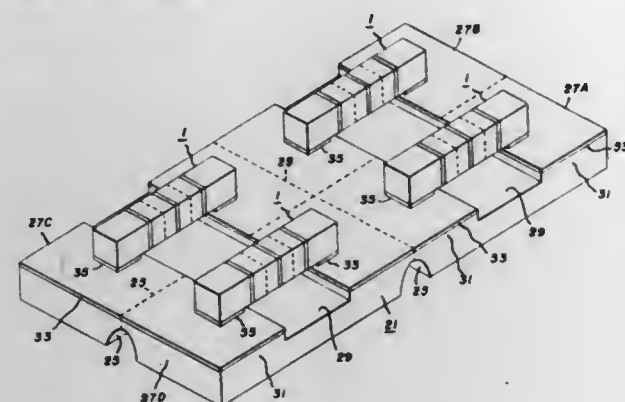
## PROCESS FOR MANUFACTURE OF SUBSTRATE SUPPORTED SEMICONDUCTIVE STACK

Warren E. Berner, Camillus, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 863,209, Oct. 2, 1969. This application Nov. 2, 1970, Ser. No. 85,961

Int. Cl. B01j 17/00

4 Claims



A plurality of junction containing semiconductive elements are bonded in series relation with semiconductive attachment elements of low resistivity bonded to opposite ends of the stack to form a semiconductive sub-assembly. The sub-assembly is bonded to metallized spaced lands with the junction containing elements spaced from the intervening surface of the substrate. Electrical conductors are bonded to the metallized lands in spaced relation to the semiconductive sub-assembly. The sub-assembly is etched in position on the lands and thereafter encapsulated with a passivant without intermediate handling. A plastic casement is molded around the sub-assembly and passivant. A plurality of substrates are initially integrally associated.

3,753,290

## ELECTRICAL CONNECTION MEMBERS FOR ELECTRONIC DEVICES AND METHOD OF MAKING SAME

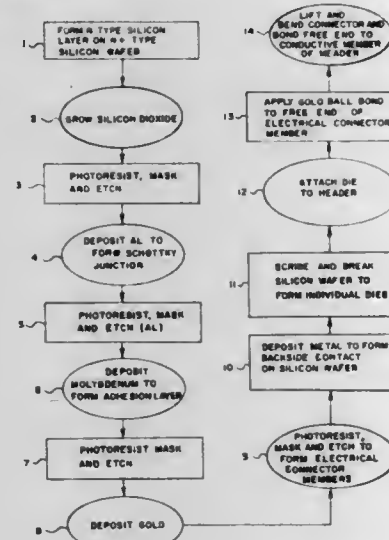
Raymond A. Zandonatti, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sept. 30, 1971, Ser. No. 185,260

Int. Cl. H01r 43/00

U.S. Cl. 29—628

5 Claims



Electrical connection means are formed on surface means of an electronic device. One end of the electrical connection means is connected to electrical contact means provided by the electronic device. The free end of the electrical connection means is engaged and lifted from the surface means thereby lifting at least a section of the electrical connection means free of the surface means and the free end is electrically connected to another electrical contact means.

3,753,291

## DENTAL RESTORATION DOWEL POSITIONER

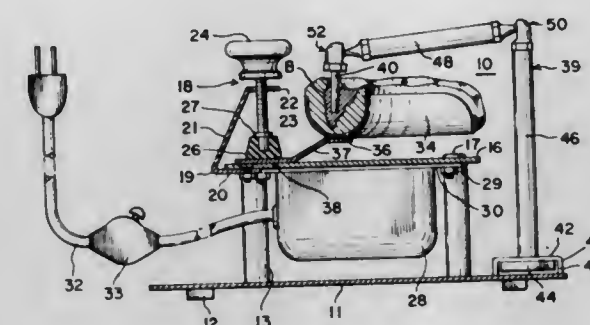
Harvey Bocian, Jericho; Neil L. Hauptman, Jamaica, both of N.Y., and George Manik, Morganville, N.J., assignors to So-Mar Dental Studios, Inc., Jamaica, N.Y.

Filed Nov. 30, 1971, Ser. No. 203,198

Int. Cl. A61c 13/00

U.S. Cl. 32—11

10 Claims



A dental restoration dowel positioner includes a base plate of magnetic material and a flat table resiliently mounted above the base plate and carrying an electrical vibrator. A pair of clamps are mounted on the table and releaseably clamp arms extending from pans holding dental impressions. A number of universally adjustable brackets are provided and each includes a permanent magnet coupling base magnetically retained on the base plate and movable along its face, a post projecting from the coupling base above the table and supporting an arm by a ball and socket joint. The arm terminates in a second ball and socket joint which supports an element for releaseably engaging a dowel for universal adjustment relative to the dental impression.

3,753,292

## ADJUSTABLE SALIVA EJECTOR

Clifford L. Hutson, Glendale, Calif., assignor to Clifford L. Hutson and Anita M. Hutson, Glendale, Calif.

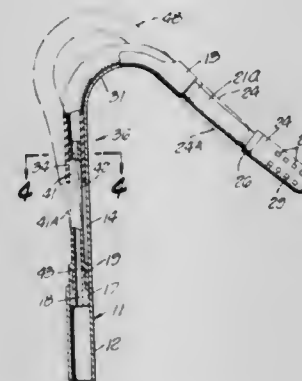
Continuation of Ser. No. 850,794, Aug. 18, 1969, abandoned.

This application Apr. 22, 1971, Ser. No. 136,607

Int. Cl. A61c 11/00

U.S. Cl. 32—33

8 Claims



A support frame has an elongate open guide channel with a connection base at one end and a restraint loop at the other. The restraint loop has a through passage connecting with the channel. One end of a flexible conduit with a saliva ejector tip passes through the restraint loop into the channel to slidably engage a conduit connector at the connection base. Preferably, the connector has an elongate conduit receiver on which the conduit is slidable. The receiver flexes to facilitate removal of the conduit from the channel to adjust the overlap of the conduit and the connector to change the extension of the ejector tip with respect to the restraint loop. The conduit connector and ejector tip configuration and material may vary.

3,753,293

## APPARATUS FOR USE IN THE MAKING OR ALTERATION OF GARMENTS

Daniel Hamilton Branda, Brooklyn, N.Y., and Richard Daniel Branda, Allentown, Pa., assignors to Automeasure, Inc., Brooklyn, N.Y.

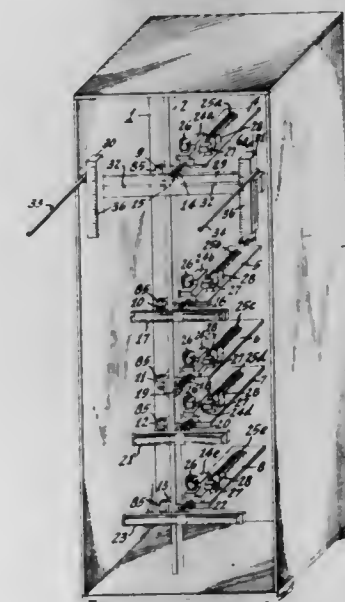
Continuation of Ser. No. 822,129, May 6, 1969, abandoned.

This application Apr. 15, 1971, Ser. No. 134,513

Int. Cl. A41h 1/04

U.S. Cl. 33—8

4 Claims



An apparatus for automatically measuring dimensions defining the posture of a person upon whom clothing is to be fitted. The apparatus includes a vertical post fitted with a number of shelves which are vertically moveable on the post by means of motors. Each shelf is provided with a slide which is mounted for horizontal in-and-out movement on the shelf. The slide is driven by means of a motor and gear assembly mounted on the shelf. The outward end of the slide contains a sensitive switch which is coupled to the slide drive motor. Upon actuating the apparatus, the slide drive motor causes the corresponding slide to move outward until the sensitive switch is actuated by contact between the end of the slide and the person being fitted. As soon as the switch is so actuated, it shuts off the slide drive motor to halt the outward movement of the slide. A variable resistance mounted on the shelf and coupled to the slide provides a signal indicative of the horizontal position of the slide. A meter is provided to convert the signal developed from the variable resistance to a visual display.

3,753,294

## METHOD AND APPARATUS FOR MEASURING DEPTH

Georges Attali; John Altken, both of Paris, France, and Jean-Louis Bernard, Houston, Tex., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Feb. 24, 1971, Ser. No. 118,263

Claims priority, application France, Feb. 27, 1970, 7007104

Int. Cl. G01b 7/04, 7/26, 5/18

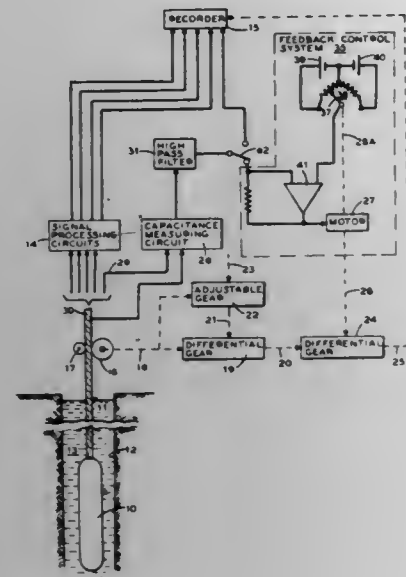
U.S. Cl. 33—133

12 Claims

In accordance with illustrative embodiments of the present invention, the distributed capacitance between a conductor and the outer metallic armor of a cable is measured to enable a determination of the instantaneous changes in position of a



tool supported by an elastic cable in a borehole. The correction calculated from the capacitance measurement is used

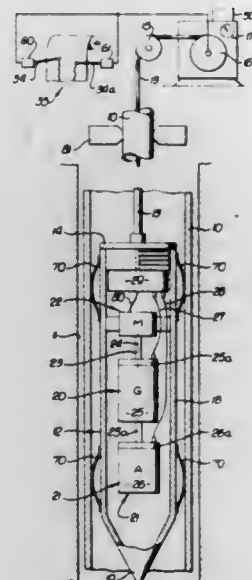


to correct cable length measurements derived from a measure wheel which engages and rotates with movement of the cable.

**3,753,296**  
**WELL MAPPING APPARATUS AND METHOD**  
Donald H. Van Steenwyk, San Marino, Calif., assignor to Applied Technologies Associates, Alhambra, Calif.  
Filed Dec. 4, 1970, Ser. No. 95,302  
Int. Cl. G01c 9/00

U.S. Cl. 33—304

28 Claims

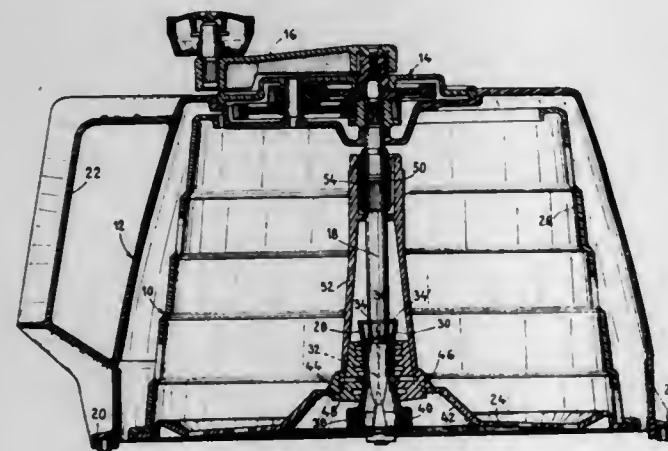


Bore hole and well mapping apparatus and method employs a rate gyroscope to travel in the hole or well, and to be rotated for azimuth determination, an accelerometer also being usable in conjunction with the gyroscope for tilt determination.

**3,753,297**  
**HOUSEHOLD DRYING MACHINE**  
Jean Mantelet, Paris, France, assignor to Moulinex S.A., Bagnolet, France  
Filed Dec. 23, 1971, Ser. No. 211,192  
Claims priority, application France, Jan. 25, 1971, 7102298  
Int. Cl. F26b 17/24

U.S. Cl. 34—58

3 Claims



A household dryer, for example for drying salads, includes a basket mounted for rotation in a cover and a step-up gear drive connected to a handle for rotating the basket inside the cover. The basket is inside the cover and includes a sliding coupling part for connection to the gear drive.

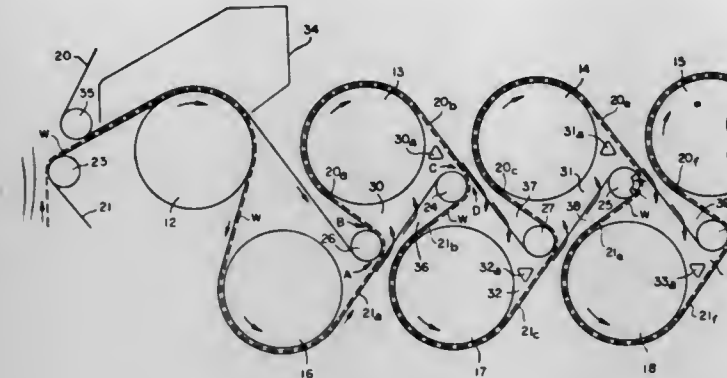
**3,753,298**  
**WEB DRYER**  
Donald A. Ely, Roscoe, Ill., assignor to Beloit Corporation, Beloit, Wis.  
Filed Dec. 17, 1971, Ser. No. 209,204  
Int. Cl. F26b 13/06, 13/16

U.S. Cl. 34—116

11 Claims

A web dryer structure for thermal removal of moisture from a traveling web such as a web of paper coming from the press

section of a paper making machine including a row of upper dryer drums and a row of lower dryer drums with the drums positioned to carry the web in a sinuous path successively between the upper and lower drums and the web wrapping the upper and lower surfaces of the drums respectively with upper and lower looped felts wrapping the web on the upper and

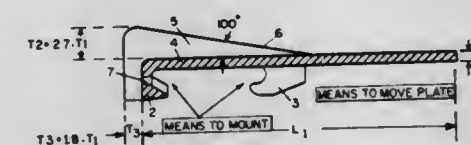


lower surfaces of the drums with the felt guided by guide rolls which are shifted laterally of the spaces between the drums a distance in the direction of web movement so that the pockets formed between the felts and the drums are pressurized due to the induced flow of air by the traveling felts and the guide rolls pumping air through the felts.

**3,753,299**  
**GRATE PLATE FOR GRATES FOR COOLING OR COMBUSTION**  
Paul Schreiner, Papenwisch, Germany, assignor to Claudius Peters, Aktiengesellschaft, Hamburg, Germany  
Filed Mar. 26, 1971, Ser. No. 128,371  
Claims priority, application Germany, Mar. 28, 1970, P 70 11 510.5; Apr. 30, 1970, P 70 16 267.3  
Int. Cl. F27b 7/38

U.S. Cl. 34—237

10 Claims



A grate plate in combination with an apparatus for cooling or combustion having a first zone of a high intense heat and a second area of a lesser heat such as a furnace, rotary furnace or a cooling facility of substantial dimensions for industrial purposes operating with temperature conditions varying from intense heat to moderate temperatures;

said apparatus having means for a directional flow of the material to be moved over said plate, air supply means for combustion or cooling of said material on top of said plate, comprising: a planar body made of heat resisting, heat dissipating rigid metal, means to mount said plate into said apparatus;

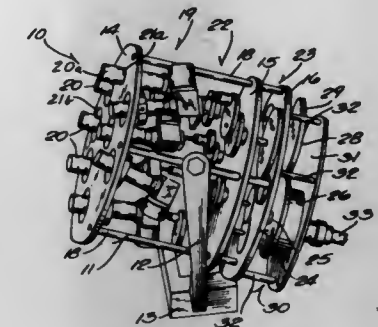
a plurality of ribs in relation to the direction of flow of said material on a first area of the upper side of said plate exposed to said high intense heat and perpendicularly to said plate;

said ribs having upper wear surfaces inclined in a direction opposite to the forward direction of travel of said material and orifices in the said first zone of said plate for air supply.

**3,753,300**  
**ORRERY PROJECTION AND DRIVE**  
Kenneth C. Mosley, 6056 Del Cano S.E., Grand Rapids, Mich.  
Filed July 17, 1972, Ser. No. 272,393  
Int. Cl. G09b 27/02

U.S. Cl. 35—42.5

34 Claims



Each image projector is suspended by and within a ring about a pair of axes perpendicular to each other and to the image projection axis. The image projector is driven simultaneously about both axes of the ring by a drive mechanism interconnected to the projector whereby an image is projected on a screen defining an orbital path. The magnitude and type of orbital path is selected by the spacing of the axes from each other and the drive mechanism. Where the orbit is elliptical, the drive mechanism includes an input shaft and wheel and an output shaft and wheel. An axially extending pin from the input wheel is confined within a radial slot in the output wheel whereby rotation of the input shaft at a constant velocity drives the output shaft and connected projector at a variable cyclical velocity corresponding generally to Kepler's Second Law.

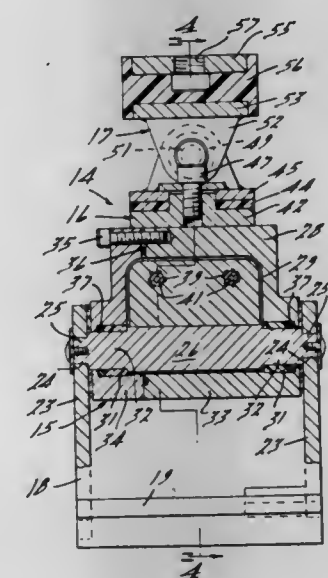
In another aspect of the invention, the plane of the drive mechanisms are rotatable in cooperation with each other to provide binary star projection and variable aspect orrery projection.

**3,753,301**  
**CRASH DUMMY VISCOUS NECK**  
Roger P. Daniel, Dearborn, and Robert E. Resh, Westland, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 23, 1972, Ser. No. 265,872  
Int. Cl. G09b 23/32

U.S. Cl. 35—17

8 Claims

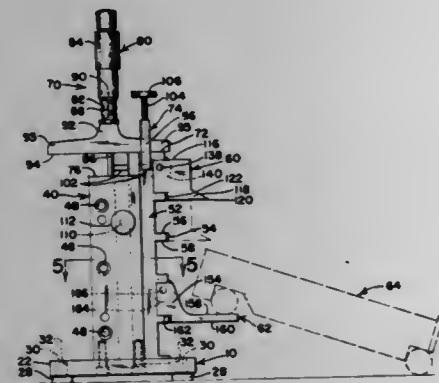


A simulated neck construction and arrangement is provided for coupling a head structure to a torso structure of an anthropomorphic dummy of the type used in vehicular crash testing. The simulated neck construction and arrangement

**3,753,295**  
**HEIGHT GAUGE AND AUXILIARY ATTACHMENTS THEREFOR**  
Harold M. Hecklinger, 8001 N. Ozanam, Niles, Ill.  
Filed July 22, 1971, Ser. No. 165,138  
Int. Cl. G01b 5/02

U.S. Cl. 33—170

2 Claims



A multi-purpose gauging instrument embodying a pedestal which embraces a freely and vertically slidable carrier having integral vertically spaced projections defining gauging surfaces. A micrometer head has its sleeve fixedly secured to the upper end of the carrier and is movable bodily therewith, while the lower end of the micrometer spindle is engageable with the upper end face of the carrier so that when it rests thereon the micrometer head yields an accurate reading of the elevation of the carrier, and consequently of the gauging surfaces. A layout tool and a sine bar rest constitute auxiliary adjuncts which may be attached to the carrier to extend the usefulness of the instrument.



comprises a plurality of interconnected swivel units interposed between the head and torso structure. The swivel units permit fore and aft tilting movement, rotary movement about an axis lying in a vertical plane of the torso structure and substantially lateral tilting movement. A viscous damping means is housed within the swivel unit permitting fore and aft tilting movement to control the rate of deceleration of the head structure during such movements.

3,753,302

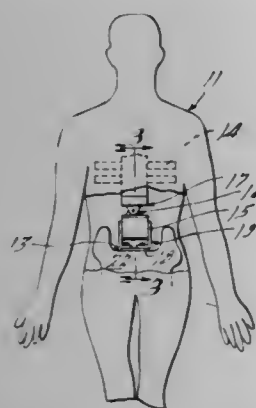
**ANTHROPOMORPHIC TEST DUMMY TORSO**  
Roger P. Daniel, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 10, 1972, Ser. No. 305,621

Int. Cl. G09b 23/32

U.S. Cl. 35-17

5 Claims



An anthropomorphic test dummy torso is provided with a spine mechanism extending from the pelvis upwardly to the chest. The spine mechanism comprises a plurality of vertically stacked pivot means mounted on a support platform located at the pelvis. The pivot means provide a pivot axis located at the waist line about which the torso is bendable in fore and aft directions, a vertical spinal axis about which the torso is twistable above its waist line, and an axis normal to the vertical spinal axis about which the torso is bendable sideways. An elastomeric isolation means above the stacked pivot means provides pelvis-to-chest shock and vibration isolation.

3,753,303

**APPARATUS FOR HYDRAULICALLY RAISING ORE AND OTHER MATERIALS**

Kurt Holzenberger, Frankenthal, and Otto Schiele, Neustadt, both of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal/Pfalz, Germany

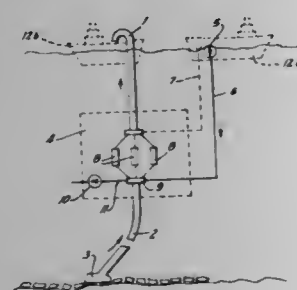
Filed Nov. 5, 1971, Ser. No. 195,920

Claims priority, application Germany, Nov. 10, 1970, P 20 55 132.0

Int. Cl. E02f 3/88

U.S. Cl. 37-58

6 Claims



A plurality of containers in a riser conduit cooperates cyclically with a main suction pump and a flushing pump. Control valves are cyclically operated so that the main suction pump exhausts clear flushing water from one container, whereby a pressure differential is produced for raising an ore-water mixture in the lower portion of the riser conduit to the level of the

container, while the ore-water mixture in another container is flushed through the upper riser conduit portion to the surface level. Between two and four containers can be used for the cyclical operation so that the ore-water mixture flows continuously out of the upper riser conduit portion, while any contact between the material and the main suction pump and the flushing pump is avoided.

3,753,304

**PRESSURE WAVE GENERATOR**

Nathaniel Hughes, Rolling Hills, Calif., assignor to Energy Sciences, Inc., Costa Mesa, Calif.

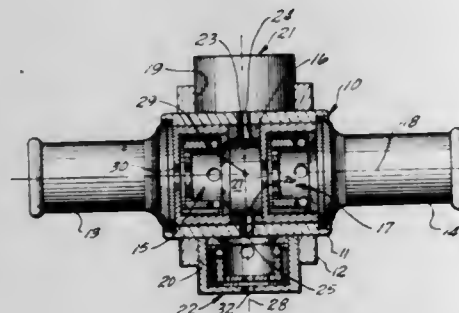
Continuation-in-part of Ser. No. 855,321, Sept. 4, 1969, abandoned, and a continuation-in-part of Ser. No. 13,977, Feb. 25, 1970, abandoned. This application Feb. 2, 1971, Ser. No.

111,995

Int. Cl. F15c 1/14

U.S. Cl. 137-823

17 Claims



First and second shock wave generating cells are separated by a first resonant cavity. Third and fourth shock wave generating cells are arranged transverse to the first and second cells at opposite sides of and in communication with the first cavity. The shock waves from the cells collide in the first cavity. A second resonant cavity, which is terminated by a reflective strip of material, communicates with the outlet of the second cell. A plurality of cubicle auxiliary resonant cavities are formed around the side of the second cavity to intersect the plane in which the strip lies. A fifth shock wave generating cell is arranged transverse to the second cell in communication with the second cavity. Preferably, the shock waves generated by all the cells and the dimensions of the cavities are multiply related.

3,753,305

**ADVERTISING SHEET CARRIER**

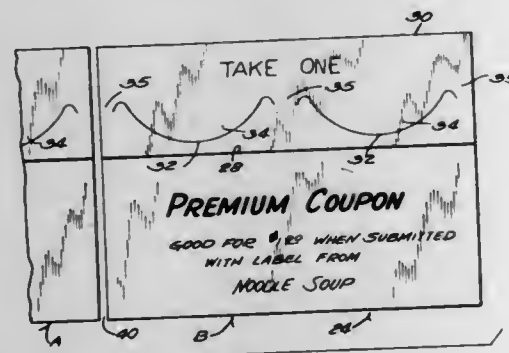
Alfred E. Mueh, Milwaukee, Wis., assignor to Tempo Communications, Inc., Milwaukee, Wis.

Filed Apr. 22, 1971, Ser. No. 136,361

Int. Cl. G09f 1/00

U.S. Cl. 40-125 R

9 Claims



A resilient card has upper and lower margins spaced to fit snugly into the upper and lower flanges of a price tag channel in a merchandising center. It serves to support a pack of detachable advertising sheets. Its mid portion is anchored to the channel by a strip of pressure sensitive adhesive which prevents the card from flexing sufficiently to permit its anchored margins to escape from the flanges.

3,753,306

**LETTER CARDS AND CLAMP BARS FOR CONSTRUCTING SIGNS, AND METHOD OF ASSEMBLING SAME**

Sven Anders Hemgren, Sodra Skeppargatan 6b, 802 23 Gavle, Sweden

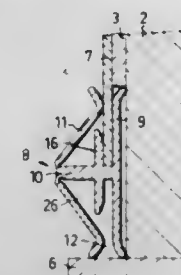
Filed July 27, 1971, Ser. No. 166,424

Claims priority, application Sweden, Aug. 10, 1970, 10924/70; Nov. 26, 1970, 16031/70; Nov. 26, 1970, 16032/70; Nov. 26, 1970, 16033/70

Int. Cl. G09f 7/08

U.S. Cl. 40-128

15 Claims



A building set for the assembly of text signs comprising one or several text lines comprises letter cards of a sufficient number and marking to form any desired text and a number of clamping rods for framing text lines along all four sides of the signs and between consecutive lines of the same. The clamping rods are formed as profiled rods symmetrical with respect to a medial longitudinal plane and provide one clamping gap on each side of the symmetry plane, the clamping gaps opening in opposite directions so that two successive text lines may be joined by means of one such clamping rod. Locking means are provided to connect the frame members formed by the clamping rods to hold the sign assembled, and suspension and mounting means are provided to support both separate signs and a number of signs placed one above the other or back to back. The method involves the assembling of the text signs by the use of an assembling board.

3,753,307

**CARTRIDGE EXTRACTING ARRANGEMENT FOR USE WITH FIREARMS**

Hubert Usel, 6401 Inzing, Tirol, Austria

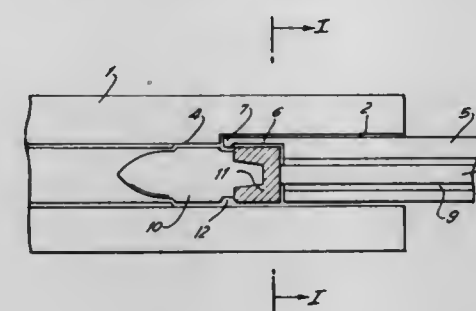
Filed Oct. 26, 1971, Ser. No. 192,548

Claims priority, application Austria, Oct. 28, 1970, A9677/70

Int. Cl. F41c 15/00

U.S. Cl. 42-25

6 Claims



A firearm includes a tubular barrel having at its rear end a substantially cylindrical breech portion. A projectile is arranged within said barrel reaching with its rear end into said breech portion and having a peripheral surface. First engaging means is arranged on the peripheral surface of the projectile. A breech plunger is located behind said projectile in the breech portion of the barrel. Second engaging means is provided on said breech plunger and projects forwardly thereof. The second engaging means is adapted to engage with the first engaging means on the peripheral surface of the projectile. In this way, when the engaging means are engaged the projectile can be extracted in rearward direction from the barrel by rearward movement of the breech plunger.

3,753,308

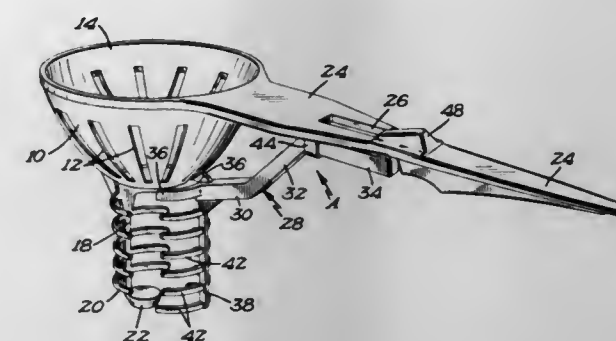
**MINNOW DIPPER AND HOLDER**

Harold E. Swanson, Rt. 1, Box 62, Waverly, Minn.  
Filed Dec. 2, 1971, Ser. No. 204,164

Int. Cl. A01k 97/04

U.S. Cl. 43-4

1 Claim



A minnow dipper and holder including a cup-shaped body having an opening at the lower diminished end and a handle connected thereto. A first support depends from the cup-shaped body adjacent the opening with a multiplicity of longitudinally spaced and generally semi-circular segments extending therefrom and a second support is connected to an arm slidable on the handle. The second support also has a multiplicity of longitudinally spaced and generally semi-circular segments extending therefrom with an arm connected to said second support and slidably connected to and actuable on the handle. The second support is spaced from the first support along its entire length.

3,753,309

**FISHING BOBBER**

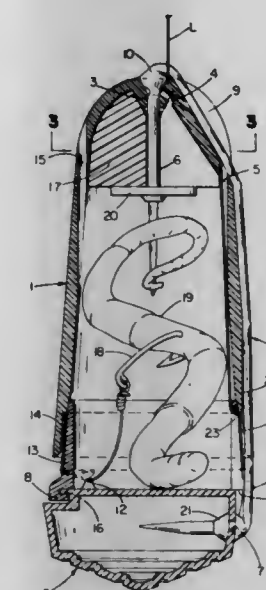
Charles Harry Bryant, 30 Gaffield Avenue, Monument Beach, Mass.

Filed Feb. 18, 1971, Ser. No. 116,528

Int. Cl. A01k 93/00, 97/04

U.S. Cl. 43-17.5

9 Claims



A fishing bobber with an enclosed bait compartment having an upper float portion and a lower bait compartment portion with an open bottom end. The lower bait compartment portion has an external line winding surface for temporarily retaining a wound line thereon by leading a fishing line to it for winding a desired length and from it for retaining the terminal bait carrying portion of the line within the bait compartment. A captured floatable preferably luminous bait compartment cover is adapted to be releasably retained against the lower edge of the bait compartment portion and releasable cover retaining means are provided including an elastic strand of substantial length extending from the cover to the container

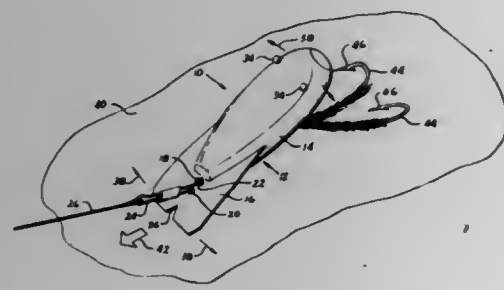


and overlapping cooperating release means on the cover and the container. The elastic strand is tensioned with the release means engaged to retain the cover against the lower edge and is released by water contact for removal of the cover to a floating position adjacent the container but connected to it by the strand for visual identification of its release.

### 3,753,310 FISH LURE

David C. Werner, 1625 Dutchess Ave., Dayton, Ohio  
Filed Oct. 5, 1971, Ser. No. 186,680  
Int. Cl. A01k 85/00  
U.S. Cl. 43—42.39

4 Claims

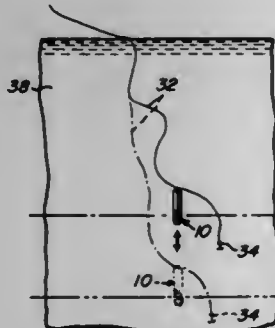


A bottom running fish lure with a restricted swing multiple hook constructed such that the hook barbs invariably point upwardly when the lure is in water, whereupon the lure may run over rocks without snagging. The lure includes a wiggly plate causing it to wobble from side to side and remain low in the water as it is retrieved.

3,753,311  
DEVICE HAVING A FLUID DISPLACEMENT VOLUME WHICH VARIES WITH TEMPERATURE  
George R. Boone, 4730 Ridgebury Dr., Dayton, Ohio  
Filed Oct. 7, 1971, Ser. No. 187,389  
Int. Cl. A01k 93/00

U.S. Cl. 43—43.14

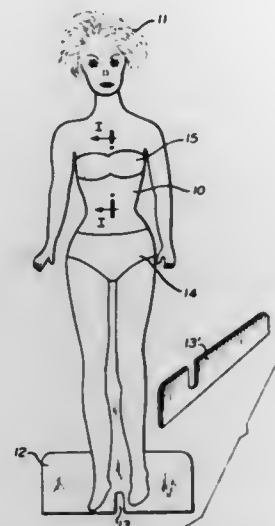
8 Claims



A device which seeks to maintain itself in a predetermined temperature region in a body of fluid having various temperature regions as the fluid displacement volume of the device is automatically varied with temperature. The device is particularly adapted for fishing, as a bait or lure or the like is maintained within or vertically oscillates through a predetermined temperature layer or stratum in a large body of water, such as a lake or ocean or the like. However, the device may have numerous other uses in which it is desired to maintain an instrument or the like in liquid of a given temperature in a body of liquid having regions of various temperatures.

3,753,312  
DOLL AND DOLL CLOTHING ENSEMBLE  
Alexander W. Hughes, Jr., 19 Wardell Cir., Oceanport, N.J.  
Filed Mar. 22, 1972, Ser. No. 236,941  
Int. Cl. A63h 9/00  
U.S. Cl. 46—157

3 Claims

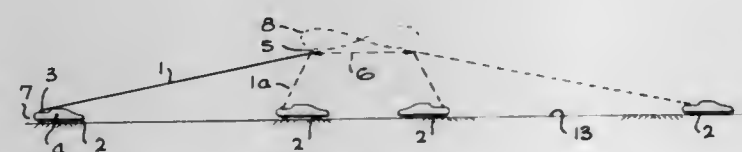


A doll having a three-dimensional head and a two-dimensional body, said doll being in combination with a cloth-vinyl laminated article of doll clothing physically bondable to the doll body.

3,753,313  
REMOTE CONTROLLED ACTION TOY  
Helmut Bross, Altenberg U/Nurnberg, Germany, assignor to Helmut Bross, Nurnberg, Germany  
Filed Apr. 1, 1970, Ser. No. 24,772  
Claims priority, application Germany, July 12, 1969, P 19 35 461.1; Apr. 8, 1969, P 19 17 755.0; Apr. 8, 1969, G 69 19 975.9; July 12, 1969, G 69 27 595.2  
Int. Cl. A63h 17/26

U.S. Cl. 46—202

6 Claims



An action toy controlled by a remote control handle device for providing high drive speeds, automatic braking, and automatic steering of the toy by utilizing an extensible resilient traction means attached between the toy and the control handle. The traction means is effective to give the operator control of the toy whether the toy is confined to a predetermined track or is free to move randomly on a surface. The toy may be totally unpowered, or may be self-powered with a driving means and/or power supply means provided in either the control handle or within the action toy itself.

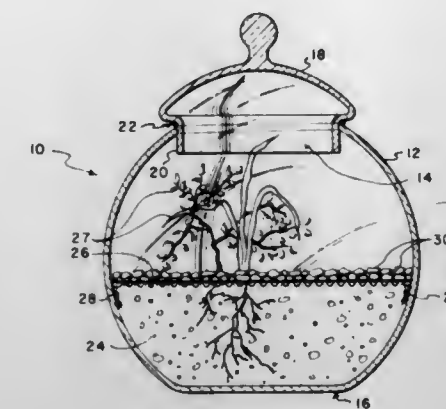
3,753,314  
SCREEN FOR A TERRARIUM  
Earl R. Clark, P. O. Box 914, Graham, Tex.  
Filed Feb. 28, 1972, Ser. No. 229,688  
Int. Cl. A01g 9/02

U.S. Cl. 47—34.11

5 Claims

A terrarium or the like for use in cultivating and exhibiting plants having a transparent container with a transparent closure member sealing said container, an aluminum mesh screen dividing the interior of said container into a first and second area, the first area being located below the screen when the

container is in its orientation of use, the first area containing moist soil, the side of said screen adjacent said second area



having decorative cover attached thereto and plants with roots extending into said soil through said ground cover and the screen.

3,753,315  
DEVICE FOR IRRIGATION ESPECIALLY OF FLOWER POTS

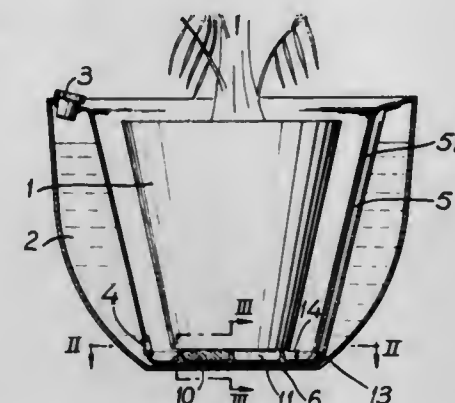
Roger Francois Jean Adam, 40, rue du Mont Valerien, Saint Cloud, France

Filed May 27, 1971, Ser. No. 147,383

Claims priority, application France, May 28, 1970, 7019572  
Int. Cl. A01g 27/00

U.S. Cl. 47—38

10 Claims



An irrigation device comprising a closed water tank having a hermetically closable filling stopper at its upper end and a water outlet at its lower end and a receptacle formed with two cavities therein and adapted for receiving a flower pot which is to be irrigated. A first cavity is connected to the water outlet of the tank to permit free flow of water from the tank into the first cavity and the second cavity is open to the atmosphere and is connected via an air conduit to the upper end of the tank above the level of the water therein. The second cavity can receive water by overflow from the first cavity to establish a height of water in the cavities to the level of the water inlet. The outlet of the air conduit is below the water outlet so that water flows from the water outlet only when the level of water has dropped below the outlet of the air conduit. A sponge or similar absorption medium is disposed in one of the cavities for supplying water to the flower pot. When the sponge is in the first cavity water will be supplied cyclically and the first cavity will be periodically filled and emptied by the pot. When the sponge is in the second cavity water will be supplied continuously to the pot. In a modification the pot is replaced by a bed of soil and the second cavity is isolated therefrom while the first cavity is connected to the bed of soil through the intermediary of a porous wall. The sponge is placed in the first cavity.

3,753,316  
DOOR LOCK WITH AUTOMATIC AND EMERGENCY CONTROL SYSTEM  
Henri Savarieu, Montgeron (Essonnes), and Georges Bourrie, Neuilly-sur-Seine, both of France, assignors to R. Alkan Cie, Paris, France

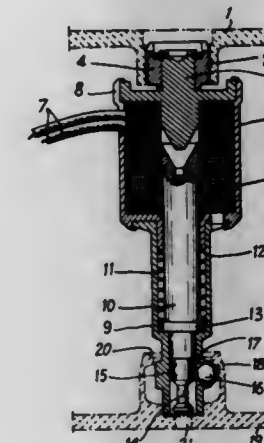
Filed Aug. 25, 1971, Ser. No. 174,863

Claims priority, application France, Sept. 10, 1970, 7032848; Feb. 10, 1971, 7104460; Feb. 10, 1971, 7104459

Int. Cl. A62b 25/00; E05b 47/00

U.S. Cl. 49—31

16 Claims



The door locking device according to this invention is characterized in that it comprises a guiding sleeve disposed within the locker or like box and having slidably mounted therein a piston responsive to an electromagnet or a fluid pressure so as to actuate with its lateral surface at least one lateral locking member movable in said locker and adapted to co-act with a retaining member rigid with the door so as to lock or release this door according as said piston is in its front or back position in said sleeve.

3,753,317  
INFLATABLE POCKET ARRANGEMENT FOR SELECTIVELY CLOSING A PASSAGEWAY  
Pierre Turpin, Bures sur Yvette, and Albert Nael, Saint Michel sur Orge, both of France, assignors to Compagnie Generale D'Automatisme, Paris, France

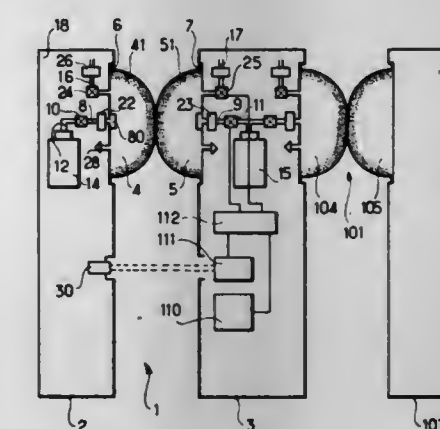
Filed May 13, 1971, Ser. No. 143,120

Claims priority, application France, May 13, 1970, 7017432; June 11, 1970, 7021455; July 10, 1970, 7025847; Oct. 19, 1970, 7037567

Int. Cl. E05b 65/00

U.S. Cl. 49—35

10 Claims



Device for closing automatically controlled pedestrian passages, comprising two pockets having elastic lateral walls arranged facing each other on the lateral edges of the passage, each pocket being provided with inflating means.



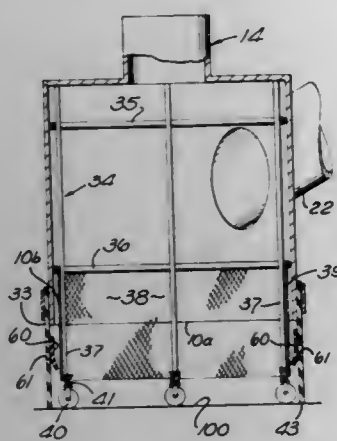
### 3,753,318 DUSTLESS SAND BLASTER

Luther Eskiljan, Altadena, Calif.

Filed Oct. 25, 1972, Ser. No. 300,462

Int. Cl. B24c 3/06, 5/00, 9/00

U.S. Cl. 51-11



Sand or grit blasting equipment with a work-engaging chamber having a nozzle inlet. The chamber is positioned and moved parallel to a work surface by multiple spring-biased caster supports and is connected to a suction device, which may include a venturi to aid in maintaining reduced chamber pressure. A flexible, slit skirt extends about the work-engaging open end of the chamber to prevent escape of grit particles while allowing air streams to pass into the chamber. An open-work frame within the skirt limits inward deflection of the skirt.

3,753,319

### CONTROL OF TOOTH FLANK GRINDING MACHINES FOR HELICAL GEARS

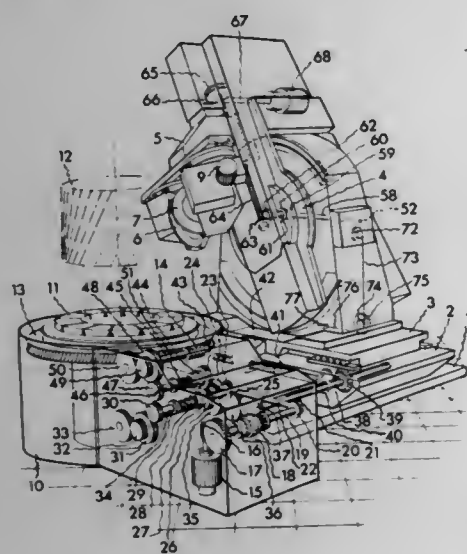
Milton Mesey, Wallisellen, Switzerland, assignor to Maag Gear Wheel &amp; Machine Company Limited, Zurich, Switzerland

Filed Oct. 8, 1971, Ser. No. 187,792

Claims priority, application Germany, Oct. 16, 1970, P 20 50 946.0

Int. Cl. B24b 3/00

U.S. Cl. 51-42



A control means for a tooth flank grinding machine operating in accordance with the indexing generating method has an arrangement for varying the grinding stroke length during a traverse so that it increases from a minimum at the beginning of a traverse and reduces again towards the end of the traverse, so reducing the over-run of the grinding wheels in the end regions of the traverse. The velocity of the generating motion is controlled concurrently in reverse proportion to the grinding stroke length.

10 Claims

3,753,320

### APPARATUS FOR GRINDING DRILLS

Raimund August Wurscher, Lund, Sweden, assignor to Inter-medum AG, Lueglsland, Sweden

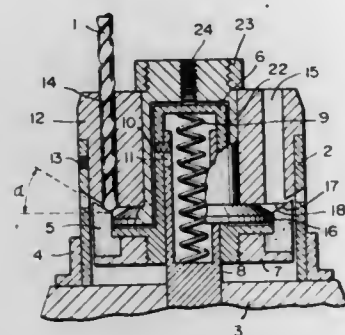
Continuation-in-part of Ser. Nos. 682,406, Nov. 13, 1967, abandoned, and Ser. No. 27,589, April 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 682,406, Nov. 13, 1967, and Ser. No. 864,445, Oct. 7, 1969, abandoned. This application Aug. 4, 1970, Ser. No. 60,888

Claims priority, application Sweden, May 3, 1967, 6261/67

Int. Cl. B24b 3/26

U.S. Cl. 51-73 R

32 Claims



Apparatus is described whereby the clearance surfaces of the working head of a drill are ground by keeping the drill axis at an operatively constant angle relative to the rotary place of a grinding wheel, while rotating the drill about its longitudinal axis within a limited angular area. In one embodiment of the invention the wheel heel is provided with a single grinding surface and may be mounted stationary or mounted to yield against spring pressure to a single clearance surface urged against it, until the other clearance surface is intercepted by an abutment upon which it rests while rotating the drill, thus providing an essentially steady grinding pressure. In the latter case, the point of the drill will be centrally ground after working each clearance surface for an equally long time. In a modified form the wheel is provided with two conical grinding surfaces and a slight clearance between these surfaces. Thereby a centrally ground point of the drill is automatically achieved.

3,753,321

### CAM GRINDERS

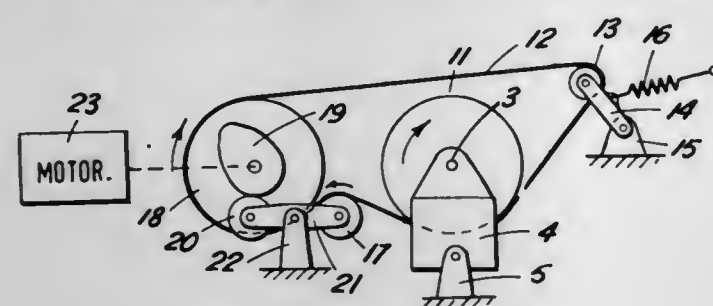
Curt Ludwig David, Peterborough, England, assignor to The Newall Engineering Company Limited, Old Fletton, Peterborough, England

Filed July 19, 1971, Ser. No. 163,601

Int. Cl. B24b 17/02

U.S. Cl. 51-101 R

3 Claims



A cam grinder in which the angular velocity of the workpiece is cyclically varied to reduce variations in the contour velocity. A work table is controlled by a master cam to move relative to a grinding wheel in accord with the desired profile. The workpiece is driven by a spindle carrying a wheel driven by a belt which passes over a driving wheel. Additional longitudinal movement of the belt is introduced by a wheel mounted on a pivoted arm controlled by a control cam that is rotated in accord with the movements of the work table.

3,753,322

### METHODS FOR THE MANUFACTURE OF LIGHTWEIGHT OPTICAL PARTS

Roger Rene Bordes, Puteaux, France, assignor to ETAT Francais Delegation Ministerielle pour L'Armement, Paris, France

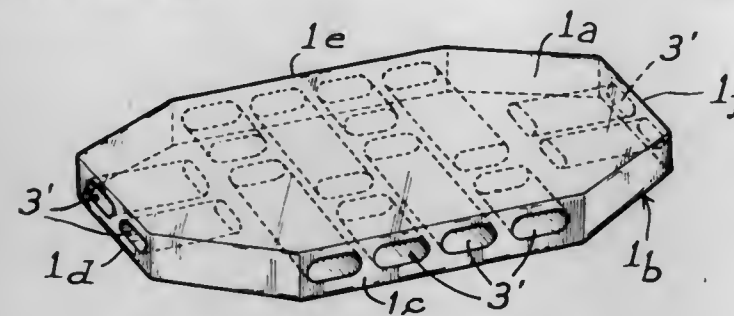
Filed Jan. 27, 1971, Ser. No. 110,124

Claims priority, application France, Jan. 28, 1970, 7002892; Jan. 7, 1971, 7100278

Int. Cl. B24b 1/00, 9/14

U.S. Cl. 51-284

7 Claims



A process for the manufacture of lightweight optical parts, comprises forming at least one optical surface on a solid blank by machining and mechanical polishing ultrasonically machining cavities underlying the optical face in at least one of the remaining faces of the blank to reduce the weight of the article and finally depositing an optical coating on the optical surface. The weight reducing recesses can be made in the face of the blank opposite the optical surface or they can be formed in lateral surfaces of the blank. An ultrasonic generator is disclosed with an electrode serving as a machining tool.

3,753,323

### SKIRTING FOR MOBILE HOMES

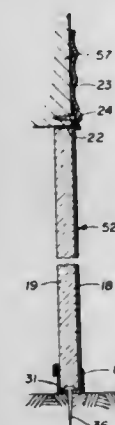
George G. Nesbitt, Denver, Colo., assignor to Denver Wood Products Co., Denver, Colo.

Filed Oct. 12, 1971, Ser. No. 188,061

Int. Cl. E04d 2/38

U.S. Cl. 52-169

5 Claims



A skirting system and components for enclosing an air space beneath mobile homes, trailers and similar structures. The system utilizes metal panels with insulation bonded thereto in position to provide exposed lip edges for cooperative use when erecting the system. The edges are lapped with adjacent panels or components of the structure to provide weather-tight joints and continuous insulation. Corner pieces and anchor channels and plates are provided for adjustable positioning between a lower skirt edge and the ground support for the structure.

3,753,324

### METAL STUD ASSEMBLY

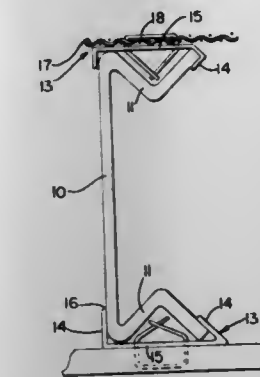
Joseph L. Puccio, 41286 Chapel Way, Fremont, Calif.

Filed Dec. 10, 1971, Ser. No. 206,705

Int. Cl. E04c 3/07

U.S. Cl. 52-377

5 Claims



A metal stud assembly is disclosed which includes a load-bearing element consisting of a web and at least one flange with the flange bent from the same sheet of metal as the web and bent into a V-shaped cross section. A sheet-holding element is fixed to the flange, the sheet-holding element being penetrable by connectors for sheet material.

3,753,325

### DEMOUNTABLE WALL STRUCTURE

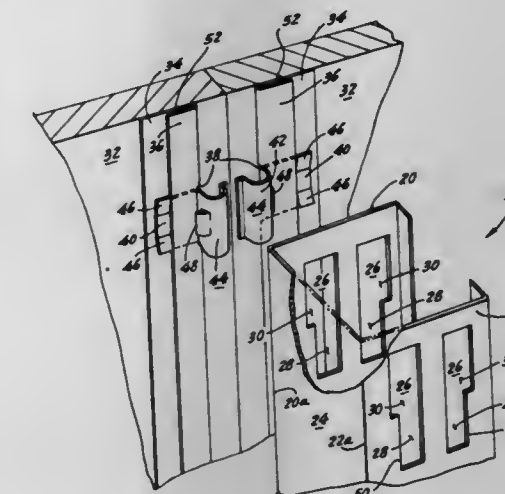
John E. Stanley, 525 Starlight Crest Dr., La Canada, Calif., and Bernard Mann, 14519 Greenleaf St., Sherman Oaks, Calif.

Filed Feb. 7, 1972, Ser. No. 223,887

Int. Cl. E04b 2/74

U.S. Cl. 52-489

3 Claims



A series of channel-member or "H" studs is disposed vertically between the floor and ceiling or other upper support in a planar alignment and the studs are spaced from each other to support wall or partition facing. Each channel or "H" member is orificed at a plurality of areas on its side or sides against which the facing is to be supported, either with or without flanges to constitute receptacles. The back side of each wall or partition facing, such as a sheet of gypsum board, has affixed to it a series of spring-type projections spaced from each other to register with the orifices in the channel-member studs. The wall is formed by placing the backside of the facing sheet against the channel-member studs and pushing the spring-type projection into the receptacles. Preferably each receptacle includes locking tabs which require the projections, and hence the facing sheet upon the back of which they are mounted, to be moved slightly upwardly in order to effect disengagement of the projections from the receptacles.



3,753,326

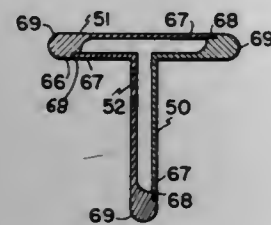
**HOLLOW STRUCTURAL MEMBERS**

Ralph O. Kaufman, Sr., Titusville, Pa., assignor to Cyclops Corporation, Universal-Cyclops Specialty Steel Division, Pittsburgh, Pa.

Division of Ser. No. 864,927, Sept. 10, 1969, Pat. No. 3,606,580, which is a continuation-in-part of Ser. No. 823,924, May 12, 1969, abandoned. This application Apr. 26, 1971, Ser. No. 137,555  
Int. Cl. E04c 3/07

U.S. Cl. 52—731

3 Claims



A hollow structural member comprising at least two connected wrought metal components, each component having a specially formed edge configuration and a plain formed remaining portion. The hollow structural member is formed by connecting the plain formed remaining portion of a first component with the specially formed edge configuration of a second component and connecting the plain formed portion of the second component with the specially formed edge configuration of the first component or a third component, etc., these connections being inward from the outer extremities of the special formed edge configurations and being along a recess in an enlarged mass portion of the special formed edge configuration.

3,753,327

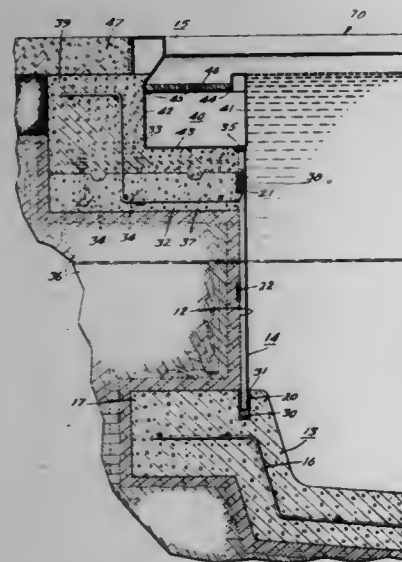
**METHOD OF CONSTRUCTING A SWIMMING POOL**

Brickley S. Orndorff, Camp Hill, Pa., assignor to Penn-Aquatic Industries, Inc., Mechanicsburg, Pa.

Division of Ser. No. 52,250, July 6, 1970, This application Aug. 24, 1971, Ser. No. 174,449  
Int. Cl. E04g 21/02; E04h 3/18

U.S. Cl. 52—742

1 Claim



A method for constructing an in-ground swimming pool having a poured concrete bottom, an upstanding wall composed of a series of vertically corrugated metal panels bonded to the bottom, and a coping around the top of the wall. The wall is bonded to the bottom by means of an epoxy resin ap-

plied along the lower margin of the wall and in a continuous recess formed in the periphery of the bottom during pouring. A layer of deformable leveling material is applied in the recess in the bottom of the pool for supporting the wall. The leveling material permits the wall to be leveled before being permanently bonded to the bottom by the epoxy. The coping means may be provided with an upwardly open water channel at water level in which case, a layer of epoxy resin is disposed between the top of the wall and the underside of the coping. The channel coping is supported on a series of horizontally disposed members which are vertically adjustable by means of threaded fasteners to enable the position of the coping to be adjusted before a layer of concrete is poured therearound to effect permanent installation of the coping in the ground.

3,753,328

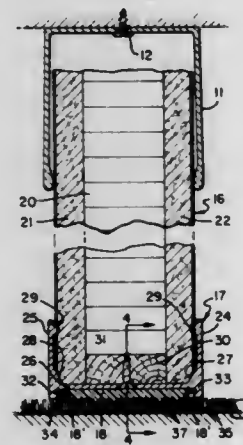
**METHOD OF INSTALLING MODULAR WALL CONSTRUCTION**

William G. Papsco, P.O. Box 666, San Carlos, Calif.

Continuation-in-part of Ser. No. 820,561, April 30, 1969, abandoned. This application June 8, 1971, Ser. No. 151,053  
Int. Cl. E04b 2/82

U.S. Cl. 52—745

1 Claim



An interior modular wall for finished or existing rooms in which each module has a panel with an integral floor rail carrying a shorter floor gripper plate which projects from the floor rail and is longitudinally slidably interlocked therewith. The module is installed quickly and simply by manually lifting the module into the vertical plane of a prepositioned longitudinally extending ceiling rail, longitudinally spacing the vertically extending side edge of the module from the corresponding edge of the adjacent module or abutment, lowering the module while in that vertical plane onto the floor so that the gripper plate engages and grips the floor covering, and moving the panel and floor rail unit longitudinally relative to the ceiling rail, floor, and gripper plate into engagement with the adjacent preinstalled module. Both side edges of the panel are free to be gripped by the installer during the lifting and lowering operations, thereby greatly simplifying and reducing the time for erecting the wall.

3,753,329

Patent Not Issued For This Number

3,753,330

**APPARATUS FOR PACKING STRIPS OF PHOTOGRAPHIC FILM**

Friedrich Hujer, Grunwald, and Wilhelm Dietl, Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

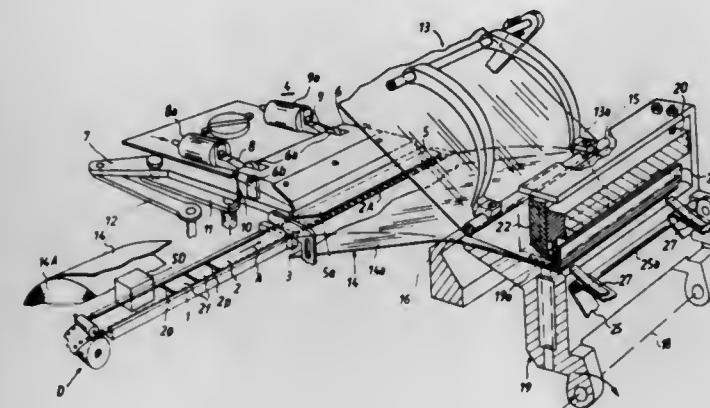
Filed Sept. 22, 1971, Ser. No. 182,631

Claims priority, application Germany, Sept. 23, 1970, P 20 46 874.0

Int. Cl. B65b 55/00; B32b 31/00

U.S. Cl. 53—123

17 Claims



Apparatus for enclosing sections of photographic roll films in transparent envelopes has two rolls of convoluted webs of weldable synthetic plastic material from which the webs are being withdrawn in such a way that their leading portions form a funnel. A severing device subdivides successive films into sections of requisite length, and a transfer device collects and introduces such sections into the funnel between the webs and all the way to a welding station where the webs are intermittently welded to each other to form envelopes each of which contains a single section or a stack of two or more superimposed sections. The webs can be severed subsequent to formation of each envelope or subsequent to formation of two or more interconnected envelopes to thus separate from the webs a series of discrete envelopes or a series of composite envelopes. Such composite envelopes can be folded in leprellon fashion.

3,753,331

**METHOD OF AND MEANS FOR FACILITATING A SEALING OF END FLAPS OF A FILM**

Yoshimasa Sato, Yokohama, Japan, assignor to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan

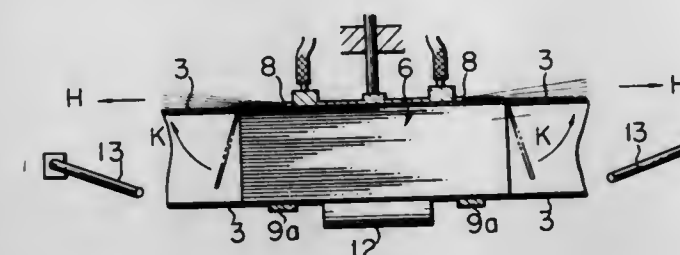
Filed May 10, 1971, Ser. No. 141,769

Claims priority, application Japan, May 14, 1970, 45/40522; May 14, 1970, 45/46474

Int. Cl. B65b 1/24, 7/06, 43/34

U.S. Cl. 53—124 C

2 Claims



A method of tensioning end flaps of a film which has been already sealed along at least one of the top, bottom, front and

back of an object to be packed. This method consists in establishing a stream of air flowing toward the end flap along at least the top of the object, and training the end flaps of the film along the air stream. Means to carry out this method comprises a plurality of air injection nozzles extending towards the end flaps of the film along at least the top of the object.

3,753,332

**BAG FORMING, FILLING AND SEALING METHOD AND APPARATUS**

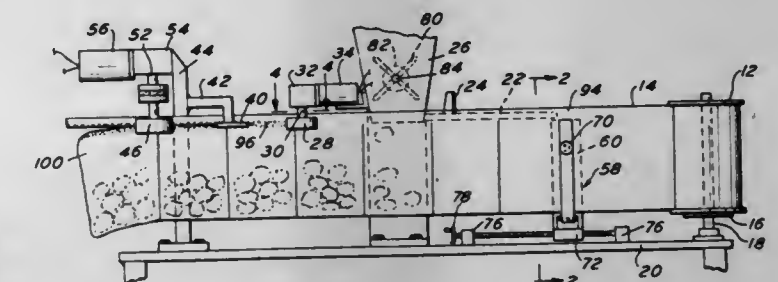
Hercules Membrino, 1934 Arch St., Philadelphia, Pa.

Continuation-in-part of Ser. No. 44,186, June 8, 1970. This application Sept. 28, 1971, Ser. No. 184,345

Int. Cl. B65b 9/08

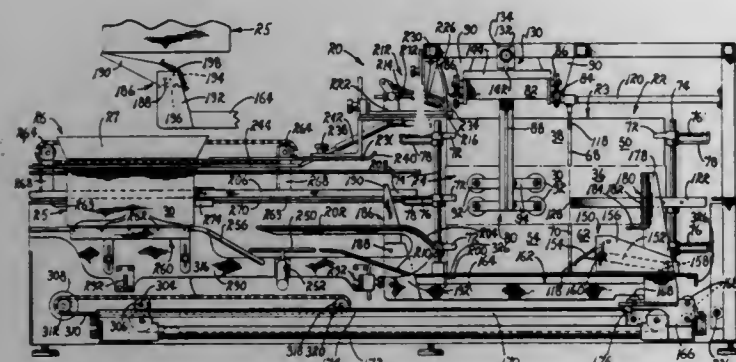
U.S. Cl. 53—183

7 Claims





ously ejecting packed cartons from the carton loading station and advancing thereto cartons erected at the erecting station. The features of the invention include a readily adjustable support structure for accommodating cartons of various practical



dimensions, without requiring an alteration of the position of the loading station, and a fluidic control circuit for dictating the sequence of the carton handling operations performed by the machine.

3,753,334

## PROTECTIVE BONNET FOR ANIMALS

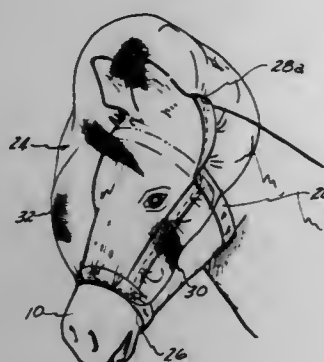
Jacqueline M. Blessing, 5074 Cohoctah Rd., Linden, Mich.

Filed Nov. 3, 1971, Ser. No. 195,110

Int. Cl. B68c 05/00

U.S. Cl. 54-80

18 Claims



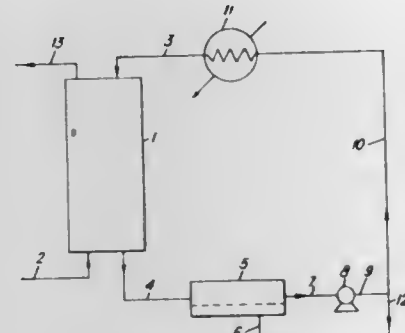
A protective bonnet for an animal's head, having a pair of adjustable, preferably elastic, straps formed to encircle the animal's head respectively forward and behind its eyes and connected by a pair of side bands, one on each side of the animal's face. A sheet of foraminous screen material is peripherally secured to the side bands and to the portions of the straps extending over the top of the animal's nose and brow, with the sheet of screen material being relatively large to bulge outwardly of the animal's face. A modification includes a third strap attached at side portions of the rearward strap and encircling the top of the animal's head behind its ears to prevent the bonnet from slipping forwardly on the animal's face. The strap over the animal's brow may optionally be pulled around to extend behind its ears so that the screen material will also cover the ears if desired, and in another modification additional screen-mesh pockets are optionally removably attached to the straps to cover and enclose the animal's head.

3,753,335  
CONDENSATION OF HALOHYDROCARBONS  
Victor William Morris, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England  
Filed Nov. 12, 1970, Ser. No. 88,649  
Claims priority, application Great Britain, Dec. 5, 1969, 59,511/69

Int. Cl. B01d 53/16

U.S. Cl. 55-29

2 Claims

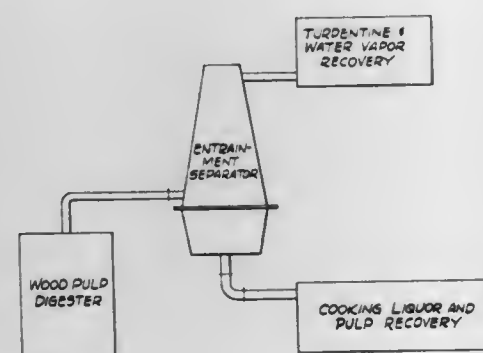


A process for condensing halogenated hydrocarbon which comprises bringing a stream comprising halogenated hydrocarbon vapour, water vapour and non-condensable gases into direct contact with a liquid medium which is maintained at a subnormal temperature sufficient to condense both the halogenated hydrocarbon vapour and the water vapour and which retains condensed water in the liquid phase.

3,753,336  
CENTRIFUGAL SEPARATION APPARATUS  
John Drew, and Robert Elliott Marks, both of Jacksonville, Fla., assignors to Envirotech Corporation, Salt Lake City, Utah  
Continuation of Ser. No. 76,645, Sept. 29, 1970, abandoned, which is a continuation of Ser. No. 781,055, Dec. 4, 1968, abandoned. This application Apr. 6, 1972, Ser. No. 241,628  
Int. Cl. B01d 45/12

U.S. Cl. 55-242

9 Claims



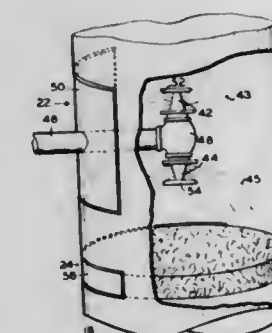
This application discloses an apparatus for separating entrained liquids and solids from a gaseous stream containing entrained liquids and solids. The apparatus is described as a conical tubular envelope partitioned into a de-entrainment chamber and settling chamber by an apertured diaphragm or baffle plate. The gaseous stream tangentially enters the de-entrainment chamber wherein liquids and solids are centrifugally separated. The de-entrained liquids and solids pass through the apertured diaphragm into the settling chamber, while gaseous components leave through an outlet in the de-entrainment chamber.

The apparatus is particularly effective in removing entrained cooking liquids and woodpulp from the wet gaseous effluent of a woodpulp digester.

3,753,337  
GAS CLEANING SYSTEM  
Harry D. Shaw, 445 W. Perry St., Tiffin, Ohio, and George E. Strausbaugh, 2444 County Rd. 80, Burgoon, Ohio  
Filed June 18, 1971, Ser. No. 154,293  
Int. Cl. B01d 47/06

U.S. Cl. 55-233

1 Claim

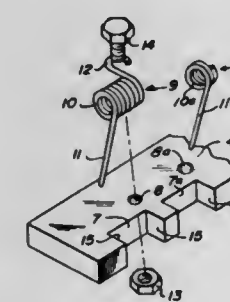


A system for cleaning gas and particularly for removing fine solid particles including a cyclone separator and a unit separator downstream thereof interconnected by a duct containing sources of oppositely directed liquid curtains or sprays through which the gas stream passes. A wire maze filter is positioned in the duct downstream of the curtains in a position to be washed by the second curtain. A second separator receives the issue from the duct and provides a broad area reentrant gas path to an exit and a surface upon which fluid and removed solids accumulates and flows under the influence of gravity to a sump and/or exit.

3,753,338  
POWERED GRASS RAKING DEVICE  
Jack Sherratt, Edmonton, Alberta, Canada, assignor to Arthur Mihalcheon, Edmonton, Alberta, Canada  
Continuation-in-part of Ser. No. 786,486, Nov. 15, 1968, abandoned. This application Dec. 18, 1969, Ser. No. 886,341  
Int. Cl. A01d 79/02

U.S. Cl. 56-17.5

1 Claim

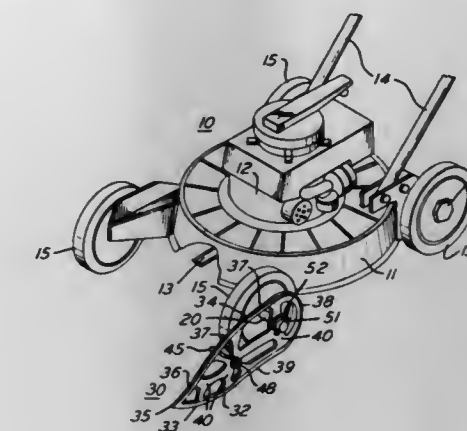


An attachment for use with a household-type rotary power lawn mower having a vertical spindle. A bar is horizontally mounted on the spindle. One or two coil spring tines are mounted on the bar at each end. The tooth of each tine extends downwardly so that its tip is at ground surface. The high speed rotation of the tines over the ground along with the movement of the machine along the ground results in the tines scrubbing dead grass out of a lawn without otherwise seriously damaging the live grass.

3,753,339  
SHRUBBERY LIFTER FOR LAWN MOWERS  
Robert G. Loughhead, 547 Concord Rd., Warminster, Pa.  
Filed Mar. 27, 1972, Ser. No. 238,441  
Int. Cl. A01d 63/00

U.S. Cl. 56-119

6 Claims

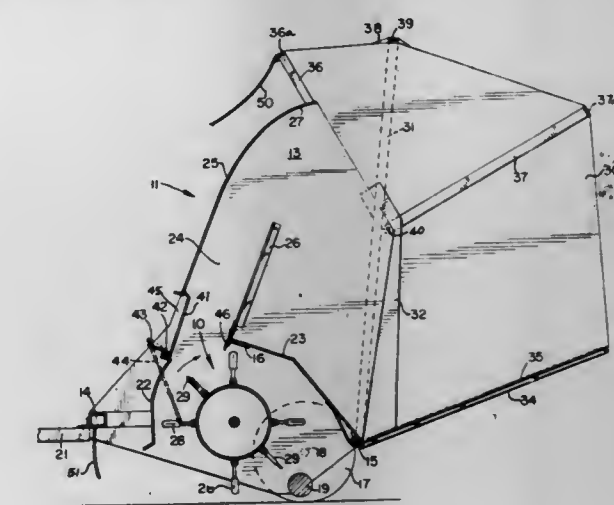


A shrubbery lifter for mowers is provided which is particularly suited for power mowers and avoids likelihood of injury of the user by the mower blades. The lifter includes a readily attachable and detachable lifter arm pivotally carried at one side of the mower and movable to a position for lifting the lower branches to avoid injury thereto while cutting the grass or to an out of action position.

3,753,340  
MOWER WITH EASY DISCHARGE GRASS CATCHER  
Bernard C. Mathews, P.O. Box 70, Crystal Lake, Ill.  
Filed Jan. 10, 1972, Ser. No. 216,413  
Int. Cl. A01d 35/22

U.S. Cl. 56-200

11 Claims



A flail type rotor assembly is journaled in side plates. A housing over the rotor was an outlet leading into a vertical chute formed by a front wall and a baffle. A grass catching receptacle is pivotally suspended from the upper part of the side walls. The upper part of the front wall is curved to deflect grass clippings rearwardly into the receptacle. By rocking the receptacle, the bottom edge moves away from the housing to empty itself. A gate for the outlet may be closed for alternative operation in which the clippings are returned to the ground. The front wall is cut away in front of the gate. Paddles on the drum help create the air stream which blows the clippings upwardly.



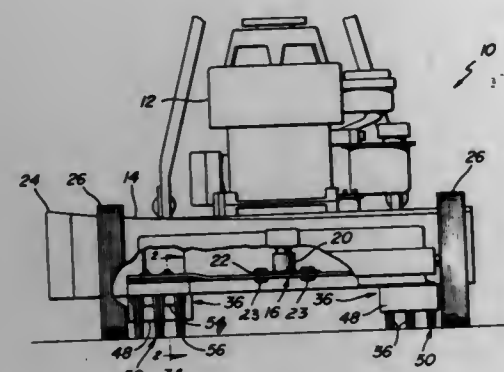
3,753,341

**RAKE ATTACHMENT FOR ROTARY POWER MOWERS**  
Albert T. Berg, Jr., and Howard Langille, both of Ellendale, Minn.

Filed Sept. 22, 1972, Ser. No. 291,214  
Int. Cl. A01d 81/00

U.S. Cl. 56—400.04

13 Claims



A pair of polyethylene rake units are detachably mounted on the end portions of an elongated member carried at the lower end of the drive shaft of a rotary power mower blade. The embodiments are described, the rake units being held in both instances by channel-shaped retention means. In one embodiment, the holding is achieved by means of a separate channel-shaped adapter which is bolted to the underside of the usual blade attached to the drive shaft, whereas in the other embodiment the blade is removed and a specially configured elongated member is substituted in order to provide the requisite rake unit retention. Use of the adapter lends itself readily to the provision of a vane which produces a continuous trailing region of reduced pressure, thereby enhancing the raking action.

3,753,342

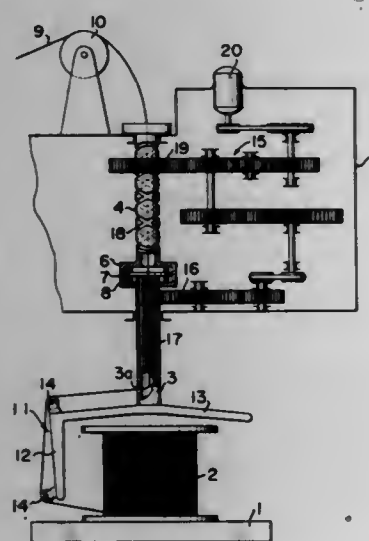
**APPARATUS FOR WINDING UP WIRE, STRAND, CABLE OR THE LIKE**

Tatsumi Yoshitake, and Masami Azetu, Ohita, Japan, assignors to Nishinippon Electric-Wire & Cable Co., Ltd., Ohita-ken, Japan

Filed Dec. 14, 1971, Ser. No. 207,740  
Int. Cl. D01h 7/24, 1/04

U.S. Cl. 57—71

1 Claim



An apparatus for winding up a cable or the like includes a stationary spool, a cable guiding device positioned about said spool, and means for vertically reciprocating said guiding device while moving it about the axis of said spool.

3,753,343

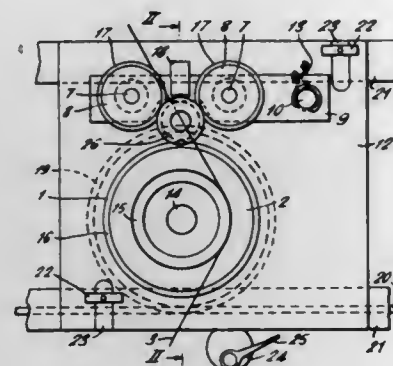
**APPARATUS FOR FALSE-TWISTING YARN**

Geoffrey Naylor, and Harold Sydney Warne, Macclesfield, England, assignors to Ernest Scragg & Sons Limited, Macclesfield, Cheshire, England

Filed Jan. 19, 1972, Ser. No. 219,026  
Int. Cl. D02g 1/04, 1/06

U.S. Cl. 57—77.45

17 Claims



A bush twister for false-twisting yarn is of the known kind comprising a friction bush at each end of a bush tube of comparatively large diameter, the yarn being false-twisted by running it through the bore of the bush twister, which is not supported in anti-friction bearings but is supported and driven by engagement with the rim of a driving wheel, against which the bush twister is held by a pair of idler wheels on a pivotal spring-loaded arm.

3,753,344

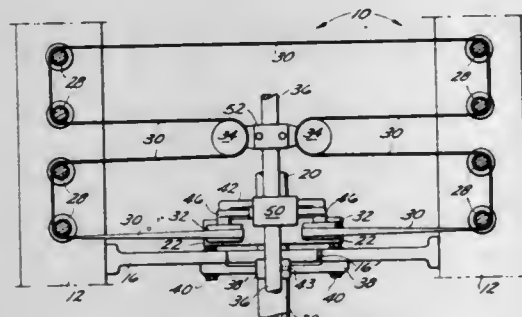
**SPINDLE-DRIVE ASSEMBLY FOR TEXTILE SPINNING MACHINES**

James K. Merck, Piedmont, S.C., assignor to Maremont Corporation, Chicago, Ill.

Filed Feb. 7, 1972, Ser. No. 223,947  
Int. Cl. D01h 1/24

U.S. Cl. 57—105

12 Claims



The drive tape is directed into desired engagement with the whirls of at least three spindles on each side of the spinning machine, and with a centrally located tape-driving drum rotatable in either direction, by pairs of idler and tension pulleys symmetrically mounted adjacent the driving drum and preferably adjacent the center of the machine for unitary vertical adjustment.

3,753,345

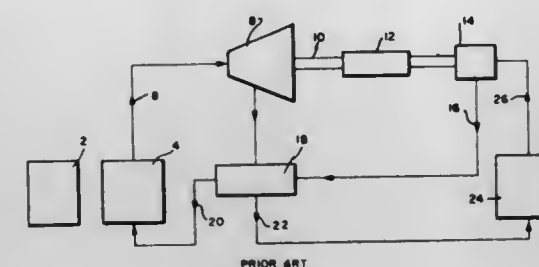
**POWER FLUID**

Frank H. Cassidy, Orangevale, and Ramon Garcia, Sacramento, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed Nov. 1, 1971, Ser. No. 194,271  
Int. Cl. F01k 25/00

U.S. Cl. 60—36

7 Claims



A working fluid for use in a Rankine cycle engine consists of a mixture of hexafluorobenzene and perfluorotoluene.

3,753,346

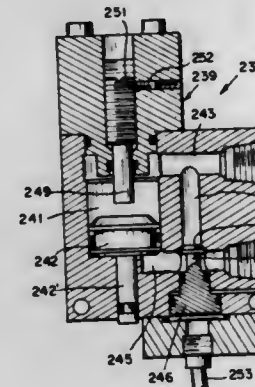
**FLUID MONITORING UNIT**

William M. B. Fitzgerald, Toronto, Ontario, Canada, assignor to Johnson, Matthey and Mallory, Ltd., Toronto, Canada  
Division of Ser. No. 786,971, Dec. 26, 1968, Pat. No. 3,634,934, which is a continuation-in-part of Ser. No. 507,173, Nov. 10, 1965, abandoned. This application Nov. 24, 1970, Ser. No. 92,515

Int. Cl. F15b 7/00

U.S. Cl. 60—54.6 R

1 Claim



A volume of fluid emanating from a cavity is regulated through a parallel conduit, pressurized system.

3,753,347

**RANKINE CYCLE POWER PLANT WITH COMPRESSIBLE FLUID TORQUE CONVERTER**

Charles C. Hill, La Jolla, Calif., assignor to Power Technology Corporation, Bloomfield, Mich.

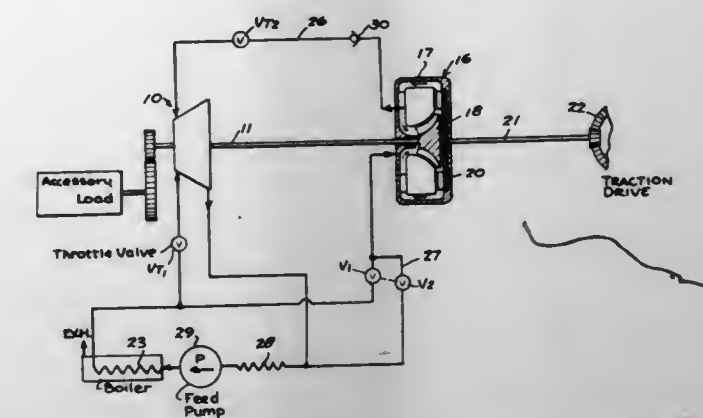
Filed Dec. 29, 1971, Ser. No. 213,345  
Int. Cl. F01k 27/00

U.S. Cl. 60—105

9 Claims

A Rankine cycle power plant which has its output shaft connected to the input rotor of a compressible fluid torque con-

verter. Fluid lines connect the casing of the torque converter with the Rankine cycle power plant. By varying the density of



the fluid in the compressible fluid torque converter, a variable speed output can be achieved without the use of high speed gearing.

3,753,348

**PROPELLANT BURNING RATE CATALYST AND METHOD OF PROPULSION**

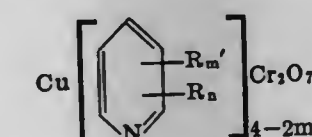
Charles H. Burnside, Waco, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 2, 1959, Ser. No. 850,491  
Int. Cl. C06d 5/06

U.S. Cl. 60—219

18 Claims

1. An improved solid composite type propellant composition comprising: as a base propellant, a major amount of a solid inorganic oxidizing salt as an oxidizer component and a minor amount of a suitable binder component comprised of a material selected from the group consisting of natural rubber, synthetic rubber, copolymers of a conjugated diene containing from 4 to 10 carbon atoms per molecule with a polymerizable heterocyclic nitrogen base, copolymers of a conjugated diene containing from 4 to 10 carbon atoms per molecule with styrene asphalt, pitch, mixtures of asphalt and natural rubber, mixtures of asphalt and synthetic rubber, mixtures of pitch and natural rubber, mixtures of pitch and synthetic rubber, epoxy resins, polybutadiene, polybutene, polyisobutylene, hydrogenated polybutadiene, natural waxes, synthetic waxes, polyethylenes, polysulfide rubbers, acrylic resins, polyvinyl resins, and nitro polymers; and from about 0.25 to about 12 parts by weight per 100 parts by weight of said base propellant of a burning rate catalyst consisting essentially of a complex of a pyridine containing copper and hexavalent chromium and selected from the group of compounds characterized by the formula



wherein: R is selected from the group consisting of alkyl and alkenyl radicals containing from 1 to 4 carbon atoms; R' is a pyridyl radical; m is the number of R' substituents and is an integer of from 0 to 1; and n is the number of R substituents and is an integer of from 0 to 3.

3,753,349

**HYDROPLANE CONSTRUCTION**

Ronald Leslie Holmes, 30 Wilton Ave., Southampton, Sol. 2HJ Hants, England

Division of Ser. No. 570,606, Sept. 5, 1966, Pat. No. 3,592,154. This application July 12, 1971, Ser. No. 161,466  
Int. Cl. B63h 11/02, 11/14

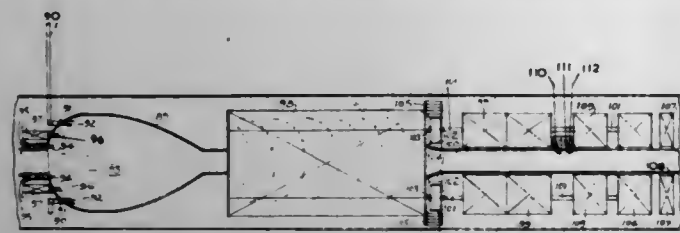
U.S. Cl. 60—227

4 Claims

The invention relates to a water-borne craft of the hydroplane type which is capable of ocean travel at high speed while simultaneously maintaining a high degree of stability and a horizontal aptitude to the craft. The craft is supported by a support assembly in the form of a plurality of vertical structure supports which have a pair of roller shaped floats



positioned to each vertical support through means of a rocker assembly pivotally connected to the vertical supports and mounted for reciprocating movement up and down the support, and shock absorbing means carried by said support to provide a shock absorbing action upon the vertical reciproca-



tion of each pair of floats. A propulsion unit for the craft includes a controlled water inlet means, multi-stage combustion zones for generation of steam and combustion products, a turbine means for generation of electrical power, and jet nozzle means for generation of the required propulsive force.

3,753,350

### REVERSIBLE HYDRAULIC ACTUATOR WITH SELECTABLE FAIL-SAFE OPERATION

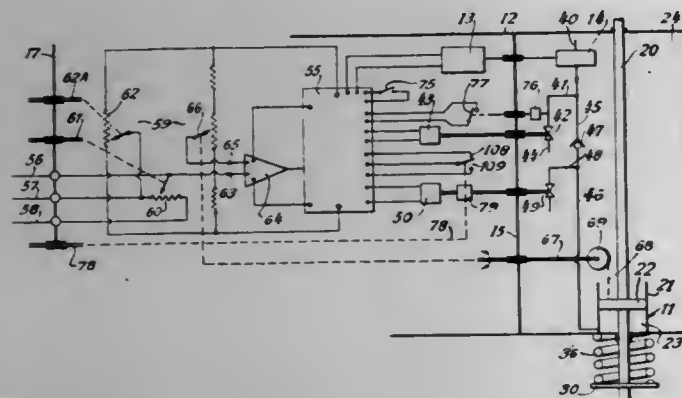
Peter T. M. Nott, Bath, England, assignor to Rotork Limited, Lower Weston, Bath, Somerset, England

Filed Aug. 30, 1971, Ser. No. 175,864

Int. Cl. F15b 13/044

U.S. Cl. 60—403

11 Claims



The invention is concerned with a modulating actuator in which a linearly movable output shaft is movable in one direction by a single acting hydraulic motor and in the other direction by the stored energy of a spring device. The hydraulic circuit for the motor includes two solenoid operated control valves, the operation of which is reversible by a manual control so as to select a desired mode of fail-safe operation in the event of power failure. The actuator can be selected to fail-safe in an end position of the output shaft or to stay put in its actual position of movement.

3,753,351

### ENERGY REGAINING APPARATUS AND METHOD FOR ACCELERATING AND DECELERATING CENTRIFUGES

Kurt Pause, Grevenbroich, and Werner Steprath, Gohr, both of Germany, assignors to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Germany

Filed Feb. 24, 1972, Ser. No. 229,093

Claims priority, application Germany, Mar. 6, 1971, P 21 10 736.8

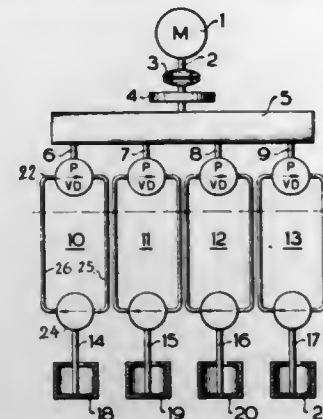
Int. Cl. F16d 33/00

U.S. Cl. 60—420

10 Claims

A set of centrifuges is driven by the hydraulic motors of a set of hydrostatic transmissions whose adjustable pumps have shafts positively connected for rotation with a drive motor. By

adjustment of the respective pump, any centrifuge can be accelerated and decelerated. A decelerated centrifuge regains



energy for driving the respective hydraulic motor to pump fluid so that the respective pump operates as a motor and aids in driving a centrifuge which is being accelerated.

3,753,352

### PERFORATE CONDUIT

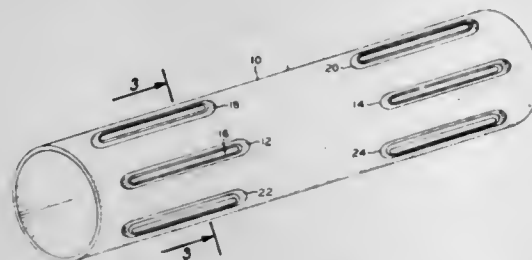
Paul F. McNally, Overijse, Belgium, assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 21, 1971, Ser. No. 145,848

Int. Cl. E02b 11/10

U.S. Cl. 61—10

14 Claims



A perforate conduit comprising an elongated tubing provided with at least one series of longitudinally extending, spaced apart ridges formed in the wall of and extending outwardly from the surface of said tubing. At least one opening is provided in each of said ridges so as to provide communication between the exterior and interior of said tubing.

3,753,353

### AUTOMATIC WATER GATE INSTALLATION

Jacques L. Dubouchet, Larchmont, N.Y., assignor to Societe Generale de Constructions Electriques et Mechaniques (Alsthom), Grenoble, France

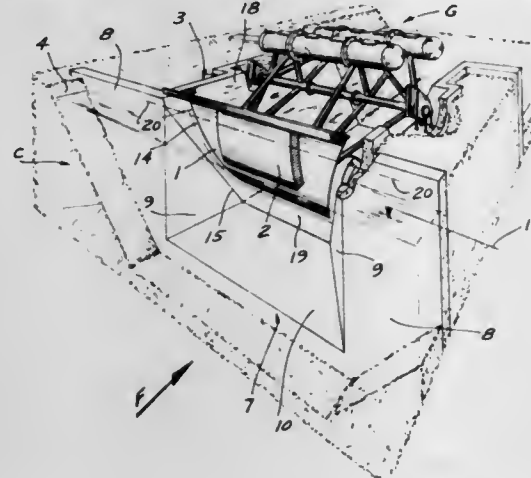
Filed Jan. 18, 1971, Ser. No. 107,088

Claims priority, application France, Jan. 20, 1970, 7001836

Int. Cl. E02b 7/40

U.S. Cl. 61—25

6 Claims



The passage in which an automatic gate for constant upstream level control is installed, is formed at its entry end with

vertical partitions disposed perpendicular to the longitudinal axis of such passage, and the angles formed by such vertical partitions and the side walls of the passage are truncated by oblique faces, the intersections of which with such passage side walls are in close proximity to the side edges of the gate apron.

3,753,354

### CORROSION-PROTECTED ANCHORING RODS FOR ANCHORING STRUCTURAL PARTS IN THE EARTH, AS WELL AS METHOD OF PRODUCING ANCHORINGS WITH CORROSION-PROTECTED ANCHOR RODS

Karlheinz Bauer, 8898 Willelsbacherstr. 5, Schrobenhausen/Obb., Germany

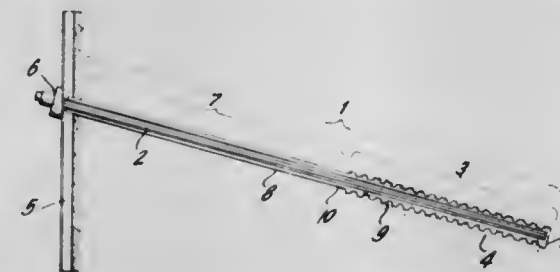
Filed Mar. 31, 1971, Ser. No. 129,715

Claims priority, application Germany, Jan. 12, 1971, P 21 01 236.2

Int. Cl. E02d 5/74, 17/04

U.S. Cl. 61—35

4 Claims



A corrosion-protected anchoring rod for the anchoring of structural parts in the earth is adapted to be placed in a bore hole formed in the earth, with the rod consisting of a force transmission section adjacent the opening of the bore hole, and a force introduction section adjacent the end of the anchoring rod disposed furthest in the hole. The force transmission section of the rod is covered with a smooth, corrosion-preventing covering, while the force introduction section is also covered with a corrosion-preventing covering having a corrugated profile in order to increase the frictional resistance between the anchoring rod and the surrounding soil. The corrosion-prevented coverings of the anchoring rod are suitably joined to completely enclose the anchoring rod, and a bonding composition is provided in the space between the corrugated covering and the tension member.

3,753,355

### LIFTING DRY DOCK

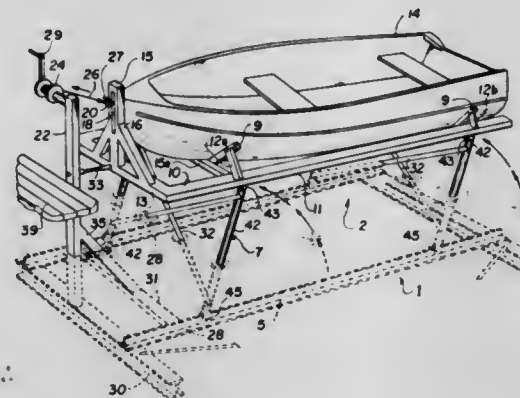
Glen C. Knoch, Lake Ozark, Mo.

Filed Dec. 2, 1971, Ser. No. 204,272

Int. Cl. B63c 1/02

U.S. Cl. 61—65

5 Claims



A lifting dry dock for lifting a boat out of the water comprising a subsurface support, a cradle for cradling the boat, and a plurality of legs pivotally connecting the cradle to the subsurface support in a manner which permits movement of the cra-

dle between a lowered position in which the cradle is below the surface of the water a distance sufficient to permit the boat to float thereover and a raised position in which the cradle is clear of the water. A winch is provided for effecting movement of the cradle between its lowered position and its raised position.

3,753,356

### MEANS AND METHOD FOR DETERMINING THE LIQUID REFRIGERANT CHARGE IN A REFRIGERATION SYSTEM

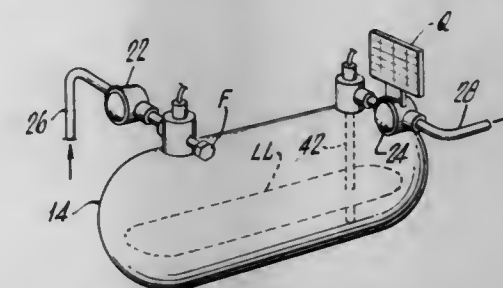
Daniel E. Kramer, Yardley, Pa., assignor to Kramer Trenton Company, Trenton, N.J.

Continuation-in-part of Ser. No. 73,527, Sept. 18, 1970, abandoned. This application May 8, 1972, Ser. No. 253,670

Int. Cl. F25b 49/00

U.S. Cl. 62—56

8 Claims



Dual sight glass system in the liquid line of a refrigerant circuit. One of the two sight glasses is disposed in the line at a receiver inlet and is inspected to determine the presence of liquid refrigerant in excess of the proper maximum amount. The second sight glass is disposed at the receiver outlet and is inspected to determine whether the liquid refrigerant in the system is insufficient. The latter device and its operation are known by themselves. The refrigerant circuit is hermetically sealed.

3,753,357

### METHOD AND APPARATUS FOR THE PRESERVATION OF CELLS AND TISSUES

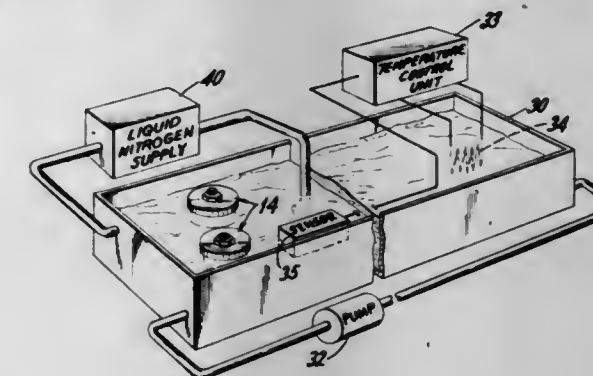
Ralph E. Schwartz, Elgin, Ariz., assignor to Ovitron Research Corporation, Avenel, N.J.

Continuation-in-part of Ser. No. 757,195, Aug. 8, 1968. This application Dec. 14, 1970, Ser. No. 97,734

Int. Cl. A61b 19/00

U.S. Cl. 62—64

14 Claims



The invention contemplates a storage method and apparatus for biological substances by virtue of which solid phase storage is avoided by subjecting the substance to a precompression pressure above atmospheric, and thereafter the specimen is subjected to isovolumetric cooling below 0°C. Where desired, a storage period extension is achieved in solid phase by (a) permitting temperature equilibrium to take place throughout the substance maintained in liquid phase below 0°C as previously described; (b) decompressing the substance sufficiently to permit uniform freezing to take place; and (c) reducing the temperature of the substance to a cryogenic temperature.



3,753,358

APPARATUS FOR TREATING LONG AND BROAD  
FABRIC WITH LIQUIDMasao Masuda, No. 80 Shimoyama-cho 2-chome, Mizuho-ku,  
Nagoya, Japan

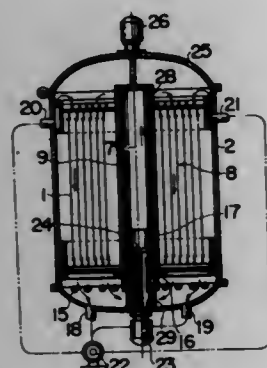
Filed July 1, 1971, Ser. No. 158,782

Claims priority, application Japan, Nov. 11, 1970, U.S. Cl. 70—39  
45/98769; Nov. 11, 1970, 45/98770

Int. Cl. B05c 8/02

U.S. Cl. 68—150

6 Claims



Fabric having a large breadth and length wound in the form of a cylindrical spiral roll around a reel with a space provided between respective adjacent turns is treated with a treating liquid in a cylindrical vessel while causing relative motion of the roll of fabric and the treating liquid. This new method enables the broad and lengthy fabric such as carpet to be treated uniformly throughout its entire portions with no loss of feel and without any development of entanglement, clustering and bending of the pile of such fabric.

3,753,359

## LOCKING SKI CLAMP

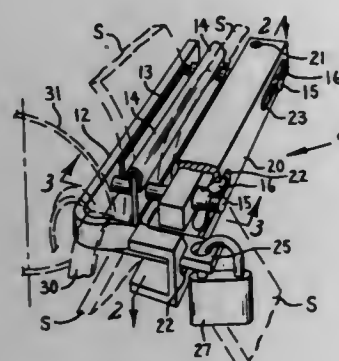
Max Frey, 3940 S.W. Altadena Ave., Portland, Oreg.

Filed Oct. 22, 1971, Ser. No. 191,755

Int. Cl. A63c 11/00; E05b 73/00

U.S. Cl. 70—19

11 Claims



A clamp is provided for locking together the curved tips of skis for the purpose of discouraging theft. A pair of outside clamp plates clamps the two skis securely on opposite sides of a center plate, the parts being fastened in clamped position by a padlock. By clamping together the curved end portions, bottom to bottom, the main flat portions of the two skis are disposed at a wide angle to each other making an awkward and very conspicuous bundle which a thief cannot carry away unnoticed. If the back ends of the skis are deeply embedded in a snow bank at such an angle to each other, the application of the clamp to the upstanding front ends makes the skis impossible to remove from the snow and carry away without first digging them out of the snow. By securing the ski pole straps in the clamp, a tripod is formed for standing the skis and poles on the ground or on a floor.

3,753,360

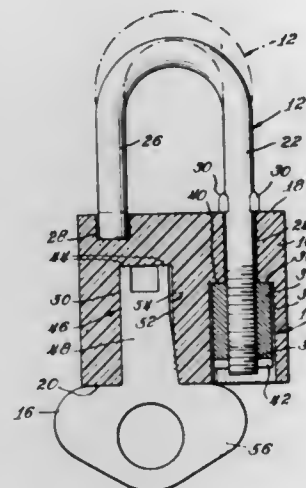
## PADLOCK DEVICE

Gerald F. Bower, Elkhart, Ind., assignor to The Bower Manufacturing Co., Inc., Goshen, Elkhart, Ind.

Filed Dec. 6, 1971, Ser. No. 204,985

Int. Cl. E05b 67/38

6 Claims



A padlock device constructed with a cavity formed in its casing for storing the padlock key and retainer means for releasably holding the key in the cavity. The lock means for the padlock comprises a threaded member disposed within a recess of the casing and in threaded engagement with the longer shank portion of the padlock's shackle.

3,753,361

STEERING WHEEL LOCK FOR AUTOMOTIVE  
VEHICLES

Gerhard Schlesterl, Stuttgart-Vaihingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

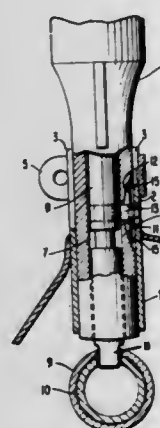
Filed Mar. 6, 1969, Ser. No. 804,851

Claims priority, application Germany, Mar. 6, 1968, P 16 80 023.0

Int. Cl. B60r 25/02

U.S. Cl. 70—185

9 Claims



A steering wheel lock for automotive vehicles wherein the locking bolt which engages with the steering column is slidably disposed in a lock shaft which is keyed to a fixed mounting sleeve, the key to the mounting sleeve being selectively disengageable through translation thereof into a recess provided in the locking bolt only when the locking bolt is out of engagement with the steering column.

3,753,362

## 4,5 DIAMINOURACIL SULFATE AS ALGICIDE

Al F. Kerst, and John D. Douros, Jr., both of Littleton, Colo.,  
assignors to The Gates Rubber Company, Denver, Colo.

Filed Nov. 9, 1970, Ser. No. 88,095

Int. Cl. A01n 9/22, 15/00

U.S. Cl. 71—67

12 Claims

4,5 diaminouracil sulfate can be used to inhibit and/or prevent the growth of many undesirable forms of algae. This invention is particularly concerned with the algicidal properties of 4,5 diaminouracil sulfate against the algae species Scenedesmus, Plectonema, Anabaena, Ankistrodesmus, Oscillatoria, Coccochloris, Chlamydomonas, Lyngbya, Synura, and Chlorella.

3,753,363

## HELICALLY WOUND TUBING

John Massey Trihey, Balwyn, Australia, assignor to Johns-Manville Corp., New York, N.Y.

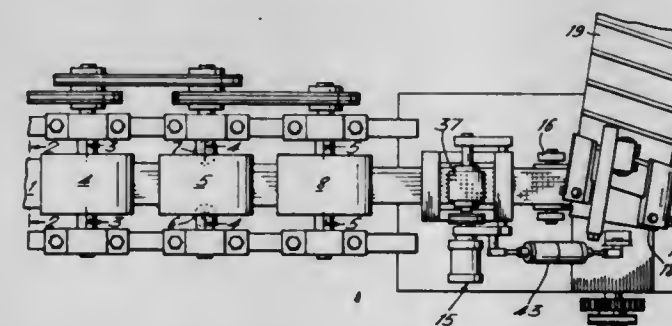
Division of Ser. No. 865,275, Oct. 10, 1969, Pat. No.

3,621,884. This application Apr. 7, 1971, Ser. No. 132,187

Int. Cl. B21c 37/12

U.S. Cl. 72—50

9 Claims



A locked seam is formed in ducting formed by convoluted metal strip and seam locking adjacent edges of adjacent convolutions, in which one edge is folded to form a pair of inwardly facing channels and the other is folded to form a generally T-shaped flange and the arms of the T-shaped flange are locked within the channels. The seam may be formed by folding the edges of the strip before it is convoluted to provide along one edge an open U-shaped element facing out of the plane of the strip. A complementary flange is formed along the other edge, generally of similar U-shape or L-shape and after the strip is convoluted and the edges are mated the U-shape is deformed to form the seam. Apparatus for forming the seam comprises a mandrel removably mounted on a frame and two pairs of forming means disposed about the mandrel, one pair being fixed in its location relative to the frame and the other pair being movable with the mandrel, whereby the mandrel can be changed without requiring adjustment of the forming means.

3,753,364

HEAT PIPE AND METHOD AND APPARATUS FOR  
FABRICATING SAME

James E. Runyan, and George M. Grover, both of Santa Fe, N. Mex., assignors to Q-dot Corporation, Santa Fe, N. Mex.

Filed Feb. 8, 1971, Ser. No. 113,394

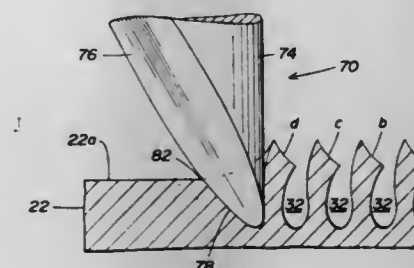
Int. Cl. B21d 53/06

U.S. Cl. 72—71

15 Claims

A unit for recovering thermal energy which utilizes a plurality of unique heat pipes, and the method and apparatus for fabricating the heat pipes is disclosed. The heat pipes are disposed horizontally and are filled with a volume of working fluid sufficient to cause the liquid phase to travel in either direction by gravity. Circumferential capillary grooves in the side walls of the heat pipes transport the liquid phase vertically above the liquid level to increase the area of the liquid-vapor interface. Additionally, the solid metal strips which form the grooves provide a low impedance thermal path from the walls

of the heat pipe to the liquid-vapor interface where evaporation and condensation occur. These two factors significantly increase the efficiency of the system. A divider plate having an X-shaped cross section separates the liquid phase from the high velocity vapor phase to prevent slugging under high energy transfer conditions. The divider plate is operative when the unit is disposed in either of two horizontal positions.



The method and apparatus provides a means for fabricating a spiraled capillary groove by cutting the metal from the wall of the tube and raising and folding the cut metal over to provide a groove having a narrow opening for a maximum capillary action. The cutting tool has a curved cutting edge formed by the intersection of a planar surface and a cylindrical surface. Apparatus for driving the cutting tool is also described.

3,753,365

SWAGING MACHINE FOR THE INTERNAL PROFILING  
OF TUBULAR WORKPIECES

Bruno Kralowetz, Weinleiten 142, St. Ulrich near Steyr, Austria

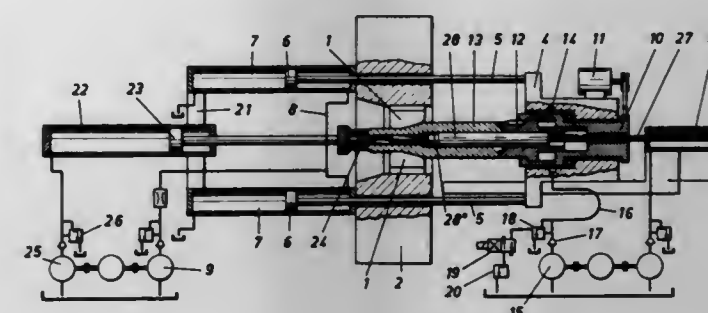
Filed Apr. 21, 1972, Ser. No. 246,137

Claims priority, application Austria, May 6, 1971, A 3940/71

Int. Cl. B21j 13/08

U.S. Cl. 72—76

8 Claims



Mandrel means formed with a shoulder are adapted to enter said workpiece so that the latter surrounds said shoulder. A plurality of dies are spaced around said mandrel means and adapted to swage said workpiece onto said mandrel means. A gripping head surrounds said mandrel means and is adapted to axially support said workpiece at one end thereof and operable to rotate said workpiece about its axis and to advance it toward said dies at the same time. A holder-up is adapted to axially support said workpiece at the opposite end thereof and movable in the axial direction of said workpiece. Means are provided to apply a hydraulic backpressure to said holder-up so that the same yieldably resists the movement of said workpiece as the same is advanced by said gripping head. The gripping head comprises means defining a chamber adapted to contain a cushion of liquid under pressure, which cushion is adapted to axially support said workpiece, and a piston interposed between said cushion and said workpiece and surrounding said mandrel means. The machine also comprises valve means operable to reduce the pressure of said cushion when said shoulder enters between said dies.



3,753,366

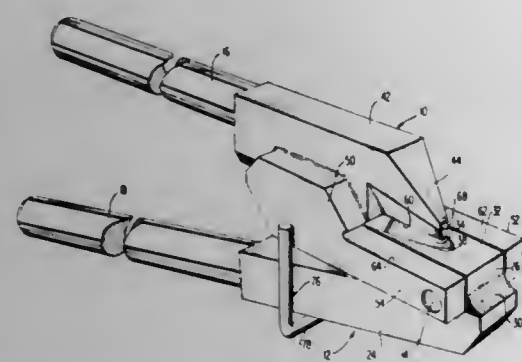
**PROCESS OF BENDING STRUCTURAL MEMBERS AND TOOL THEREFOR**

James C. White, P. O. Box 5495, Station B, Greenville, S.C.  
Division of Ser. No. 786,103, Dec. 23, 1968. This application  
Feb. 8, 1971, Ser. No. 113,639  
Int. Cl. B21d 9/08

U.S. Cl. 72-409

4 Claims

U.S. Cl. 72-475



Structural members such as an angle iron or channel members are bent to a desired radius by crimping the flange or flanges thereof to provide V-shaped pockets or crimps therein. The crimping tool includes a crimping jaw which, before crimping, locates the tool against the leg of the angle or channel member but which swings slightly away from it during crimping movement effected on the intersected flange so as to avoid tearing or shearing the flange while still locating the crimp very close to the leg. An improved form of angle or channel member is provided with openings along the intersection of the leg and flange to allow accurate positioning of the crimp and to further militate against tearing or shearing of the flange.

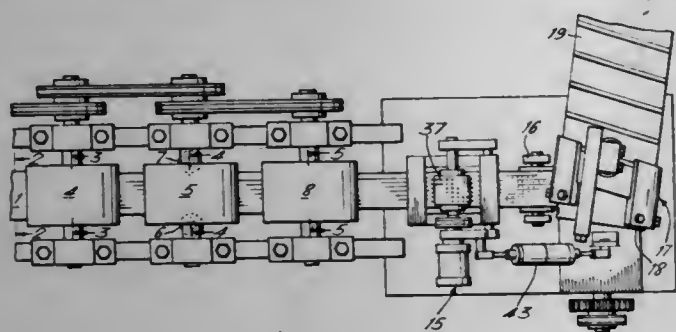
3,753,367

**HELICALLY WOUND TUBING**

John Massey Trihey, Balwyn, Australia, assignor to Johns-Manville Corporation, New York, N.Y.  
Division of Ser. No. 865,275, Oct. 10, 1969, Pat. No. 3,621,884. This application Apr. 7, 1971, Ser. No. 132,188  
Int. Cl. B21c 37/12

U.S. Cl. 72-49

6 Claims



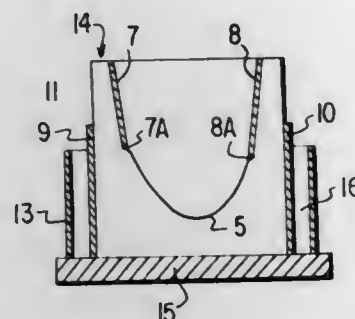
A locked seam is formed in ducting formed by convoluted metal strip and seam locking adjacent edges of adjacent convolutions, in which one edge is folded to form a pair of inwardly facing channels and the other is folded to form a generally T-shaped flange and the arms of the T-shaped flange are locked within the channels. The seam may be formed by folding the edges of the strip before it is convoluted to provide along one edge an open U-shaped element facing out of the plane of the strip. A complementary flange is formed along the other edge, generally of similar U-shape or L-shape and after the strip is convoluted and the edges are mated the U-shape is deformed to form the seam. Apparatus for forming the seam comprises a mandrel removably mounted on a frame and two pairs of forming means disposed about the mandrel, one pair being fixed in its location relative to the frame and the other pair being movable with the mandrel, whereby the mandrel can be changed without requiring adjustment of the forming means.

3,753,368

**BUMPER REPAIR TOOLS AND PROCESS OF MANUFACTURE**

Imre Lang, Santa Barbara, Willowdale, Toronto, Canada  
Continuation-in-part of Ser. No. 870,468, Oct. 22, 1969,  
abandoned. This application June 11, 1971, Ser. No. 152,273  
Int. Cl. B21d 37/14

1 Claim



This application discloses a mold for making die sets for bumper repair, a method of making the mold, and a method of making the dies. The mold is made from an undamaged bumper section to which extensions are added to make an enclosure suitable for simultaneously casting both of the male and female die members. The welding and a subsequent step of heat treating is accomplished in such a way that the longitudinal curvature is greater than that of the original bumper so that the resulting die set tends to overbend bumpers being repaired.

The mold is placed in a flask with side walls and liquid casting metal is introduced inside and outside of the mold, filling the inside and substantially enclosing the outside. After hardening, the flask and mold are removed, leaving a matching, fully congruent die set. The working (pressing) surfaces of the die thus obtained correspond exactly to each other and are true copies of the faultless original bumper segment, except for the added curvature.

**ERRATUM**

For Class 72-214 see:  
Patent No. 3,753,370

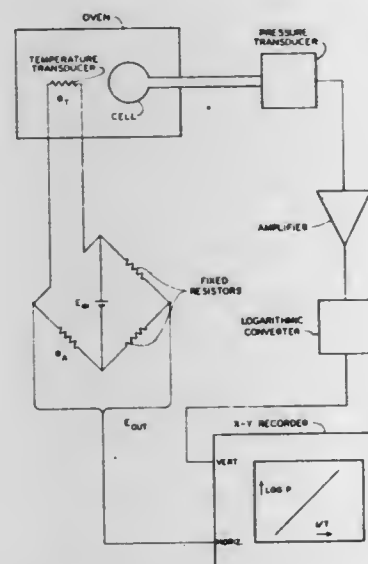
3,753,369

**RECORDING OF RECIPROCAL OF TEMPERATURE**

Lewis Fowler, and Walter N. Trump, both of St. Louis, Mo., assignors to Monsanto Corporation, St. Louis, Mo.  
Filed Dec. 28, 1970, Ser. No. 102,123  
Int. Cl. G01n 25/00; G01k 3/00

U.S. Cl. 73-15.4

5 Claims



Direct recording of the relationship between a measured property and the reciprocal of absolute temperature is af-

forded in viscosity and vapor pressure measurements by means of resistance thermometry in cooperation with a bridge circuit.

3,753,370

**HIGH SPEED TUBE MILL**

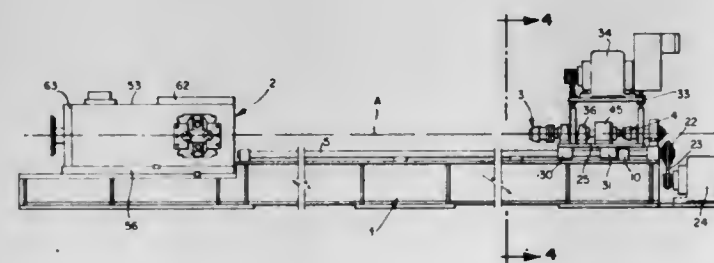
Claus L. Sporck, Traverse City, Mich., assignor to Hiltco, Gardena, Calif.

Filed Aug. 24, 1970, Ser. No. 66,342

Int. Cl. B21b 21/06

U.S. Cl. 72-214

6 Claims



Apparatus for rocking the work rollers and turning and feeding the blank of a pilger mill to provide a mill which will operate at very high speeds and produce accurately dimensioned thin walled tubes even of refractory type metals.

3,753,371

**WIND CHILL METER**

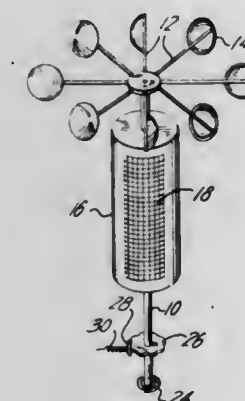
Robert W. Anderson, 443 Hauck Rd., Bridgewater, N.J.

Filed May 11, 1971, Ser. No. 142,298

Int. Cl. G01w 1/06

U.S. Cl. 73-344

6 Claims



Wind cup assembly driving a drum having a scale of wind chill values. A thermometer has indicator for the scale. A hair spring restrains the drum and there is a control wheel to suppress variations due to gustiness. In one embodiment there is gearing from the wind cups having variable toothed spacing for driving the drum.

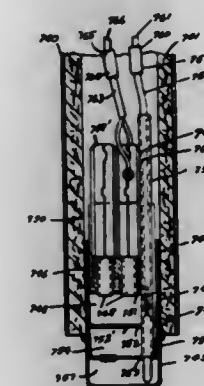
3,753,372

**DEVICE FOR SAMPLING MOLTEN METAL**

William J. Collins, 7005 Madison St., Merrillville, Ind.  
Division of Ser. No. 61,625, Aug. 6, 1970, Pat. No. 3,656,338.  
This application Nov. 30, 1971, Ser. No. 203,258  
Int. Cl. G01n 1/12; G01k 13/12

U.S. Cl. 73-354

18 Claims



Apparatus of the type in which a sample receiving means is positioned in the end of an elongated tube intended to be dipped into a body of molten metal.

3,753,373

**TRANSDUCER SYSTEM**

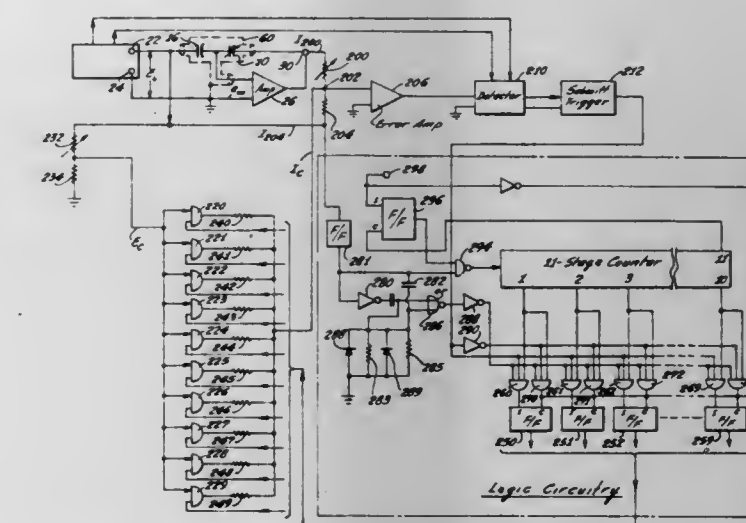
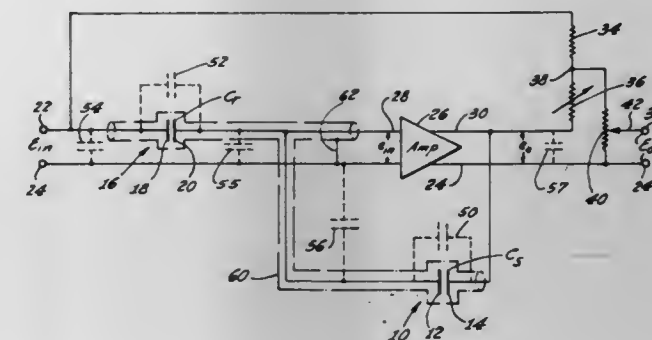
Neil L. Brown, El Cajon, Calif., assignor to The Bissett-Berman Corporation, Santa Monica, Calif.

Filed Oct. 22, 1965, Ser. No. 501,731

Int. Cl. G01k 5/52; G011 9/12; G01r 27/26

U.S. Cl. 73-398 C

4 Claims



This invention relates to a system for measuring the value of a variable capacitor. The capacitor is included in a circuit with a reference capacitor which is connected in series with the variable capacitor. An operational amplifier having a high gain is connected in series with one of the variable and reference capacitors and is connected in parallel with the



other one of the variable and reference capacitors. An input voltage is applied to the one of the variable and reference capacitors and an output voltage is derived from the operational amplifier. The relative values of the output and input voltages indicate the relative values of the variable and reference capacitors.

3,753,374

## MEASURING INSTRUMENT WITH GYRO

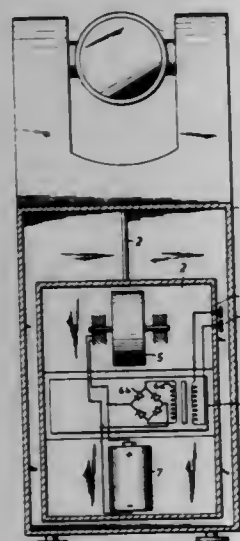
Lothar Strassburg, Humboldtstrasse 27, 464 Wattenscheid-Eppendorf, Germany

Continuation-in-part of Ser. No. 1,193, Jan. 7, 1970, abandoned. This application June 21, 1972, Ser. No. 264,795

Int. Cl. G01c 19/10

U.S. Cl. 74-5.7

2 Claims



A measuring instrument incorporating a gyro, in particular a gyro-compass, in which a gyro forms the measuring device proper and in which the current source for the gyro is built into the north-seeking system. The gyro consists of an electronically controlled brushless d.c. motor, adjusted as regards its rate of rotation, and having a permanent magnet rotor.

3,753,375

## RACK AND PINION STEERING GEAR

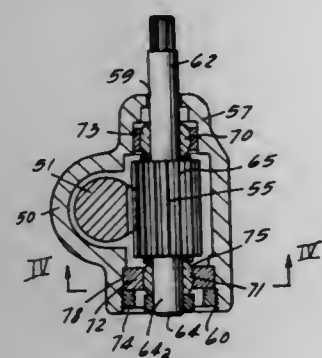
John B. Colletti, Grosse Pointe Park, Mich., assignor to TRW Inc., Cleveland, Ohio

Filed Nov. 29, 1971, Ser. No. 202,867

Int. Cl. B62d 3/12

U.S. Cl. 74-498

2 Claims



A rack and pinion steering gear wherein the rack bar is supported in the rack tube by bearing sleeves journaled in the axial open ends of the tube without use of a yoke. In order to provide alignment adjustment, the pinion has at least one end thereof supported in an adjustable eccentrically mounted spherical bearing to allow movement of the pinion with regard to the rack.

3,753,376

## TRANSFER AND DIFFERENTIAL REDUCTION BOX FOR MOTOR VEHICLES

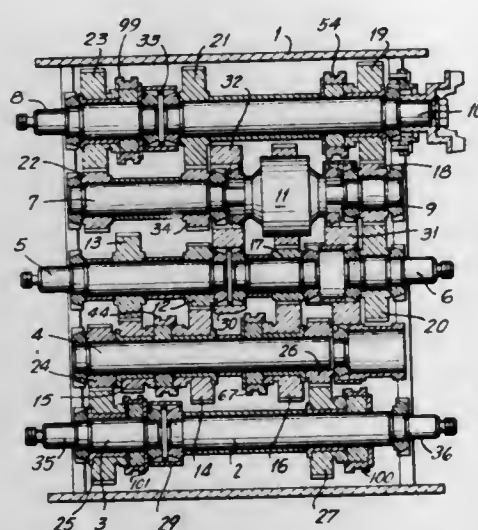
Jose Luiz Whitaker Ribeiro, Sao Paulo, Brazil, assignor to Engesa-Engenhelros Especializados S.A., Sao Paulo, Brazil

Filed Feb. 9, 1971, Ser. No. 113,953

Int. Cl. F16h 37/08, 37/06

U.S. Cl. 74-665 GA

12 Claims



A transmission box with power take-off, for transmitting power to four or six wheels, comprising one or more internal differentials, which may be locked, a clutching system with two parallel shafts alternately lockable, through the agency of a transverse rod and grooves in the shafts; interchangeable parts and parallel shafts equidistant from one another; the clutching system includes a number of rods articulated one to the next. The locking of the differential is provided by way of a gear transmission and clutch in parallel with the differential outputs.

3,753,377

## AUTOMATIC TRANSMISSION SHIFT CONTROL ENGINE SPARK CONTROL

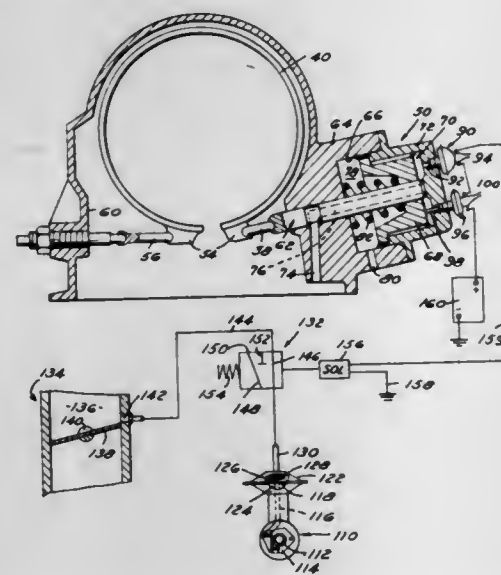
Norman T. General, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1971, Ser. No. 212,490

Int. Cl. B60k 21/00; F02p 5/04

U.S. Cl. 74-856

6 Claims



The engine spark timing includes an electrically actuated on-off valve in the vacuum line between the carburetor spark port and the distributor servo actuator, the valve being actuated to permit vacuum to advance the distributor only when the automatic transmission associated with the engine is con-

ditioned for a high speed gear ratio and the intermediate speed gear ratio is disestablished; the fluid pressure actuating the intermediate and high speed ratio servos to their respective positions simultaneously actuating a pressure responsive switch in series power flow arrangement with an intermediate gear ratio servo position indicating switch to complete the circuit to the vacuum switch.

3,753,378

## RACK AND PINION VARIABLE RATIO STEERING GEAR

Arthur E. Bishop, 54 Tobruk, Cremorne, New South Wales, Australia

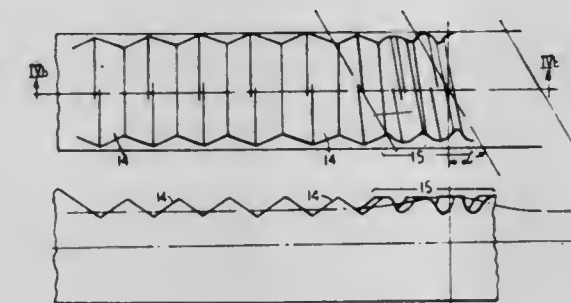
Filed Aug. 16, 1971, Ser. No. 171,842

Claims priority, application Australia, Aug. 17, 1970, 2222/70; July 5, 1971, 3086/71

Int. Cl. F16h 1/04

U.S. Cl. 74-422

14 Claims



A variable ratio steering mechanism for a vehicle having an axially movable rack meshing with a helical pinion the axis thereof making an angle with the axis of the said rack, the rack having a group of teeth at its center of varying form and varying inclinations with respect to the axis of the rack, the inclination of the teeth of said group becoming less closely aligned with the pinion axis as the teeth are more remote from the center of said rack, said teeth thereby meshing with the teeth of the pinion at varying effective pitch radii in a predetermined manner.

3,753,379

## CUT-OFF DEVICES FOR CONTINUOUS ROD CIGARETTE-MAKING MACHINES AND OTHER SIMILAR MACHINES

Desmond Walter Molins, and Edward George Preston, both of London, England, assignors to Molins Limited, London, England

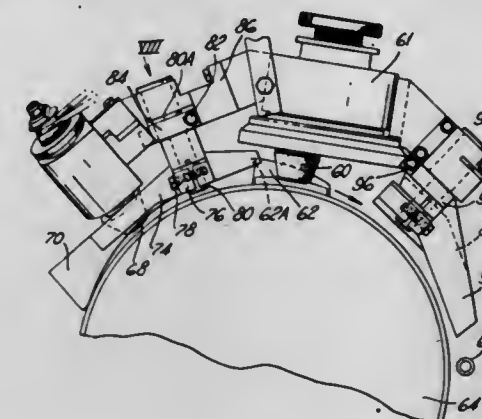
Filed Feb. 17, 1971, Ser. No. 115,953

Claims priority, application Great Britain, Feb. 17, 1970, 7,626/70

Int. Cl. A24c 5/30

U.S. Cl. 83-174

17 Claims



A cut-off device for a cigarette or other similar rod-making machine includes a damping member which is arranged to touch the knife of the cut-off device, at least in the event of the knife vibrating at or above a predetermined amplitude, so as to damp down vibrations of the knife.

3,753,380

## CUTTING SYSTEM HAVING IMPROVED ANVIL MEANS

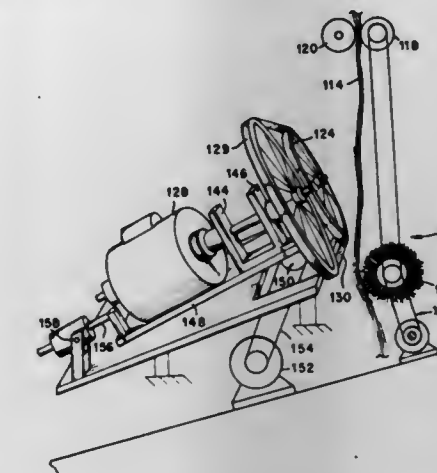
Charles A. Lee, Knoxville, Tenn., assignor to International Paper Company, New York, N.Y.

Filed June 24, 1971, Ser. No. 156,185

Int. Cl. B23d 25/06, 53/04

U.S. Cl. 83-315

4 Claims



A cutting system for flexible work including a cutter having a cutting edge and anvil means having a plurality of closely-spaced elongate work-contacting means whose unattached ends contact the work, such work-contact means in the aggregate being sufficiently stiff in their longitudinal direction to constrain the work against movement away from the cutter and being flexible in a direction generally laterally of their longitudinal direction to receive the cutting edge of the cutter therebetween.

3,753,381

## WEB EDGE CONTROL FOR STRIP PROCESSING LINES

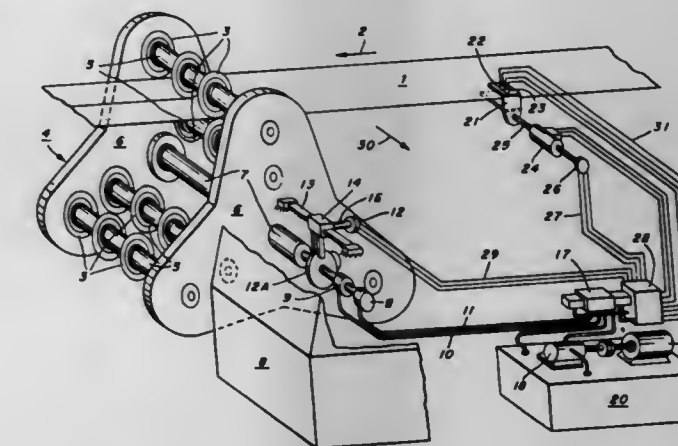
Theodor Reime, Ennepetal-Milspe; Gunter Schnell, Bochum; Anton Dinkelbach, Gelsenkirchen, and Friedrich Wippermann, Dortmund, all of Germany, assignors to Gebr. Elckhoff, Maschinenfabrik Und Eisengesserei m.b.H., Bochum, Germany

Filed Dec. 10, 1971, Ser. No. 206,791

Int. Cl. B23d 19/06

U.S. Cl. 83-364

3 Claims



Web edge control apparatus for corrugated paperboard cutting and grooving apparatus, for example, wherein two electro-optical sensing devices (preferably photocells) are positioned on the same side of the web so that one device normally sights on the relatively dark web while the other sights on a lighter background adjacent the web. If the web should shift to one side or the other, either both devices will sight on the dark web as when the web moves toward one side, or both devices will sight on the lighter background as when the web moves in the opposite direction. When either one of these events occurs, the cutting and grooving apparatus is caused to move in the same direction as the movement of the web to



maintain a fixed relationship of the cutting and grooving apparatus with respect to the edge of the web.

3,753,382

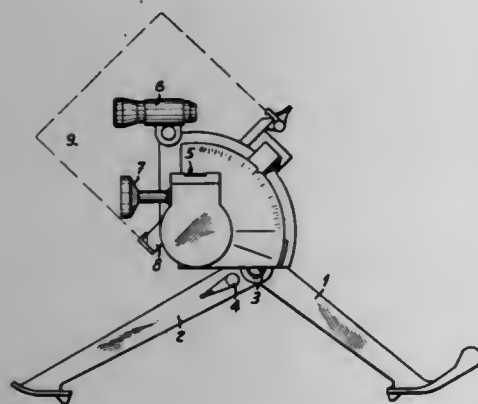
## INFANTRY WEAPON AND ITS AMMUNITION

Maurice Rusbach, Vernier-Geneva, Switzerland, assignor to Sarmac S.A., Carouge, Switzerland  
Continuation-in-part of Ser. No. 847,693, Aug. 5, 1969, abandoned. This application May 9, 1972, Ser. No. 251,699

Int. Cl. F41f3/04

U.S. Cl. 89—1.815

4 Claims



The invention concerns an infantry weapon and its ammunition. The weapon includes a stand provided with an aiming device for orientating a movable support on which interchangeable launching tubes are fixed. The ammunition includes packing cases for the transport and storage of shells to be shot by this infantry weapon; these cases include tubes in which the shells are nested, which form simultaneously, when the cases are mounted on the said stand, the launching tubes of the weapon.

3,753,383

## POWER OPERATED DRAWBOLT

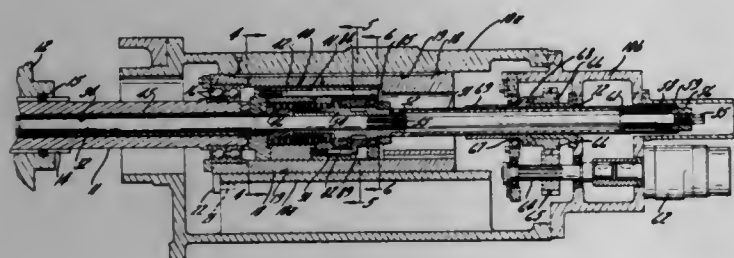
Frederick L. Schmidt, Fond du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Apr. 4, 1972, Ser. No. 241,028

Int. Cl. B23b 5/26

U.S. Cl. 90—11 D

17 Claims



A power drawbolt assembly for releasably clamping a tool in the socket of a machine tool spindle. The assembly includes a drawbolt that is biased in a rearward direction relative to the spindle and in an opposite forward direction relative to a concentrically mounted drive sleeve whereby the drawbolt is readily accessible for engaging a tool automatically inserted into the spindle socket and is resiliently supported to absorb excessive axial forces that may be imparted to the drawbolt. A separate ejector tube mounted concentrically on the drawbolt is adapted to be forwardly moved relative to the spindle and drawbolt to strike and positively release a tool adaptor from seating engagement with the spindle socket after the drawbolt has completely unthreaded from the tool adaptor. The operation of the drawbolt and ejector tube are synchronized by an actuating mechanism driven from a single motor.

3,753,384  
APPARATUS FOR THE ADJUSTMENT OF THE WORKING PRESSURE OF A TOOL

Ole Arnt Anfindsen, Gudest 18, 3600 Kongsberg, Norway

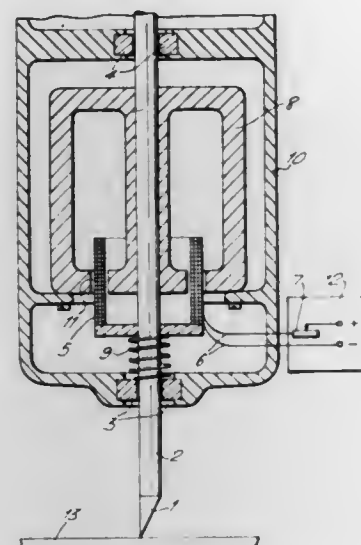
Filed Oct. 12, 1971, Ser. No. 188,178

Claims priority, application Norway, Oct. 12, 1970, 3823

Int. Cl. B23d 13/00; B23q 5/28

U.S. Cl. 90—24 R

6 Claims



A machining tool is attached to a current carrying annular coil which is mounted for axial movements in an associated annular gap of a magnetic circuit, energized by at least one suitable permanent magnet and/or electromagnet. The terminal leads of the coil are connected to a variable current source. In this arrangement the working pressure of the tool against a workpiece may be very accurately regulated by suitable adjustment of the current supplied to the coil from the variable current source.

3,753,385

## MOUNTING ADAPTER FOR CUTTING TOOLS

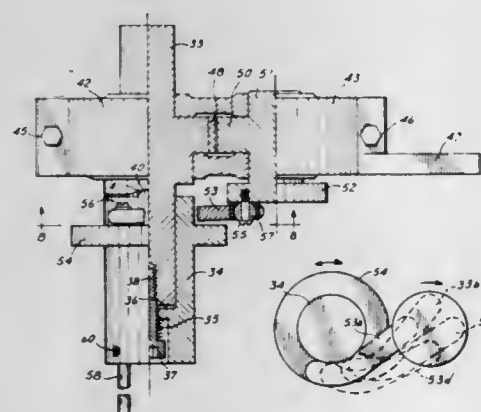
Vincent Zarlengo, 3530 Chase St., Wheatridge, Colo.

Filed Aug. 6, 1971, Ser. No. 169,672

Int. Cl. B23d 5/02

U.S. Cl. 90—31

5 Claims



An adapter for mounting cutting tools on milling machines, lathes, drill presses and the like comprises a body having an attaching extension for engagement by the chuck or other attaching device of the milling machine, a cutting tool attaching member movable axially with respect to the body and a control member arranged to be held stationary with respect to the milling machine. Cam members on the body and on the tool attaching member produce movement of the cutting tool such that it may move periodically or intermittently into and out of engagement with the work.

3,753,386

## VALVE ACTUATOR

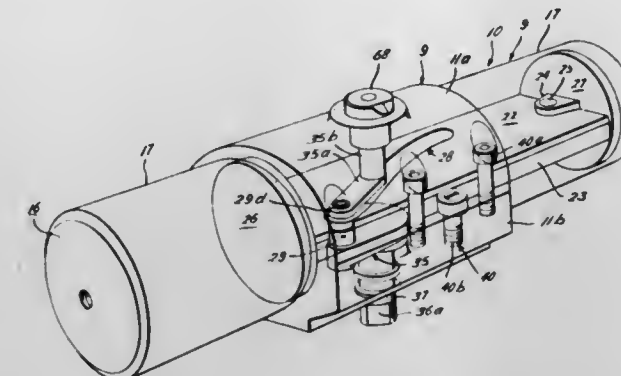
Floyd L. Scott, Jr., 7922 Westglen Dr., Houston, Tex.

Filed Mar. 3, 1971, Ser. No. 120,585

Int. Cl. F01b 9/00, 25/26, 31/12

U.S. Cl. 92—5

1 Claim



Spaced, single acting piston means are mounted for reciprocation within a housing, such pistons having interconnected therebetween and movable therewith a carrier means having cam surface means thereon. Fixed, rotatable bearing means are interposed between the housing and cam surface carrier to facilitate reciprocation of the cam surface carrier means within the housing in which it is supported.

A cam follower means is provided for abutting the cam surface in the carrier, and crank means is connected therewith and is provided with means for connecting to a valve stem so that reciprocation of said cam surface carrier means in the housing causes the cam follower to move along said cam surface means and impart rotation to the crank arm means and the valve stem connected therewith. An indicator is connected with the cam follower to indicate externally of the housing the open or closed condition of the valve.

3,753,387

## BRIDGE TYPE EXPOSURE METER

Osamu Maeda, Toshima-ku, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

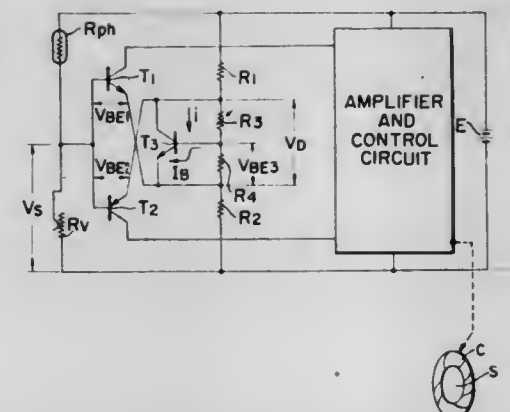
Filed Aug. 22, 1972, Ser. No. 282,712

Claims priority, application Japan, Sept. 2, 1971, 46/67691

Int. Cl. G03b 7/08

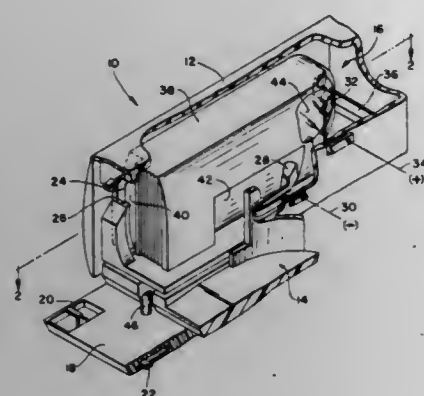
U.S. Cl. 95—10 CE

8 Claims





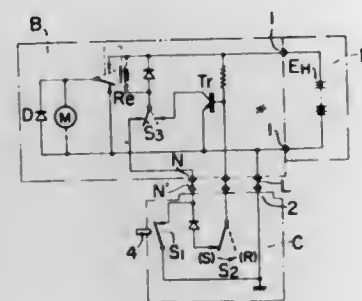
received battery relative to the contacts in response to movement of the door between its open and closed positions so as



**3,753,391**  
**MOTOR-DRIVEN WINDING DEVICE OF CAMERA**  
Shuji Kimura, Setagaya-ku, and Kouichi Daitoku, Ohta-ku, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan  
Continuation of Ser. No. 886,621, Dec. 19, 1969, abandoned.  
This application Dec. 9, 1971, Ser. No. 206,561  
Int. Cl. G03b 9/00

U.S. Cl. 95—53

2 Claims



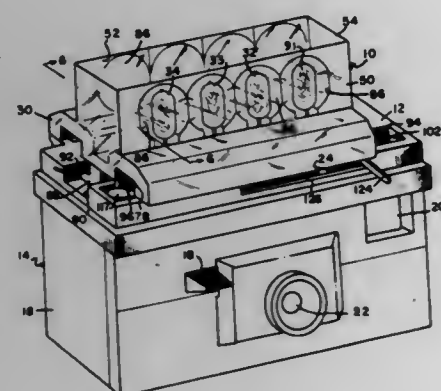
to provide rubbing engagement between the contacts and the battery.

A camera having a motor-driven winding device is provided with a detachable remote control unit having a shutter release button and a change-over switch to effect selection between single-frame phototaking and continuous phototaking. During remote control operation the change-over switch and shutter release button are electrically interconnected by means of an electrically conductive cord.

**3,753,390**  
**PERCUSSIVE PHOTOFLASH LAMP ARRAY WITH SELECTIVE ACTUATING MECHANISM**  
Harold L. Hough, Emery G. Audesse, and Warren H. Hay, all of Salem, Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.  
Filed June 9, 1972, Ser. No. 261,534  
Int. Cl. G03b 19/00

U.S. Cl. 95—11 R

19 Claims

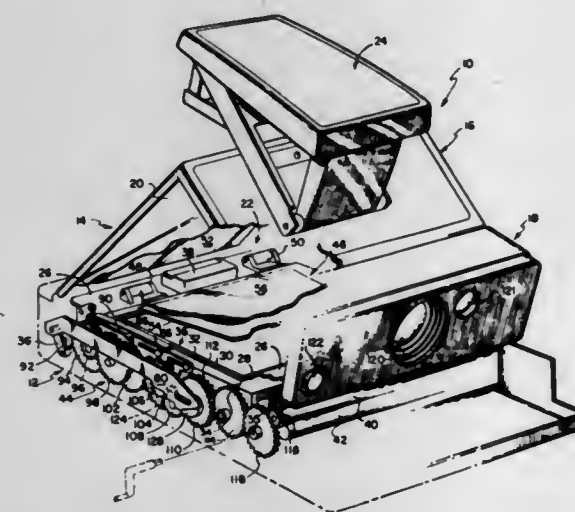


A photoflash assembly comprising a plurality of percussively-ignitable flashlamps arranged in a linear array with respectively associated reflectors and preenergized striker springs, a support member attached to an associated camera and adapted to slidably receive the flashlamp array, and an actuating mechanism retained in the support member for selectively controlling the one or more lamps of the array to be fired in response to shutter operation. The selective actuating mechanism includes a channel member which is pivotally mounted parallel to the array and spring loaded within a recess of the support member. A spring-loaded sliding plate is retained in the channel with its position therealong being determined by engagement with one of the preenergized striker springs. Upon pivoting of the channel member in response to operation of the camera shutter, the slide plate releases the overlying striker spring to fire a corresponding one of the flashlamps. A spring-loaded latch enables the slide plate to be shifted so as to underlie two striker springs and thereby enable the firing of two lamps simultaneously. Subsequent to lamp firing, the spring-loaded plate automatically advances to the next preenergized striker spring.

**3,753,392**  
**FILM-ADVANCING APPARATUS**  
Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.  
Continuation-in-part of Ser. No. 65,053, Aug. 19, 1970, Pat. No. 3,683,771. This application Aug. 12, 1971, Ser. No. 171,127  
Int. Cl. G03b 17/50

U.S. Cl. 95—13

17 Claims

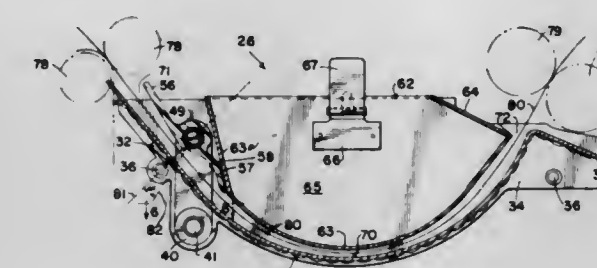


Photographic apparatus including a camera for receiving a film assemblage and a film assemblage including a film cassette and a plurality of thin, flexible film units arranged in stacked relation therein. The film cassette has an exit in one end wall through which a foremost film unit is adapted to be moved after exposure and an opening located near an opposite end of the film cassette. The camera further includes film-advancing apparatus including a first component which is adapted to enter the opening in the cassette and engage the foremost film unit at or near an end thereof or at an edge thereof most distant from the exit and move the foremost film unit through the exit, and a second component including a pair of processing rollers which is adapted to receive the film unit and continue its movement toward the exterior of the camera while spreading a processing liquid between elements of the film unit to initiate formation of a visible image.

**3,753,393**  
**LIQUID DEVELOPER SYSTEM FOR ELECTROSTATIC COPIER**  
George P. Niesen, Niles, and Edward Domeco, Glenview, both of Ill., assignors to A. B. Dick Company, Niles, Ill.  
Filed May 21, 1971, Ser. No. 145,607  
Int. Cl. G03d 3/12

U.S. Cl. 95—94 R

12 Claims

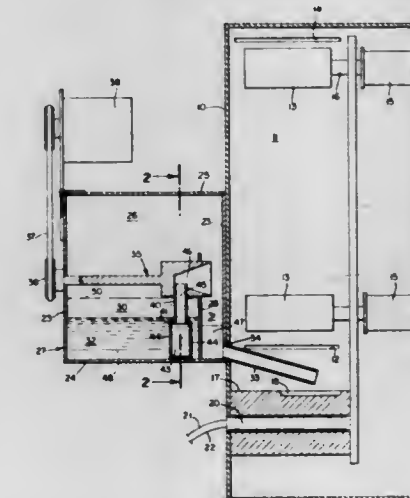


Upper and lower guides are curved in the direction of the path of movement of the copy material to be developed and extend transversely of such path for a distance greater than the width of the copy material. Opposed walls are connected with the ends of these guides to define a confined arcuate space with an inlet slot and an outlet slot. A liquid developer distribution outlet opens into such arcuate space adjacent to and inwardly of the inlet slot for distributing a flow of developer fluid in a pattern extending transversely of said path for a distance substantially the same as the width of the copy material. The liquid developer is forced through said outlet under pressure resulting in a turbulent flow of the developer liquid throughout the arcuate space thereby causing a substantial quantity of fresh, active, charged toner particles to come into contact with the latent electrostatic image on the copy material.

**3,753,394**  
**LIQUID METERING APPARATUS FOR PHOTOGRAPHIC DEVELOPING DEVICE**  
Paul E. Klitch, West Springfield, Mass., assignor to The Plastic Coating Corporation, South Hadley, Mass.  
Filed Dec. 18, 1969, Ser. No. 886,132  
Int. Cl. G03d 3/12

U.S. Cl. 95—94 G

7 Claims



Liquid metering apparatus for removing a predetermined amount of processing liquid from a reservoir in which the liquid level may vary, and feeding the removed liquid through a conduit to a developing chamber. The metering apparatus includes a cyclically immersed dipper having a chamber therein of a configuration enabling the separation and transfer of a precise amount of liquid from the reservoir even if the level of liquid in the reservoir varies.

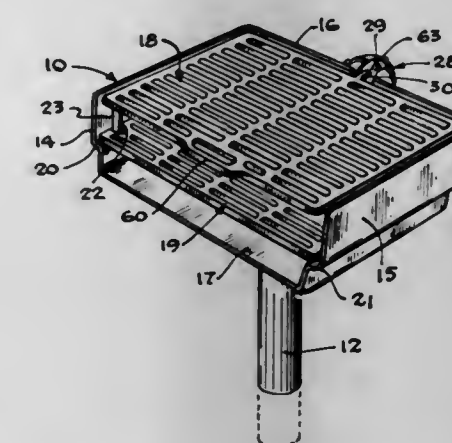
**3,753,395**  
**PHOTO-THERMOGRAPHIC RECORDING PROCESS WITH 5-PYRAZOLANE**  
Albert Lucien Poot, Kontich, and Jan Frans Van Besauw, Brasschaat, both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium  
Filed Apr. 8, 1971, Ser. No. 132,585  
Claims priority, application Great Britain, Apr. 9, 1970, 16,999/70  
Int. Cl. G03c 11/12

**U.S. Cl. 96—28**  
A photosensitive recording material containing a pyrazolin-5-one reducing agent having at least one hydrogen atom in its 4-position in chemical interrelationship with a photoreducible dye capable when exposed to activating electromagnetic radiation adsorbable by the dye of initiating oxidation of the pyrazolin-5-one reducing agent, whereby imagewise exposure of the material to such radiation causes the reducing properties of said pyrazolin-5-one agent to be substantially eliminated in the exposed areas thereof and an image recording method using the same. The material can also contain a bi-imidazolyl compound.

**3,753,396**  
**COOKING DEVICE**  
Walter Koziol, Russell, Ill., assignor to Beatrice Foods Co., Chicago, Ill.  
Continuation of Ser. No. 800,634, Feb. 19, 1969, abandoned.  
This application Dec. 31, 1970, Ser. No. 103,309  
Int. Cl. A47J 37/04

U.S. Cl. 99—450

10 Claims



A barbecue grill type cooking apparatus is constructed with a grid member which can be both pivoted and rotated on a base member while simultaneously retained on the base member. The pivoting, rotating and retaining is effected by a unitary means which preferably is a ball and socket arrangement.

**3,753,397**  
**APPARATUS FOR SECTIONIZING CITRUS FRUIT**  
Robert S. Shrewsbury, Dunedin; J. D. Webb, Clearwater, both of Fla., and R. C. Bushman, Claremont, Calif., assignors to Brown International Corporation, Covina, Calif.  
Division of Ser. No. 697,215, Jan. 11, 1968, Pat. No. 3,566,940. This application Nov. 27, 1970, Ser. No. 93,022  
Int. Cl. A23n 15/00

**U.S. Cl. 99—491**  
It is old to sectionize a single peeled citrus fruit by a procedure wherein the fruit is penetrated by a set of tines of a fruit holder for rotating the fruit step by step in synchronism with associated reciprocating sectionizing tool means. The sectionizing tool means comprises a pair of tools that straddle the radial membranes of the fruit in succession for successive severance of the fruit sections, severance being accomplished largely by concentrated jets of water directed radially from the tools along opposite sides of the membranes. Indexing the



rotation of the peeled fruit with respect to the successive radial membranes is accomplished by inserting the tip of one of the pair of tools into the rotating fruit and terminating the rotation in response to impingement of a radial membrane against the tool.

The present invention is an apparatus for processing batches of peeled fruit in this general manner in rapid succession for a high rate of production. While one batch is being sectionized on a plurality of fruit holders, fruit of a new batch are being manually impaled on upright spikes of a corresponding plurality of fruit holders. After a batch sectionizing operation, the downwardly extending sets of tines of the plurality of fruit holders are aligned axially with the corresponding loading spikes and the new batch is transferred to the tines of the fruit holders. The fruit holders are then shifted to positions ad-

block of meat on raising the upper die and plate. The block is ejected onto a delivery chute provided with a guard. The dies,

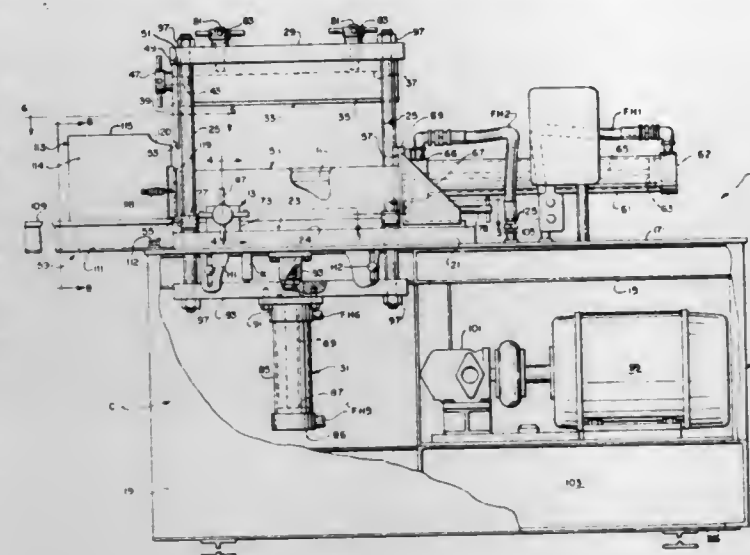


plate and chute are readily removable without the use of tools for cleaning.

3,753,399

#### CONTINUOUS HELICAL ACREW PRESS

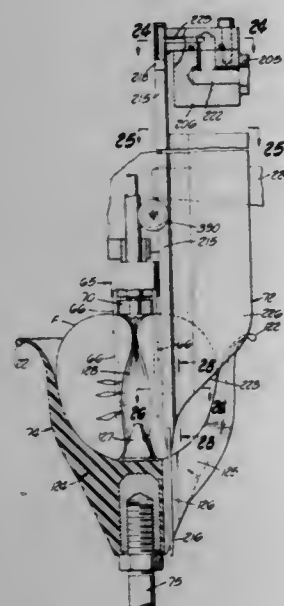
Rene Alfred Francois Dessoris, Cité du Soleil, Les Fenouillères, Aix-en-Provence, France

Filed Mar. 26, 1971, Ser. No. 128,319

Claims priority, application France, Apr. 22, 1970, 7014631  
Int. Cl. B30b 3/02

U.S. Cl. 100-145

4 Claims



jacent corresponding reciprocative sectionizing tools and corresponding cup members are moved into position to support the fruit from below during the batch sectionizing operation.

All of the sectionizing tools are fixedly but adjustably mounted on a vertical reciprocative frame for simultaneous sectionizing strokes and synchronization of the rotation of the fruit with the operation of the sectionizing tools is accomplished by employing cam means on the vertically reciprocative frame to actuate the fruit holders. Indexing of the rotating fruit relative to the successive radial membranes of the fruit is accomplished by providing individual clutches for the fruit holders and disengaging each clutch in response to impingement of a radial membrane of the corresponding rotating fruit against the corresponding partially inserted fruit sectionizing tool.

3,753,398  
MEAT PRESS

Daniel Dohm, Jr., St. Louis, Mo., assignor to Cashin System, Long Island, N.Y.

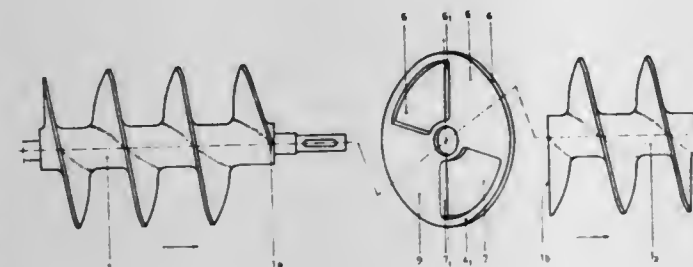
Filed Aug. 20, 1971, Ser. No. 173,478

Int. Cl. B30b 7/04

U.S. Cl. 100-53

11 Claims

A press for shaping frozen meat into an elongate block or "log" of uniform cross-section, having a lower die and an upper die movable between a raised retracted position clear of the lower die and a lowered closed position on the lower die, the dies forming a cavity extending lengthwise thereof when the upper die is closed. The upper die carries a plate at its forward end for closing the forward end of the cavity, and a ram is movable in the cavity for compressing frozen meat therein against the plate to form a block of meat, and for ejecting the



The invention relates to a helical screw press particularly for the continuous pressing of the grape harvest comprising a static obturator positioned in the path of the pressed matter and located between a helical feed screw and a filter cylinder.

3,753,400

#### REFUSE COMPACTOR SUPPORT MEANS

Frank E. Miller, Danville, Ky., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 8, 1971, Ser. No. 178,606

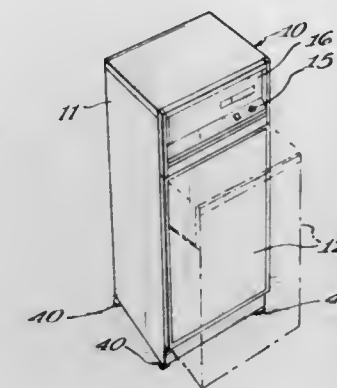
Int. Cl. B30b 15/00

U.S. Cl. 100-100

9 Claims

A refuse compactor having a receptacle in which refuse is compacted for facilitated disposal. The compactor includes an outer cabinet and improved means at the lower end of the cabinet for enclosing moving parts of the compactor and for

selectively movably carrying the compactor, such as for moving the compactor over a floor surface during installation element. The three-input-seven-output explosive logic element comprises four explosive AND/NAND logic elements.



thereof, and adjustable means for supporting the compactor when so installed for compacting operation.

3,753,401

#### SUPPORTING HOUSING ASSEMBLY FOR A PRINTING MACHINE

Kenichi Miyazaki, Kokubunji-shi, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan

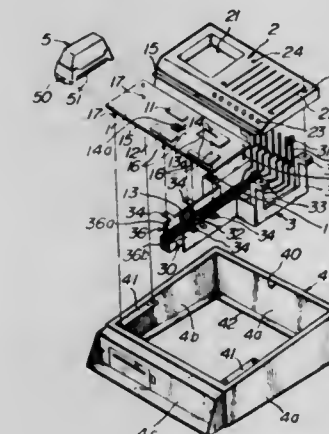
Filed Dec. 23, 1971, Ser. No. 211,191

Claims priority, application Japan, Dec. 28, 1970, 45/132377

Int. Cl. B411 35/10

U.S. Cl. 105-45

10 Claims



A manually operated printing machine includes a printing bed plate mounted on a housing extending over the front portion of the open top of the housing, and supporting the carrier of a printing unit which is located in the housing. A cover for the setting rack bars of the numbering unit, closes the rear portion of the open top of the housing, and is also secured to the carrier of the printing unit so that it is easy to accurately assemble the machine.

3,753,402

#### EXPLOSIVE AND/NAND LOGIC ELEMENT

Fred L. Menz, and Michael R. Osburn, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

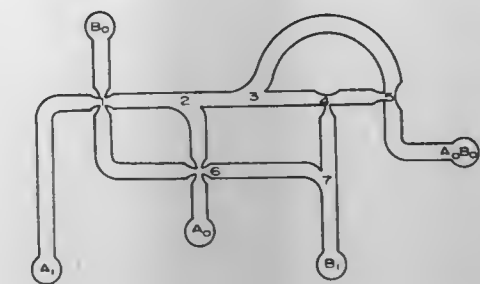
Filed Sept. 20, 1971, Ser. No. 181,994

Int. Cl. F42d 1/04; C06c 5/04

U.S. Cl. 102-22

2 Claims

An explosive controlled rectifier, an explosive AND/NAND logic element and a three-input-seven-output explosive logic



Each explosive AND/NAND logic element has two inputs and three outputs and includes one explosive controlled rectifier.

3,753,403

#### STATIC DISCHARGE FOR ELECTRO-EXPLOSIVE DEVICES

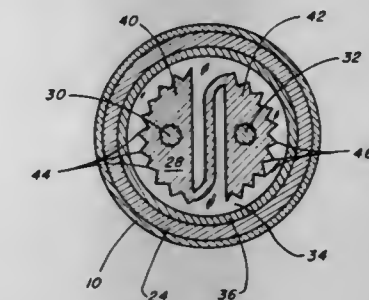
Vincent J. Menichelli, Panorama City, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 19, 1968, Ser. No. 760,934

Int. Cl. F42b 3/18

U.S. Cl. 102-28 R

3 Claims



A static discharge device for an electro-explosive having a pair of electrical lead wires with a bridge element connected there across and in contact with an explosive charge. The bridge element has saw tooth edges positioned away from the explosive charge to provide multiple selective static breakdown points.

3,753,404

#### SPIKE DRIVING SYSTEM

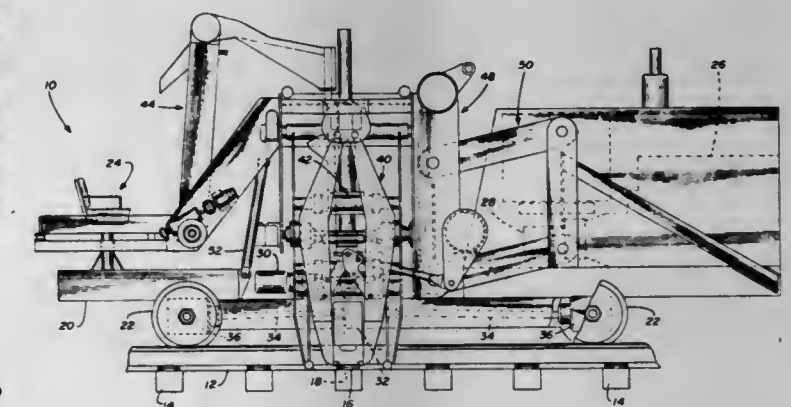
John F. Bryan, Jr., 3212 Mapleleaf Cir., Dallas, Tex.

Filed Sept. 21, 1970, Ser. No. 74,016

Int. Cl. E01b 29/26

U.S. Cl. 104-17 R

37 Claims



In a spike driving system, a tie nipper assembly, a spike receiving hole locating and spike driving assembly, and a spike feeder assembly are supported on a vehicle for movement along a track. The tie nipper assembly grips one of the ties of the track and applies an upwardly directed force to the tie.



The spike receiving hole locating and spike driving assembly includes four subassemblies each for automatically locating a spike receiving hole on one side of one of the rails of the track and for thereafter driving a spike through the hole and into the tie. The spike feeder assembly supplies spikes to the subassemblies and simultaneously manipulates the spikes into orientation necessary for insertion.

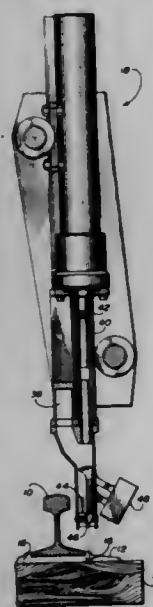
3,753,405

## SPIKE POSITIONING SYSTEM

John F. Bryan, Jr., 3212 Mapleleaf Cir., Dallas, Tex.  
Continuation-in-part of Ser. No. 839,142, July 2, 1969,  
abandoned. This application Sept. 3, 1971, Ser. No. 177,588  
Int. Cl. E01b 29/26

U.S. Cl. 104-17 R

14 Claims



A spike positioning system includes an electro-optical device for locating spike receiving holes. The locating device is mounted on a spike positioning mechanism that is in turn mounted for movement by hydraulic cylinders. In use, the electro-optical device controls a servo system which operates the hydraulic cylinders. The cylinders in turn move the locating device and the spike positioning mechanism into alignment with a spike receiving hole.

3,753,406

## CABLEWAY ARRANGEMENT

Gerhard Muller, Zipfelwiesenstrasse 7, Dietlikon, Switzerland  
Filed Oct. 4, 1971, Ser. No. 186,037  
Claims priority, application Switzerland, Oct. 13, 1970,  
15112/70

Int. Cl. B61b 7/10

U.S. Cl. 104-112

3 Claims



A cableway arrangement comprising a driveway formed from at least one cable, and at least one support cable. The driveway is stressed and further is preloaded by the support cable through the agency of connection element means between each two supports limiting a span zone in a manner producing a negative sag when the driveway is not subjected to the load of the payload. The preloading is such that the payload guided along the driveway, and against the action of the preloading of the driveway produced by the negative sag, follows a direction of travel which approximates a straight line.

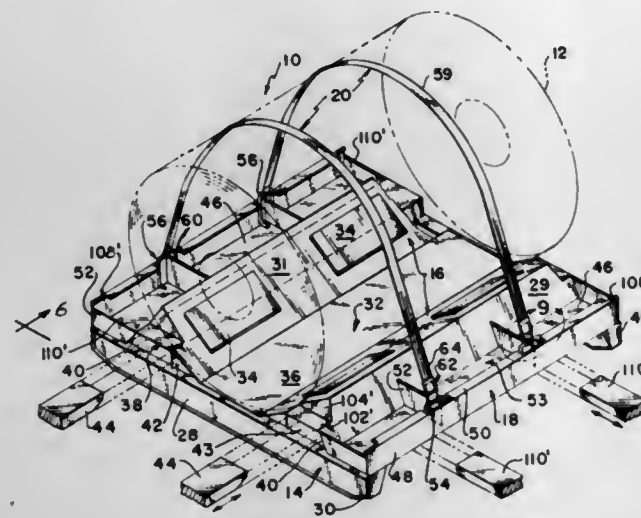
3,753,407  
CONVERTIBLE SHIPPING PALLET

Arne B. Tilseth, Oakland, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Apr. 5, 1972, Ser. No. 241,255  
Int. Cl. B65d 19/38

U.S. Cl. 108-53

20 Claims



Improved reusable and convertible shipping pallet of cradle-like design having truss-like reinforcing elements and special attachments whereby the pallet can be used to ship either flat or annular shaped products with equal facility and can be handled equally well by various types of pallet handling equipment such as lift trucks, cranes, etc.

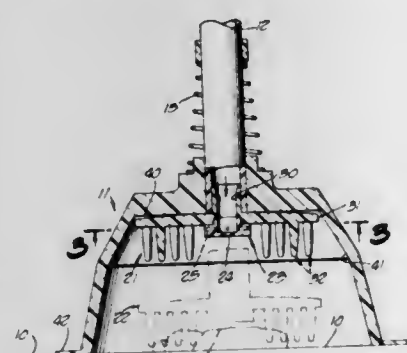
3,753,408

## HYDRO-DISINTEGRATOR

Nell J. Zimmerman, 3339 Brookside Drive, Malibu, Calif.  
Filed Sept. 16, 1971, Ser. No. 181,071  
Int. Cl. A01c 23/02

U.S. Cl. 111-7.1

7 Claims



A hydro-disintegrator useful for disposing of animal droppings in lawns utilizing a stream of water and fragmenting means. The device breaks up the droppings and causes them to be dispersed, absorbed or dissolved into the lawn. The stream of water may be supplied by an ordinary garden hose and means for adding a deodorant, detergent, or the like to the water stream are also disclosed.

3,753,409

## METHOD AND APPARATUS FOR SUBSOIL IRRIGATION

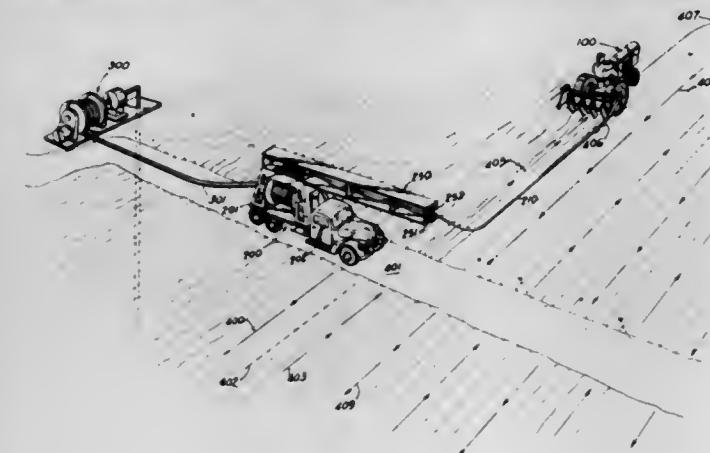
Thomas J. Frazier, 2680 Ashford Rd. N.E., Atlanta, Ga.  
Filed July 2, 1971, Ser. No. 159,223  
Int. Cl. A01c 23/02

U.S. Cl. 111-6

11 Claims

A method and apparatus for subsoil application of fluid soil conditioning medium, such as water, for use in subsoil irrigation. An application of fluid soil conditioning medium is applied to the subsoil of an area by traversing the area with a translatable fluid application means in a plurality of alternate

paths of movement parallel arranged relative to each other, with each alternate path of movement being located adjacent to a preceding path of movement, whereby the plurality of paths of movement are collectively operable to completely cover a predetermined area in which a subsoil application of fluid soil conditioning medium is to be made. The fluid medium to be applied is delivered from a stationary supply source to the translatable application means during the traversing operation and is ejected through a plurality of openings made in the soil during the traversing movement, whereby the fluid can be delivered or ejected in the subsoil of the area being traversed. The system of subsoil irrigation or application of a fluid soil conditioning medium includes a stationary supply source, such as a well, with the well being operatively connected through reelable conduit means to an intermediate reel means supported on a translatable vehicle means and with the



conduit means including an additional conduit portion operatively connected to the translatable fluid application means, with the translatable fluid application means including a plurality of horizontally spaced soil splitting shank means for making openings in the soil of the area being traversed and including pressure pumping means for applying the fluid delivered thereto through the openings in the soil to the subsoil of the area. The translatable vehicle means containing the reel means and the translatable vehicle means containing the soil splitting shank means and fluid applying means are controlled and operatively associated with each other whereby the fluid can be pumped in a continuous manner from the stationary supply source through the reelable conduit means and through the openings in the soil during the traversing operation of the area with the vehicle containing soil splitting shank means.

3,753,410

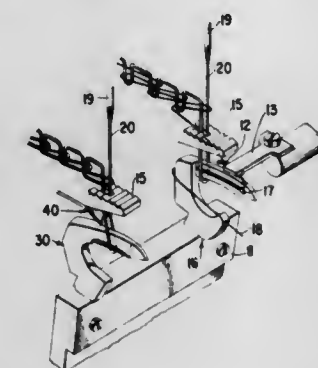
## SINGLE THREAD CHAINSTITCH FITTINGS FOR TWO THREAD CHAINSTITCH SEWING MACHINE

Stanley Kostenowczyk, Cranford, N.J., assignor to The Singer Company, New York, N.Y.

Filed May 12, 1972, Ser. No. 252,756  
Int. Cl. D05b 1/06

U.S. Cl. 112-199

3 Claims



A looper and a cooperating thread loop positioner for forming single thread chainstitches which may be applied to the

looper carrier and work feed dog respectively of a sewing machine adjusted to operate in the production of a two thread chainstitch seam without requiring any change in the timing of any of the sewing machine parts.

3,753,411

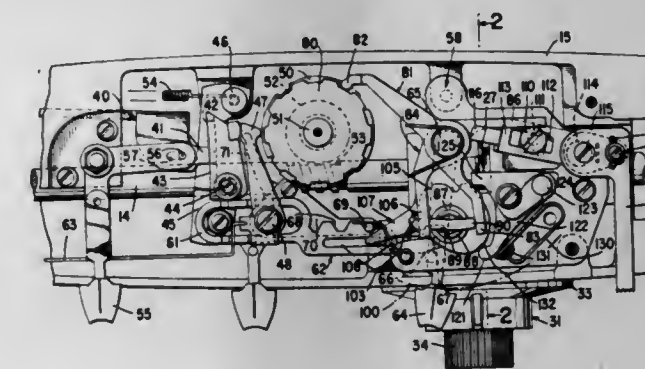
## REGULATOR FOR CAM CONTROLLED FEED IN SEWING MACHINE

Richard P. Graham, Westfield, and Henry Schaeffern, Somerville, Bridgewater Twp., both of N.J., assignors to The Slinger Company, New York, N.Y.

Filed June 30, 1972, Ser. No. 267,773  
Int. Cl. D05b 3/04

U.S. Cl. 112-210

7 Claims



A control mechanism for selectively rendering effective a manual or a cam control for the sewing machine work feeding mechanism. Simultaneously with selection of cam control for the work feeding mechanism, provision is made for rendering ineffective the heavy spring which biases the work feeding mechanism in a forward direction of feed during manual control. Also associated with the selector for manual or cam control of the work feeding mechanism is a cam follower throw-out device whereby exchange of pattern cams is facilitated.

3,753,412

## SELECTIVELY HARDENED NEEDLES

Richard W. Shepard, Torrington; William A. Ross, Harwinton; Samuel Audia, Torrington, and Gary W. Holmes, Winsted, all of Conn., assignors to The Torrington Company, Torrington, Conn.

Continuation of Ser. No. 44,709, June 9, 1970, abandoned.  
This application Dec. 2, 1971, Ser. No. 204,337  
Int. Cl. D05b 85/00

U.S. Cl. 112-222

5 Claims

	BROAD RANGE	PREFERRED RANGE
CRANK	40-61	45-53
SHANK	47-61	51-59
START OF INTERMEDIATE BLADE	50-61	55-61
INTERMEDIATE BLADE	54-64	58-64
START OF TRIANGULAR BLADE	53-63	57-63
TRIANGULAR BLADE	57-64	60-64
POINT	57-67	63-67

A selectively tempered needle is disclosed. The needle comprises one section having a predetermined hardness and a second section having a different predetermined hardness. Needles of several different sections, each having different hardnesses, may be formed.

The needles are made by applying different amounts of heat to different portions of the needle. The heat may be applied electromagnetically.



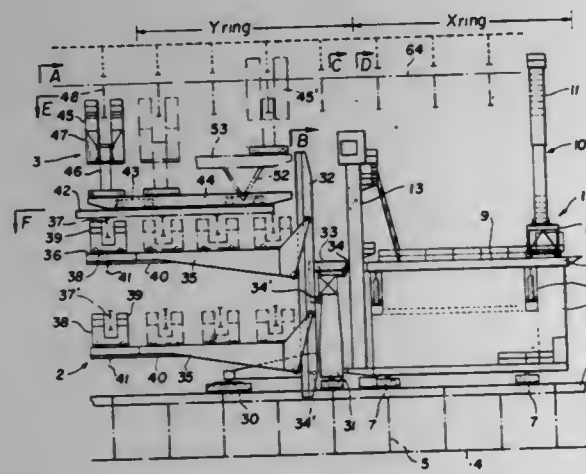
An automatic system feeds each needle to a heating area where the needle is selectively tempered and straightened. The selectively heated needle is simultaneously expelled from the heating area and cooled.

**3,753,413**  
**HULL CONSTRUCTION METHOD EMPLOYING HULL CONSTRUCTION UNITS AND A FACILITY THEREFOR**  
Yoshio Ichikawa, Tokyo; Sadao Kenko, and Katsumi Matsuhira, both of Hiroshima, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed June 22, 1971, Ser. No. 155,593  
Int. Cl. B63b 3/00

U.S. Cl. 114-65

6 Claims



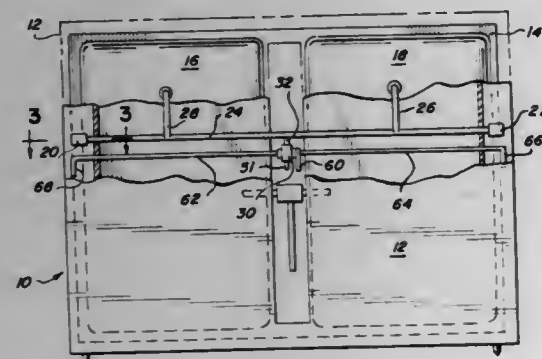
A hull construction method comprises three work units mounting the welding and tack welding machines and other machines and equipment for facilitating the hull construction so that the hull construction works may be concentrated.

**3,753,414**  
**AIR MANIFOLD SYSTEM FOR INFLATABLE BULKHEADS**  
Samuel H. Enochian, Thornton, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed Sept. 23, 1971, Ser. No. 183,017  
Int. Cl. B63b 25/24

U.S. Cl. 114-75

5 Claims



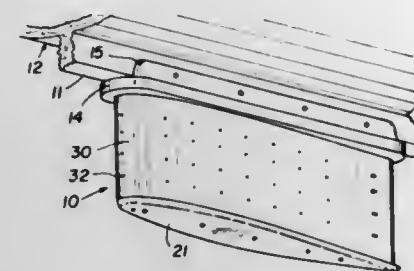
An improved system for selective inflation and deflation of the inflatable envelope means, of an air-pressure type bulkhead system using an inflatable envelope positioned between the spaced panels, is provided by manifolding multiple, normally closed inlet valves at selected locations with the envelope means and providing a single deflation valve that is selectively operable from multiple selected locations. In one form of construction, the single deflation valve is combined with an inlet valve.

**3,753,415**  
**HYDROFOIL-SHAPED STABILIZING OR ATTITUDE-AFFECTING MEANS FOR BOATS**  
Samuel G. Burtis, Sherman Point Rd., P.O. Box 367, Camden, Maine

Filed Nov. 30, 1971, Ser. No. 203,341  
Int. Cl. B63b 39/06

U.S. Cl. 114-126

8 Claims



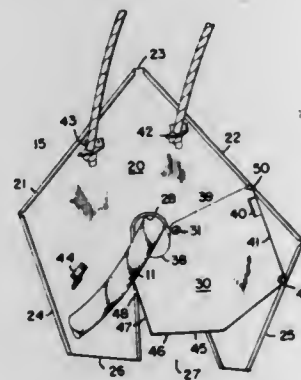
A hydrofoil-shaped stabilizer or attitude-changing means for boats, having an elongated frame assembly adapted to be connected to a submerged portion of the hull of a boat with its longitudinal axis parallel to the fore-to-aft axis of the boat. A flexible curtain assembly extends about the frame assembly and is fixed thereto but free to move laterally and to a more limited extent longitudinally relative to the frame assembly. The interior of the curtain assembly communicates with the surrounding water and is deflected to one side or the other relative to the frame assembly by its displacement relative to the water caused by a change in the attitude of the boat so as to form a hydrofoil having a camber for generating forces to oppose the change in attitude to one side or the other when the boat is underway.

**3,753,416**  
**RAT GUARD**  
Bernard F. Haglund, Hayward, and Robert M. Salvarezza, Hillsborough, both of Calif., assignors to Coast Marine & Industrial Supply Inc., San Francisco, Calif.

Filed Sept. 24, 1971, Ser. No. 183,372  
Int. Cl. B63b 21/12

U.S. Cl. 114-221 R

11 Claims

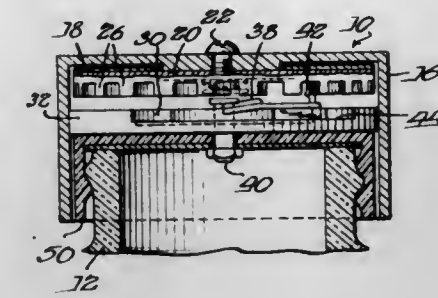


A rat guard for ships' hawsers and the like. A polygonal barrier plate has a bottom portion and has a top portion with two steeply converging edges meeting at a narrow vertex at the very top. A slot in the bottom portion extends up to a round hawser-engaging edge at about the center of gravity. A self-closing door is pivoted to the plate near the upper end of said slot. It is urged to a normally closed position by its weight and its relation to its pivot, and it then lies athwart the slot, with an edge mating with the round hawser-engaging edge to encircle the hawser. A stop or other holding means secured to the plate can hold the door about 180° away from its said normal position, where a portion lies across the slot's upper end so that it will be engaged by a hawser that has entered the slot and thereby caused to swing around its pivot to enclose the hawser between itself and the plate.

**3,753,417**  
**SEQUENCE INDICATING MECHANISM**  
Louis C. Garby, 3890 Armer Dr., Boulder, Colo.  
Filed June 25, 1970, Ser. No. 49,824  
Int. Cl. G09f 9/00

U.S. Cl. 116-121

6 Claims



A sequencing mechanism adapted to incrementally change the relative positions of two members that is activated by reciprocal movement of one of the members.

**3,753,418**  
**COATING APPARATUS WITH FLUID DOCTOR BLADE**  
Riccardo Roncan, Genoa, Italy, assignor to Italsider S.p.A., Genoa, Italy

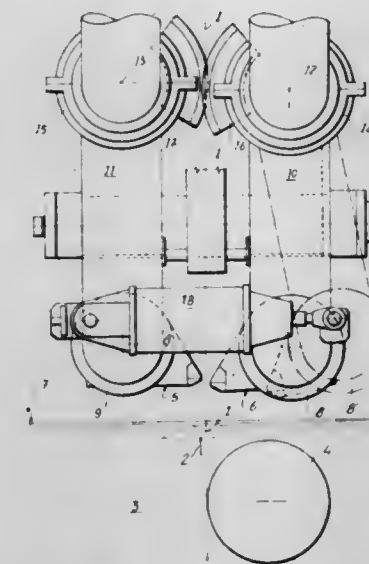
Filed May 17, 1971, Ser. No. 144,186

Claims priority, application Italy, May 27, 1970, 12711 A/70

Int. Cl. B65c 11/06

U.S. Cl. 118-63

6 Claims



The invention relates to an improved device suitable to adjust continuously the zinc coating on a steel sheet or the like by means of a pair of substantially horizontal headers arranged just above the bath surface on both sides of said metal strip, said headers being provided each with a slotted elongated nozzle consisting of two lips capable of projecting a fluid blade of varying configuration onto the surface of said metal strip.

**3,753,419**  
**ELECTROPHOTOGRAPHIC LIQUID DEVELOPING APPARATUS**

Osamu Fukushima, and Masamichi Sato, both of Asaka, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-Shi Kanagawa, Japan

Filed June 22, 1971, Ser. No. 155,510

Claims priority, application Japan, June 22, 1970, 45/54208

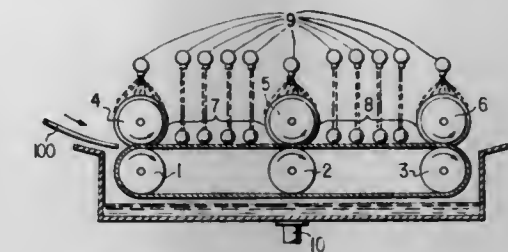
Int. Cl. G03g 13/00

U.S. Cl. 118-637

20 Claims

An electrophotographic developing apparatus employing a liquid developer for developing an electrostatic latent image on an insulating sheet, the apparatus comprising (1) at least

two pairs of nip rollers, each pair comprising a first roller disposed on one side of the insulating sheet and a second roller disposed adjacent the first roller and on the opposite side of the insulating sheet where the rollers nip and transport the insulating sheet and where successive pairs of rollers are disposed along the direction of movement of the sheet, (2) at least one pair of endless belts suspended between selected nip rollers at the end portions thereof, the selected rollers being



disposed along the direction of movement of the insulating sheet, (3) a plurality of development electrode rollers disposed between each adjacent pair of first rollers and on the same side of the insulating sheet as each of the first rollers and having smaller diameters than the nip rollers with their end portions disposed on the endless belts, and (4) means for supplying the developer liquid onto the surface of the sheet bearing the electrostatic latent image.

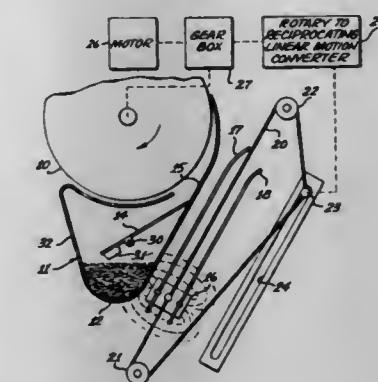
**3,753,420**  
**MAGNETIC BRUSH DEVELOPER SYSTEM**  
Gerald Post, Kew Gardens, and Charles M. Buchholtz, New York, both of N.Y., assignors to Ing. C. Olivetti & Co., S.p.A., Ivrea, Italy

Filed Aug. 11, 1971, Ser. No. 170,858

Int. Cl. G03g 13/00

U.S. Cl. 118-637

10 Claims



Apparatus for applying dry toner to a surface bearing an electrostatic image is disclosed using a mixture of magnetic particles and toner in a trough having a wall extending upwardly and progressively close to the image surface. A magnet is moved upwardly parallel to that wall for carrying a quantity of the mixture into contact with the surface. A gate in the trough permits a quantity of fresh mixture to pass upwardly along the wall and the spent mixture to move downwardly over the gate to the opposite side of the trough.

**3,753,421**  
**METHOD AND APPARATUS FOR CONTROLLING AN ANIMAL**  
Richard M. Peck, 3113 Club Dr., Allentown, Pa.  
Filed Dec. 20, 1971, Ser. No. 209,928  
Int. Cl. A01k 15/00

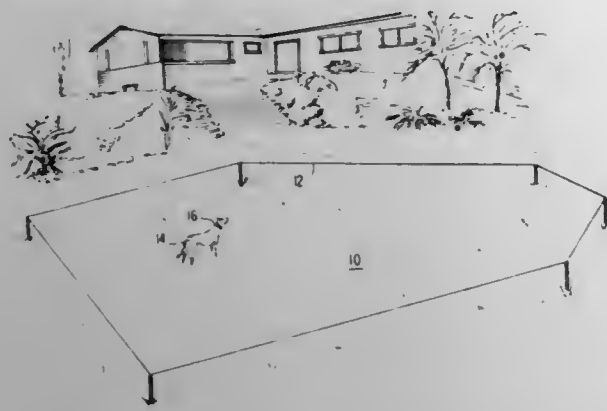
U.S. Cl. 119-29

13 Claims

Method and apparatus for controlling a domestic animal to prevent it from moving into or out of a predetermined area wherein a signal emitting wire is placed to surround the area,



and a low-powered, high voltage receiver circuit is mounted to the animal such as through a collar for receiving the signal



from the wire and producing a physical effect on the animal as it approaches the wire.

3,753,422

### MARINE MAMMAL AUTOMATIC FLOAT LOCATING AND RESTRAINING DEVICE AND METHOD

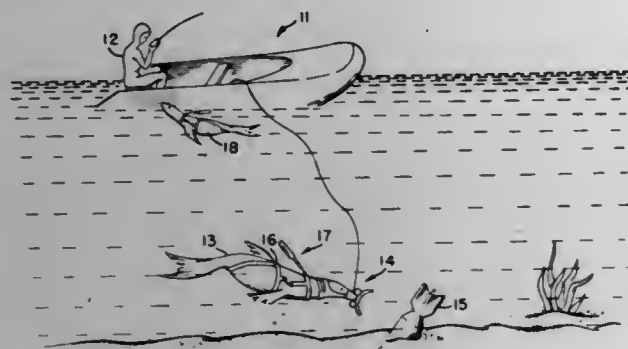
Ronald L. Selpie, Kailua, Hawaii, assignor to the United States of America as represented by the Secretary of the Navy

Filed June 26, 1972, Ser. No. 266,086

Int. Cl. A01k 15/00

U.S. Cl. 119-29

11 Claims



A device useful in training marine mammals is disclosed as having an inflatable bladder which, when inflated, increases the hydrodynamic drag and buoyancy of the marine mammal. The device is characterized by having an inactive position having low hydrodynamic drag and negative buoyancy and an activated position which has a relatively high hydrodynamic drag and positive buoyancy. A source of gas under pressure, for example, a gas cartridge, is connected so as to inflate the bladder means upon a predetermined interval of exposure to salt water. The inflation of the bladder is controlled by a water soluble washer which restrains a spring loaded plunger from penetrating the gas filled cartridge.

3,753,423

### CHEMICAL REACTOR BOILER ASSEMBLY

Donald R. Olson, and Daniel H. Kiely, both of State College, Pa., assignors to the United States of America as represented by the Secretary of the Navy

Filed June 22, 1972, Ser. No. 265,118

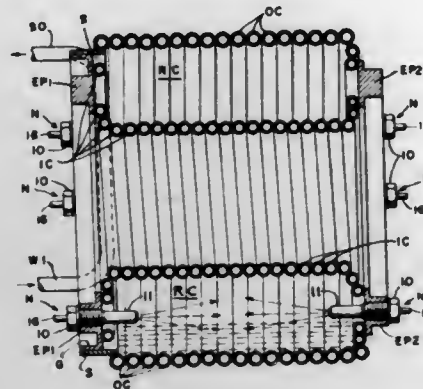
Int. Cl. F22b 37/10

U.S. Cl. 122-248

11 Claims

A compact boiler unit of the type used for torpedo propulsion for transferring chemical reaction heat to a working medium. The reaction takes place in an annular zone defined between two concentric cylindrical wall elements and two annular end plate elements secured thereto, the cylindrical wall elements formed of continuous laterally bonded turns of a helical tubular conduit and the end plate elements provided with circumferentially spaced opposed reactant nozzle units for injecting reactant fluid into the annular zone to create

maximum turbulent mixing therein. The working medium is moved in a helical path first through the inner helical conduit to generate vapor and then through the outer helical conduit to superheat the vapor. Centrifugal action during movement of the medium through the inner helical path breaks up and removes vapor bubbles to enhance heat transfer and reduce



overheating which could cause conduit burnout. Maximum centrifugal force is advantageously developed along the outer surface of the inner conduit wall where best heat transfer potential and maximum burnout danger exist.

3,753,424

### METHOD AND APPARATUS FOR SUPPLYING GASEOUS AND LIQUID FUELS TO A DUAL-FUEL ENGINE

Dieter Haldvogel, Vienna, Austria, assignor to Steyr-Daimler-Puch Aktiengesellschaft, Vienna, Austria

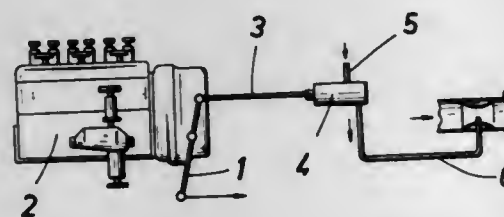
Filed Nov. 12, 1971, Ser. No. 198,166

Claims priority, application Austria, Dec. 22, 1970, A 11 518/70

Int. Cl. F02m 13/08

U.S. Cl. 123-27 G

5 Claims



Only liquid fuel is supplied to the engine under a no-load condition. Only liquid fuel at an increasing rate is supplied to said engine as the load thereon increases from said no-load condition through a lower partial load range. Liquid and gaseous fuels are supplied to said engine in a higher partial load range and under full load. The proportion of said gaseous fuel relative to said liquid fuel is increased during an increase of the load on said engine above said lower partial load range to about three-fourths of the full load on the engine.

3,753,425

### TWO STROKE INTERNAL COMBUSTION ENGINES

Bernard Hooper, Wordsley near Stourbridge, England, assignor to John Edward Favill, Sedgley, England, a part interest

Filed Sept. 14, 1971, Ser. No. 176,404

Claims priority, application Great Britain, Sept. 19, 1970, 44,749/70

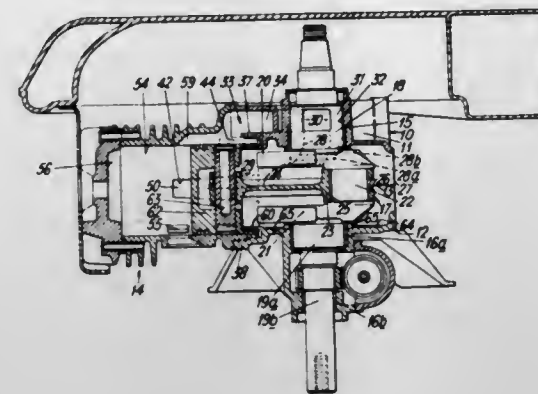
Int. Cl. F02b 33/04

U.S. Cl. 123-73 PP

5 Claims

The specification discloses a two-stroke engine employing crankcase compression wherein a charge of lubricant and fuel passes through a first transfer passage in a stationary part of the engine. The transfer passages for the or each cylinder communicate at one only of the journals of the crankshaft and the second transfer passage is branched and leads to inlet parts

located so as to give loop scavenging of the cylinder. The rotary axis of the crankshaft may be vertical and said journal the



upper journal which is thus well lubricated since at least the majority of the cylinder charge is exposed to the journal bearing.

3,753,426

### BALANCED PRESSURE FUEL VALVE

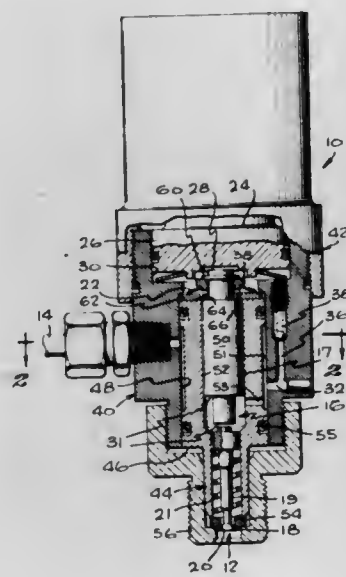
Martin C. Lilley, San Ramon, Calif., assignor to Physics International, San Leandro, Calif.

Filed Apr. 21, 1971, Ser. No. 136,097

Int. Cl. F02b 15/00

U.S. Cl. 123-139 E

14 Claims



A hydraulic fuel valve assembly which equalizes the pressure of fluid at the hydraulic cylinder during the closed-valve condition with the pressure of fuel at the nozzle region, to thereby assure that the hydraulic cylinder is always full and to minimize variations in the force that must be applied by the hydraulic piston when fuel pressure varies. The valve assembly includes a passageway connecting the fuel supply line to the nozzle region of the valve, and a channel leading to the hydraulic cylinder to supply pressurized fuel to it. A check valve is located along the channel to prevent the flow of fluid out of the hydraulic cylinder when it is highly pressurized during valve opening. In a valve wherein a fluid other than fuel is employed in the hydraulic cylinder, a bellows or sealed piston is installed in the channel between the check valve and the fuel line to prevent mixing of the hydraulic fluid and the fuel. The valve assembly includes a valve body that forms the hydraulic cylinder, and a separate valve insert that contains a valve plunger and an insert housing that defines the valve seat and that limits plunger movement away from the seat, to thereby enable testing and adjustment prior to complete valve assembly.

3,753,427

### ENGINE ANTI-DIESEL AND DECELERATION CONTROL

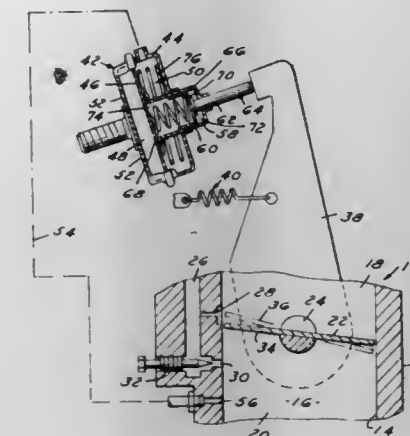
Raymond J. Cedar, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 29, 1971, Ser. No. 202,913

Int. Cl. F02m 19/12, 1/14; F02d 33/00

U.S. Cl. 123-198 DB

2 Claims



The throttle valve of a downdraft type carburetor is controlled in its movement by a servo in turn controlled by manifold vacuum changes; servo springs initially move the throttle valve to a closed position for engine anti-dieseling; engine running vacuum moves the servo diaphragm to open the throttle valve to an idle speed position; and, engine decelerations effect a delayed throttle valve closing to reduce emissions.

3,753,428

### IGNITION SYSTEM

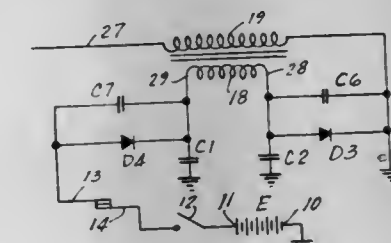
John P. Phillips, 625 Esther St., Michigan City, Ind.

Filed Mar. 30, 1971, Ser. No. 129,527

Int. Cl. F02p 1/00

U.S. Cl. 123-148 E

4 Claims



An improved ignition system for internal combustion engines having diode rectifiers and condensers in an ignition system connected in a fashion so as to provide an improved system thereby allowing increased gas mileage and hotter sparks to be obtained.

3,753,429

### INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

Gerhard Imhof, Rothenbach/P., and Peter Schmaldienst, Nurnberg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 12, 1971, Ser. No. 161,766

Claims priority, application Germany, July 28, 1970, P 20 37 336.8

Int. Cl. F02p 1/00

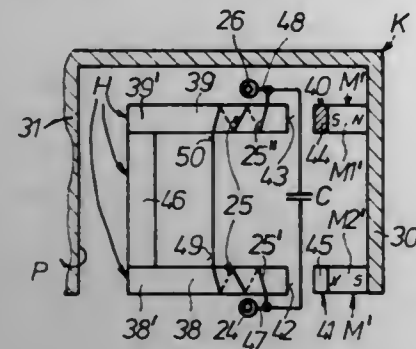
U.S. Cl. 123-148 E

33 Claims

A plurality of permanent magnets forming a cylinder is rotated about a common axis, inducing voltages in two windings on respective legs of a magnet yoke positioned within the cylinder, the windings being so wound that their



voltage normally cancel. Means are provided within the cylinder so as to upset, once every rotation of the plurality of magnets, the balance between the voltages in the two windings so that there is produced a control voltage that is conducted to the control electrode of a thyristor that controls the discharg-



ing of an ignition capacitor through the primary of a spark coil. In one form of the invention, the cross piece connecting together the two legs is nonmagnetic, and means are provided for preventing the generation of a control voltage when the engine rotates in the wrong direction.

3,753,430

### SAW-GRINDER COMBINATION FOR THIN ROCK SECTION MACHINES

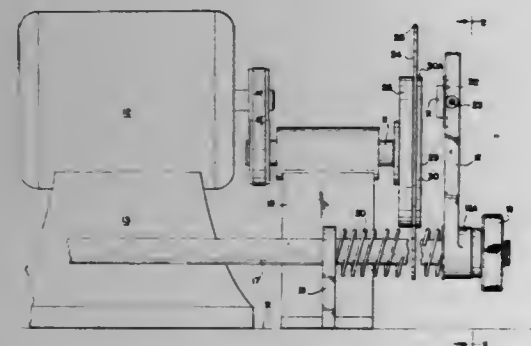
Egil Oas, Rt. 2, Box 133, Springfield, Oreg.

Filed June 14, 1972, Ser. No. 262,695

Int. Cl. B24d 7/18

U.S. Cl. 125-14

8 Claims



A combination sawing and grinding instrumentality supported on a single arbor for the cutting and grinding of specimens into thin sections for microscopic analysis. An abrasive periphery of the saw is supported against dishing during cutting operations by cooperating plate and grinder means oppositely disposed on the blade. Importantly, the offset grinder means additionally serves to abrade the specimen to the required 30 micron thickness all in one operation without the use of a separate machine and without re-mounting of the slide mounted specimen.

3,753,431

### GAS SUPPLY UNIT FOR PORTABLE GRILL

Walter Kozlowski, Russell, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

Filed May 8, 1972, Ser. No. 251,108

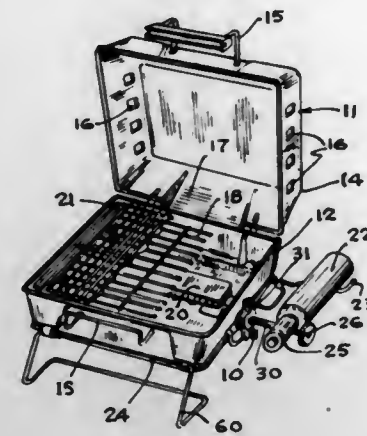
Int. Cl. F24c 5/20

U.S. Cl. 126-38

10 Claims

A gas supply unit for a portable gas grill which is easily assembled and disassembled to a standard portable gas supply tank. A base member for the grill has a compartment into which the gas inlet tube for the burner element and the gas outlet tube from the gas supply control unit are interfitted in an easily removable manner. In preferred embodiment, the gas outlet tube has a butterfly type bolt for threadable engagement with the compartment to hold it in place inside the inlet

tube and the compartment. A support arm which is pivotally attached to a support rack for the base holds the gas supply tank at a determined level. The gas outlet tube with the gas



3,753,432

### HYPODERMIC SYRINGE FOR BLOOD TESTS

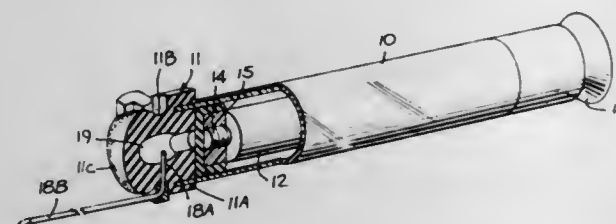
Luis A. Guerra, New York, N.Y.

Filed Mar. 10, 1971, Ser. No. 122,775

Int. Cl. A61b 5/14

U.S. Cl. 128-2 F

5 Claims



A syringe assembly for drawing a blood sample into a test tube suitable for blood analysis. The assembly includes an open-ended cylindrical tube secured at one end to a closure provided with a constricted neck of self-sealing elastomeric material and having an internal chamber therein communicating with the tube. Slidably disposed within the tube is a piston which is detachably coupled to a stem terminating in a handle whereby the piston may be shifted from an initial position sealing off said chamber to a final position adjacent the other end of the tube, the withdrawal of the piston creating a suction force. Also provided is an applicator having a yoke adapted to embrace the neck of the closure, and an L-shaped double-pointed needle secured at its junction to the yoke, the lateral arm of the needle penetrating the neck to enter the chamber therein, whereby blood flowing through the longitudinal arm of the needle which is injected in a vein of a patient is conducted into the neck chamber and from there into the tube to a level determined by the piston position. The piston serves as a stopper when the stem is detached therefrom and may be later removed by a puncturing tool which vents the stopper to facilitate its extraction from the tube.

3,753,433

### ELECTROENCEPHALOPHONE AND FEEDBACK SYSTEM

Frank Bakerich, and Robert T. Scully, both of Mendocino, Calif., assignors to Aquarius Electronics, Mendocino, Calif.

Filed Jan. 18, 1971, Ser. No. 107,215

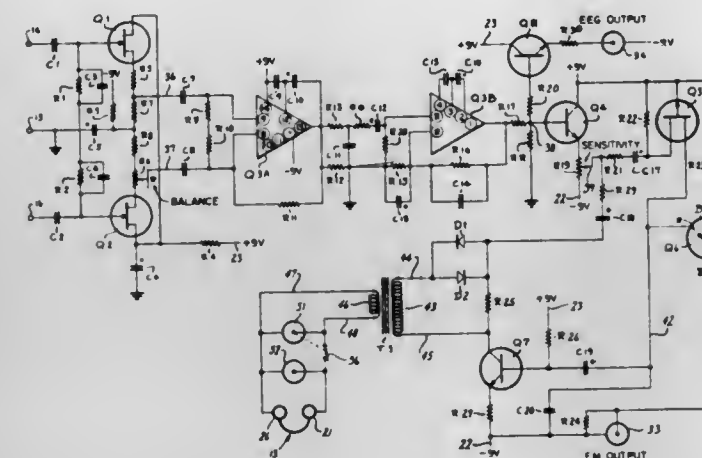
Int. Cl. A61b 5/05

U.S. Cl. 128-2.1 B

19 Claims

An electroencephalophone which is battery operated and completely self-contained in a headset to be worn by the user and having a plurality of scalp electrodes carried on flexible

leads permitting placement of the electrodes on the user's head when the headset is mounted thereon and having an electronic circuit and transducer for converting brain wave signals picked up by the electrodes into recognizable audio tones enabling the user to listen to his own brain wave generation.



3,753,434

### ELECTRONIC DEVICE FOR MEASURING PENETRATION OF TOOTH ROOT CANAL AND ENDODONTIC THERAPY METHOD

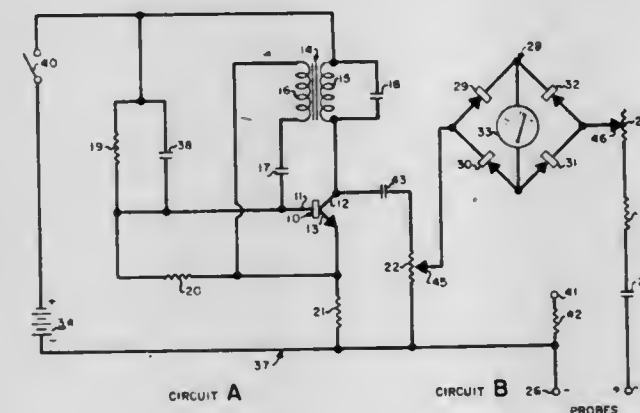
James L. Pike, 2115 E. Lavendale, San Antonio, Tex., and Polk W. Cash, 9714 La Rue, San Antonio, Tex.

Filed Aug. 23, 1971, Ser. No. 173,775

Int. Cl. A61b 5/05

U.S. Cl. 128-2.1 Z

9 Claims



An electronic device for accurately determining the point of penetration of root canal and contacting of peridental tissue. The device is battery powered fed through a tickle oscillator conductively connected to a probe diode bridge meter circuit utilized for accurately measuring conductivity between the root canal area and body tissue of the mouth. Potentiometers are provided for adjusting and balancing circuits to insure accuracy of measurements. The method and utilization includes not only measurements of penetration of root canal to peridental tissue but also provides determination of effectiveness of seal of silver points in restoration as well as disclosing cracked teeth and secondary canals.

3,753,435

### MULTI-JET MASSAGER

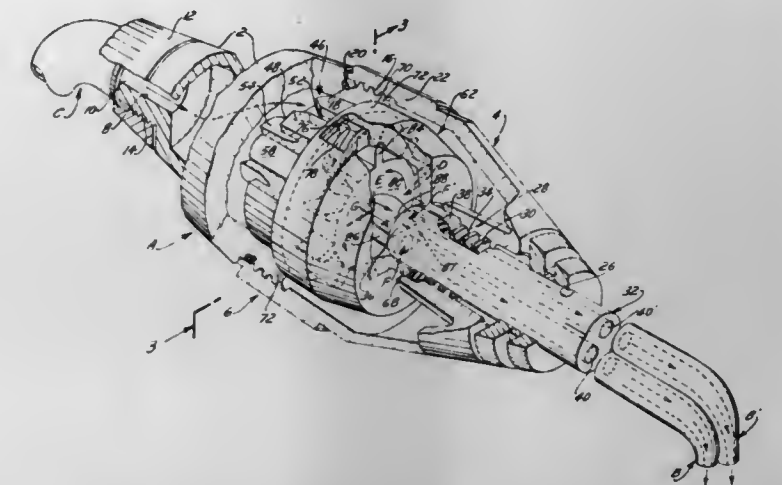
William Blasnik, 16 Donnybrook Dr., Demarest, N.J.

Filed Nov. 22, 1971, Ser. No. 201,017

Int. Cl. A61h 9/00

U.S. Cl. 128-66

19 Claims



A multi-jet massager particularly well adapted for treatment of the gums, in which a plurality of jet nozzles are provided and in which an impeller-driven rotary valve is utilized to direct fluid sequentially to the several nozzles, thereby to produce successive jet action from the nozzles. The arrangement is such that all of the fluid flowing through the device is utilized in jet-formation, and at the same time all of the fluid contributes to the control action which produces those jets. The device is designed so that it will be self-starting no matter in what position it may stop.

3,753,436

### AUTOMATIC RESPIRATOR

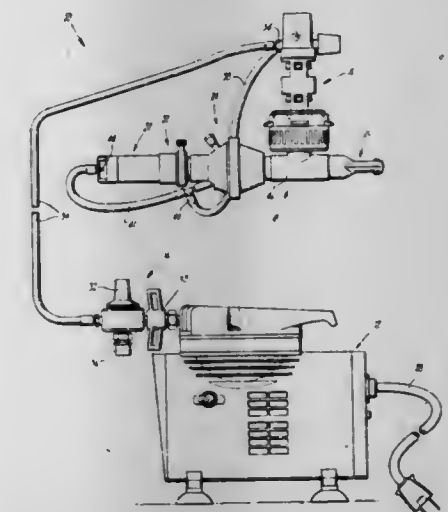
Forrest M. Bird, Mark 7, Palm Springs, and Henry L. Pohn-dorf, 1227 Brewster Street, El Cerrito, both of Calif.

Continuation-in-part of Ser. No. 26,023, April 6, 1970, abandoned. This application Feb. 16, 1971, Ser. No. 115,225

Int. Cl. A61m 16/00

U.S. Cl. 128-145.8

22 Claims



Respiratory apparatus for controlling the flow of gases to a patient's airway. In one embodiment a light weight, portable, reliable and ethical respirator apparatus adapted for home use or the like is provided. A servo flow control affords convenient and accurate adjustment of sensitivity pressures and peak inspiratory pressures. The elements are constructed in a manner facilitating disassembly, sterilization, and assembly by a relatively unskilled person. The respirator is adapted to freely operate under adverse conditions without being affected by



an accumulation of moisture. In another embodiment the respirator apparatus includes means facilitating accurate manual adjustment of the peak inspiratory pressure limit in a manner which does not alter the pre-set sensitivity level.

3,753,437

# EXPANDABLE TAMPON INSERTER HAVING A CONSTRAINING RING

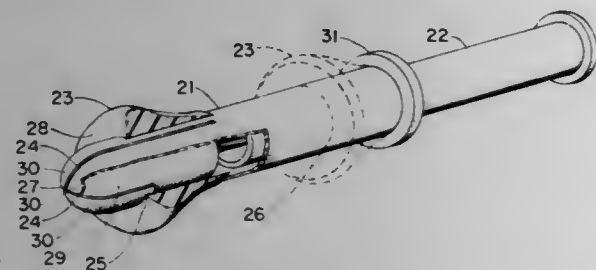
Charles Reay Hood, Cincinnati, and Bernard Allen Dulle, Montgomery, both of Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Dec. 17, 1971, Ser. No. 209,273

Int. Cl. A61m 31/00

U.S. Cl. 128—263

7 Claims



A tampon inserter having one end expandable when subjected to pressure on its interior surface and an externally mounted, moveable member which in a first position constrains such expansion and in a second position allows the one end of the inserter to expand or move outwardly. The expansion relieves the force between the interior wall of the inserter and exterior surface of the tampon, thus lowering the frictional force between the inserter wall and the tampon.

3,753,438  
SUTURE CLIP

Ernest C. Wood, 2461 Ivanhoe Dr., Los Angeles, and Peter B. Samuels, 5363 Balboa Blvd., Encino, both of Calif.

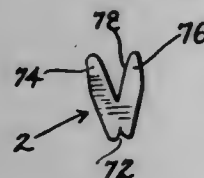
Continuation of Ser. No. 817,496, April 18, 1969, abandoned.

This application Apr. 25, 1972, Ser. No. 247,422

Int. Cl. A61b 17/04

U.S. Cl. 128—335

2 Claims



In order to promote even healing and minimize scarring, this application discloses a flat clip to be applied to each end of a thread drawn by a needle through the edges of the wound until the clip lies flat against the surface of the skin. The application also discloses a tool carrying a cartridge holding a supply of clips for securing the clips on the thread and severing it. In addition, there is shown a tool for removing the clips from the thread so that the sutures may be removed when the wound has healed.

3,753,439

# GENERAL PURPOSE SURGICAL DRAIN

Antonio Brugarolas, and Elias G. Elias, both of Buffalo, N.Y., assignors to Elias & Brugarolas, Buffalo, N.Y.

Filed Aug. 24, 1971, Ser. No. 174,466

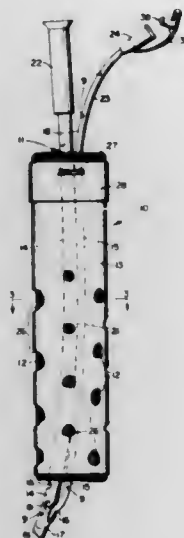
Int. Cl. A61m 27/00

U.S. Cl. 128—350 R

6 Claims

A surgical drain for operative and post operative usage providing a core comprising a pliant drainage conduit having through wall passages throughout its length from its distal end

to a point inset from its proximal end and a co-extensive pliant irrigation conduit open at its ends, a padding layer of soft, non-friable absorbent material surrounding said core from its distal end to a point opposite the proximal end passages of the drainage conduit, a soft rubber or like sheathing surrounding the padding layer from end-to-end and having through wall passages throughout its length from its distal end to a point op-



posite the proximal end passages of the drainage conduit, and a securing suture extending through the proximal ends of the padding layer and sheath and encircling the core to retain the parts assembled. Fittings are provided at the proximal ends of the respective conduits adapting them respectively for connection to a suction line and to an irrigation line and the fitting of the irrigation conduit includes a normally closed plug valve selectively opened to provide irrigation when needed.

3,753,440

# TOBACCO EXPANSION PROCESS

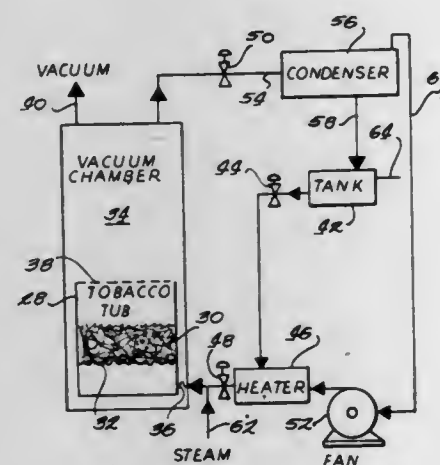
James Gilbert Ashburn, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Mar. 7, 1972, Ser. No. 232,541

Int. Cl. A24b 03/18

U.S. Cl. 131—140 P

6 Claims



The filling capacity of tobacco is increased by establishing a body of water-moistened tobacco in a bed in a hermetically sealed chamber. A partial vacuum is applied to the bed to remove occluded air and the tobacco is contacted with vapors of a compound having an atmospheric pressure boiling point between about -10 and +80° C., the temperature of the tobacco during contact being maintained at or below the boiling point of the compound at the prevailing pressure, whereby the tobacco is impregnated with the compound in the liquid state by condensation. The impregnated tobacco is then equilibrated, and a drying gas at a temperature between about 40° and 80° C. is passed through the bed to remove a portion

of the moisture and the impregnating compound as vapors. A hot gas at a temperature above about 90° C. and more than about 18° C. above the boiling point of the compound is then passed through the tobacco to expand it.

3,753,441

# DISPOSABLE ASHTRAY LINER

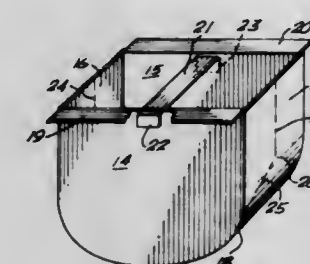
William B. Bennett, 1525 N.E. 149th St., North Miami, Fla.

Filed Jan. 31, 1972, Ser. No. 221,904

Int. Cl. A24f 19/14

U.S. Cl. 131—235 R

4 Claims



A disposable ashtray liner for replaceable use in an ashtray receptacle is fabricated of thin, bendable, sheet material so as to be collapsible and sealable at its upper end upon completion of its use for encapsulating cigarette butts, ashes, etc. for unitary disposal therewith. The sheet material is preferably of light-gauge sheet aluminum formed into an open-topped, cup-like ashtray liner having opposed end walls and opposed side walls and including an upper end plate secured against the upper periphery of the liner providing an outwardly-extending peripheral flange. The upper end plate has a pair of spaced, parallel, rectangular openings defining therebetween a snuffer strip extending between opposite end walls of the liner.

3,753,442

# MONITORING DEVICE AND METHOD

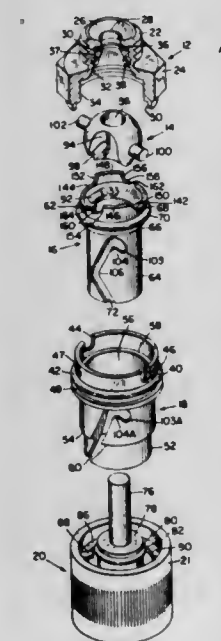
Thomas Tauber, Clifton Heights, Pa., assignor to Technical Development Company, Glenolden, Pa.

Filed Nov. 1, 1971, Ser. No. 194,203

Int. Cl. F16k 37/00

U.S. Cl. 137—15

10 Claims



A hydraulic device suitable for installation in a vessel wall and having a positively opening and closing valve, respectively, upon the insertion and withdrawal, selectively, of another functional member. Such a member may be a magnetic debris collector, an electric chip detector, a fluid-sampling element, a thermosensitive probe, a drain attachment and any related accessory, selectively. The practice of this hydraulic device

precludes the draining of the fluid and reduces the fluid spillage to a minimum when the accessory members are negotiated.

3,753,443

# APPARATUS FOR REMOVING FUEL VAPORS FROM A FUEL TANK ON A MOTOR VEHICLE

Yuichi Sorimachi, Toyota, and Kazuo Okamoto, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan

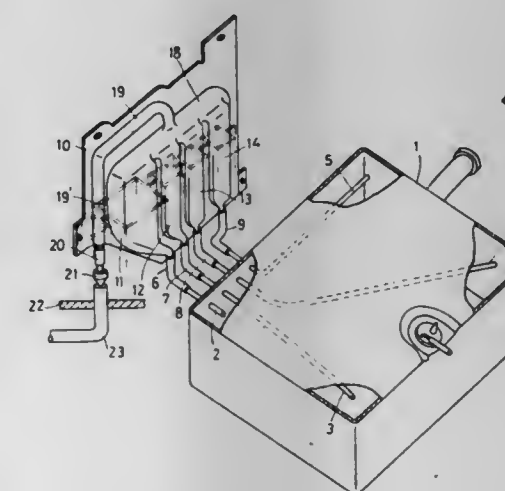
Filed May 8, 1972, Ser. No. 250,916

Claims priority, application Japan, May 25, 1971, 46/35691

Int. Cl. F17c 3/00

U.S. Cl. 137—255

6 Claims



An apparatus for removing fuel vapors from a fuel tank on a motor vehicle, comprising a plurality of upstanding expansion chambers having different volumetric capacities and separated from one another by dividing walls except for the upper end portions thereof in which they communicate with one another through a common chamber. The expansion chambers have at the lower ends thereof openings communicating respectively with the upper corner portions of the fuel tank, and the expansion chamber communicating with the corner of the fuel tank located closest to the apparatus is provided with an especially large volumetric capacity as compared with the other expansion chambers. The apparatus further includes a check valve installed in a path provided for communication between the apparatus and the canister, crank case, etc. of the vehicle for controlling the flow of vapors therebetween. The apparatus may be manufactured as a very compact unit, and yet, is capable of very effective vapor separation irrespective of the position of installation thereof relative to the fuel tank.

3,753,444

# DEVICE FOR COMBINING AND MIXING LIQUIDS

Herbert D. Winton, 4115 Picasso, Woodland Hills, Calif.

Filed Sept. 9, 1971, Ser. No. 179,075

Int. Cl. F16k 51/00

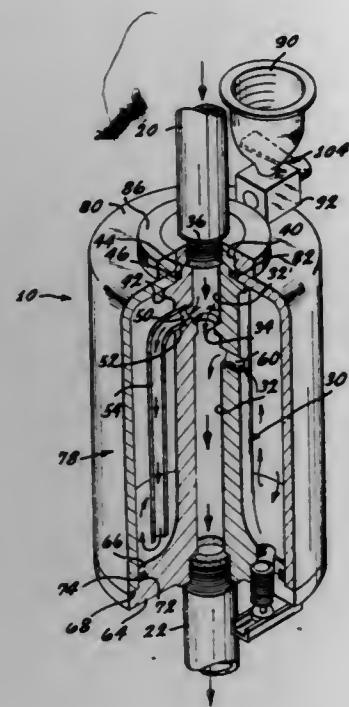
U.S. Cl. 137—268

8 Claims

A device for combining and mixing liquids and particularly for mixing an additive such as fertilizer with water. First and second concentric cylindrical chambers are provided with a water inlet to and an outlet from the inner chambers. A restricted venturi throat is provided at the inlet to the inner chamber so as to develop a pressure differential across it. A connection is provided from the inlet side of the restricted throat into the second chamber and from the second chamber



back to the inner chamber beyond the restricted throat. A flow of water is enforced through the second chamber which



contains the additive such as fertilizer which is turbulated, entrained, and then carried into the outlet stream of water.

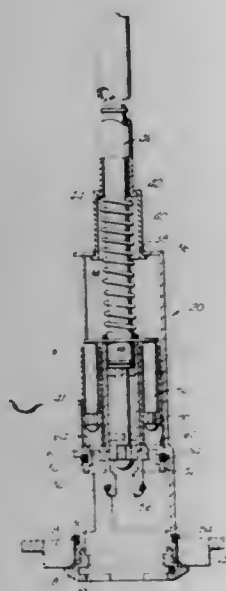
3,753,445

**WASHING, FILLING AND TAPPING VALVE ASSEMBLY**  
Mack S. Johnston, 26 Hitching Post Drive, Rolling Hills, Calif.

Filed Feb. 2, 1972, Ser. No. 222,910  
Int. Cl. F16I 55/10; B65d 83/14

U.S. Cl. 137-322

12 Claims



A valve assembly especially suitable for mounting in the bung opening in the side wall of a beer keg, and containing a skeletal tubular housing and a siphon tube which extends into said keg. A valve body is mounted in the tubular housing for movement between a closed position in which it is in closed, sealing engagement with the bung opening, and an open position in which it is spaced from the bung opening to permit cleaning liquid or beer to flow past the valve body and into the keg, said valve body being yieldably biased toward the closed position. Liquid and gas passageways with associated valve means are provided in the valve body, whereby gas under pressure can be admitted into the keg and beer can be withdrawn therefrom when the valve body is in the aforesaid closed position, as by using a tapper attachment.

3,753,446

**FLUID PRESSURE REGULATOR**

Adrianus Johannes Theodorus Hoogeboom, Harmelen, Netherlands, assignor to William Turner Brunot, London, England

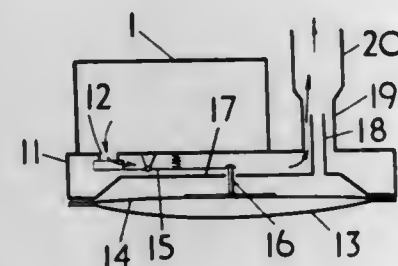
Continuation of Ser. No. 800,629, Feb. 19, 1969, abandoned.  
This application Jan. 11, 1971, Ser. No. 105,623

Claims priority, application Great Britain, June 14, 1968, 28,385/68

Int. Cl. F16k 21/00

U.S. Cl. 137-484-8

5 Claims



A fluid pressure regulator having a preliminary chamber provided with a biased preliminary inlet valve so that pressure of the fluid in such chamber is substantially reduced from the supply pressure. The preliminary chamber leads a main inlet valve into a main chamber having a discharge pipe. A pressure responsive diaphragm is located in an auxiliary chamber and has a discharge pipe opening into the discharge pipe from the main chamber so that the passage of any fluid along the discharge pipe out of the main chamber causes a suction in the auxiliary chamber which causes the diaphragm to move. The diaphragm carries an operating rod which moves pivotally mounted biased lever to open the main inlet valve and allow more fluid to enter the main chamber from the preliminary chamber.

3,753,447

**PNEUMATIC VALVES**

John David Davis, 25 The Fairway, Newton Ferrers, and Christopher Lee Atkins, 24 Longfield, Luton, Cornwall, both of England

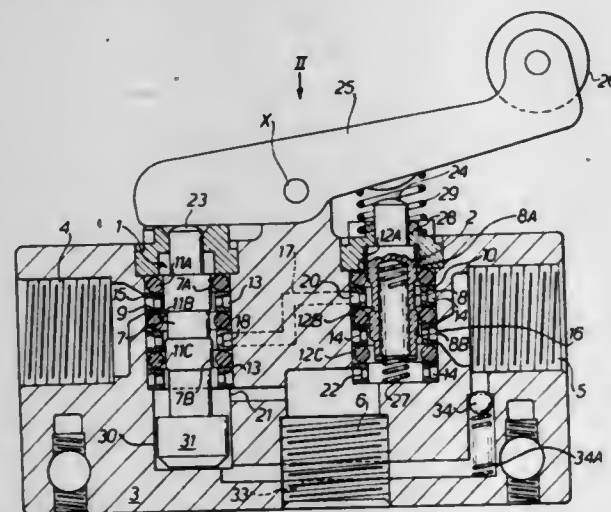
Filed Nov. 29, 1971, Ser. No. 202,813

Claims priority, application Great Britain, Nov. 27, 1970, 56,607/70

Int. Cl. F16k 11/10, 11/14

U.S. Cl. 137-596

13 Claims



A pneumatic control valve assembly has two valves in a common housing interconnected by a transfer duct. A first valve controls communication between an inlet and the transfer duct while the second valve controls communication between the transfer duct and an outlet. Operation of the second valve, for example by a lever, causes input pressure to be delivered to a point of use — e.g. an actuator. Back pressure is tapped from the outlet and operates an actuator in the

housing which closes the first valve, so that a pressure pulse is delivered. The closure of the first valve ensures that subsequent interruption or failure of the supply pressure has no effect on the state of the valves.

3,753,448

**VALVE ASSEMBLY FOR WATER FOUNTAINS AND THE LIKE**

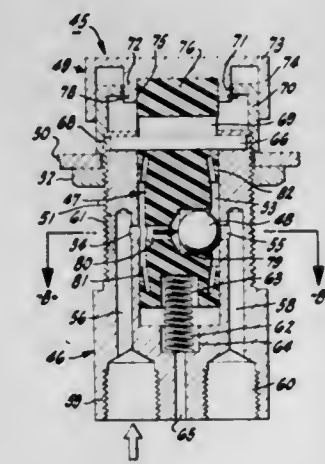
Allen C. Wright, Berkeley, Calif., assignor to Haws Drinking Faucet Company, Berkeley, Calif.

Division of Ser. No. 875,873, Nov. 12, 1969, Pat. No. 3,709,254. This application Dec. 7, 1971, Ser. No. 205,688

Int. Cl. F16k 11/14

U.S. Cl. 137-609

10 Claims



A valve assembly for controlling the flow of water to the discharge nozzle of water fountains and the like. The valve assembly is characterized by providing a complete change from fully closed to fully open position with a very small displacement of the movable control component of the valve assembly, and such control component is isolated from unbalanced pressure forces and, therefore, can be displaced with substantially the same mechanical force irrespective of the pressure of the supply water delivered to the fountain. Further, delay or lag can be introduced into the valve assembly so that opening, or closing, thereof will not be initiated until the movable component of the assembly has been displaced through some predetermined distance. The valve assembly includes a casing defining a pressurizable chamber having an inlet passage in continuous communication therewith and an outlet port selectively opened and closed by a generally spherical valve in accordance with whether the movable control component of the assembly is in its open or closed position. The valve tends to be carried into closing engagement with the outlet port by the discharge of water therethrough, and it also tends to be sealingly related to such port because of the pressure differential developed across the valve when it is once in engagement with the port.

3,753,449

**TURBINE INLET VALVE STRUCTURE**

Henry A. Nelson, Latrobe, and William A. Straslicka, Norvelt, both of Pa., assignors to Carrier Corporation, Syracuse, N.Y.

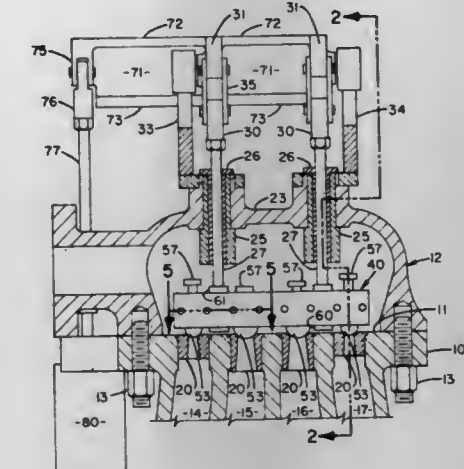
Filed June 5, 1972, Ser. No. 259,701

Int. Cl. F16k 11/50

U.S. Cl. 137-630-19

4 Claims

Fluid flow control valves arranged in the valve chest of an elastic fluid turbine are formed with stems noncircular in cross section having slidable engagement with noncircular apertures formed in the valve lifting bar whereby the valves are prevented from spinning on their axes. The valve stems are formed with enlargements integrally united with the stems.



ally a distance equal to the vertical dimension of the lifting bar.

**ERRATUM**

For Class 137-823 see:  
Patent No. 3,753,304

3,753,450

**HEDDLE FRAME**

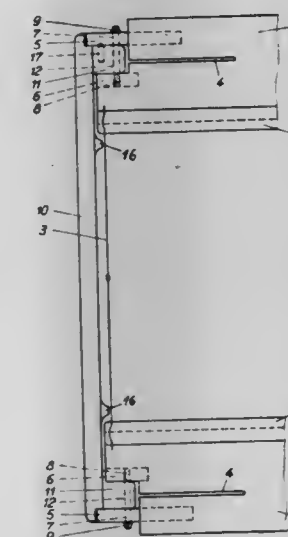
Bernhard R. Koch, Horgenberg, Switzerland, assignor to Grab & Co., Aktiengesellschaft, Horgenberg, Switzerland  
Filed May 9, 1972, Ser. No. 251,687

Claims priority, application Switzerland, May 13, 1971, 7099/71

Int. Cl. D03c 9/06

U.S. Cl. 139-191

8 Claims



A heddle frame is provided with at least one vertical side support to the ends of which the horizontal frame staves are connected by vertical screw bolts which are in axial alignment with each other and also are disposed parallel to the vertical side support. Upon loosening the screw bolts the side support may be pivoted away from the adjacent ends of the horizontal staves to expose the ends of heddle carrying rods attached to the staves, so that the heddles may easily be slidably attached and removed from the rods.



3,753,451

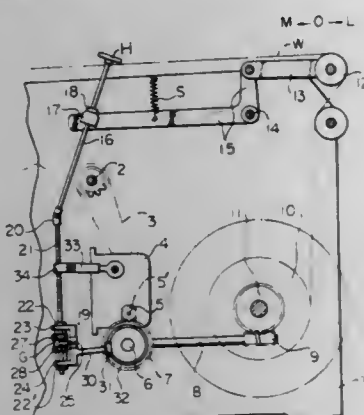
## LET-OFF MOTION IN LOOM

Shinichi Hosono, and Kazuyoshi Kida, both of Ishikawa-ken, Komatsu, Japan, assignors to Teijin Limited, Osaka, Japan  
Filed Mar. 30, 1970, Ser. No. 23,684

Int. Cl. D03d 49/06

U.S. Cl. 139—110

6 Claims



A warp let-off mechanism for a loom having a warp beam driven through a variable speed transmission and a backrest over which the warp runs, the backrest being movable in a direction for increasing and decreasing warp tension and being resiliently urged against warp tension in the tension increasing direction, the variable speed transmission having means for varying the speed thereof. The warp let-off mechanism is comprised of a first adjustment means comprising backrest coupling means coupled between the backrest and the means for varying the speed of the variable speed transmission and responsive to an increase or decrease in tension in the warp as the removal of the warp from the warp beam progresses for adjusting the position of the varying means to increase or decrease, respectively, the speed of the warp beam for reducing or increasing, respectively, the tension. A second adjustment means is coupled to the first adjustment means and is responsive to adjusting movement of the first adjusting means for adjusting the coupling between the coupling means and the varying means to return the backrest to its initial position while maintaining the varying means in its adjusted position.

3,753,452

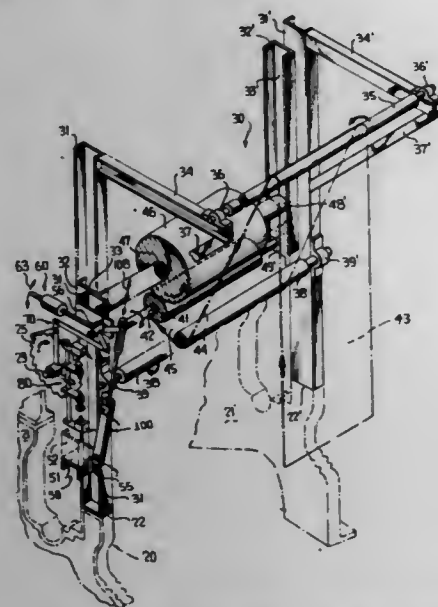
## POTENTIAL-ENERGY TORQUE-GENERATING MECHANISM FOR OPERATING A TAKE-UP ROLL

Donald Dane Zebley, Greenville, S.C., assignor to United Merchants and Manufacturers, Inc., New York, N.Y.  
Filed Apr. 22, 1971, Ser. No. 136,477

Int. Cl. D03d 49/20

U.S. Cl. 139—311

13 Claims



A torque-generating mechanism of the potential-energy type which steadily maintains a selected rotational force within selected limits for winding or unwinding operations.

The mechanism comprises a toothed ratchet wheel which turns a drive shaft, a leverage means in the form of a lever arm and leverage weight which provides torque by pivotal movement through a selected arc, a torque arm means that transmits the pivotal movement to the perimeter of the ratchet wheel through a tooth-engaging pawl, a counter-rotation means, and an energy restoration means. The preferred counter-rotation means is a second leverage means which acts in alternating sequence and is disposed in opposed relationship to the first leverage means. When winding textiles, for example, the drive shaft may be connected to a sand roll which provides constant fabric tension at a single leverage weight setting or to the mandrel of a take-up roll which provides decreasing fabric tension at a constant leverage weight setting.

3,753,453

## FLUID HANDLING APPARATUS

Michael J. Madden, West Covina, Calif.; Robert L. Murray, Dayton, Ky.; Stephen C. Lemon, and Paul R. Ostand, both of Cincinnati, Ohio, assignors to Dover Corporation, Cincinnati, Ohio

Division of Ser. No. 761,236, Sept. 20, 1968, Pat. No.

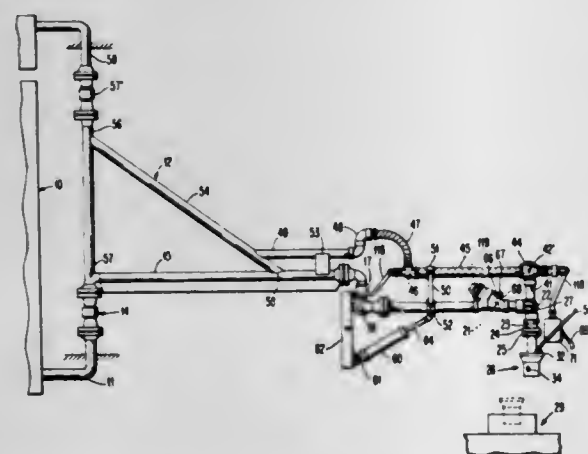
3,605,824.

Filed Oct. 1, 1970, Ser. No. 77,361

Int. Cl. B65b 3/18; B67c 3/34

U.S. Cl. 141—387

3 Claims



This disclosure relates to an apparatus and method whereby liquid is supplied at a container from a supply line only when a vapor seal is formed between the supply line and the container. Flow of liquid is automatically stopped when the liquid in the tank reaches a predetermined level, when the pressure in the tank exceeds a predetermined value, or when the vapor seal is broken. Vapor is removed from the container during filling thereof. When filling ceases or the supply line is no longer vapor sealed to the container, the vapor removal line is automatically blocked to prevent escape of vapors into the atmosphere.

3,753,454

## SCREW DRIVER BIT WITH DOUBLE BLADES

Katsuyuki Totsu, No. 4-7, 3-chome, Oshlage, Sumida-ku, Tokyo, Japan

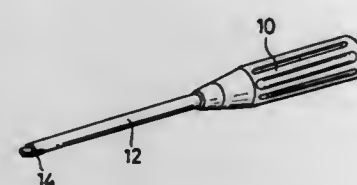
Continuation-in-part of Ser. No. 737,871, June 18, 1968, Pat. No. 3,612,554. This application July 9, 1971, Ser. No. 161,057

Claims priority, application Japan, July 13, 1970, 45/60874

Int. Cl. B25b 15/02

U.S. Cl. 145—50 E

5 Claims



A screw suspension driver with substitutable double bits which are inserted into the tip portion of the screw driver

3,753,457

## ELECTROMECHANICAL PULLING DEVICE FOR RAIL-GUIDED HANGINGS, PARTICULARLY CURTAINS

Konrad Bratschi, Eigerstrasse 5, CH-3007, Bern, Switzerland

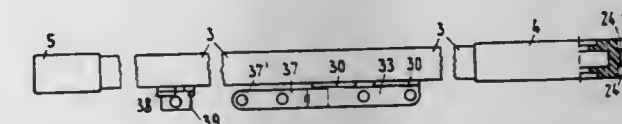
Filed July 27, 1971, Ser. No. 166,355

Claims priority, application Switzerland, July 28, 1970, 11376/70

Int. Cl. A47h 5/02

U.S. Cl. 160—331

11 Claims



An electromechanical device for pulling curtains or other rail-guided hangings comprises a driving unit which can be attached in a number of different positions to a second unit which incorporates a guide rail, a perforated endless band running in channels in the rail, and pulleys accommodated in casings at each end of the rail for reversing the direction of movement of the band between forward and return runs. The attachment is effected by means of headed bolts accommodated in resilient apertures, and by a tongue-and-slot connection between a shaft of the driving unit and the shaft of one of the pulleys. Sliders are accommodated in a channel in the rail, having parts engageable from outside the rail for supporting a curtain and further parts for engaging the holes in the band.

3,753,458

## DEMOUNTABLE CAR WINDOW SCREEN AND FASTENING MEANS THEREFOR

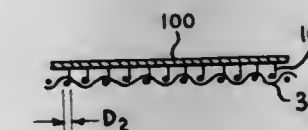
Andrew H. Lazarek, 2319 Arnold Ave., Yorkville, N.Y.

Filed Apr. 12, 1972, Ser. No. 243,363

Int. Cl. A47h 3/00

U.S. Cl. 160—354

1 Claim



A demountable screen for a car window which comprises a sheet of screening somewhat larger than the car window cut to the configuration of the car window; and a strip of male and female Velcro, one strip of which is mounted around the car window and the other strip is mounted to the screen around the periphery thereof so that the screen may be demountably attached to the window. In an alternate embodiment a strip of material having projections thereon that mate with the apertures in the screen is mounted around the window so that the screen may be placed over the window and against the projection, thereby demountably attaching the screen to the car window.

3,753,459

## METHOD AND APPARATUS FOR COOLING AND GUIDING STRANDS IN CONTINUOUS CASTING MACHINES

Max Burkhardt, Zurich; Armin Thalmann, Uster; Ferdinand Fiala, Thalwil, and Markus Schmid, Zurich, all of Switzerland, assignors to Concast AG, Zurich, Switzerland

Filed Aug. 30, 1971, Ser. No. 176,107

Claims priority, application Switzerland, Sept. 4, 1970, 13266/70

Int. Cl. B22d 11/12

U.S. Cl. 164—89

16 Claims

In continuous casting, the cast strand which emerges from the casting mold is conducted through a secondary cooling zone wherein it is guided and supported between latticed

shaft. The double bits have end edges which are recessed to form stepped portions and individual of the bits at its center portion being provided with a projection adapted to be inserted into the guide hole in the screw head.

3,753,455

## SELECTIVE CHAMBER SCREWDRIVER

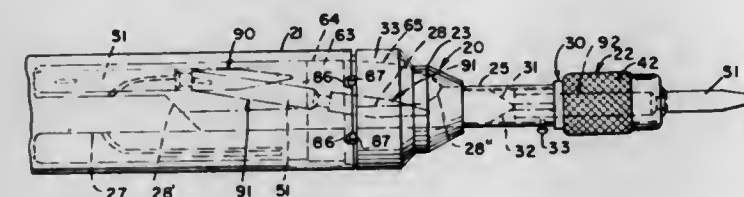
Richard George Butler, Box 391, Gimli Manitoba, Canada

Filed July 16, 1971, Ser. No. 163,334

Int. Cl. B25g 1/08; B23b 5/34

U.S. Cl. 145—63

2 Claims



The invention comprises a selective blade screwdriver. The screwdriver has six screwdriver blades of different sizes housed in the handle of the screwdriver. The screwdriver has a hollow stem structure extending from the forward portion of the handle of the screwdriver, providing a hollow passageway which communicates with the handle. The handle is rotatable to align a selected size screwdriver blade with the hollow passageway, whereupon the screwdriver may be tipped with the handle upward and the stem downward which causes the selected blade to slide under gravity out of the handle into the stem. The screwdriver has radially engaging locking structure at the forward end of the stem to lock the selected blade in the stem once it has slid there under gravity for using the blade with the handle as a screwdriver.

3,753,456

## TRACTION DEVICE FOR AUTOMOBILE WHEELS

Marvella Saunders, Springfield, Mo., assignor to The Union

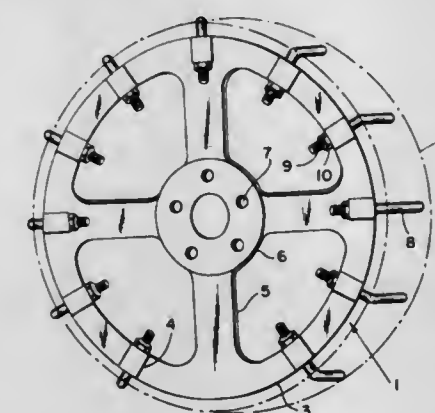
National Bank of Springfield, Springfield, Mo.

Filed Mar. 22, 1972, Ser. No. 237,116

Int. Cl. B60c 27/04

U.S. Cl. 152—225

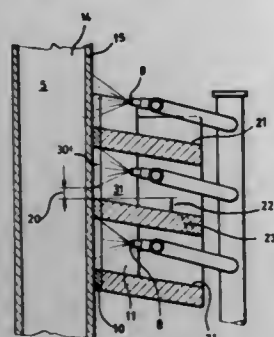
7 Claims



A traction device for automobile wheels comprises a circular frame member having an inner mounting portion formed with apertures to receive conventional lug bolts of a wheel assembly to secure the traction device to the wheel assembly, and a plurality of L-shaped traction bars reciprocally mounted in radial through-bores adjacent the periphery of the frame, the outer arms of the traction bars extending axially over the outer tread surface of the pneumatic tire of the wheel assembly. The traction bars are resiliently biased outwardly, and are adjustably positioned radially by threaded nuts on the inner ends of the bars where they project from the through-bores. The bars are thus easily removable, and are relatively free to reciprocate radially with flexing of the tire.



guide plates having guide faces which contact areas of the surface of the casting which are supported thereby, and having windows therethrough bounded by said guide faces. The un-



supported areas of the surface of the casting which are exposed by said windows are cooled by sprays of cooling water from spray nozzles located in the windows.

3,753,460

## METHOD OF MAKING A BRAKE SHOE

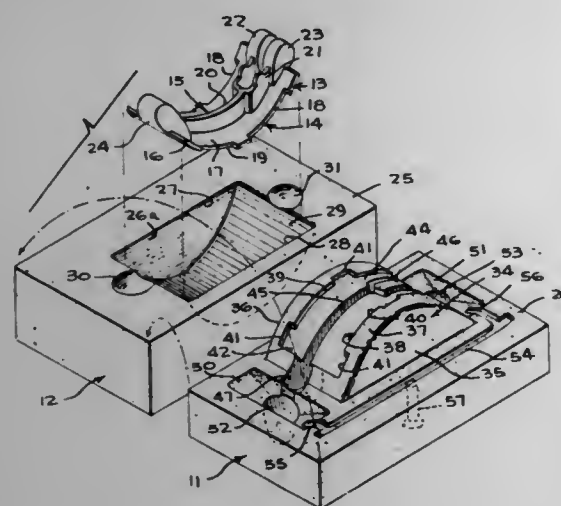
Harry Bradshaw, Newport, Va.; Hunter R. McKenney, Prattville, Ala., and Roland W. McKenzie, Culpeper, Va., assignors to Standard Forge and Axle Company, Incorporated, Montgomery, Ala.

Filed Aug. 25, 1971, Ser. No. 174,634

Int. Cl. B22d 23/00

U.S. Cl. 164—131

8 Claims



A method of making a brake shoe having a curved table section and at least one rib section disposed on the concave side of the table section, generally including casting the brake shoe in a mold having cope and drag sections so that the axis of curvature of the table section thereof is disposed substantially parallel to the parting plane of the mold sections whereby no draft or parting ridge is formed on the outer curved surface of the table section.

3,753,461

## BENDING-ROLL UNIT FOR CONTINUOUS-CASTING MACHINE

Francis Gallucci, Irwin, and George J. Wagner, Jr., McDonald, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 16, 1971, Ser. No. 208,776

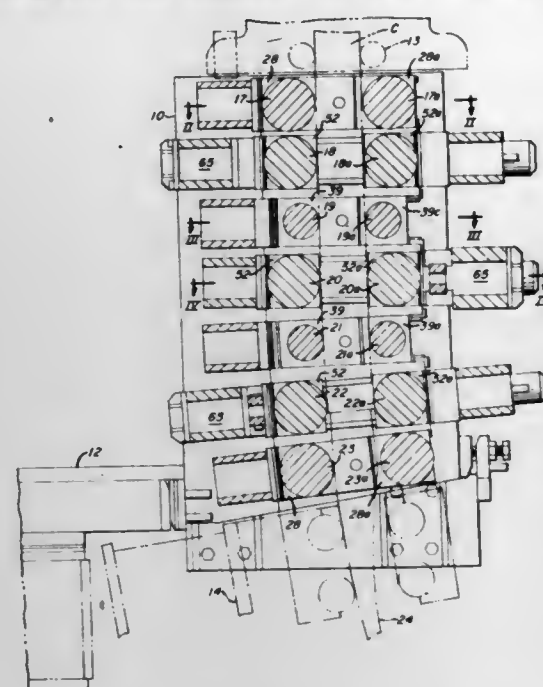
Int. Cl. B22d 11/12

U.S. Cl. 164—282

11 Claims

A bending-roll unit for continuous-casting machines, where the unit directly follows a guide-roll rack and precedes a curved roll rack. The unit embodies a combination of driven rolls and idlers arranged in opposed pairs. One of the driven rolls is a fulcrum roll which defines the tangent line where a casting first acquires a curvature. Other driven rolls above and

below the fulcrum roll sustain the reaction forces. These driven rolls also supply the initial tractive force which propels the casting and thus eliminate the need for separate driven



pinch rolls usually located above the bending rolls. Floating idlers confine the casting against bulging. The unit may be used with either a flexible starter bar or slightly modified with a rigid bar.

3,753,462

## APPARATUS FOR HEATING AND COOLING A VEHICLE PASSENGER COMPARTMENT

Karl-Heinz Burger, Buhl, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

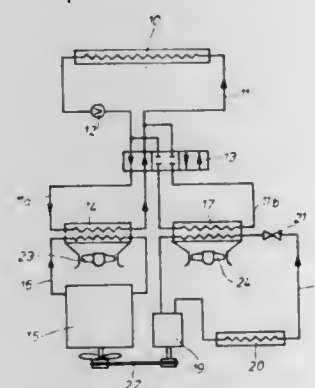
Filed Nov. 1, 1971, Ser. No. 194,575

Claims priority, application Germany, Oct. 30, 1970, P 20 53 370.4

Int. Cl. B60h 3/04

U.S. Cl. 165—23

13 Claims



An apparatus for heating and cooling the passenger compartment of a motor vehicle quickly brings the temperature of the compartment to the desired level and the temperature is thereafter maintained at a constant level without the use of blowers. The apparatus includes first and second heat exchangers which are separately or in combination selectively connected for establishing a heat-exchanging relationship between a third heat exchanger and the first and second heat exchangers. The third heat exchanger has a relatively large surface area and is located within the vehicle passenger compartment. The first and second heat exchanger rapidly bring the temperature of the passenger compartment to the desired level with the assistance of blowers, adjacent to these two heat exchangers, which blow the conditioned air into the passenger compartment. After the desired temperature has been reached, the fans are turned off and the temperature in the compartment is maintained by radiation by the third heat-exchanger and at least one of the other two heat exchangers.

3,753,463

## DEVICE FOR COOLING THE BEARINGS OF HEATED ROLLS

Rudolph Segelken, Muelheim; Oskar Tippmann, Laemmer-spiel, and Peter Westebbe, Offenbach-Buerger, all of Germany, assignors to Dienes-Honeywell GmbH, Muelheim am Main, Germany

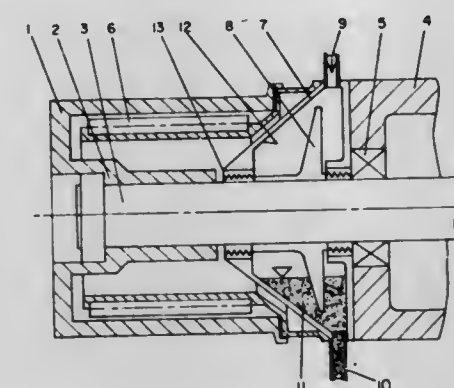
Filed Sept. 9, 1971, Ser. No. 178,958

Claims priority, application Germany, Dec. 28, 1970, P 70 47 913.9

Int. Cl. F24h 3/00

U.S. Cl. 165—47

9 Claims



A cooling device for the bearings of overhung supported heated rolls. Such a device must shield the bearing against the thermal radiation of the heating device and the heated roll. A tube-like hollow body is mounted between the bearing and the heat source, that is, the heating device and heated roll. A drive shaft between the bearing on one side and the heated roll on the other is passed through the hollow body. The hollow body, which the drive shaft passes through is completely sealed to contain the cooling fluid being passed or flown through the hollow body.

3,753,464

## ARRANGEMENT FOR INHIBITING THE UNTHREADING OF CASING STRING DURING WELL COMPLETIONS

Billy M. Wilhelm, c/o Parker Drig. Co., Box 3644, Quito, Ecuador

Filed July 7, 1971, Ser. No. 160,401

Int. Cl. E21b 17/02, 17/14

U.S. Cl. 166—242

2 Claims



A plurality of sections of tubular members is arranged in end-to-end relationship with couplings between the sections of tubular members for connecting them together. The sections of tubular members and couplings are provided with left-hand threads to inhibit the unthreading of the tubular sections during well completions. The casing string may include so-called

auxiliary equipment for aiding in floating it into position in the well bore and guide equipment which is also provided left-hand threads.

3,753,465

## METHOD FOR CONTROLLING THE VISCOSITY OF SURFACTANT SOLUTIONS

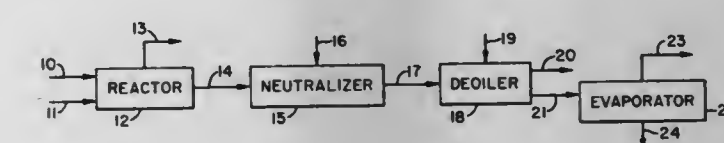
Milton O. Denekas, Houston, Tex., assignor to Esso Production Research Company

Filed Nov. 22, 1971, Ser. No. 201,089

Int. Cl. E21b 43/22

U.S. Cl. 166—252

6 Claims



A method of recovering oil from a subterranean formation using an aqueous surfactant solution with a predetermined and controlled viscosity. The ability of the surfactant composition to impart viscosity to the aqueous solution is dependent upon the weight ratio of hydrocarbon oil in the composition to the surfactants in the composition. This oil/surfactant weight ratio must be maintained within the range of 0.05 to 0.40 to obtain a surfactant composition having the ability to impart a desired viscosity to its aqueous solution. The ratio can be maintained within this range and varied in value to change the viscosity-imparting properties of the surfactant composition by adjusting the deoiling process during the manufacture of the surfactant composition or by adding hydrocarbon oil to the surfactant composition.

3,753,466

## AUTOMATIC FIRE EXTINGUISHER IN ELECTROPHOTOGRAPHIC COPYING MACHINE OR THE LIKE

Kaoru Uematsu, Okegawa, Japan, assignor to Fuji Xerox Co., Ltd., Minato-ku, Tokyo, Japan

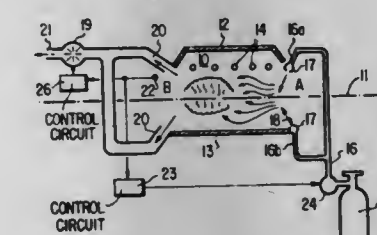
Filed Dec. 2, 1971, Ser. No. 204,068

Claims priority, application Japan, Dec. 29, 1970, 45/130482

Int. Cl. A62c 3/00

U.S. Cl. 169—2 R

3 Claims



An automatic fire extinguishing device for use in an electrophotographic copying machine or the like having a heat treating section including inlet and outlet portions through which flammable material is passed and heat treated, the fire extinguishing device including means for detecting a fire in the heat treating section, a source of fire extinguishing gas, means responsive to the fire detecting means for releasing fire extinguishing gas upon detection of a fire, nozzle means connected to the source of fire extinguishing gas for spraying upon outbreak of a fire, the fire extinguishing gas in the form of a curtain so as to form an air curtain of the extinguishing gas at least one of the inlet and outlet portions of the heat treating section to prevent the inflow of air therethrough, and an exhaust system responsive to the fire detecting means for sucking up the fire extinguishing gas after it has performed its function as an air curtain, so as to let it cover the source of the fire, and for discharging hot air in the heat treating section to the outside of the machine.



3,753,467

**TRACTOR-IMPLEMENT HYDRAULIC LIFT SYSTEM**

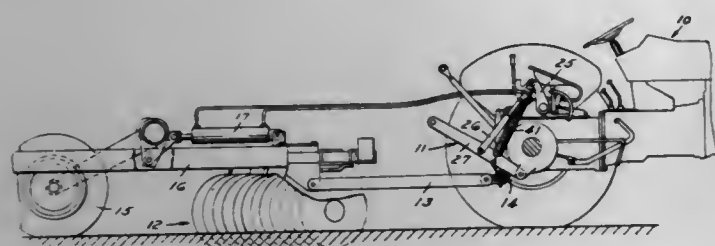
Raymond W. Wilson, Washington, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 27, 1971, Ser. No. 212,361

Int. Cl. A01b 63/112

U.S. Cl. 172-3

4 Claims



A tractor having an implement hitch which is lifted and lowered by a hydraulic lift system responsive to driveline torque is coupled to the hydraulic lift system of an implement attached to the rear of the tractor to control the implement hydraulic lift system responsive to driveline torque of the tractor.

3,753,468

**DRIVE ARRANGEMENT FOR TELESCOPICALLY ARRANGED ELEMENTS**

Bruno Casagrande, Via Zoncanard, 33077 Sacile, Italy

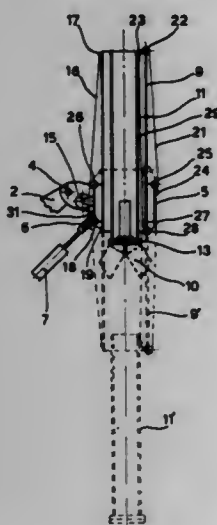
Filed Mar. 13, 1972, Ser. No. 233,970

Claims priority, application Italy, Mar. 18, 1971, 83325 A/71

Int. Cl. E21b 17/00

U.S. Cl. 173-44

5 Claims



The invention relates to a drive arrangement for elements telescopically received one within the other. At least three telescopic elements are required, the intermediate one functioning as a movable pulley wheel for a fixed length cable means fixedly attached at opposite ends thereof to the outer and the inner elements respectively.

3,753,469  
AIR TOOL

Herman C. Tuttle, 26720 Whiteway Dr., Richmond Heights, Ohio

Continuation-in-part of Ser. No. 841,875, July 15, 1969, Pat. No. 3,602,315. This application Aug. 27, 1971, Ser. No. 175,474

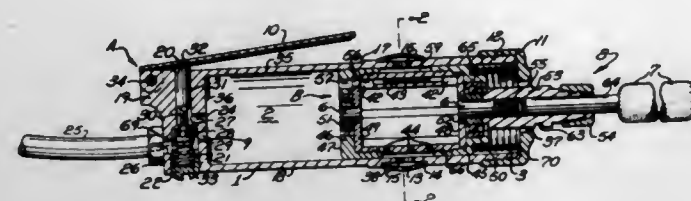
Int. Cl. B23b 45/04

U.S. Cl. 173-163

5 Claims

A portable air tool having a rotary air motor mounted in a tubular valve sleeve or housing so that relative axial movement between the motor exhaust ports and the valve sleeve or housing opens and closes said exhaust ports. A spring biases

the air motor or the valve sleeve in one direction to choke the exhaust and to effect rapid deceleration of the rotor shaft when the air supply is cut off, and an air chamber is provided



in communication with the air supply and the motor inlet ports to effect movement of the motor or valve sleeve in the opposite direction to open the exhaust ports during operation of the tool.

3,753,470

**ECCENTRIC DRILL TOOL**

Gunnar Lagerstrom, Ektorp, and Harry Artur Ingvar Wiredal, Sandviken, both of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

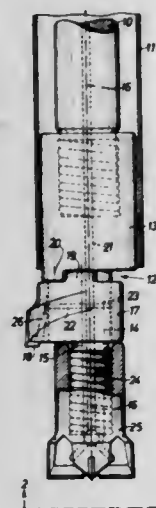
Filed Nov. 29, 1971, Ser. No. 202,827

Claims priority, application Sweden, Nov. 27, 1970, 16078/70

Int. Cl. E21b 9/26

U.S. Cl. 175-292

9 Claims



For use in drilling through earthy material into underlying rock, the eccentric drill tool of the present invention is generally characterized by two cutting portions, with a central portion which is fixed in relation to the drill rod and an eccentric portion which can be shifted between protruding and retracted positions.

3,753,471

**DISCONNECTIBLE TORQUE AND DRILLING WEIGHT TRANSMISSION APPARATUS FOR DRILL BITS**

Archer W. Kammerer, Jr., Fullerton, Calif., and Gary R. Johnson, Houston, Tex., assignors to Baker Oil Tools, Inc., Los Angeles, Calif.

Division of Ser. No. 132,993, April 12, 1971, which is a continuation-in-part of Ser. No. 23,700, March 30, 1970, abandoned. This application Oct. 18, 1971, Ser. No. 190,181

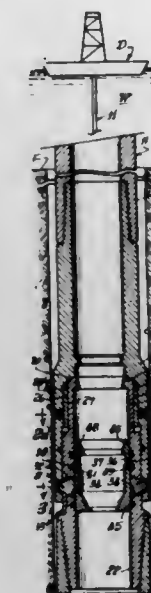
Int. Cl. E21b 17/046, 17/06

U.S. Cl. 175-320

6 Claims

A drill pipe string secured to a rotary drill bit for drilling a bore hole from an ocean floor to a desired depth, the drill pipe string having a releasable connection above the drill bit through which torque and drilling weight can be transmitted to the drill bit, such connection being readily disconnected

after the bore hole has been drilled to permit recovery of the portion of the drill pipe string above the connection while



leaving the drill bit and portion of the string below the connection in the bore hole.

3,753,472

**LIGHT PRESSURE OPERATED MICROBALANCE SYSTEM**

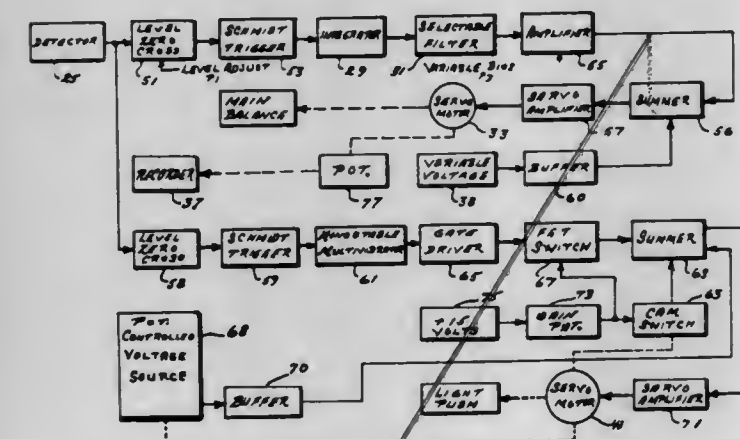
Jens P. Dybwad, Arlington, Mass.; Winsor E. Alexander, Albuquerque, N. Mex., and Karl P. Zinnow, Arlington, Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 12, 1971, Ser. No. 171,077

Int. Cl. G01g 3/14, 7/00

U.S. Cl. 177-210

4 Claims



A swinging undamped microbalance that measures time intervals of successive half periods of complete swings using an optical lever consisting of a light source aligned to reflect light from a mirror mounted upon the balance onto a light sensitive detector. The time intervals which are electronically processed determine an off-balance signal that drives a servo which restores the balance by applying light pressure to a mirrored surface of a counter weight. The restoring force is in relation to weight increases of the sample being weighed.

3,753,473

**GOLF CART WITH OUTBOARD POWER UNIT**

Roger M. Hollis, 2823 Gulf of Mexico Dr., Longboat Key, Sarasota, Fla.

Filed Aug. 3, 1971, Ser. No. 168,663

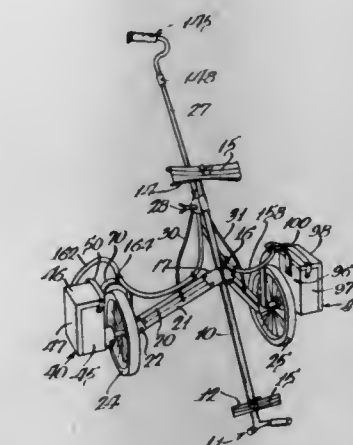
Int. Cl. B62d 51/04

U.S. Cl. 180-19 H

16 Claims

A collapsible powered two-wheel golf bag cart including a frame, collapsible leg structures on the frame each carrying a

ground-engaging wheel, golf bag support means on the frame, a handle on the frame for manipulating the cart, a motor unit detachably supported on one of the leg structures outside of the adjacent wheel including an electric motor, a disconnectible coupling for connecting the motor to drive the adjacent wheel, a battery unit detachably supported on the other leg structure outside of the adjacent wheel, a hand grip on the



3,753,474

**VEHICLE OVERTURN PREVENTER**

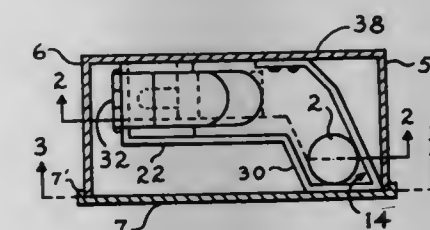
Eugene Roland Dillmann, 398 Washington St., Bay St. Louis, Miss.

Filed June 4, 1971, Ser. No. 150,020

Int. Cl. B60k 27/08

U.S. Cl. 180-104

10 Claims



Mechanism for preventing overturn of a tractor or other vehicle when it rears to a dangerous angle, comprising: a track that is inclined downward in a forward direction when the vehicle is in level position, and forwardly inclined upward when the front end of the vehicle has dangerously tipped upward; an upright chute connected to the rear end of the track; a spherical weight that normally remains at a forward part of the track, but when the vehicle is at a dangerous inclination moves down the track incline and falls down the chute; a device for controlling the power of the vehicle's motor comprising a lever pivotal in the chute (shown as an electric switch control lever, but optionally instead may be a throttle valve control lever), this device being actuated into motor-stopping position by the falling ball; and braking means for retarding and preventing movement of the ball into the chute due to vibrations of the vehicle and changes of its level until it reaches a dangerous angle, threatening overturn. This braking means comprises two elements: an upright baffle plate, making difficult the ball's climb out of a forward corner of the track; and a hinged, lead-weighted lever that must be pivoted out of the way before the ball enters the chute. Instead of the levered switch a push button may be utilized.



3,753,475

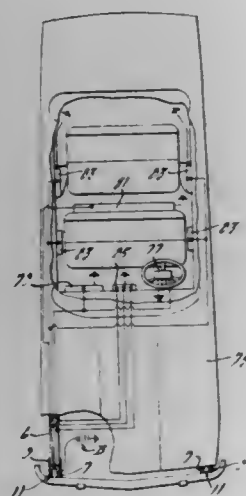
**PASSENGER SAFETY RESTRAINT DEVICE INCLUDING BUMPER MOUNTED SWITCH AND ASSOCIATED CIRCUITRY**

Poul H. Andersen, 2448 N. Willson, Royal Oak, Mich.; Frank R. Povlaltus, 3620 Finch Rd., and Robert S. Himes, 4146 Gatesford Circle Rd., both of Troy, Mich.

Filed Nov. 15, 1971, Ser. No. 198,541  
Int. Cl. B60r 21/00; H01h 3/16

U.S. Cl. 180-91

3 Claims



Sensing device for sensing the velocity of an automotive vehicle when the latter collides with another object, the device having a plurality of contacts adapted to be electrically interconnected at different times depending upon the velocity of the vehicle at the moment of impact.

3,753,476

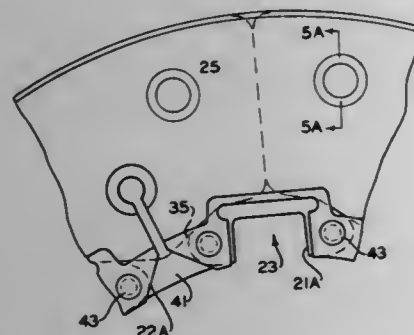
**BRAKE DISC SUBASSEMBLY WITH SEGMENTED BERYLLIUM CORE**

Joseph F. Dernovashek, Akron; Peter D. Birmingham, Suffield, and Charles E. Fuchs, N. Canton, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio  
Continuation-in-part of Ser. No. 49,242, June 24, 1970, Pat. No. 3,710,210. This application Oct. 27, 1971, Ser. No. 192,974

Int. Cl. F16d 65/12

U.S. Cl. 188-73.2

6 Claims



Brake discs which have a pair of annular steel plates and segmented beryllium filler plates between the annular steel plates. The steel plates have sintered metallic outer faces and are riveted together on opposite sides of the beryllium plates. The beryllium filler plates extend from the center of one key slot to the center of the adjacent key slot and each of the filler plates is sloped on one or more edges. Metallic inserts are riveted to the annular steel plates. The inserts serve to transmit torque across a broad area to the beryllium filler pieces by wedging action between the sides of the inserts and the sloped portions of the filler plates.

3,753,477

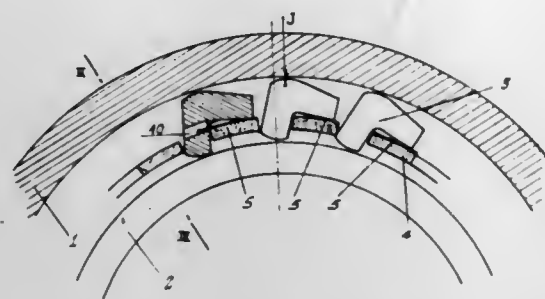
**GRADUAL-LOCKING FREEWHEELS**

Raymond Cadet, Annecy (Haute Savoie), France, assignor to Societe Nouvelle De Roulements Annecy, Haute Savoie, France

Filed Oct. 1, 1971, Ser. No. 185,770  
Claims priority, application France, Oct. 16, 1970, 7037434  
Int. Cl. F16d 41/07, 43/24

U.S. Cl. 192-41 A

6 Claims



This freewheel device of the wedging-cam locking type comprises a series of cam members retained by a positioning cage between inner and outer rings. The cam members are held in relative position and in bearing engagement with the cage by individual resilient means counteracting the action of the centrifugal force. Said cage is connected to one ring and the cam members engage the rings by pivoting or rocking under the centrifugal force only beyond a predetermined speed given for a limited number of cam members of which the return force of the individual resilient means is the lowest and balanced by the centrifugal force. This device is applicable to the freewheel coupling between engine and change-speed mechanisms of automotive vehicles.

3,753,478

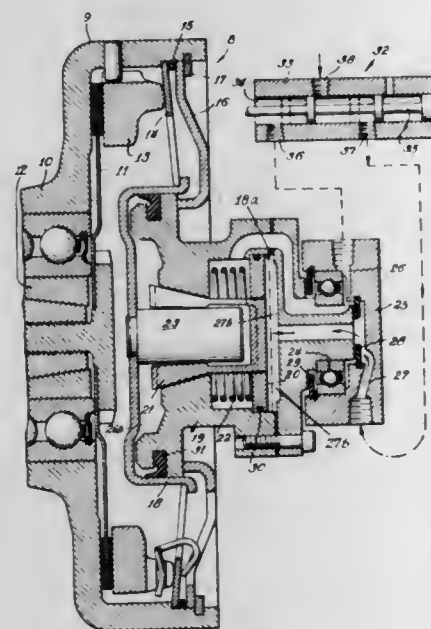
**CLUTCH WITH FLUID OPERATED LOCK**

Samuel Shiber, Chicago, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed July 19, 1971, Ser. No. 163,681  
Int. Cl. F16d 25/063

U.S. Cl. 192-85 AA

5 Claims



A clutch mechanism for coupling a first shaft to a second shaft comprising a friction plate which is connected to one shaft and a clutch housing, a pressure plate that is connected to the second shaft, a pressure actuated cylinder and piston assembly for urging the pressure plate against the clutch housing, locking the friction plate there-in-between, and a mechanical means to maintain the pressure plate and housing in this position.

3,753,479

**CAM AND SPRING OPERATED POSITIVE CLUTCH**

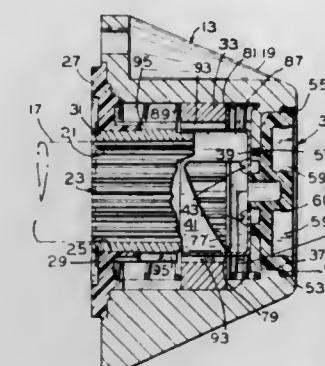
Richard D. Williams, Vancouver, Wash., assignor to Warm-Bellevue Inc., Portland, Oreg.

Filed Jan. 17, 1972, Ser. No. 218,191

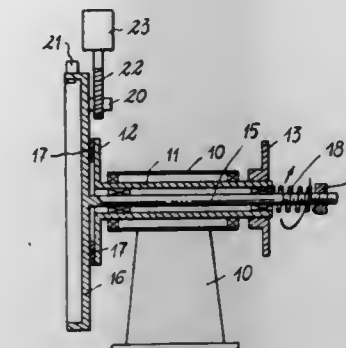
Int. Cl. F16d 11/04

U.S. Cl. 192-89 A

9 Claims



A wheel hub clutching mechanism has a dial which, when turned to a "lock" position moves an actuator cam to permit primary springs to move the clutch into mesh with the shaft driven pinion. When the dial is moved to a "free" position it moves the actuator cam to permit secondary springs to move the clutch out of mesh with the pinion.



ously moving mechanical members. These members operate a first disc of a clutch slipping on a second disc, which is normally kept stationary by a latch and carrying in turn a ratchet

which, when said latch is released, concurrently with the stop of said elements, and the second disc rotates along with the first disc, acts upon a switch controlling the movement resumption for said moving elements.

3,753,480

**STOPPING FOR FILM RETRIEVAL**

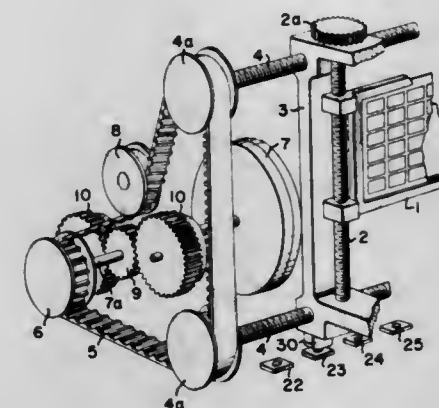
Takeshi Okano, Nishinomiyashi, Japan, assignor to Fuji Shashin Film Kabushiki Kaisha, Kanagawa-ken, Japan

Filed June 21, 1971, Ser. No. 154,962

Claims priority, application Japan, June 29, 1970, 45/65187  
Int. Cl. F16d 71/04; G03b 23/08

U.S. Cl. 192-141

8 Claims



In a device for restricting the stopping position of a film shifting mechanism by means of a cam stopper provided between the film shifting mechanism and a cam, a shock absorbing spring is disposed between the cam and a driving shaft. On the driving shaft are mounted two cams consisting of a normal rotation stopping cam and a reverse rotation stopping cam, and two stoppers are provided to stop the respective cams. These two stoppers are operated by a single operating lever.

3,753,481

**DEVICE FOR CONTROLLING THE STANDSTILL PERIOD OF INTERMITTENTLY MOVING ELEMENTS AS A FUNCTION OF THE CONTINUOUS MOVEMENT OF MECHANICAL MEMBERS**

Aldo Piola, Villa Marisa, Inverigo (Como), Italy (22044), and Giovanni Sabate, Via Arrigo Bolto 12, Monza, Italy (22052)

Filed June 21, 1972, Ser. No. 264,768

Int. Cl. F61d 71/00; B65h 57/28

U.S. Cl. 192-142 R

4 Claims

A device for controlling the standstill period of intermittently moving elements as a function of the speed of continu-

3,753,482

**AUTOMATIC PUSH BUTTON TAPE EMBOSSEING MACHINE**

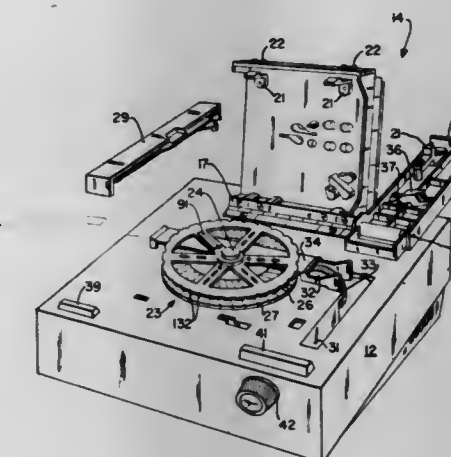
Milton Brown, Berkeley; Eugene W. Beers, Lafayette, both of Calif., and Andre Nicole, Le Manoir, Switzerland, assignors to Dymo Industries, Inc., Emeryville, Calif.

Filed May 10, 1971, Ser. No. 141,643

Int. Cl. B41j 1/30

U.S. Cl. 197-6.6

17 Claims



Apparatus for successively embossing characters onto a tape in response to depression of keys representative of the characters is described. The apparatus includes a rectangular keyboard and an embossing wheel having about its periphery an annular array of embossing dies corresponding to the characters to be produced. The embossing wheel is normally continually rotated during operation of the mechanism, and each of the keys has a stem which cooperates with a stop on the embossing wheel for interrupting the rotation of the wheel with the proper die positioned at an embossing station upon the depression of any one of the keys. A cam assembly is activated by the depression of one of the keys to then cause the character positioned at the embossing station to be embossed on a tape located at such station and also to advance the tape through the embossing station for appropriately spacing successively embossed characters.



3,753,483

**TYPEWRITER DUAL FEED APPARATUS**

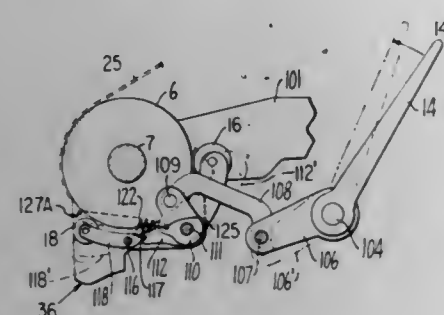
Ingemar H. Lundquist, Oakland, and John Pastrone, Los Gatos, both of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Mar. 20, 1970, Ser. No. 21,433

Int. Cl. B41j 13/00

U.S. Cl. 197-127 R

1 Claim



A typewriter capable of conventional paper feed downward and to the rear of the platen cylinder or upward from below the platen cylinder as for computer paper. A single arm and linkage assembly provides for roller release for conventional feed in a first position and for retraction of the entire platen assembly for computer paper feed in a second position. A sprocket drive operating in conjunction with the platen cylinder for computer paper is provided.

3,753,484

**HANDLING DEVICE FOR DELICATE ARTICLES**

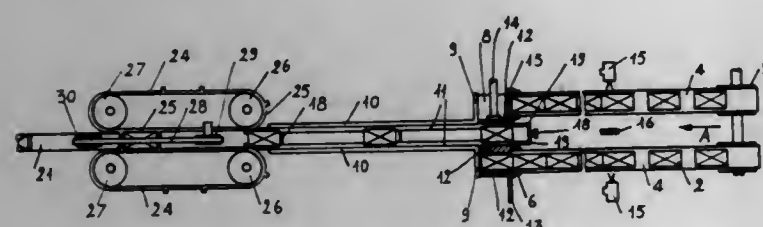
Franco Aluola, Bologna, and Luciano Nannini, Casalecchio Di Reno, both of Italy, assignors to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.P.A., Bologna, Italy

Filed July 19, 1972, Ser. No. 273,229

Int. Cl. B65g 47/22, 47/52

U.S. Cl. 198-20 R

3 Claims



A device for placing at regular distances delicate objects coming from a production line onto a receiving line. The objects are firstly pushed from the production line into a channel and then accelerated therein by a jet of air until they are engaged by pulling elements projecting from the bottom of the channel and arranged on an endless chain moving at the same speed of said receiving line. At the end of the channel the objects pass into receptacles defined by the adjacent portion of a pair of parallel belts, from which they are expelled onto the receiving line by means of ejectors mounted on an endless belt located above said pair of belts.

3,753,485

**BRANCHING DEVICE AND GUIDE MEANS FOR HIGH-SPEED TRAY CONVEYORS**

Hanes-Georg Fromme, Wetzlar, and Erich Lehberger, Dornholzhausen, both of Germany, assignors to Fa Fromme, Wetzlar, Germany

Filed Feb. 9, 1972, Ser. No. 224,771

Claims priority, application Germany, Oct. 13, 1971, P 21 50 984.2

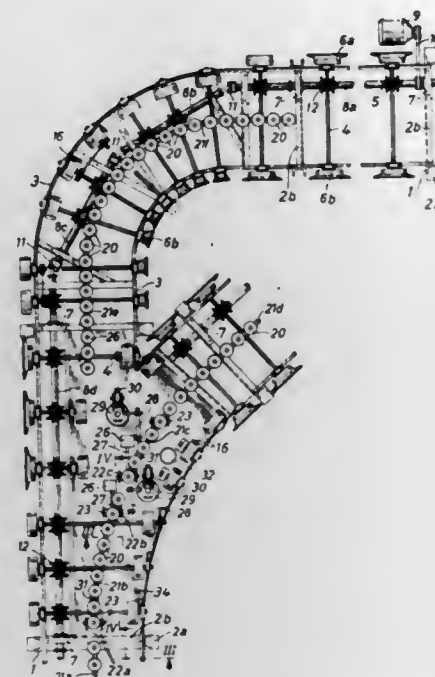
Int. Cl. B65g 13/02, 47/26

U.S. Cl. 198-31 AC

13 Claims

Branching device and guide means for a high speed tray conveyor where each tray has in its bottom an hourglass-

shaped central guide groove and the conveyor includes in its bend sections and branching sections groups or horizontal guide rollers engaging the tray grooves. In the branching sec-



tion these guide roller groups are arranged to be raised and lowered by solenoids in staggered timing to permit a rapid succession of trays travelling through the branching section while the latter switches in and out.

3,753,486

**APPARATUS FOR LOADING AN AUTOMATIC FILM PROCESSING UNIT**

Horst Dieter Vogt, and Oskar Schnellmann, both of Zurich, Switzerland, assignors to Gretag Aktiengesellschaft, Regensdorf, Switzerland

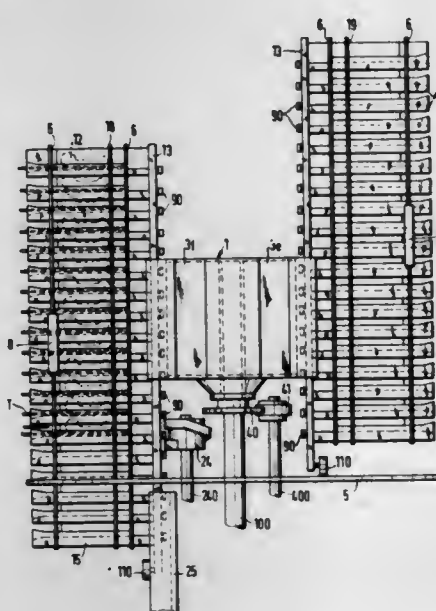
Filed Sept. 30, 1971, Ser. No. 185,249

Claims priority, application Switzerland, Oct. 2, 1970, 14626/70

Int. Cl. B65g 59/00

U.S. Cl. 198-131

13 Claims



Apparatus for loading an automatic film processing unit comprises a rotatable turret formed with guideways for holding magazines for axial movement relative to the turret. Each magazine comprises a stack of compartments each of which is adapted to accommodate a standard film container in a predetermined position. The turret is rotatable so that each magazine is successively in a processing station in which a shifting means engages and axially shifts the magazine stepwise so that each compartment is successively adjacent a

processing position, the magazines not in a processing station being engaged by means preventing axial movement. The magazines may be formed with compartments selectively adjustable to all hold either 126-type film cassettes or 135-type film cartridges, and means may be provided so that once a magazine holding one type of film has been placed on the turret, only magazines also holding that type of film can be positioned on the turret.

3,753,487

**UNIVERSAL COUPLINGS AND CHAINS INCORPORATING SUCH COUPLINGS**

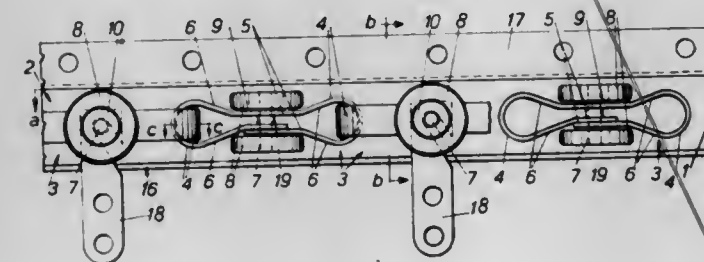
Charles Milburn-Bathgate, West Hagley, England, assignor to Cavamatic Limited, Bridgnorth, Shropshire, England

Filed Apr. 2, 1971, Ser. No. 130,637

Int. Cl. B65g 17/20

U.S. Cl. 198-177 R

4 Claims



A universal coupling suitable for connecting chain links of the kind fabricated from metal strip, the coupling comprises two interconnected looped members which are located in planes normal to one another, and each of which has a curved end extending through the curved end of the other member, and a pivot block, trapped between the said curved ends, has two opposed convex surfaces each of which is concentric to an axis normal to the axis of the other surface and contacts the adjacent curved link end so that the axis of the block surface and the axis of the said adjacent link end are in parallel.

3,753,488

**SAFETY DEVICE FOR A SLACK TAKE-UP WEIGHT OF A BELT CONVEYOR**

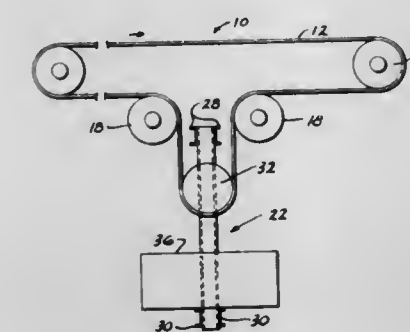
Robert Laverne Wilson, Abilene, Kans., assignor to The Elvsum Company, Abilene, Kans.

Filed July 6, 1972, Ser. No. 269,334

Int. Cl. B65g 15/30

U.S. Cl. 198-208

1 Claim



A safety device for a slack take-up weight of a belt conveyor, which includes a pair of guide members positioned on either side of the weight. The guide members are substantially vertical, being at a slight angle thereto, with the bottom ends closest together. If the conveyor belt breaks, the falling weight is gradually slowed down, and eventually stopped by the wedging action of the guide rails.

3,753,489

**APPARATUS FOR TRANSFERRING FORMED ARTICLES BETWEEN PRESSES**

Kunio Tomioka, and Yohiro Kubota, both of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Continuation of Ser. No. 838,899, July 3, 1969, abandoned.

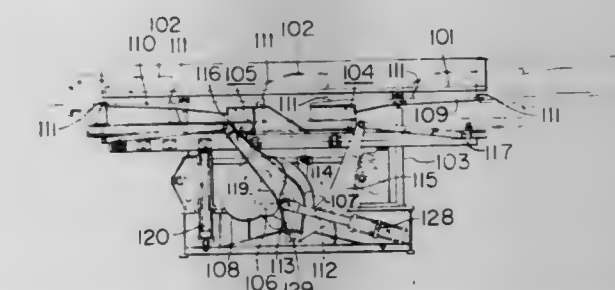
This application Oct. 15, 1971, Ser. No. 189,775

Claims priority, application Japan, Sept. 21, 1968, 43/68144

Int. Cl. B65g 25/04

U.S. Cl. 198-219

3 Claims



In a press line formed by aligning independent presses each allotted with an operational section interrelated therebetween, an apparatus for automatically transferring formed articles between presses.

3,753,490

**CARRY CASE FOR MAGNETIC DISCS**

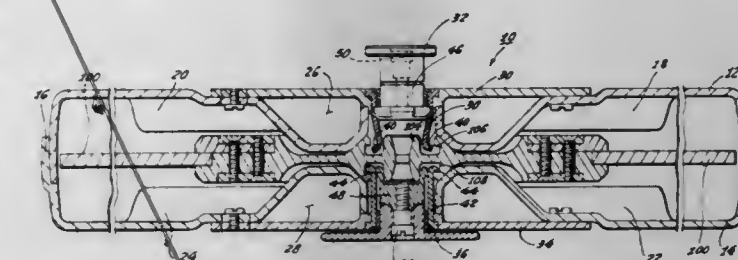
Albert V. Mowrey, Canoga Park, Calif., assignor to General Instrument Corporation, Hawthorne, Calif.

Filed June 24, 1971, Ser. No. 156,382

Int. Cl. B65d 85/02

U.S. Cl. 206-62 P

7 Claims



A carry case for magnetic discs including a pair of interconnecting cover members forming an enclosed space and with the cover member supporting the magnetic disc therebetween within the enclosed space and with each cover member including a locking mechanism for engagement with a complementary locking portion on the magnetic disc so that the magnetic disc may be independently supported by each one of the cover members for insertion onto and removal from a drive spindle in a magnetic disc recording and reproducing machine.

3,753,491

**APPARATUS FOR SUPPLYING WASH WATER TO A SPIRAL CONCENTRATOR**

Justus H. Vollmer, Grand Rapids, Minn., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 28, 1971, Ser. No. 213,072

Int. Cl. B03b 3/04

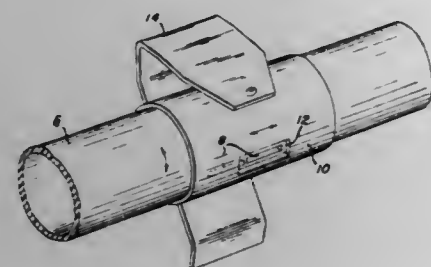
U.S. Cl. 209-459

2 Claims

Apparatus includes a length of tubing, closed at one end and connected with a water supply at its other end, having water emission openings spaced therealong. The tubing is disposed along the length of the helical trough of the concentrator clamped to the inner sidewall thereof. A length of pipe is telescoped around at least some of the portions of the tubing having a water emission opening therein. The pipe lengths are



formed with cut-out areas intermediate their ends which normally span the water emission openings. The tubing is supported by means of elongated spring clamps each of which is connected by one end with a pipe length and at its other end is spring mounted around the upper edge of the inner sidewall of the helical trough. The tubing is slidable in each of the pipe



lengths so that direction of the water emission from each opening can be controlled by rotation of the tubing within the pipe lengths. Amount of flow from each emission opening can be controlled by relative longitudinal movement between the tubing and pipe lengths to partially or completely close any of the emission openings.

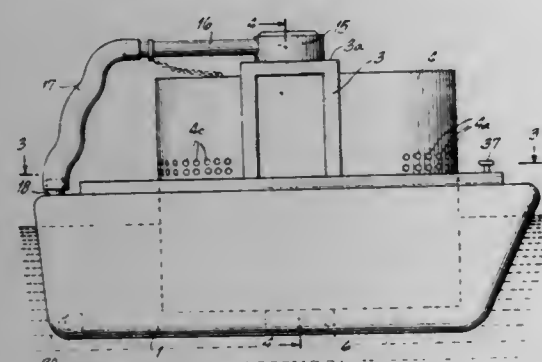
### 3,753,492 SEPARATING APPARATUS

Victor S. Aiello, Glen Cove; Joseph P. Albanese, Long Island City; Robert V. Anderson, Huntington, and Frank Platt, Brooklyn, all of N.Y.

Filed June 19, 1970, Ser. No. 47,778  
Int. Cl. C02c 1/38

U.S. Cl. 210-96

9 Claims



Apparatus for separating two non-miscible liquids of different densities from a mixture thereof, including a vertical cylindrical tank with an inlet at one side and an outlet at the opposite side. External means produces a flow of the mixture into the inlet and of the heavier liquid through the outlet. The tank extends above and below the liquid-air interface to provide a free liquid surface inside the tank. A rotating impeller at the center of the bottom of the tank swirls the liquid in the tank and creates a vortex. The lighter liquid collects in a thick layer at the center of the vortex and is substantially absent from the periphery of the vortex. The lateral outlet carries away the heavier liquid. An outlet for the lighter liquid has an opening submerged in the liquid at the center of the vortex. A pump removes the lighter liquid through this outlet.

The separating apparatus may be mounted on a twin hulled vessel and propelled through the water, for the purpose of removing an oil slick from the surface. The inlet for the oil and water mixture is at the bow end of the tank, with the water outlet at the stern end. The oil outlet is provided with a pump for transferring the oil into suitable storage tanks, which may be in the hull or in separate vessels. Means are provided for coordinating the operation of the impeller and the oil pump.

### 3,753,493 ARTIFICIAL KIDNEY CLEANING APPARATUS

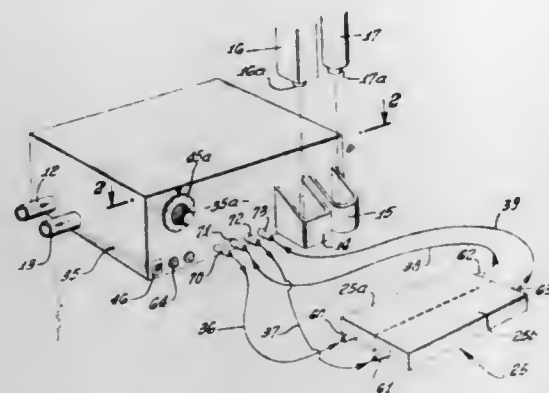
El K. Mellor, 305 Andover Dr., Burbank, Calif.

Filed Apr. 23, 1971, Ser. No. 136,904

Int. Cl. B01d 31/00

U.S. Cl. 210-140

12 Claims



Artificial kidney treatment apparatus comprises:

- a clean water inlet,
- inlet means for kidney treating liquid concentrate,
- means to deliver the concentrate into a water stream being circulated to and through the kidney, whereby the kidney may be washed by aqueously diluted treating liquid, and
- control means to control the sequential delivery of water flow to the kidney and dilute treating liquid flow to the kidney.

### 3,753,494 UNDER-SEA OIL STORAGE INSTALLATION

Hiroshi Hirata, 15-30 2-chome Sanno, Ota-ku, Tokyo, Japan

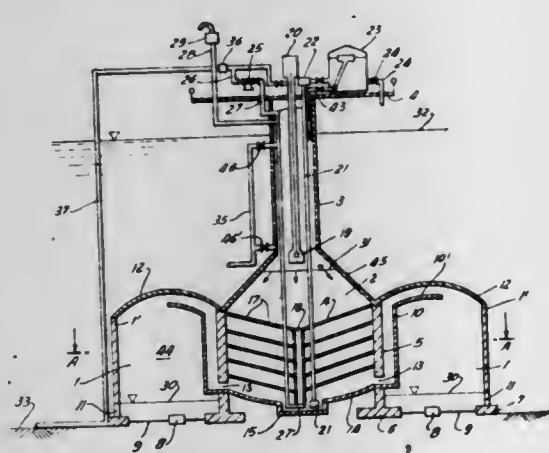
Filed Sept. 14, 1971, Ser. No. 180,293

Claims priority, application Japan, Dec. 15, 1970, 45/111157

Int. Cl. E02b 15/04

U.S. Cl. 210-170

15 Claims



An installation including first and second storage tanks supported on the sea bottom; the second or external tank may be annular in shape and surround the first, or internal tank. Means are provided for introducing oil into and removing oil from, the upper part of the internal tank, and conduit means establish communication between the lower part of the internal tank and the upper part of the external tank. The external tank has openings at its bottom through which it communicates with the sea, and a roof having an arched cross-sectional shape. The outer wall of the internal tank may form the inner wall of the external tank and support a hollow shaft extending above the sea surface, the shaft carrying an equipment-supporting platform. Within the internal tank is a sludge-gathering means, which may be perforated plates or netting, for directing sludge into a deposit tank. Means are provided for agitating the sludge preparatory to its being pumped out of the deposit tank.

### 3,753,495 WATER CONDITIONING UNIT

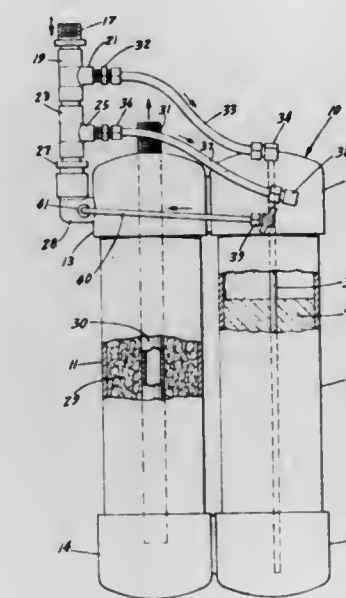
Gust H. Bjork, Robbinsdale, Minn., assignor to Filckertall Industries, Inc., Linton, N. Dak.

Filed June 1, 1971, Ser. No. 148,376

Int. Cl. B01d 27/02, 35/02

U.S. Cl. 210-206

8 Claims



A water conditioning unit for conditioning water to reduce its degree of hardness, to remove suspended impurities and for clarifying, deodorizing and the like. The unit has connections for installation in any water distribution system. It includes a first filtering tank of granular carbonaceous material and an auxiliary tank of water softening chemical. Interconnections provide for diversion of water to the chemical tank and metering of the chemical solution into the water being treated.

### 3,753,496 CONVERGING VORTEX APPARATUS FOR SEPARATING OIL FROM WATER

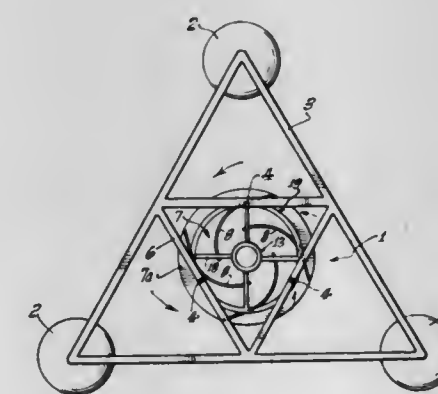
Edward A. Boyd, San Diego, Calif.

Filed Dec. 20, 1971, Ser. No. 209,835

Int. Cl. E02b 15/04

U.S. Cl. 210-242

5 Claims



A vortex generator in the form of a funnel-shaped casing is submerged with its upper edge or lip portion in close proximity to an oil slick. A plurality of vanes carried by the casing induce a rotary motion in fluids passing through the casing. A suction pump creates the flow by drawing a mixture of water and oil through the casing, the mixture then being carried by a conduit to a nearby tank or reservoir where it can be separated.

### 3,753,497 POLLUTION SKIMMER

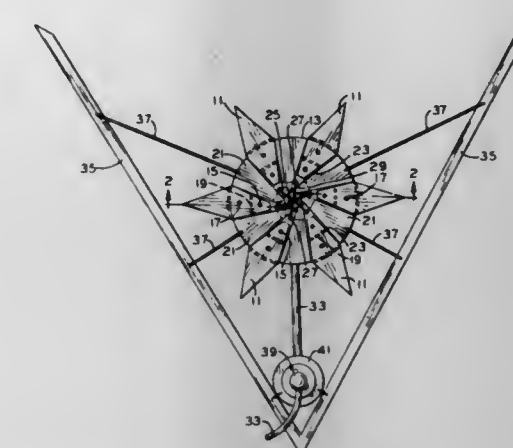
Benedict J. Hoffman, 2230 Chestnut St., Fort Wayne, Ind.

Filed June 10, 1971, Ser. No. 151,699

Int. Cl. E02b 15/04

U.S. Cl. 210-242

6 Claims



A skimmer for removing supernatant matter such as oil from a liquid such as water is disclosed having a base portion containing a centrally located drain and a plurality of troughs extending outwardly laterally from the drain but somewhat skewed relative to radii from the drain to aid in the formation of a vortex within the drain. The base portion is supported by a like plurality of laterally extending wings each having a density less than that of the liquid and each independently adjustably affixed to the base portion so that the elevation of the base portion relative to the liquid surface may be varied. A drain tube is connected to the lower end of the drain and after passing through a pump discharges the matter which is entering the drain into a surface material receptacle which may be a multiple outlet container for separating immiscible liquids. A V-shaped weir partially surrounding the base and wings and mechanically connected thereto may be provided for use if the skimmer in flowing liquids and the skimmer, weir and pump may all be mechanically interconnected so as to float as a unit.

### 3,753,498 TUBE PRESSURE FILTERS

Ralph Derek Gwilliam, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England

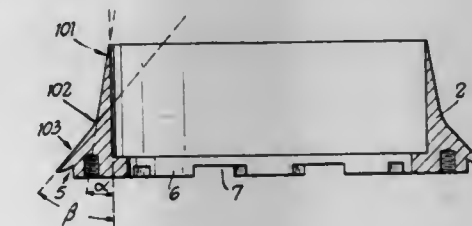
Filed Aug. 2, 1971, Ser. No. 168,040

Claims priority, application Great Britain, Aug. 7, 1970, 38,287/70

Int. Cl. B01d 29/38

U.S. Cl. 210-350

9 Claims



The invention relates to tube pressure filters which include a pair of generally coaxial inner and outer tubular bodies arranged one within the other and adapted to be supported in a generally upright position, the inner tubular body comprising a central cylindrical section and upper and lower end sections, each of which end sections includes (i) a radially outwardly extending flange portion and (ii) a fairing mounted on or adjacent to said flange portion so as to extend around an end of said cylindrical section and an end of a filter element disposed around and supported by the inner tubular body. The fairing



for the lower end section of the inner tubular body is constructed so that at least the vertex of the fairing is formed from a resilient plastics material whereby discharge of filter cake from the tube pressure filter is facilitated. The fairing for the lower end section of the inner tubular body is also preferably provided with a concavely curved profile.

3,753,499

## TUBE PRESSURE FILTERS

Ralph Derek Gwilliam, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England

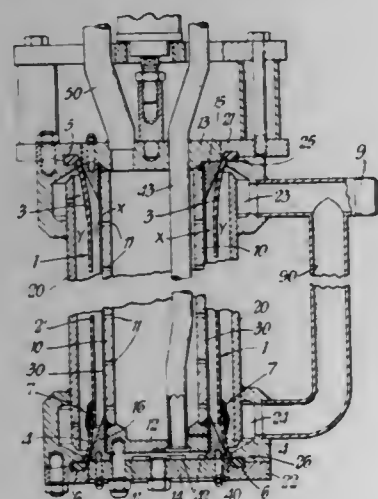
Filed Aug. 2, 1971, Ser. No. 167,910

Claims priority, application Great Britain, Aug. 7, 1970, 38,297/70

Int. Cl. B01d 29/42

U.S. Cl. 210—350

12 Claims



A tube pressure filter which comprises (a) a pair of generally coaxial inner and outer tubular bodies arranged one within the other and adapted to be supported in a generally upright position; (b) an impermeable elastic sleeve disposed within and secured to the outer tubular body; (c) a filter element disposed around and supported by the inner tubular body; and (d) means for displacing the tubular bodies axially relative to one another, wherein the impermeable elastic sleeve includes at least one means for ensuring that at least one annular portion of a filter cake formed on the filter element is substantially thinner than the major part of said filter cake, the or all of said annular portion(s) extending over a minor proportion of the length of said filter cake.

3,753,500

## INTEGRAL IN-LINE FILTER

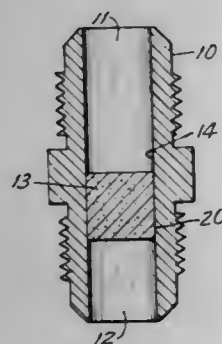
Douglas W. Voegeli, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company

Filed Mar. 20, 1970, Ser. No. 235,916

Int. Cl. B01d 27/00

U.S. Cl. 210—446

7 Claims



An integral, composite filtration structure is formed in situ of thermosetting resin-coated particles bonded to each other and to the inner walls of a tubular article at the contiguous surface of said article and the resin-coated particles.

### 3,753,501 MEMBRANE FOR AN IN-VITRO-RESORPTION MODEL OF THE GASTROINTESTINAL TRACT

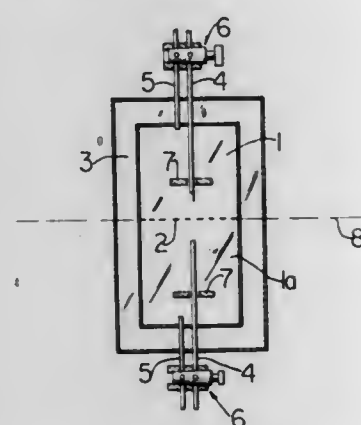
Herbert Stricker, Ingelheim am Rhein, Germany, assignor to C. H. Boehringer Sohn, Ingelheim am Rhein, Germany  
Continuation-in-part of Ser. No. 861,777, Sept. 29, 1969, Pat. No. 3,612,283. This application July 27, 1971, Ser. No. 166,350

Claims priority, application Germany, Sept. 27, 1968, P 17 98 340.3

Int. Cl. B01d 39/14, 31/00

U.S. Cl. 210—490

2 Claims



A porous membrane adapted for use as the filter element in an in-vitro-resorption model of the gastrointestinal tract, said membrane consisting essentially of solid porous carrier material, especially porous cellulose nitrate, impregnated with a liquid phase consisting of a mixture of (1) a higher fatty acid, such as caprylic acid, or dioctyl sodium sulfosuccinate and (2) a neutral lipid component, such as lauryl alcohol.

3,753,502

### DEVICE FOR AUTOMATICALLY TURNING, LIFTING OFF AND REPLACING COVERS ON THE CHARGING SHAFTS OF COKING OVENS

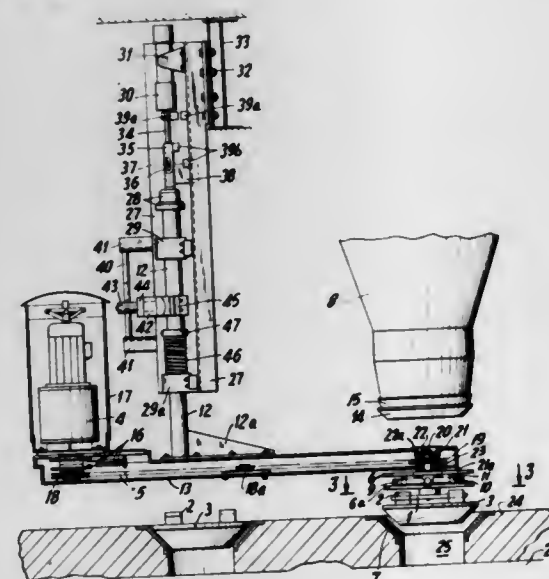
Werner Abendroth, Recklinghausen, Germany, assignor to Firma Carl Still, Recklinghausen, Germany

Filed June 25, 1971, Ser. No. 156,916

Int. Cl. B66c 13/00

U.S. Cl. 212—4

10 Claims



An automatic device for engaging and then subsequently turning and lifting off a cover for the charging shaft of a coking oven includes a horizontally extending support which is carried on a rotary column and which includes a drive motor thereon for rotating an engagement member through a clutch mechanism which causes the engagement and centering of a shaft cover and its rotation on a shaft seat in order to facilitate

the lifting of the cover upwardly and away from a top opening of a charging shaft for a coking oven furnace. In one embodiment, the device includes a clutch mechanism which provides a centering of the cover and the holding of the cover in a centered position while it is rotated in order to facilitate the precise replacement of the cover in the centered position. The support is carried on a column which is mounted on a support or frame for rotary movement and which is guided for up and down movement in order to facilitate the lifting and lowering of the cover. The rotary movement of the column is effected by engagement of a roller follower of the column with a control cam which provides an accurate rotary shifting movement of the support during the upward and downward movement of the column. In another embodiment of the invention the engagement means for the cover on the support includes a magnet which may be energized to lift the cover upwardly instead of having a rotary cam arm which engages into open ends of oppositely directed angles carried on the cover's top.

3,753,503

## COUPLER CARRIER ARRANGEMENT

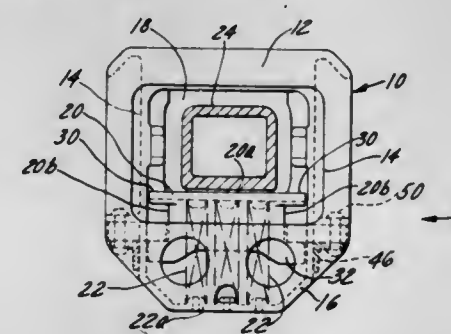
Kenneth Louis DePenti, Mayfield Heights, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Mar. 24, 1972, Ser. No. 237,635

Int. Cl. B61g 7/12, 9/22

U.S. Cl. 213—61

3 Claims



A railway car coupler flexible carrier in which the retainer plate for limiting upward movement of the carrier is held between a pair of horizontal flanges and is bolted or riveted thereto. One of the flanges is integral with the supporting structure and the other flange is on a separate member which first is positioned with the flange in engagement with the retainer plate and is then welded to the supporting structure.

3,753,504

## UNCOUPLING LINKAGE MECHANISM

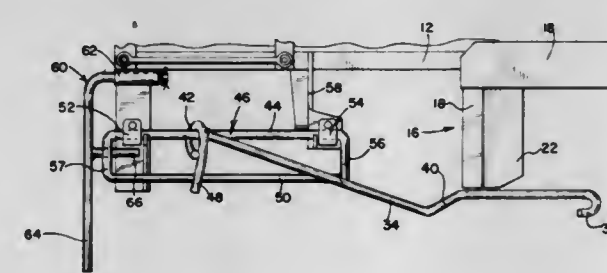
Franklin P. Adler, Michigan City, Ind., assignor to Pullman Transport Leasing Company, Chicago, Ill.

Filed Aug. 31, 1970, Ser. No. 68,268

Int. Cl. B61g 3/08

U.S. Cl. 213—166

3 Claims



An uncoupling linkage mechanism including an auxiliary operating lever extending downward from the side of the railway vehicle and accessible therefrom, aid lever rotatable about an upper pivot and including an inwardly extending finger in contact with a pivoted rack bar of the uncoupling device. The lever is rotatable by pulley a specified number of

3,753,505

## ARTICLE ROLL-OVER DEVICE

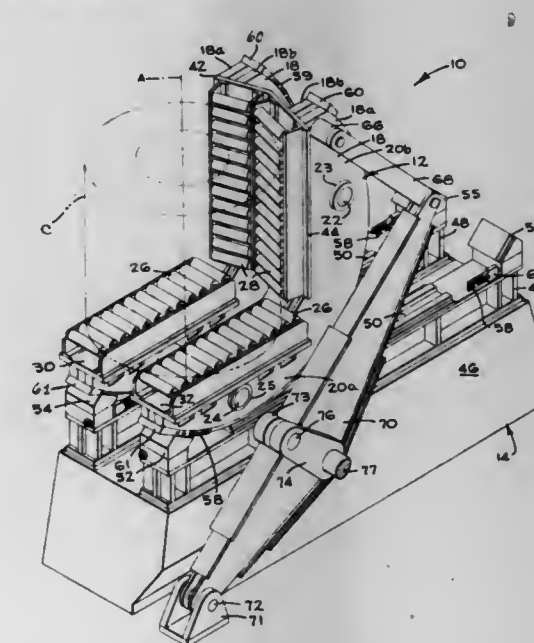
Ralph C. Ouska, Hinsdale, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed Mar. 10, 1971, Ser. No. 122,713

Int. Cl. B65g 7/00

U.S. Cl. 214—1 QF

3 Claims



A coil of metal or paper strip to be upended or downended is placed on one bed of a cradle which is constructed of semicircular vertical parallel plates and which is mounted in rolling engagement on a track beneath the cradle. The cradle is then rolled along the track one-quarter turn or 90° by a drive system to axially reorient and laterally transfer the coil. One such drive system includes a combination of pivotally interconnected levers which are actuated by a drive train. As the cradle reaches its end point, the upended or downended coil then rests on a second bed of the cradle perpendicular to the initial bed.

3,753,506

## UNITIZED REFUSE TRANSFER STATION

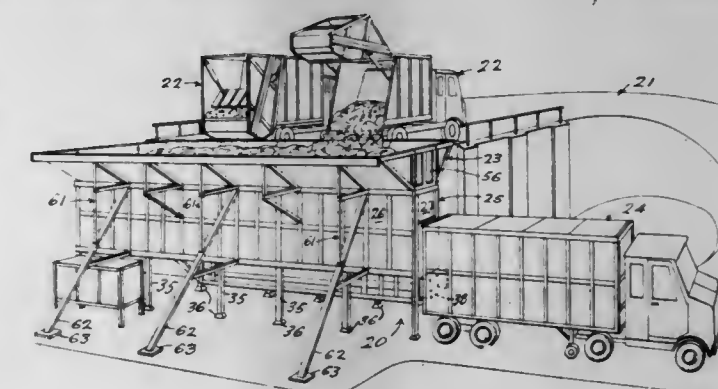
George W. Palmer, Durant, Okla., and William A. Herpich, Gallon, Ohio, assignors to Bell & Howell Co., Pasadena, Calif.

Filed May 3, 1972, Ser. No. 249,929

Int. Cl. B65g 67/20

U.S. Cl. 214—16 R

2 Claims

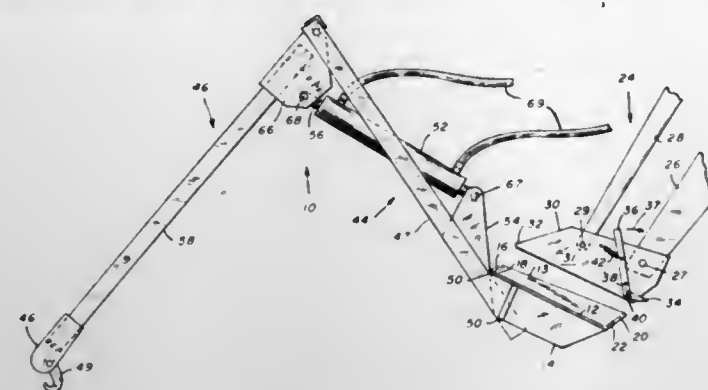


A unitary refuse transfer station that is transportable on or as a highway vehicle from fabrication site to destination. The



station comprises an elongated pit-like structure with an open top into which refuse may be dumped from route collection trucks. The main structure is originally fabricated with an outside width determined by the maximum width of a vehicle which may travel on the public highways. The pit-like structure has one or more hopper forming wings which are positioned within the structure when the entire station is being transported from factory to destination and which are swung up and out to widen its open top after positioning at the destination. Means are provided for supporting the structure at a desired ground related level. All auxiliary equipment and structural support means are also carried within the main structure during transportation. There is a transverse plate that is movable through the structure to push the refuse to one end. A compaction device has its receiving chamber at and beneath an opening in the bottom of the pit structure at that end of the structure and a ram which reciprocates through the chamber for compressing the refuse in the chamber and forcing it into a large portable container. When loaded, the portable container is moved to a dump or incinerator.

to be latched to a cooperative mounting means on the free end of the power boom. A first arm is fastened to the base plate



and carries a hydraulic cylinder. A second arm is hinged supported from the free end of the first arm, the piston of the hydraulic cylinder being fastened to the second arm.

3,753,509

## BOTTLE UNCASER-SINGLE LINER

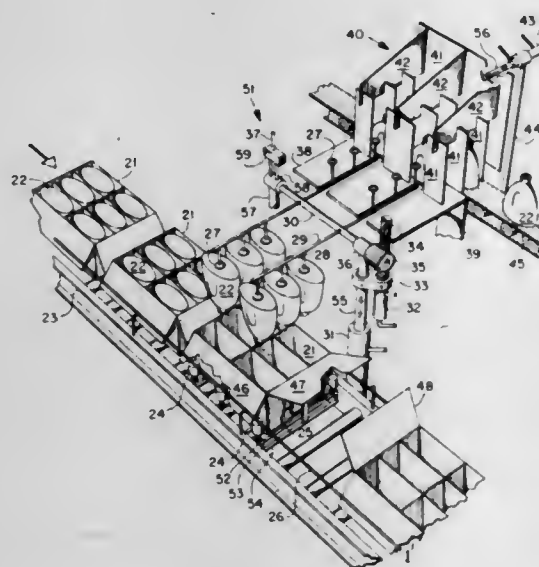
Ronald W. Kock, Jackson, Tenn., assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 16, 1971, Ser. No. 134,597

Int. Cl. B65b 21/04

U.S. Cl. 214-309

7 Claims



A machine having an unloading device integrated with a single lining device. The unloading device reciprocates vertically and rotates in a vertical plane to remove containers such as bottles from reshipper cases. It grips the bases of the inverted containers, lifts them vertically from a case and simultaneously rotates to invert and move the gripped containers to a deposit station, whereat the containers are lowered and released between parallel plates which move the containers a row at a time to a conveyor which carries the containers to other operating stations.

3,753,510

## LIQUID PROOF SAFETY PACKAGE

Peter Hedgewick, 3691 Victoria St., and Lothar J. Bauer, 306 Partington, Apt. 105, both of Windsor, Ontario, Canada

Continuation-in-part of Ser. No. 73,821, Sept. 21, 1970, abandoned. This application Mar. 12, 1971, Ser. No. 123,645

Int. Cl. B65d 41/06, 55/02

U.S. Cl. 215-9

41 Claims

A liquid proof safety closure and container assembly including a cap and container having complementary bayonet locking means with a sealing member interposed between the container and the end wall of the cap for resiliently maintaining the cap and container in locked engagement, and for

3,753,507

## WAREHOUSING AND INVENTORY CONTROL OF AUTOMOBILE AND TRUCK TIRES

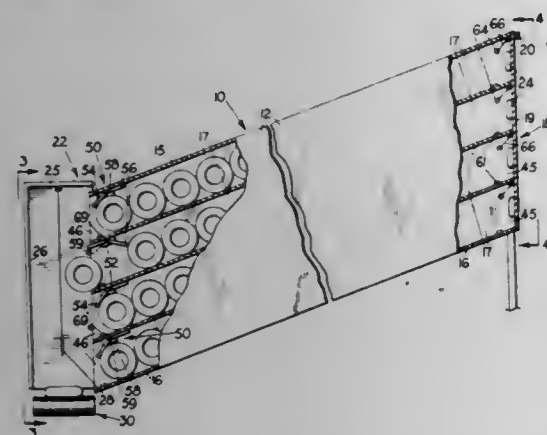
Millard P. James, and Keith B. Anderson, both of Portland, Oreg., assignors to Millard P. James, Portland, Oreg.

Filed Mar. 18, 1971, Ser. No. 125,539

Int. Cl. B65g 1/06

U.S. Cl. 214-16.4 R

2 Claims



A method and apparatus for the warehousing and dispensing of round objects such as tires with an inventory control thereof. A storage structure is subdivided into a number of individual chutes, with each chute having an infeed opening and an outfeed opening connected by a sloped runway. Tires of a particular size are placed in each chute and roll to the bottom thereof where they can be selectively released by an operator-controlled brake and ejector arm assembly provided near the outfeed opening. A conveyor is provided near the base of the structure for receiving tires released from the chutes and transporting them to a service area. Switch means are provided at the infeed and outfeed openings of each chute for monitoring the passage of tires. A running inventory count is visually displayed upon a remote console that is electrically responsive to the switch means.

3,753,508

## SKID WHEEL TRACTOR UTILITY BOOM

Orval R. Carpenter, 4347 W. 41st St., Tulsa, Okla.

Filed June 24, 1971, Ser. No. 156,438

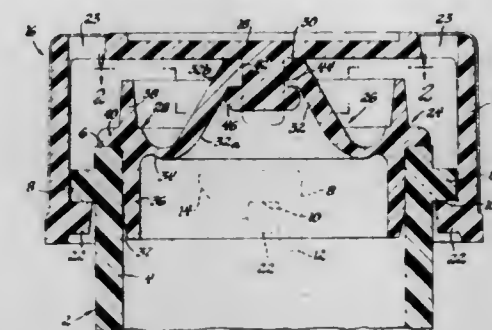
Int. Cl. B66c 23/00

U.S. Cl. 214-130 R

4 Claims

A lightweight, hydraulically actuated boom adapted for rapid attachment to, and detachment from, a material-handling power boom. It comprises a base plate adapted to fit and

providing a seal for the contents of the container. The sealing member comprises a one-piece plastic body having a plunger portion overlying the mouth of the container and a sealing portion engaging the mouth portion of the container. The plunging portion includes a base portion engaging the cap with a side wall portion extending from the periphery of the base portion and terminating in a resilient, outwardly extending



spring portion joined to the inner periphery of the sealing portion. The sealing portion includes an axially extending seal for sealing engagement with the inner surface of the mouth of the container and a cylindrical rib projects from the spring member toward the end wall of the cap and is operable after predetermined deflection of the spring portion to force the sealing portion into sealing engagement with the container upon further axial movement of the cap toward the container.

3,753,511

## CONTAINER AND CLOSURE THEREFOR

Heinz Ruch, 11, Friedensgasse, Basel, Switzerland

Continuation of Ser. No. 119,629, March 1, 1971, abandoned.

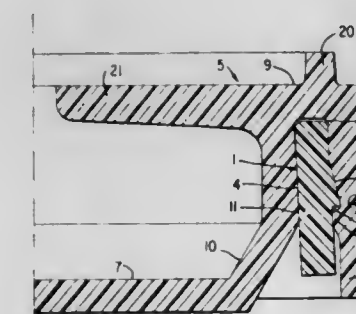
This application Dec. 4, 1972, Ser. No. 310,322

Claims priority, application Switzerland, Mar. 2, 1970, 3023/70

Int. Cl. B65d 43/02, 41/22

U.S. Cl. 215-46 A

16 Claims



A container and closure therefor comprises an open top or mouth container having a container wall provided with a circumferential shoulder close to the upper end of the wall, and a push-in cover member having a circumferential raised rim portion provided with a circumferential skirt member depending externally over the container wall. The skirt member has its inner wall surface provided with a projection which engages underneath said shoulder on the container wall when the cover member is pushed over the open top of the container. A circumferential notch on the outer side of the skirt member provides a weakening line permitting to tear off a lower portion of the skirt member provided with said projection when the container is to be opened, but leaving the remaining cover member intact to be reusable for closing the container. The cover has a bulged portion on the outer surface of the inner wall and there is a shaped contoured fit between the container and cover.

3,753,512

## CONTAINER AND CLOSURE

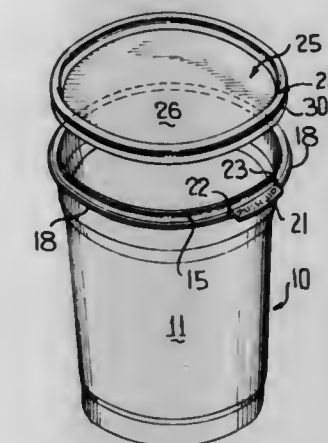
John J. Curry, Westchester, Ill., assignor to Phoenix Closures, Inc., Chicago, Ill.

Filed Oct. 27, 1970, Ser. No. 84,348

Int. Cl. B65d 43/04

U.S. Cl. 220-43 R

9 Claims



This disclosure relates to a container formed of thermoform plastic material and a metallic closure, the closure being of a conventional construction and including a downwardly opening channel in part defined by an outermost peripheral wall terminating in a raw severed edge, the container having a body terminating at an upper end portion in a radially upwardly outwardly and downwardly directed wall, the latter of which joins a generally radially outwardly directed peripheral wall which underlies the free raw edge of the lid to prevent contact thereof with a person's hand. The peripheral wall includes as an integral extension thereof a tab for manually deflecting the lid upwardly to facilitate the removal thereof. Additionally, the outermost maximum diameter of the downwardly directed container wall portion is normally greater than the diameter of the innermost surface of the outermost lid wall whereby the downwardly directed portion of the body will be directed radially inwardly when the lid is in its seated position.

3,753,513

## HANDLING AND SORTING DEVICES

Julian Pascoe Grenfell, Weybridge, and John Brown Buchanan, Mytchett, both of England, assignors to Badalex Limited, Weybridge, England

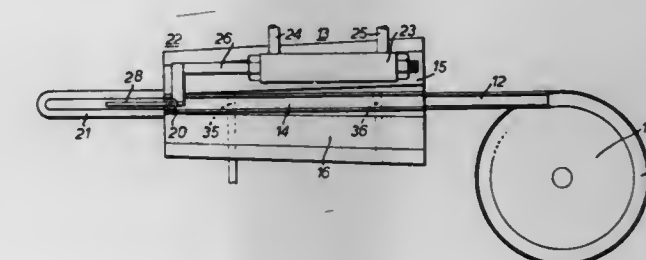
Filed May 5, 1972, Ser. No. 250,749

Claims priority, application Great Britain, May 6, 1971, 13528/71

Int. Cl. B23q 7/04; B65g 17/46

U.S. Cl. 221-1

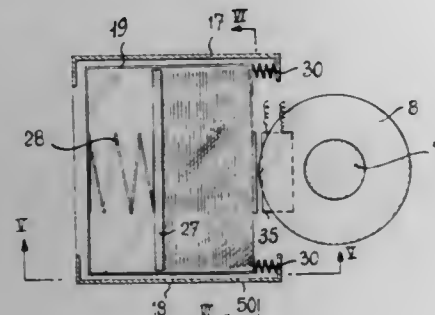
15 Claims



Apparatus and method for handling or sorting articles of magnetic material by magnetomotive means. The articles are fed to a guide across which a magnetic flux is maintained between a pair of pole pieces of a magnetomotive means; the magnetic flux increasing in density along the guide so as to separate and move the articles along the guide in the direction of increasing magnetic flux density.

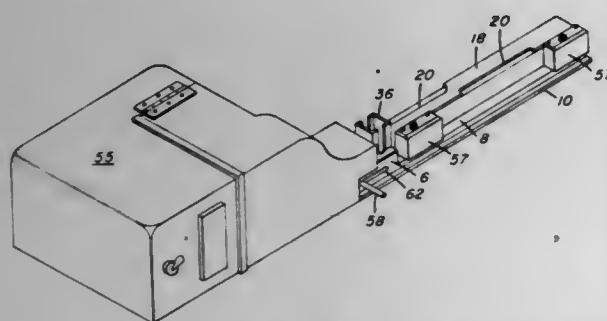


**3,753,514**  
**APPARATUS FOR SELECTIVELY DISPENSING**  
**ARTICLES STORED IN A PLURALITY OF CONTAINERS**  
 Pierre Naguet, 2, rue Carnot-93, Noisy le Grand, France  
 Filed July 18, 1972, Ser. No. 272,756  
 Claims priority, application France, July 20, 1971, 7126478  
 Int. Cl. B65h 1/12  
 U.S. Cl. 221-129 7 Claims



A vending machine including a plurality of movable containers for articles to be dispensed, the containers being mounted adjacent a rotatable shaft which supports drive rollers. The containers are selectively magnetically energized so as to move toward the shaft where a drive roller will contact and drive an article out of each selected container.

**3,753,515**  
**SLIDE TRANSPARENCY SPREADING DEVICE**  
 William F. Coons; George T. Negus, and Patrick A. Teora, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.  
 Filed Feb. 3, 1972, Ser. No. 223,158  
 Int. Cl. B65h 3/24  
 U.S. Cl. 221-191 10 Claims

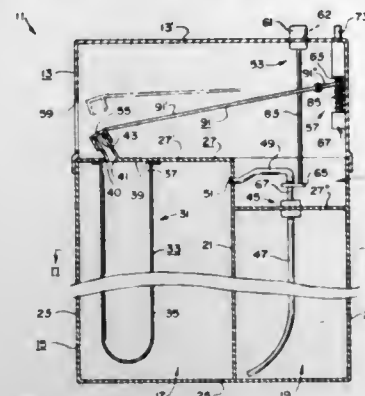


A spreading device for slide transparencies (hereinafter referred to as slides) for spreading or arranging a plurality of such slides in a row in side-by-side relation for loading into a slide clip. The clip is preferably formed of two opposing, substantially U-shaped channel sections connected back-to-back and having flexible legs biased toward one another. The slide spreading device comprises a platform onto which the slides are fed one at a time, preferably emulsion side up, in side-by-side relation, a cover secured to and spaced from the platform to form an enclosed, open ended channel for receiving the slides, and cut-outs in the side edges of the cover to provide access to the side edges of the slides in the channel to facilitate loading them into a slide clip.

**3,753,516**  
**AUTOMATIC DISPENSER FOR TOOTHPASTE AND THE LIKE**  
 Ernest L. Crider, 1902 Nantucket, Memphis, Tenn.  
 Filed Oct. 7, 1971, Ser. No. 187,397  
 Int. Cl. B65d 35/28  
 U.S. Cl. 222-95 2 Claims

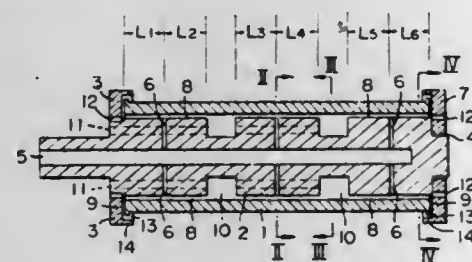
A dispenser for toothpaste and the like in which compressed gas controls the flow of the material to be dispensed from a flexible holder through an exit nozzle equipped with a removably mounted cap. A rigid compartment surrounds the

flexible holder and allows gas to enter from a second rigid compartment, thus allowing the gas to compress the flexible tube, forcing the material to be dispensed out the exit nozzle.



Actuating devices for releasing the compressed gas into the first rigid compartment from the second rigid compartment and for removing the cap from the exit nozzle are included.

**3,753,517**  
**GUIDE ROLL FOR FILAMENTS**  
 Yoshisuke Takenaka, and Hildekl Aoyama, both of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan  
 Filed Sept. 15, 1972, Ser. No. 289,316  
 Claims priority, application Japan, Nov. 26, 1971, 46/110976; Apr. 7, 1972, 47/34907  
 Int. Cl. B65h 17/32  
 U.S. Cl. 226-97 8 Claims



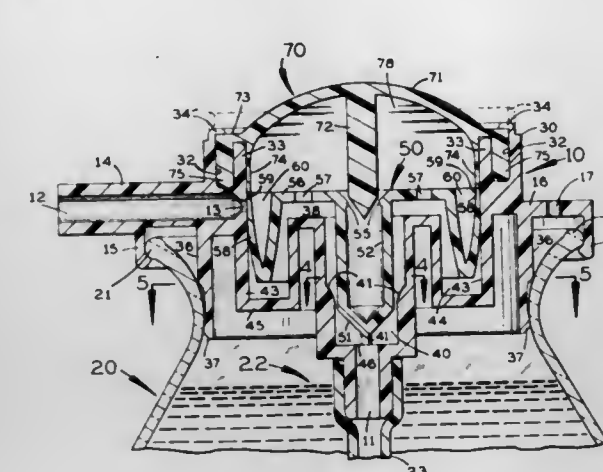
This invention provides a guide roll for filaments as used in apparatuses in which the draw-twisting, draw-winding, false twisting or heat treatment of the synthetic filaments and the like are carried out, and this guide roll is particularly devised to meet the requirements of high speed operation. Again, it can be used under conditions of elevated temperature and high humidity. Heretofore, radial ball bearings have been used in the guide rolls of low speed rotation, but to meet the demands for an increase in the production in recent years guide rolls equipped with fluid bearings are now being used in view of their low torque and ability to endure its high speed operation. This invention concerns a guide roll equipped with this type of fluid bearing and is one whose performance has been enhanced by specifying as to its basic factors, with a mathematical formula, as a result of detailed observations and repeated experimentation, the numerical values involved in its designing, and also through elaborate works in the detailed parts of the fluid bearing, by eliminating the points which might become causes for trouble. Thus, the guide roll according to the present invention not only meets the conditions for high speed operation but also can maintain its high performance.

**3,753,518**  
**PUMP WITH FLOATING VALVE ELEMENT**  
 Louis F. Kutik, 8720 S.W. 23 Pl., Broward, Fla.  
 Filed May 7, 1971, Ser. No. 141,192  
 Int. Cl. B67d 5/42; A61f 13/20  
 U.S. Cl. 222-383 7 Claims

The invention relates to a product dispensing pump, mountable on a container, comprising a housing, an actuator

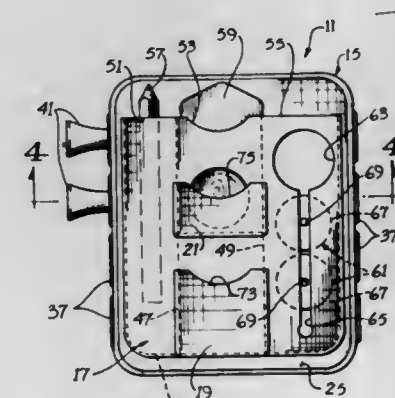
mounted on the housing and a floating valve within the housing; when the actuator is depressed, the contents of a chamber

Movement of the spare tire between the two points is provided by means of an elongated supporting member pivotally



within the housing are discharged through an exhaust port; when the actuator is released, the valve slidably closes the exhaust port and opens an input to recharge the chamber.

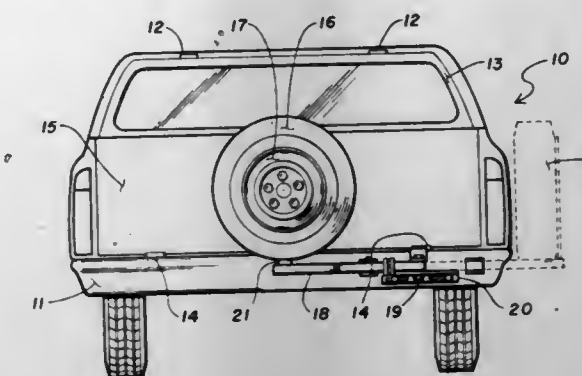
**3,753,519**  
**GOLF ACCESSORY CARRIER**  
 Fred Gammon, 219 Tremont Dr., Bayside Village, Newport Beach, Calif.  
 Filed Sept. 27, 1971, Ser. No. 183,958  
 Int. Cl. A45c 11/00  
 U.S. Cl. 224-5 C 9 Claims



A golf accessory carrier comprising a resiliently compressible core having a cavity therein and a case substantially completely enclosing the core. The case is constructed of flexible material and the case has an aperture in registry with the cavity of the core. The aperture and cavity are sized to partially receive a golf tee and the core is adapted to resiliently grip the portion of the golf tee in the cavity. One or more pockets for carrying various other golf accessories are provided on the case.

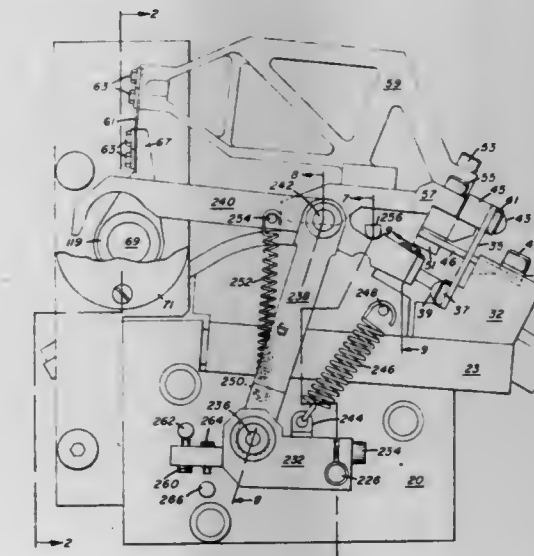
**3,753,520**  
**TWO-POSITION SPARE TIRE MOUNTING ASSEMBLY**  
 Egbert J. Bodde, Rt. 1, Trego, Wis.  
 Filed Sept. 30, 1971, Ser. No. 185,149  
 Int. Cl. B62d 43/02  
 U.S. Cl. 224-42.06 12 Claims

A spare tire mounting assembly is provided which is especially adapted for use with motor vehicles such as station wagons having an openable rear portion. The assembly provides for alternate storage of the spare tire either on the external rear of the vehicle or along a longitudinal side thereof.



mounted to the vehicle at one end thereof and by pivotal mounting of the spare tire at the other end of the elongated supporting member.

**3,753,521**  
**INTERMITTENT HIGH SPEED PERFORATOR**  
 Jasper S. Chandler, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
 Division of Ser. No. 40,951, May 27, 1970, Pat. No. 3,656,384.  
 This application Sept. 7, 1971, Ser. No. 178,365  
 Int. Cl. G03b 1/22  
 U.S. Cl. 226-64 21 Claims



An intermittent film perforator capable of operating at a shuttling and punching rate up to 12,000 perforations per minute, having a design life of 16,000 hours, and readily adapted to perforate different film formats and film widths. The heart of the perforator is a novel film shuttling mechanism having a cam and follower design which is subject to a minimum of wear and which is resiliently mounted so that it can be tuned to reduce the load of the bearings of the drive therefor.

The perforator is provided with an automatic threading mechanism which will thread unperforated film to and through the punch mechanism and to the shuttle mechanism, thus eliminating the necessity of temporarily splicing the ends of a new film to the end of an expiring film or providing the end of a new film with perforations to insure its being handled by the perforator. This automatic threading mechanism intermittently advances the film to the punch and shuttle mechanism by intermittently frictionally engaging the same and advancing it in increments substantially equal to the perforation pitch and the advancing stroke of the shuttle mechanism.

Both the novel shuttle mechanism and the automatic threading mechanism of the perforator are not limited to use in perforators but can be used independently to intermittently feed motion picture film through a motion picture camera or a motion picture projector with little or no modification.



## ERRATUM

For Class 226—97 see:  
Patent No. 3,753,517

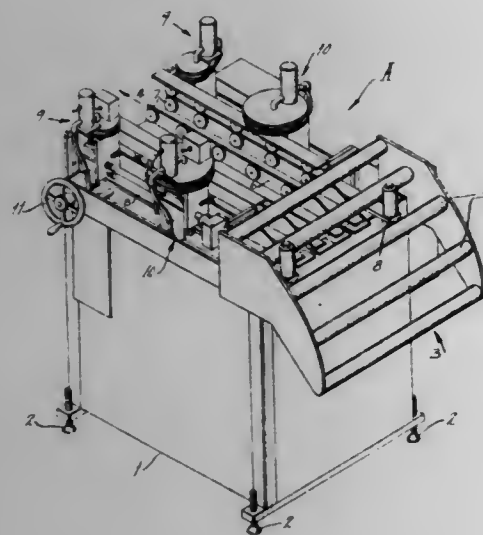
3,753,522

**SHEET TRANSFERRING DEVICE AND METHOD**  
Kenneth Voges, Red Bud, Ill., assignor to Red Bud Industries, Inc., Red Bud, Ill.

Filed Feb. 19, 1971, Ser. No. 116,914  
Int. Cl. B65h 17/26

U.S. Cl. 226—141

9 Claims



In a mechanized sheet transferring device a first movable gripping means is disposed adjacent the continuous sheet desired to be incrementally transferred forwardly of the device, with said gripping means alternately advancing said sheet forwardly of the device, whereupon a stationary gripping means effectively clamps said sheet stationary, while simultaneously the sheet may be sheared or punched by a mechanism, or the like, while the movable gripping means returns to its initial position. Since the movable gripping means is moved by means of a drive chain and motor-sprocket arrangement, this movable gripping means may be set at any position along the longitudinal length of the sheet moving surface of the device, to provide for precise advancement of the sheet material between shearing operations.

In the method of operation of this sheet transferring device, the movable gripping means alternately advances the sheet material a fixed distance, whereat circuitry energizes a stationary gripping means that clamps the sheet into fixed position, while said movable gripping means returns to its initial preset location along the sheet moving surface of the device.

3,753,523

## STAPLING MACHINE

Morris Perlman, Brooklyn, N.Y., assignor to Carblade Form Grinding, Inc., Brooklyn, N.Y.

Filed Oct. 21, 1971, Ser. No. 191,235

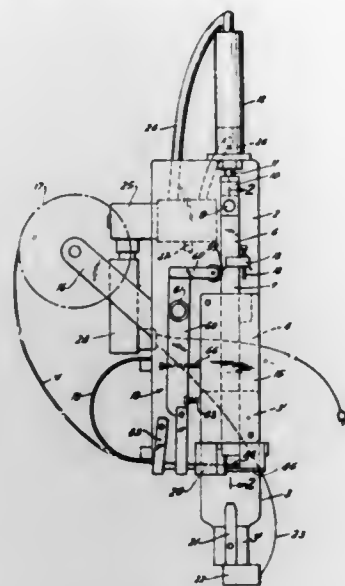
Int. Cl. B27 7/10

U.S. Cl. 227—88

30 Claims

A stapling machine in which a pair of punches cooperates with a die and a retractable anvil to cut off a portion of a wire fed between the die and the punches and bend the wire into a U-shaped staple, and in which a clincher cooperates with a stationary clinching anvil located below the retractable anvil to clinch the U-shaped staple about material placed on the clinching anvil. The clincher is carried by a driver bar reciprocated in longitudinal direction and the punches are carried by a carrier bar coupled by releasable coupling means to the driver bar for movement therewith. After the punches on the carrier bar have cut off a wire portion, formed the same

into a U-shaped staple and moved the staple toward the clinching anvil, further movement of the carrier bar is stopped by stop means while the coupling means are moved to an un-



coupling position so that the driver bar and the clincher thereon can continue their movement towards the clincher anvil to perform the clinching operation.

3,753,524

## STAPLER DEVICE

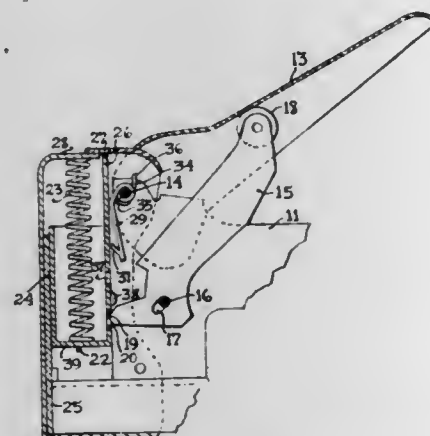
Harold Heyward, 1194 Carol Ln., Glencoe, Ill.

Filed Feb. 10, 1972, Ser. No. 225,145

Int. Cl. B25c 5/00, 5/10

U.S. Cl. 227—132

9 Claims



A hand-operated stapler device having a multi-stage operating movement of the operating handle resulting in a first cocked position of the staple-driving mechanism achieved through the employment of a latch pin operable after a predetermined length of travel of the staple-driving mechanism by compression movement on the handle, and a positive releasing of the latch pin upon successive movement of the handle after operating the staple-driving mechanism; such construction and function requiring less compression force for each handle movement and thus resulting in easier yet effective operation of the tool.

3,753,525

## PIPE WORKING CARRIAGE

Samuel J. Homes, Houston, Tex., assignor to Crc-Crose International, Inc., Houston, Tex.

Filed Aug. 2, 1971, Ser. No. 168,169

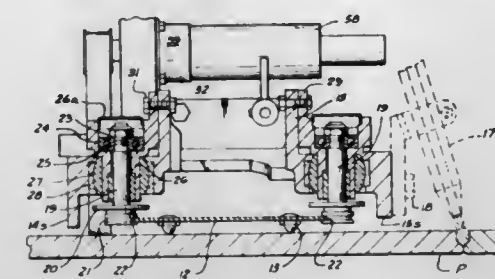
Int. Cl. B23k 5/00

U.S. Cl. 228—29

12 Claims

A pipe working carriage which is adapted to travel along a track encircling the exterior of a pipe. The carriage includes a body, wheels for engaging the track, and a drive system which

engages a cylindrical surface parallel to the axis of the pipe. This abstract is neither intended to define the invention of the



application, which of course is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,753,526

## TEMPERATURE RESPONSIVE VALVE ASSEMBLY

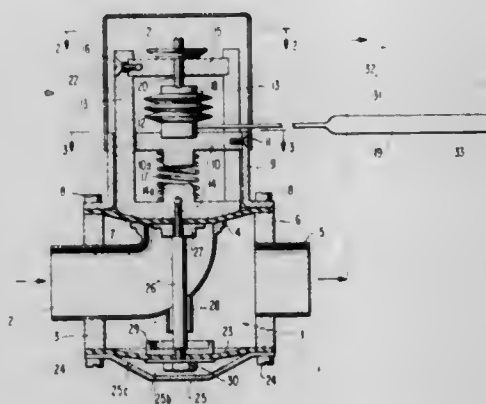
Clarence S. Johnson, P.O. Box 940, Pomona, Calif.

Filed June 4, 1971, Ser. No. 150,080

Int. Cl. G05d 23/12

U.S. Cl. 236—99

4 Claims



A temperature responsive valve assembly having a fixed disc secured to the valve body; a yoke member is slidably mounted on the disc and a compression spring is positioned on one side of the disc and biases the yoke against a diaphragm type valve urging the diaphragm to closed position. A temperature responsive bellows is mounted on the opposite side of the disc and, when expanded, moves the yoke and associated diaphragm to an open position. A counter-diaphragm is interconnected with the diaphragm valve and is adapted to move in unison therewith to thereby provide a pressure-equalizing function within the valve body during operation.

3,753,527

## DRIP IRRIGATION SYSTEM

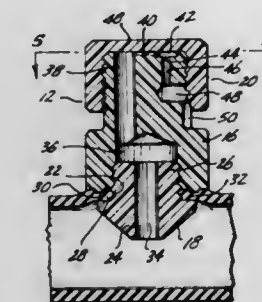
Lyle D. Galbraith, Redmond, and Alan R. Harvey, Bellevue, both of Wash., assignors to Rocket Research Corporation, Redmond, Wash.

Filed Aug. 6, 1971, Ser. No. 169,689

Int. Cl. B05b 17/04

U.S. Cl. 239—11

11 Claims



A plurality of drip units or irrigators are attached to a plastic hose. Water flows from the hose to and through a relatively

large metering orifice in each irrigator which is sized to easily pass any expected particles which are in the water. A vortex chamber is positioned immediately upstream of the metering orifice and functions to swirl the water ahead of the orifice, giving the orifice the flow determining characteristics of a relatively small orifice. The vortex chamber also serves to increase the velocity of the water at the orifice, providing an scouring action at the orifice working against algae buildup.

3,753,528

## LUBRICATION SYSTEM

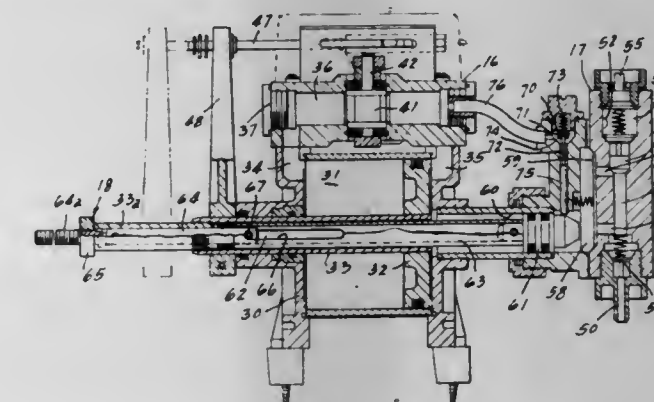
Gerald W. Gibbs, Lawrenceville, Ga., assignor to Consolidated Foods Corporation, Atlanta, Ga.

Filed Apr. 13, 1972, Ser. No. 243,763

Int. Cl. B05b 7/26

U.S. Cl. 239—61

5 Claims



The present invention is directed to a device for insuring a proper concentration of a lubricant in a water and lubricant mixture being sprayed through spray nozzles onto moving parts such as conveyors, chain belts and trolleys, characterized by a fluid-actuated motor driving a pump which meters the lubricant into the flow of water in direct proportion to the amount of water being utilized by the system of spray nozzles to insure a constant concentration thereof. In the preferred embodiment, the motor is a reciprocating piston connected to a diaphragm pump utilizing a plunger which is adjustably connected to the piston rod of the motor to enable an adjustment in the output of the pump to vary the concentration of the lubricant in the water and lubricant mixture. Preferably, the water leaving the fluid-actuated motor and the output of the pump are mixed in a mixing chamber prior to being sprayed through the nozzle system and the speed of the motor is controlled through a pressure regulator means disposed in the waterline connected to the inlet port of the motor.

3,753,529

## SPRAY APPARATUS

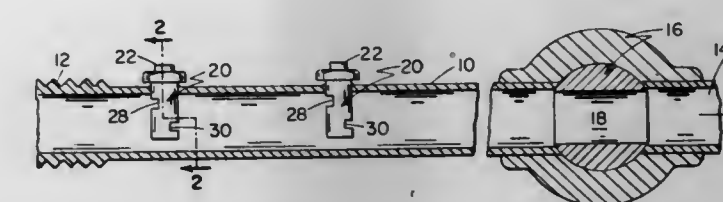
Donald Brooks Baker, Foxboro, Mass., assignor to Bird Machine Company, Inc., South Walpole, Mass.

Filed Jan. 26, 1972, Ser. No. 220,872

Int. Cl. B05b 15/02

U.S. Cl. 239—110

5 Claims



Shower apparatus has a pressure fluid conduit with spray nozzles having body portions immersed in the fluid and internal valve members movable between a spray position restricting the capacity of the spray outlet and a purge position in which such capacity is enlarged, the nozzle body portions hav-



ing inlet and outlet ports differently located in the fluid flow path in the manifold so that the valve members are shifted between spray and purge positions by pressure differential changes between the pots produced by opening and closing a conduit outlet valve to vary the fluid flow rate.

3,753,530

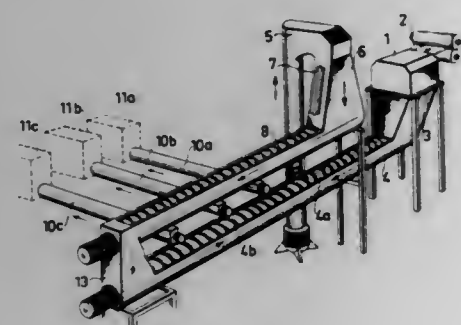
# APPARATUS FOR CONVERTING SHEET CELLULOSE PULP TO DEFIBRATED PULP

Stig Olof Grafstrom, Bondsjo, and Nils Verner Blomqvist, Ornskoldsvik, both of Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden  
Division of Ser. No. 830,042, June 3, 1969, Pat. No. 3,645,456.  
This application Sept. 2, 1971, Ser. No. 177,475

Int. Cl. B02c 13/286

U.S. Cl. 241—34

10 Claims



Apparatus are provided for converting sheet cellulose pulp to defibrated pulp, uniformity of the defibrated pulp stock being ensured by pooling the shredded pulp obtained from a plurality of cellulose pulp sheets, and uniformly feeding the pooled shredded pulp fibers to the disintegrators.

3,753,531

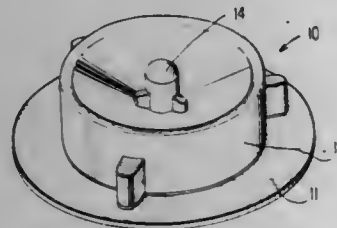
# REEL ADAPTER

Tomomi Katoh, Nerima-ku, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan  
Filed Dec. 6, 1971, Ser. No. 205,235  
Claims priority, application Japan, Dec. 15, 1970, 45/125145

Int. Cl. B65h 19/02

U.S. Cl. 242—68.3

2 Claims



A reel adapter in the form of an annular plastic insert is received within a center opening of a metal reel whose diameter is not less than 10.5 inches permitting the metal reel to be carried on a reel support normally accommodating a plastic reel of greater thickness but of a diameter not larger than 7 inches, the reel adapter including height adjusting means of a thickness approximating one-half of the thickness difference between the metal reel and plastic reel, the height adjusting means including at least a radially extending portion which underlies the metal reel to raise the reel above the reel support.

3,753,532

# METHOD AND APPARATUS FOR STORING ELONGATED MATERIAL

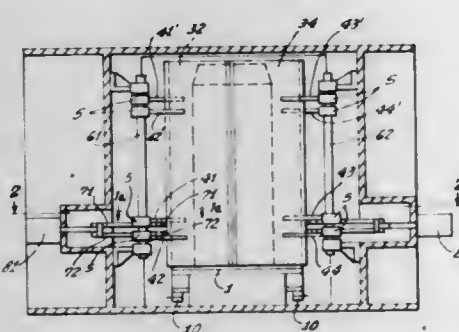
Joachim Meyer, Lintorf, Germany, assignor to Frisch Kabel- und Versellmaschinenbau GmbH, Ratingen, Germany  
Filed June 22, 1972, Ser. No. 265,306

Claims priority, application Germany, June 22, 1971, P 21 30 882.7

Int. Cl. B21c 47/04

U.S. Cl. 242—83

4 Claims



In an apparatus for storing elongated flexible material in plural coiled loops around a cylindrical core on a base plate, a plurality of cylindrically profiled panels, establishing a hollow cylinder when in coaxial position. The panels are pivotally mounted to assume a first position of coaxial relationship to each other and to a particular axis to establish a cylindrical container wall at a distance from and concentric to the core on the base when placed coaxial to said axis, and to assume a second position opening a passage between them having width larger than the diameter of the cylindrical container wall when established in the first position of the panels.

3,753,533

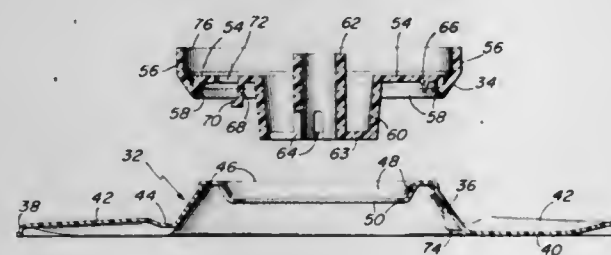
# TAPE REEL

George F. Lyman, Weston, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.  
Filed Aug. 20, 1970, Ser. No. 65,513

Int. Cl. B65h 17/48; B21c 47/02

U.S. Cl. 242—55.19 A

13 Claims



The disclosure includes an improved tape reel structure for use in a magnetic tape cartridge. The complete cartridge includes an endless tape which is wound about the tape reel and in which the magnetic tape is fed from the central portion of the tape reel and is rewound about the outer region of the reel in the usual manner. The tape reel includes two basic parts, a platform and a central cap which are connected by an improved mechanical interlock which secures the parts together and which precludes their relative rotation.

3,753,534

# RESILIENTLY COMPRESSIBLE BOBBIN MADE OF PLASTIC MATERIAL

Nobutaka Ono, Nishinomiya, and Yoshiharu Nagai, Kanagawa, both of Japan, assignors to Osaka Bobbin Kabushiki Kaisha, Osaka, Japan

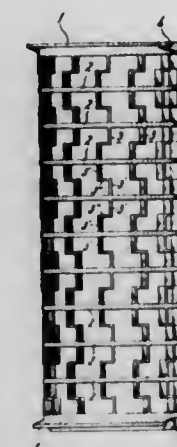
Filed Dec. 14, 1970, Ser. No. 97,511

Claims priority, application Japan, Dec. 25, 1969, 44/123414 (utility model)

Int. Cl. B65h 75/24, 75/10

U.S. Cl. 242—118.11

9 Claims



A resiliently compressible bobbin made of a synthetic thermoplastic material which comprises two end rings, a plurality of intermediate rings spaced each other in parallel with and between the end rings, and a number of chair-spaced bent elements, each of which consists of two portions extending parallel to the longitudinal axis of the bobbin and secured to the rings and a portion extending parallel to the plane of the ring, interconnecting any two adjacent rings forming a tubular lattice-work. The bent elements are arranged regularly and uniformly in a circumferential row and connected longitudinally with each others by said intermediate rings, and bending direction of the bent elements in one circumferential row is opposite to that in adjacent circumferential rows.

3,753,535

# YARN TENSIONING DEVICE AND METHOD

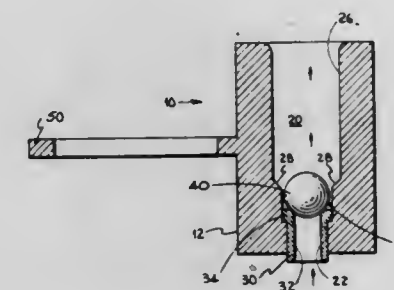
Otto Zollinger, Spartanburg, S.C.

Filed Oct. 16, 1972, Ser. No. 297,995

Int. Cl. B65h 59/22

U.S. Cl. 242—152.1

11 Claims



A device is disclosed for tensioning a running length of textile yarn. The device contains a yarn passageway made up of three sections, each section having a progressively larger diameter from the inlet end of the device. A small diameter section at the entrance end of the device has a seat adjacent the inner end thereof which receives a spherical element. The medium diameter section surrounds the seat and retains the spherical element therein. The larger diameter section of the passageway is sufficiently large to enable pressurized air to pass around the spherical element without forcing the element out the end of the passageway. The wall adjacent the junction of the large and medium diameter sections is tapered so as to

permit ready return of the spherical element to the medium diameter section to reside on the seat. Mounting means are also provided for securing the device to a yarn handling machine. A method for tensioning yarn is also disclosed and claimed herein where the yarn passes through the three sections of the yarn passageways and is engaged in the medium diameter section by the spherical element so as to impede the progress thereof while the spherical element is retained against lateral movement.

3,753,536

# SPACE VEHICLE COUPLING MECHANISMS

Neville White, Portishead, England, assignor to British Aircraft Corporation Limited, London, England

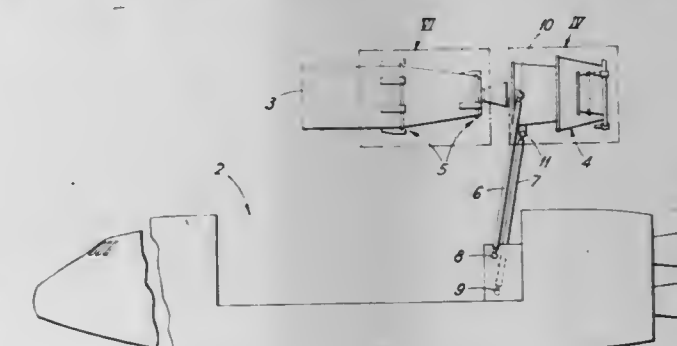
Filed Sept. 29, 1971, Ser. No. 184,817

Claims priority, application Great Britain, Oct. 2, 1970, 46,917/70

Int. Cl. B64g 9/00

U.S. Cl. 244—1 SD

6 Claims



A mechanism for the coupling of one space vehicle to another includes a coupling means on each vehicle, each coupling means having a primary engagement device and a secondary engagement device so positioned and axially spaced prior to coupling of the vehicles that engagement and locking is achieved firstly only by the two primary engagement means and, subsequently, on altering the axial spacing between the primary and secondary engagement means on one vehicle, by the two secondary engagement means.

3,753,537

# METHOD AND APPARATUS FOR STABILIZING THE TRAJECTORY OF A REACTION-PROPELLED MISSILE

Gunther Karpa, Ottobrunn, and Helmut Schmidt, Munich, both of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Germany

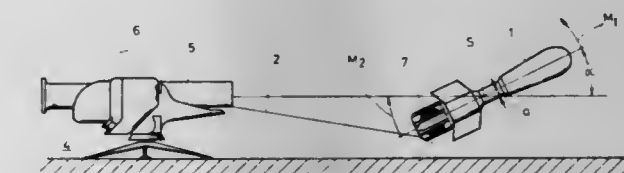
Filed Oct. 6, 1970, Ser. No. 78,447

Claims priority, application Germany, Oct. 9, 1969, P 19 50 930.9

Int. Cl. F42b 15/04, 13/56; F41g 7/02

U.S. Cl. 244—3.12

4 Claims



In a method and apparatus for stabilizing the trajectory of a reaction-propelled missile, tensile forces are exerted at the stern of the missile through a single tensile member connected to the stern, the tensile forces, at angles of incidence of the missile differing from zero, producing moments which rotate the missile back about its center of gravity. The single tensile member, at its connection with the missile, is wound on a coil



at the stern of the missile, and this coil has an axis of rotation coinciding with the longitudinal axis of the missile. The single tensile member may be the cable for transmitting guiding signals to the missile, although the tensile member may be independent of this cable.

3,753,538

## VEHICLE COMMAND SYSTEMS

Michael Martin Marsh, Biggleswade; Geoffrey Thompson, Letchworth, and Brian Thomas Trayner, Hitchin, all of England, assignors to British Aircraft Corporation Limited, London, England

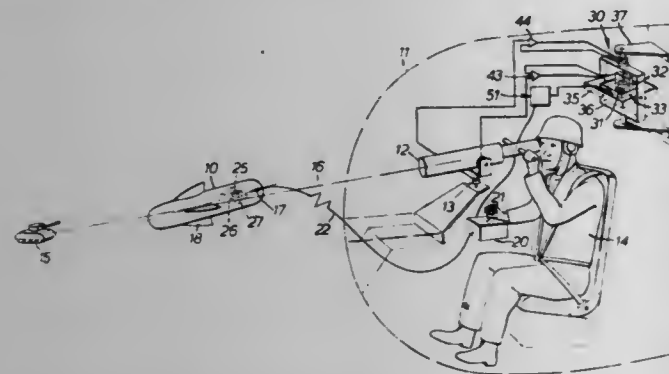
Filed May 12, 1971, Ser. No. 143,714

Claims priority, application Great Britain, May 18, 1970, 24,018/40

Int. Cl. F41g 7/02; 7/10, 9/00

U.S. Cl. 244—3.12

9 Claims



A command-to-line-of-sight system for controlling guided missiles from an aircraft, in which a two-axis free gyroscope is mounted in the controlling aircraft and maintained as an analogue of a directional reference gyroscope carried in the missile, the analogue gyroscope being mounted in a free gimbal system whose outer free gimbal is pivotally supported by a pair of controlled gimbals. The controlled gimbals are driven by servo mechanisms in response to position signals derived from an optical sight in the controlling aircraft so that the roll axis of the analogue gyroscope is maintained approximately parallel to the line of sight. A compensating signal derived from the analogue gyroscope and representative of roll of the controlling aircraft is supplied to the command signal transmitter in the controlling aircraft and is employed to correct the transmitted command signals so as to compensate for misalignment between the attitude axes of the controlling aircraft and the axes of the missile directional reference system. Alternatively the signal derived from the analogue gyroscope may be employed to maintain the optical image produced by the sight in a fixed attitude relatively to the aircraft despite roll of the aircraft.

3,753,539

## BALLOONED, VTOL AIRCRAFT

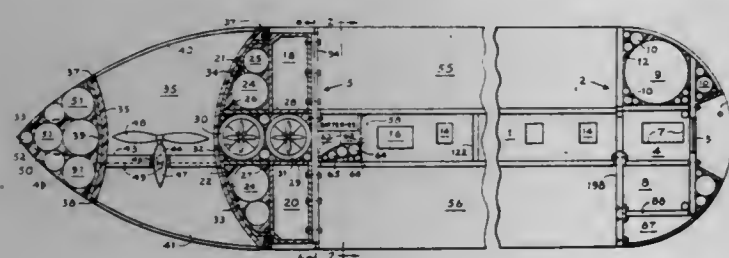
Alvin Edward Moore, 916 Beach Blvd., Waveland, Miss.

Filed Mar. 15, 1971, Ser. No. 124,001

Int. Cl. B64b 1/00

U.S. Cl. 244—5

42 Claims



An aircraft capable of vertical or nearly vertical takeoff and landing, with cabin structure and aerostatic means (one or a

plurality of balloons) having a center of lift at or near the longitudinal axis of the cabin and in-flight-forward of the craft's center of gravity. In ordinary or emergency landing this position of the lift center forces the craft to assume an upright position and it lands on a cushion at the stern. Rearward of the cabin and strongly attached to it there are two attitude-controlling fan means: (1) a stern-elevating propeller with its propeller disk approximately in the horizontal plane containing the cabin's fore-and-aft axis, for lifting the heavier stern of the craft and after takeoff moving the axis into or toward a substantially horizontal position; and (2) propulsive means in the stern portion for steering the craft to the right or left. This steering means may comprise: the two tube-contained fans of FIG. 1, having thrusts in opposite directions; or a single propeller having either reversible-pitch blades or fixed blades that provide thrust in either direction and are driven by a reversible motor. A pair of oppositely-rotating main propellers provide lift for the vertical or nearly vertical craft in takeoff and landing and forward propulsion when it is horizontal. In vehicles for travel mostly in space rockets may be substituted for both the attitude-controlling and the main propellers. In the forms of FIGS. 1, 2, 21 and 22, the main propellers are on short wings that jut thru spaces between balloons; and in these spaces doors and windows are also located. But in FIG. 19: balloons entirely encircle the middle cabin part (optionally a single balloon may be here used); rockets or turbojets preferably are used as propellers; and the only doors and windows are in the forward and rear cabin parts. The craft may be slightly heavier than air, but optionally it may be lighter than air, with main propellers of reversible pitch or controllable-direction rockets. Lightness of weight is an important part of the combination; and the cabin frame comprises tubular members, preferably containing helium.

3,753,540

## NOSE WHEEL STEERING

Eckard Renner, Achim, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany

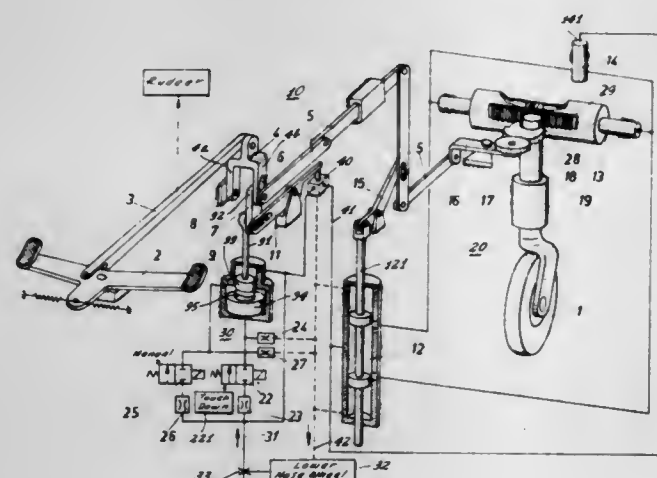
Filed Oct. 5, 1970, Ser. No. 77,806

Claims priority, application Germany, Oct. 17, 1969, P 19 52 348.9

Int. Cl. B64c 25/50

U.S. Cl. 244—50

8 Claims



The nose wheel of an aircraft is gradually made steerable after touchdown by the rudder pedal in that gradually the power on the servo system (steering momentum) is increased from zero to full value, while concurrently the steering range is increased.

3,753,541

## CARGO ROLLER ASSEMBLY

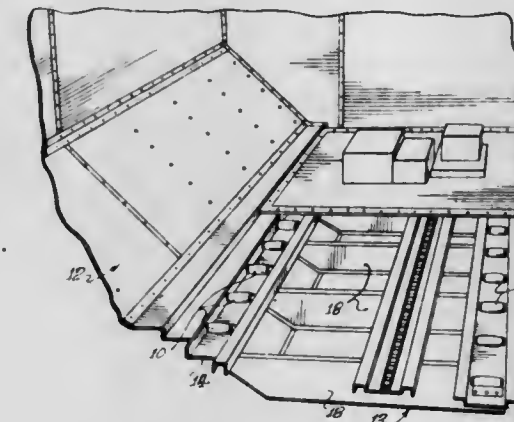
Randall A. Grueber, Los Alamitos, and Robert A. Warren, Long Beach, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Sept. 2, 1971, Ser. No. 177,361

Int. Cl. B64d 9/00

U.S. Cl. 244—137 R

7 Claims



A roller assembly for use when a high strength to weight ratio is required. The assembly includes a roller shell with internal stiffening ribs and a crown of a predetermined curvature. The shell is swaged over hubs at each end thereof, the hubs including low friction bearings for connection to a roller shaft.

3,753,542

## MACHINERY BASE WITH SLIDABLE CARRIAGE HAVING SLUE COUNTERACTING MEANS

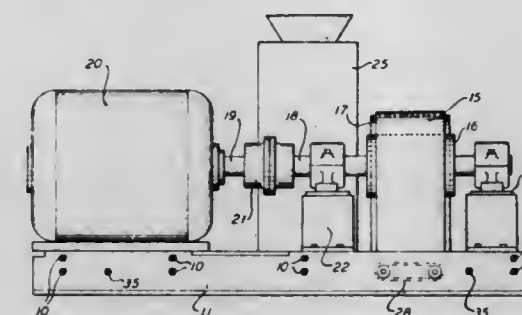
Jerome J. Sloyan, c/o Automatic Motor Base Co., Windsor, N.J.

Filed June 16, 1971, Ser. No. 153,622

Int. Cl. F16m 1/104

U.S. Cl. 248—23

2 Claims



A machinery base having a slidable carriage movably responsive to tension variation of a belt at one side thereof between driving and driven pulleys, is provided with means automatically activating the sliding impulse simultaneously to the other side of the carriage remote from the pulley side thereof so the carriage will be impelled evenly at both sides thereof, thereby eliminating tendency of the carriage to slue.

3,753,543

## BRACKET FOR GAS CONTAINERS

Wayne R. Burrell, Golden Valley, and Richard P. Burrell, Stillwater, both of Minn., assignors to Burrell Bros., Inc., Coon Rapids, Minn.

Filed Nov. 19, 1971, Ser. No. 200,294

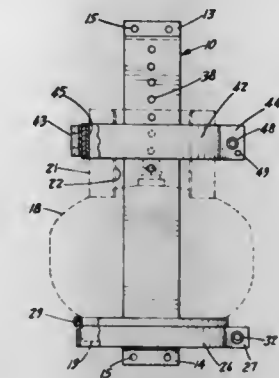
Int. Cl. A62c 33/00

U.S. Cl. 248—313

5 Claims

A bracket for rigidly supporting and mounting containers for compressed and liquefied gases such as refrigerant gases, fuel gases, and the like. The bracket is especially adapted for mounting spare containers of refrigerant gas for over-the-road

trucks and trailers. The bracket is of simple sturdy construction permitting easy placement and removal of the gas con-



tainer in the bracket. At the same time, the gas container is held securely so as to avoid vibration. The bracket is adjustable to accommodate gas containers of different sizes.

3,753,544

## APPARATUS FOR MAKING A LIQUID FILTER CARTRIDGE

David H. Hodgkins, Manchester, Conn., assignor to Standa-dyne, Inc., Windsor, Conn.

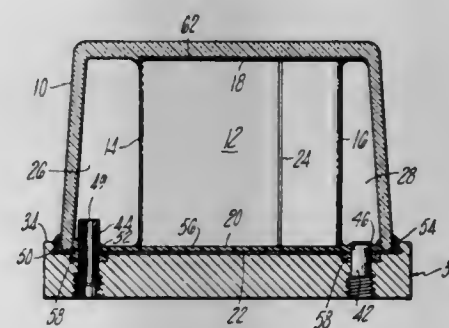
Division of Ser. No. 809,059, March 10, 1969, Pat. No.

3,630,382. This application Nov. 19, 1971, Ser. No. 200,292

Int. Cl. B29c 1/14

U.S. Cl. 249—141

3 Claims



A ported mold having a peripheral lip is positioned in a backing mold having mold pins centrally disposed in the ports and having recesses surrounding the mold pins. The recesses are filled when a layer of flowable plastics material is placed in the ported mold. The lip of a filter housing is positioned in the ported mold and, with the curing of the plastics material, the ported mold becomes a part of the filter and ported abutments forming an inlet and an outlet for the filter are provided. The mold pins may be of different lengths so that the ports may be open, or sealed by a thin layer of plastics material.

3,753,545

## CONNECTOR STRUCTURE FOR MOLD FORMS AND THE LIKE

William J. Stegmeier, 1021 C Shary Circle, Concord, Calif.

Filed June 18, 1971, Ser. No. 154,290

Int. Cl. E04g 17/00

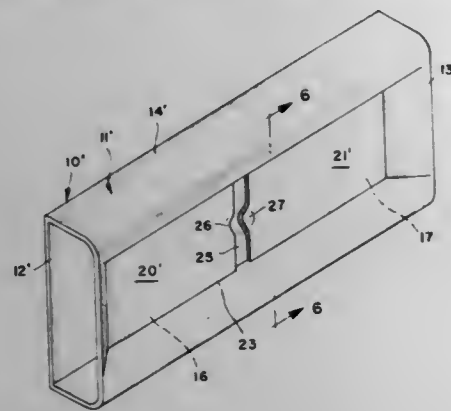
U.S. Cl. 249—219 R

6 Claims

A connector structure for releasably interconnecting successive mold forms or the like. The connector structure comprises a generally tubular sleeve that is hollow from end to end thereof and dimensioned to slidably receive the end portions of two successive moldboards inserted therein from opposite ends. The extent to which such moldboards are insertable into the connector structure is defined by stop means projecting thereinto and the moldboards are tightly held by fric-



tional grippers accommodating boards of various thickness while preventing sagging so that the upper edges of the boards can be used for grading purposes. The connector structure has



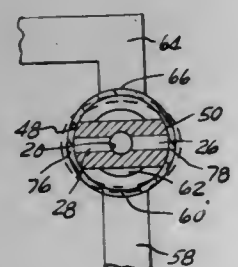
sufficient flexibility in the longitudinal direction to permit the mold comprising the same to be curved in arcuate contours required by any particular installation.

### 3,753,546 SLEEVE VALVE

Bernard R. Teltelbaum, Birmingham, Mich., assignor to The Bendix Corporation, Southfield, Mich.  
Filed Sept. 2, 1971, Ser. No. 177,240  
Int. Cl. F16k 7/06

U.S. Cl. 251-9

15 Claims



A valve is disclosed which is operated by means of an externally and radially deflectable sleeve which controls fluid flow by not permitting fluid flow in its undeflected state through a valve body disposed in an internal passage of the sleeve, and permitting fluid flow therethrough in its deflected state by blocking and unblocking valve ports in circumferentially spaced protuberance formed in the valve body member to thus provide the valving function without an operator extending from the ambient region into the valving chamber.

### 3,753,547 LIQUID VALVES

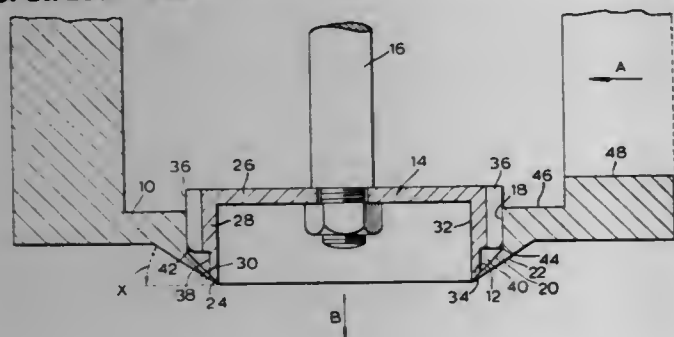
Michael Johnston Topham, Sale, England, assignor to English Calico Limited, Manchester, England  
Filed Mar. 22, 1972, Ser. No. 236,951

Claims priority, application Great Britain, Mar. 27, 1971, 8,192/71

Int. Cl. F16k 47/00

U.S. Cl. 251-120

11 Claims



The invention concerns valves of the type for downwardly delivering liquid from a liquid store and which comprise a

valve body bearing an annular valve seat and a circular closure member, the closure member and the valve body being relatively displaceable for opening and closing of the valve. In order for the valve operation to be substantially drip-free, the lowermost rim of the valve body and the lowermost rim of the closure member each comprise a respective knife edge which, when the valve seat and closure member are in their closed position, mate together to define a composite, depending knife edge.

### 3,753,548

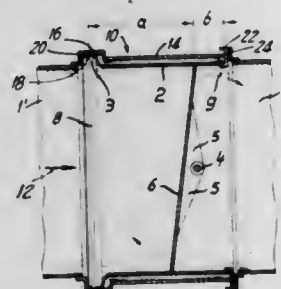
PIVOT VALVE AND SEALING SLEEVE CONSTRUCTION  
Richard Jung, Gummersbach in der Delle, and Eugen Markus, Gummersbach, both of Germany, assignors to L. & C. Steinmuller GmbH, Gummersbach, Germany  
Filed Aug. 16, 1971, Ser. No. 172,017

Claims priority, application Germany, Sept. 9, 1970, P 20 47 413.8

Int. Cl. F16k 1/22

U.S. Cl. 251-305

2 Claims



A device for sealing a duct includes a sleeve made of a deformable material which is secured in the duct passage in a manner such that it forms an annular space with the interior wall of the passage. The assembly includes a pivoted flap which is journaled in a side bearing of the duct and the size of the flap is such that it moves into a wedging sealing engagement with the deformable insert. The inner circumference of the insert is slightly smaller than the circumference of the valve flap. The valve flap includes a shaft which is supported on a connecting web which is located on the downstream side of the flap which is remote from the portion of the insert which is secured within a recess of the outer wall of the conduit.

### 3,753,549

FLOW CONTROL DEVICE AND METHOD AND APPARATUS FOR MAKING SAME

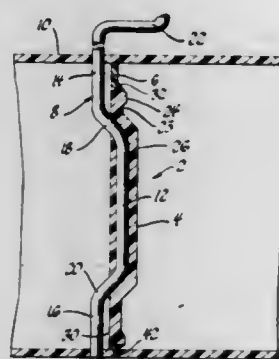
Phillip L. Rubright, Berkley, Mich., assignor to Arco Industries Corporation, Detroit, Mich.

Continuation of Ser. No. 146,369, May 24, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 314,063

Int. Cl. F16k 1/22

U.S. Cl. 251-305

22 Claims



A flow control device including a main body portion of rigid, plastic material, and a sealing portion of elastomeric

material integrally bonded to the main body portion and projecting outwardly from the periphery thereof. Mounting means in the form of a pivot rod is molded to the main body portion for pivotally supporting the device in a duct or the like such that the peripheral elastomeric material is in resilient sealing engagement therewith. The integral bond between the elastomeric material and the main body portion is achieved by simultaneously finally curing the elastomeric material and the rigid plastic material while in contact within a mold.

### 3,753,550

FRAME ATTACHMENT FOR REMOTELY POSITIONED JACKS

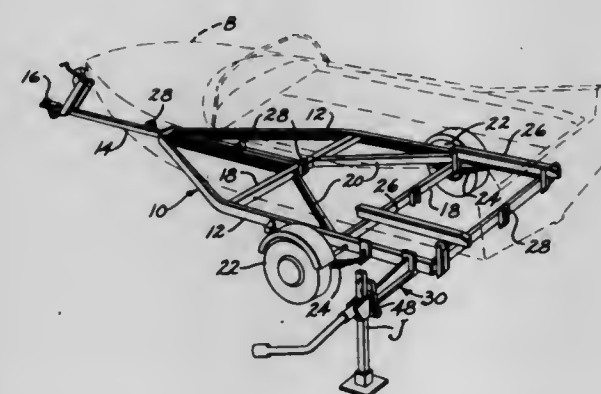
Richard L. Criswell, Leisure City, Fla., assignor to Afton Eloff, Jr., Toledo, Ohio

Filed Dec. 27, 1971, Ser. No. 212,392

Int. Cl. B66f 13/00

U.S. Cl. 254-133

3 Claims



An attachment for connecting remotely positioned jacks to the frame of a land vehicle having an inwardly turned bottom flange. The attachment generally comprises: a C-shaped hook on one end of an arm for confining an inwardly turned bottom flange of the vehicle's frame, a downwardly turned jack retaining lip at the opposite end of the arm, an abutment for engaging the outer surface of the frame, and a stiffening web between the abutment and the jack retaining lip.

### 3,753,551

SELF-TAILING MULTI-SIDED CAPSTAN

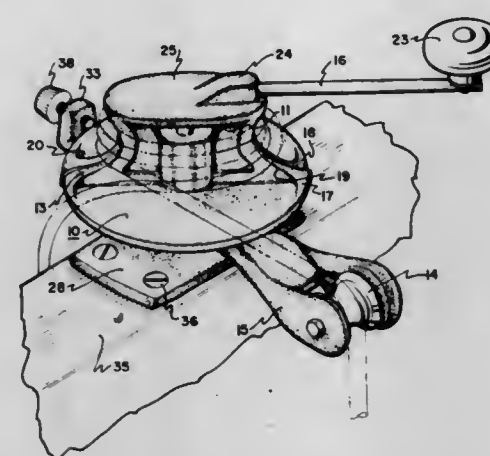
Arland J. Tidwell, Orem, Utah, assignor to Startek, Provo, Utah

Filed May 5, 1972, Ser. No. 140,339

Int. Cl. B66d 1/30

U.S. Cl. 254-150

11 Claims



A self-tailing, multi-sided capstan for manual or power operation is disclosed. A multi-sided capstan particularly adaptable for detachable vertical mounting on the gunwales or deck of a boat comprises a disc-like base member and a multi-sided web extending vertically therefrom to provide a rotating unit which may be cranked by hand or power operated to

haul-in anchors or handle lines on a sailboat. The multi-sided web member preferably having two elongated sides with opposed concave end surfaces wherein the concave surface is preferably asymmetrical about any plane parallel to the disc-like base member. The neck or narrowest dimension of the web member is preferably nearer to the top of the web member than to the intersection of the web member with the base. The edges formed by the intersection of the concave end surfaces with the flat sides of the web are only slightly rounded, thereby providing good gripping action on a line turned about the web member.

### 3,753,552

DISPLACEMENT CONTROL SYSTEM FOR HOIST APPARATUS

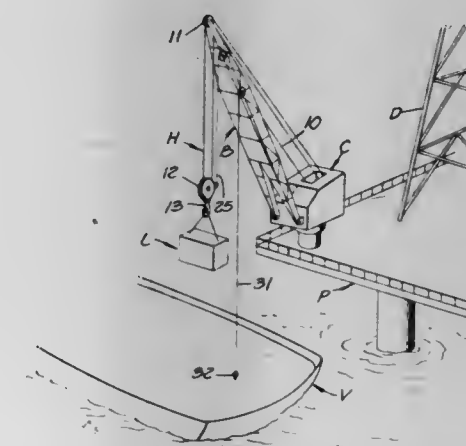
Charles D. Barron, Huntington Beach, Calif., assignor to Fyron Jackson Inc., Long Beach, Calif.

Continuation-in-part of Ser. No. 19,564, March 16, 1970, abandoned. This application Mar. 25, 1971, Ser. No. 127,892

Int. Cl. B66d 1/48

U.S. Cl. 254-172 R

2 Claims



A displacement control system for hoist apparatus, in which the winch is driven by a drive which is controlled by a pneumatic signal derived from a pressure controller, the controller output pressure signal being determined by comparing in a computing pneumatic relay variable signals derived from a relative motion responsive reference sensor, a load position sensor, and a speed sensor.

### 3,753,553

TOPPLE TOWER

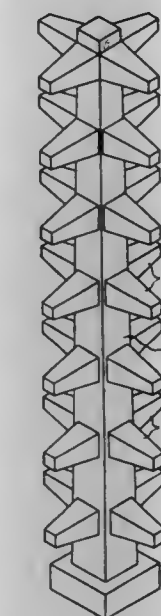
Robert B. Bocking, 8510 Pelham Rd., Bethesda, Md.

Filed Nov. 17, 1971, Ser. No. 199,592

Int. Cl. F04h 12/12

U.S. Cl. 256-1

3 Claims



My invention relates to military engineering. More specifically, it concerns obstacles and barriers designed to halt or



delay the advance of hostile military forces. My invention is designed primarily to stop or impede tanks and other armored vehicles, but it also incorporates antipersonnel features. Its main advantage lies in that it is especially suited for construction in peacetime since it requires very little maintenance, poses no danger to inhabitants and negligible inconvenience to normal peacetime movement or economic use of real estate in the area in which employed. It is designed to be quickly converted into an obstacle which is superior to types currently in use or planned.

3,753,554

## APPARATUS FOR MAKING POLYURETHANES

Gerhard Muller, Munich, and Hermann-Josef Raffenberg, Selm Kr. Ludinghausen, both of Germany, assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

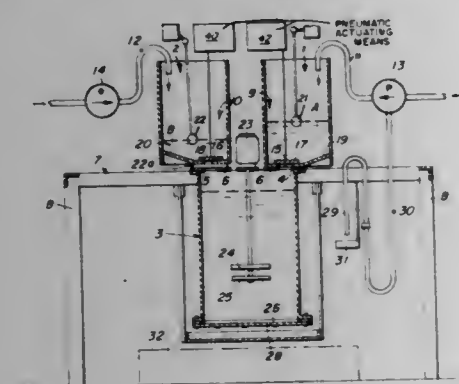
Filed Aug. 31, 1971, Ser. No. 176,508

Claims priority, application Germany, Oct. 30, 1970, P 20 53 435.4; Jan. 22, 1971, P 21 02 978.7

Int. Cl. B01f 7/18, 15/02

U.S. Cl. 259-8

6 Claims



An apparatus and process are provided for making a series of batches of foamable polyurethane reaction mixture wherein flushing of the apparatus between each batch is with one of the components used to prepare the reaction mixture.

3,753,555  
CARBURETORS

Geoffrey Lloyd Lawrence, Middlesex, Stanmore, England, assignor to The Zenith Carburettor Company Limited, Middlesex, England

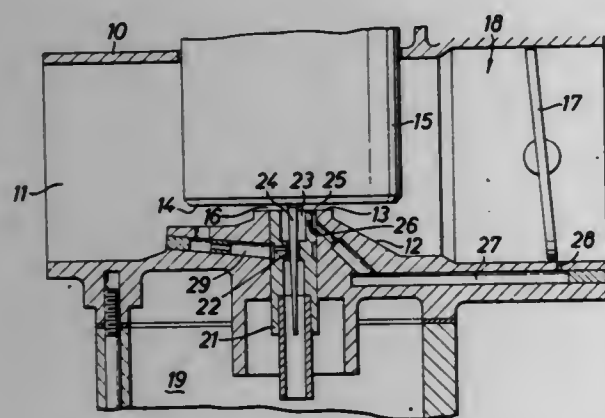
Filed June 4, 1971, Ser. No. 150,096

Claims priority, application Great Britain, June 8, 1970, 27,627/70

Int. Cl. F02m 19/06

U.S. Cl. 261-44R

6 Claims



A carburetor of the constant depression type in which liquid fuel is supplied through a fuel metering orifice into a throat defined in the induction passage by an air valve. The effective area of the fuel metering orifice is controlled by a profiled needle carried by the air valve. A transfer passage

communicates through a port at one end with the induction passage downstream of the throttle valve when the throttle valve is closed, and, at the other end, with the fuel supply passage between the orifice and the throat through a cavity and a restricted passage. Thus some of the fuel passing through the orifice is passed into the induction passage downstream of the throttle valve when the latter is closed. Air can be drawn from upstream of the throat and mixed with the fuel in the fuel metering orifice to produce an air/fuel emulsion. Air can be fed from a point in the induction passage upstream of the throat and fed to the transfer passage, and valve means may be provided to enable adjustment of the rate of flow of such air fed to the transfer passage.

3,753,556

## DOOR JAMB JIG

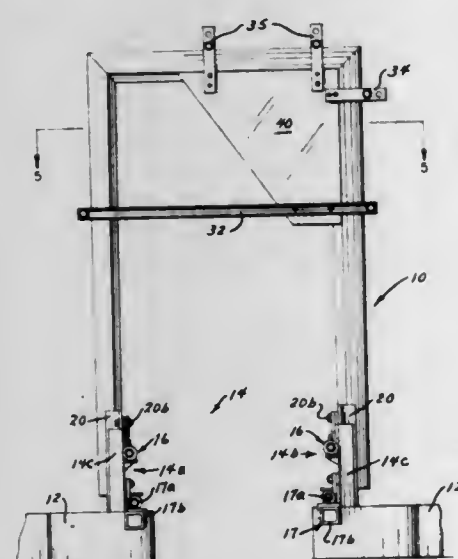
William R. Nix, 200 S. Tekappel Ave., Evansville, Ind.

Filed Nov. 10, 1970, Ser. No. 88,312

Int. Cl. B25b 1/02; E04f 21/00

U.S. Cl. 269-97

6 Claims



A jig for setting a door frame characterized by oppositely facing and similarly arranged sections defining frameworks on opposite sides of the door frame and including provisions for positioning the jig and, hence, the door frame without the need of auxiliary props.

3,753,557

## SUPPORT FOR LEG DURING KNEE SURGERY

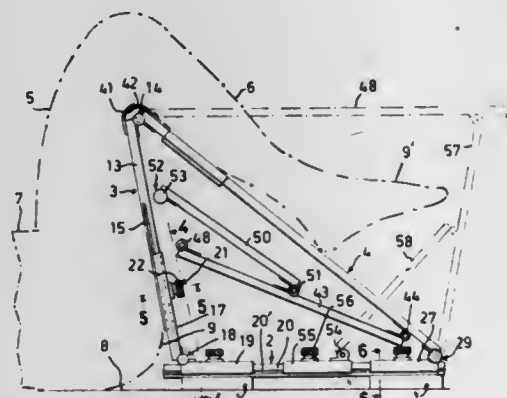
Edward Thomas Kelley, 350 Parnassus Ave., San Francisco, Calif.

Filed Sept. 3, 1971, Ser. No. 177,636

Int. Cl. A61g 13/00, 7/06

U.S. Cl. 269-328

3 Claims



A device, including a base, adapted to be adjustably and removably secured on a horizontally disposed operating table. An upwardly inclined support will support the leg bent at an

angle, preferably less than 45° at the knee, with the knee elevated and both the upper and lower legs in a substantially vertical plane and free from obstruction to clear visibility, and access to the lateral sides of the knee, and also free from obstruction to lateral movement of the leg. The support is also adjustable as to height and to the angle at which the leg may be bent and supported, and to a position in which the leg is supported with the foot elevated to operating level for foot and ankle surgery.

3,753,558

## SHEET-FOLDING MACHINE

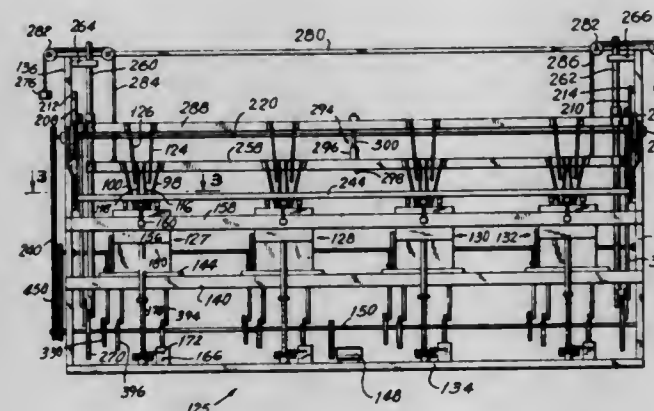
Irving Sheroff, Brooklyn, and Howard W. Berwanger, Bronx, both of N.Y., assignors to Delfold Corporation, New York, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,813

Int. Cl. B65h 45/18

U.S. Cl. 270-67

12 Claims



A sheet-folding machine for providing a sheet with a V-folded portion and with pleats situated between the V-folded portion. The machine includes a pair of rolls for feeding and simultaneously creasing a sheet while the latter is advanced by the rolls along a predetermined feed axis located in a predetermined feed plane extending between the rolls parallel to the axes thereof. A folding assembly is provided for folding a V-fold in a sheet, and this folding assembly includes an outer pair of sheet-supporting plates situated equidistantly from the feed plane as well as a pair of inner folding plates inclined inwardly toward the feed plane to be received between the outer plates so as to form a V-fold in a sheet while the latter is advanced toward the rolls. A pair of pleating members are situated at least temporarily in the space between the outer plates on opposite sides of a pleating plane which contains the feed axis and is normal to the feed plane for forming side pleats in a sheet simultaneously with the formation of a V-fold therein. Thus, the sheet which is folded and creased by the rolls will have not only a V-folded portion but also at least a pair of pleats situated between the V-folded portion.

3,753,559

## INTERMEDIATE STORAGE STATION MEANS FOR SHEET-LIKE INFORMATION BEARING MEDIA

Jurgen Ries; Manfred Keck; Heinz Strelcher, and Manfred Leutwein, all of Stuttgart, Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 15, 1972, Ser. No. 253,120

Claims priority, application Germany, May 15, 1971, P 21 24 230.8

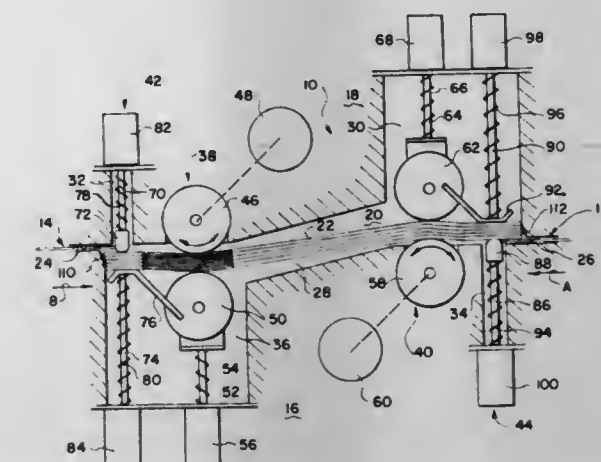
Int. Cl. B65h 1/04, 1/06

U.S. Cl. 271-3

7 Claims

In apparatus for transporting sheet-like information bearing media along a feed path between first and second stations to an utilization station there is disclosed intermediate storage station means disposed along said feed path for storing a plurality of such media. The storage station means includes a storage chamber having first and second openings on either side thereof disposed in a plane coincident with the feed path.

First and second transport means are respectively provided substantially adjacent said first and second openings for transporting information bearing media into and out of said storage chamber through said first and second openings. First and second holding means are provided respectively disposed between said first opening and said first transport means and



between said second opening and said second transport means. The first transport means and first holding means are staggered with respect to the second transport means and second holding means so that they hold image bearing media stored in the storage chamber in a substantially S-shaped bent configuration.

3,753,560

## AUXILIARY SHEET FEEDER

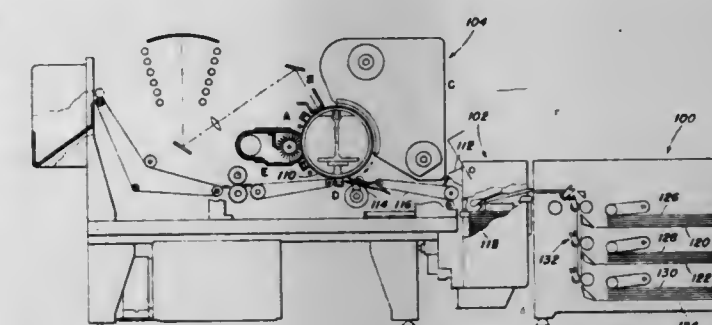
John J. Kapral, Union Hill, N.Y., and Thomas E. Cogglin, Greensboro, N.C., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1972, Ser. No. 214,039

Int. Cl. B65h 3/44, 5/26

U.S. Cl. 271-9

3 Claims



Sheet feed apparatus for an automatic copy machine in which a plurality of tray members each support a corresponding stack of sheets of differing characteristic. A vertical transporter arranged at the delivery end of sheet tray members defines a common exit path leading to a paper tray of a copy machine and copy processing stations. A sheet feed roll associated with each of the stacks engages the topmost sheet thereof in response to electrical signals. A control circuit supplies electrical signals to the appropriate sheet feed roll to feed automatically a preselected number of sheets from a one of the stacks toward the common exit path, then a preselected number of sheets from another of the stacks, and so forth. When all of the desired sheets are in the paper tray of the copy machine, it is automatically activated for transport of the sheets past copy processing stations.



3,753,561

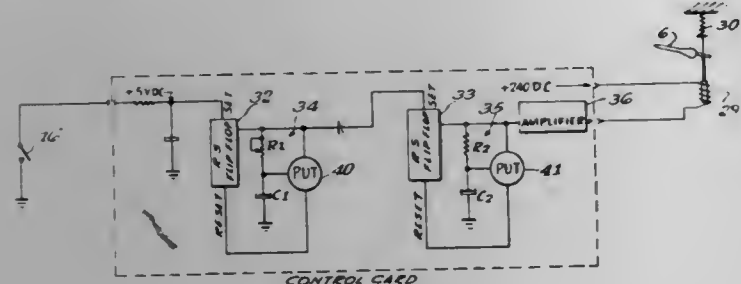
## CLUSTER BALL RACK WITH BALL DIRECTOR

Richard Szymanski, and Patrick J. Murphy, both of Muskegon, Mich., assignors to The Brunswick Corporation, Skokie, Ill.

Filed Sept. 29, 1971, Ser. No. 184,669  
Int. Cl. A63d 5/02

U.S. Cl. 273-49

4 Claims



The invention is a cluster-type bowling ball return rack having a bowler identification panel mounted in an elevated position above the center island thereof, and a ball directing vane directing returning balls to the side of the cluster rack corresponding to the lane upon which the ball was bowled. A control mechanism for the vane includes timer and operating circuits employing RS flip-flop memory latches in conjunction with programmed unijunction transistors to swing the vane against spring pressure.

3,753,562

## PATTERN RECOGNITION BOARD GAME STRUCTURE

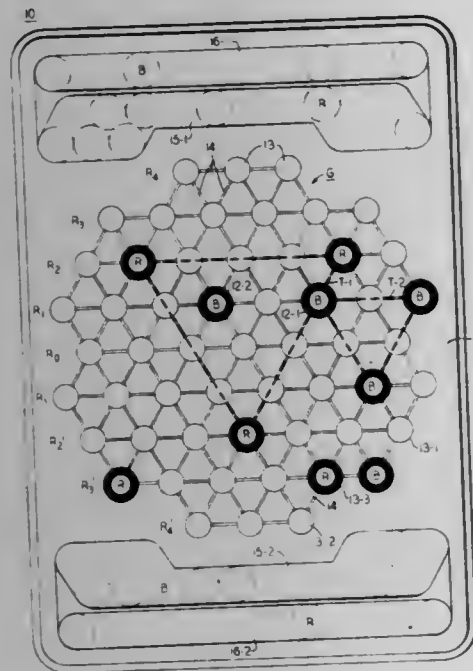
Kenneth C. Knowlton, 801 Belvidere Avenue, Plainfield, N.J.

Filed Aug. 17, 1971, Ser. No. 172,469

Int. Cl. A63f 3/00

U.S. Cl. 273-130 F

10 Claims



A structure for playing a pattern recognition game. The structure includes a playing board with apertures that are symmetrically distributed in a grid and are interconnected by guide marks. The overall outline of the grid is a six-sided geometric figure with its corners eliminated. Playing pieces such as marbles are placed in selected apertures of the board to form equilateral triangles that are outlined by the guide marks and capture opposing playing pieces that are included in and within triangles thus formed. The elimination of the corner apertures of the six-sided grid prevents any player from easily establishing a dominant position on the board.

3,753,563

## GOLF PRACTICE DEVICE

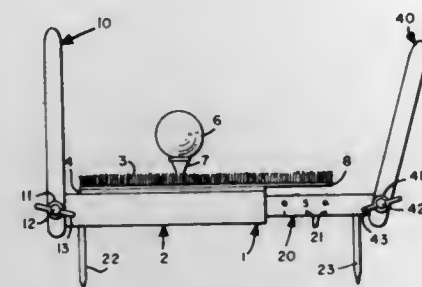
John R. Previte, Jr., 1793 Curtner Ave., San Jose, Calif.

Filed Aug. 17, 1972, Ser. No. 281,584

Int. Cl. A63b 69/36

U.S. Cl. 273-186 C

10 Claims



The invention is concerned with a device for practicing and improving a golf swing. Its most advantageously used when practicing with a wood or iron rather than with a putter. The device features two walls with an alley in between them, the alley having an artificial turf-like material thereon. The separation of the walls is adjustable so that the walls can be brought closer together as the golfer's swing improves. At least the wall closest to the golfer may be rotated to form different angles with the artificial turf. The angle can be adjusted to suit the size of the golfer and the particular golf club being used, and also to enable the golfer to establish a standard distance between himself and the ball. The bottom surface of the device includes two rotatably attached spikes for anchoring the device in the ground. The spikes may be rotated relative to the bottom surface and fitted into depressions which include constrictions for holding the spikes in storage positions.

3,753,564

## PRACTICE GOLF CLUB

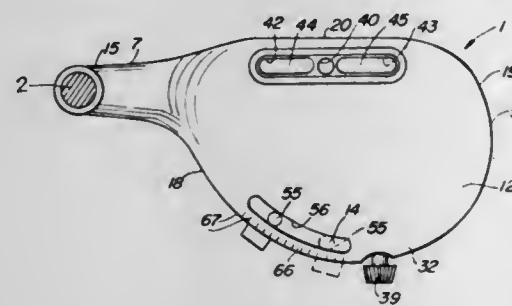
John R. Brandell, 1527 Sequola Trl., Glenview, Ill.

Filed Mar. 27, 1972, Ser. No. 238,179

Int. Cl. A63b 69/36

U.S. Cl. 273-186 A

15 Claims



The top surface of a golf club head includes a first lens adjacent the striking face and a second lens adjacent the rear of the club head. A small battery-energized light bulb is positioned below the first lens. The second lens is located in the remote end of a light transmitting cylinder which has its other end positioned adjacent the light bulb. The light transmitting cylinder is mounted so that it may be moved to various positions along an arcuate path generally parallel to the rear surface of the club head. The light beam transmitted upwardly by each lens may be used by a golfer to provide information relating to the position of the club striking face during practice swings. The sole plate of the club head is removably mounted to permit the weight of the club head to be varied. To permit access into the interior of the club head, the head is made in two parts, the upper one of which is bolted to the lower part.

3,753,565

## GOLF BALL

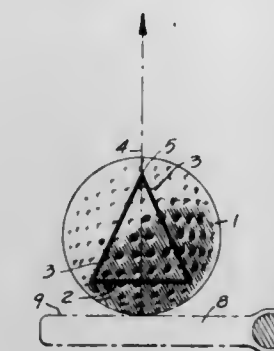
Marion A. Baker, 270 Mountain Ave., Piedmont, Calif.

Filed Apr. 10, 1972, Ser. No. 242,618

Int. Cl. A63b 43/00

U.S. Cl. 273-213

2 Claims



A direction indicator on a golf ball consisting of a triangle the bisecting line of which is on the circumference of an intersecting diametrical plane of the golf ball, the sides of said triangle being of a length equal to about one-fourth of the circumference of said diametrical plane so as to appear as straight sides to a player viewing the golf ball from directly above said triangle; in a modified form the base of the triangle and the bisecting line are utilized.

3,753,566

## CASSETTE ADAPTER

Ichiro Yoshida, Kanagawa-ken, Chigasaki-City, Japan, assignor to Maruko Co., Ltd., Okaya-City, Japan

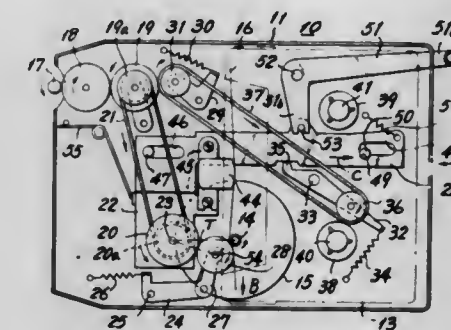
Filed July 6, 1971, Ser. No. 159,638

Claims priority, application Japan, Sept. 12, 1970, 45/79662; Jan. 26, 1971, 46/2215

Int. Cl. G11b 15/18

U.S. Cl. 274-4 G

6 Claims



A cassette adapter comprises a casing for receiving a tape cassette, a driving pinch roller which is rotated by a rotational force transmitted thereto from a capstan provided on a tape driving apparatus, and a driven capstan shaft which enters a loaded tape cassette and is positioned inside of the tape. The driving pinch roller is pressed against the driven capstan shaft through the tape and causes the capstan shaft to drive and rotate thereby advancing the tape. When the tape has stopped running, the driving pinch roller is displaced due to increase of friction between the driving pinch roller and the tape and moves away from the capstan shaft.

3,753,567

## RECORD MECHANISM FOR A TAPE PLAYER

Victor E. Church, Park Ridge, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 1, 1971, Ser. No. 111,386

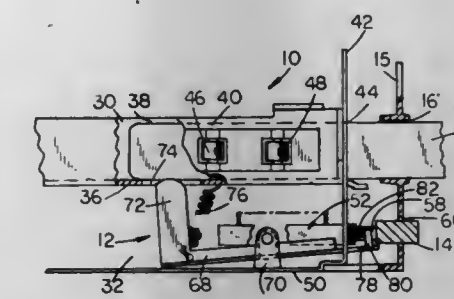
Int. Cl. G11b 23/00

U.S. Cl. 274-4 B

6 Claims

A locking mechanism for the pushbutton selector used in choosing the mode of operation of a cartridge type tape

player-recorder includes a pivotal lever arm, one end of which extends into a cartridge receiving cavity for engagement with a cartridge inserted thereto and the other end of which is positioned for engagement with the pushbutton selector. A



cartridge inserted into the cavity engages the first mentioned end of the lever arm causing the opposite end to engage the pushbutton thereby to maintain the pushbutton in a preselected position. The pushbutton is freed upon withdrawal of the cartridge from the cavity.

3,753,568

## RECORD PLAYBACK APPARATUS

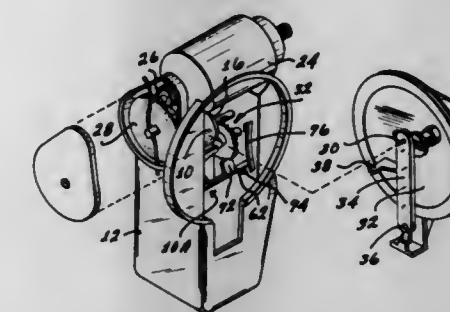
Gordon H. Buck, Torrance, and Jackie L. Nolan, Lawndale, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed May 5, 1969, Ser. No. 821,772

Int. Cl. G11b 25/06; A63h 3/33

U.S. Cl. 274-11 R

2 Claims



A record player with an endless record tape or band carrying several parallel sound tracks and a slot therein at the end of the tracks, including a mechanism operated by the slot for stopping the record player and rotating a cam to randomly select the groove in which the stylus will enter when the record player is restarted. The mechanism includes a shaft pivotally mounted on the record player housing, with an arm thereon which lies against the tape to move through the slot and thereby pivot the shaft. The shaft also carries a pawl that "flicks" the cam and a lug that separates switch contacts to de-energize the record player motor, when the shaft rotates as the arm moves through the record slot.

3,753,569

## PRESSURE VALVE FOR FLUIDS

Agostino Bonomi, Via S. Giovanni 3, Polaveno (BS), Italy

Filed Aug. 9, 1971, Ser. No. 170,217

Claims priority, application Italy, Mar. 23, 1971, 5125 A/71

Int. Cl. F16k 41/04; F16j 15/18, 15/34

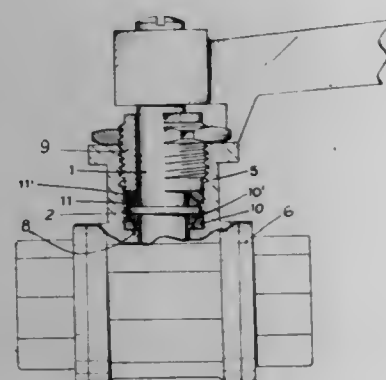
U.S. Cl. 277-112

6 Claims

In a pressure valve improved sealing means are provided by a collar that is formed integrally with the valve shaft, the collar having two transverse, axially spaced apart surfaces that are smooth and parallel with respect to each other. The first one of a first pair of frusto-conical gaskets are secured to the shaft for rotation together therewith and in abutment with one of the transverse surfaces of the collar. The second one of the first pair of frusto-conical gaskets is secured internally of the sleeve in which the valve shaft is mounted. The inclined surfaces of the first pair of frusto-conical gaskets are in sliding



contact with each other. A second pair of frusto-conical gaskets is positioned, in a similar manner on the opposite transverse surface of the valve collar. As with the first pair of frusto-conical gaskets, the second pair is secured respectively to the shaft and to the body of the valve. The inclined surfaces



of the second pair of frusto-conical gaskets are also in sliding contact with each other. In the embodiment illustrated in the drawing the inclined surfaces of each pair of gaskets is at an equal and opposite angle to the other. Preferably the gaskets are made of a low friction, resilient material.

3,753,570

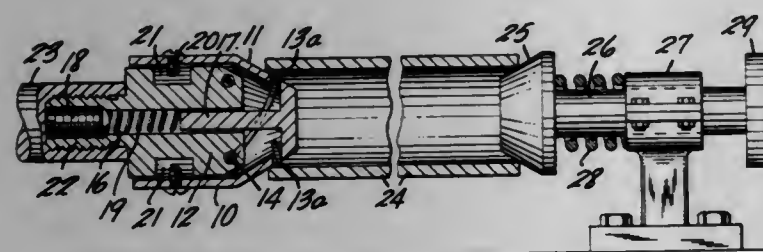
## LOCKING HEAD

Arcadio Espasa, Calle Pellgro 40, Barcelona, Spain  
Filed May 23, 1972, Ser. No. 256,100

Claims priority, application Spain, June 22, 1971, 393080  
Int. Cl. B23b 31/40

U.S. Cl. 279-2

10 Claims



A movable locking head which includes a hollow housing having a tapered end for engaging an annular member and containing an actuator which moves two or more locking arms mounted thereto through openings in the tapered end of the housing into locking engagement with the inner periphery of the annular member.

3,753,571

## SAFETY SKI BINDING

Ernst Gertsch, Wengen, Bern, and Ulrich Gertsch, Matten, Interlaken, Bern, both of Switzerland, assignors to Gertsch, A.G., Wengen, Lauterbrunnen, Switzerland

Filed Nov. 6, 1970, Ser. No. 87,404

Claims priority, application Switzerland, Nov. 10, 1969, 16697/69; Aug. 6, 1970, 11856/70

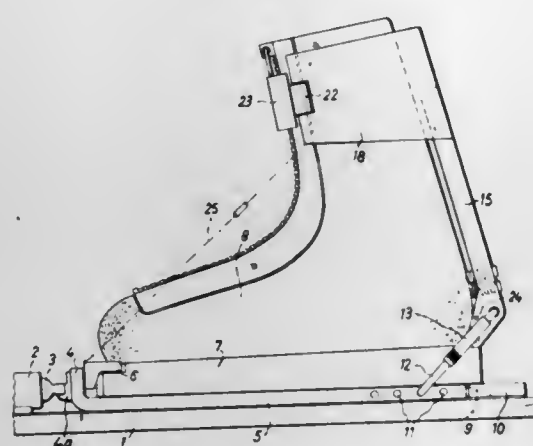
Int. Cl. A63c 9/08

U.S. Cl. 280-11.35 K

16 Claims

A safety ski binding incorporates a release plate detachably connected with the associated ski and secured to the ski boot. A reinforcement element for the ski boot is arranged at the release plate. The reinforcement element is pivotably supported at its lower region to the release plate and the heel of the ski boot for movement about a transversely extending axis.

Furthermore, the upper region of the reinforcement element at the area of the shoe upper is provided with at least one stiff



side portion nesting against the ski boot and by means of which the upper of the ski boot is afforded lateral support.

3,753,572

## HEEL GRIPPING DEVICE FOR SKI BINDINGS

Kurt Labor; Kietrich Grunau, both of Markdorf, and Gustav Tarant, Beuerberg, all of Germany, assignors to Peter Muller, Oy, Germany

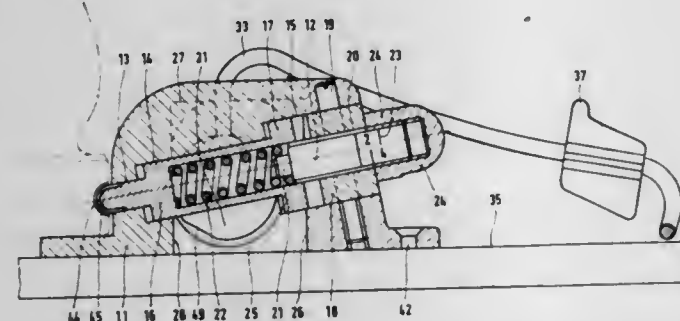
Filed Jan. 31, 1972, Ser. No. 222,133

Claims priority, application Germany, Jan. 29, 1971, P 21 04 167.8

Int. Cl. A63c 9/00

U.S. Cl. 280-11.35 T

10 Claims



A heel gripping device for a ski binding comprises a housing attachable to the ski and carrying a slidable element which is urged forwardly by a spring to project from the housing and engage a groove in the heel of the ski boot to hold the same against the ski in a downhill skiing configuration. A rotatable cam is mounted in the housing and is turned by an external actuating handle to retract the slidable element and permit the boot to be lifted in cross-country skiing.

3,753,573

## VEHICLE BODY STRUCTURE

Taiji Ariga, Suginami-ku, Tokyo; Tatsumi Tsukikawa, Chiyoda-ku, Tokyo, and Hiroshi Ito, Ohta-ku, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed July 23, 1971, Ser. No. 165,047

Claims priority, application Japan, Aug. 31, 1970, 45/76131; Aug. 31, 1970, 45/76132; Aug. 31, 1970, 45/86669

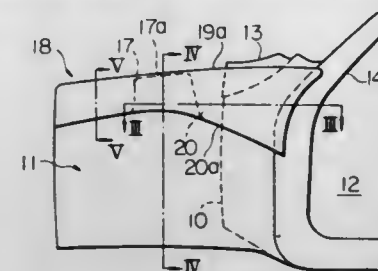
Int. Cl. B60g 11/00

U.S. Cl. 280-106.5

18 Claims

A vehicle body structure is disclosed which provides a strengthened support for a strut suspension and an increased

rigidity of a vehicle body. The strut suspension is supported by a member attached to a box-girder structure extending longitudinally of the vehicle body and rigidly secured to any structural member, such as a front pillar, of the vehicle body.



The box-girder structure may preferably be narrowed toward its foremost end so as to be collapsible when subjected to a forceful mechanical stress during collision of the motor vehicle. Arrangements may also be made so that the vehicle body structure can be assembled in a simplified manner.

3,753,574

## TRAILER CONSTRUCTION

Arnold Werle, Attendornerstr. 9, Plettenberg-Oesterau, Germany

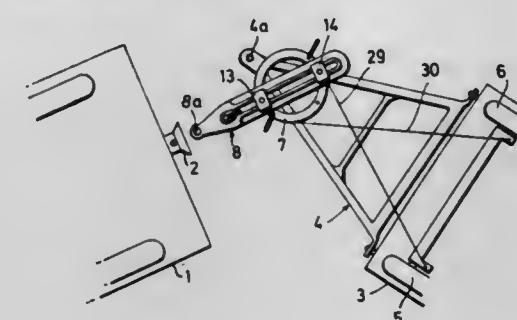
Filed June 8, 1971, Ser. No. 151,075

Claims priority, application Germany, June 8, 1970, P 20 080.2; May 21, 1971, P 21 25 236.8

Int. Cl. B62d 53/00

U.S. Cl. 280-478 A

11 Claims



A trailer has a hitch connected to its front end, and to the free end portion of the hitch is mounted an elongated coupling member which can slide longitudinally of itself as well as turn about an upright axis with respect to the hitch. Arresting devices are provided which can prevent the coupling member from sliding and turning when it assumes a predetermined position with reference to the hitch, and on a terminal portion of the coupling member a coupling is provided by means of which the coupling member can be connected with a cooperating coupling on a traction vehicle.

3,753,575

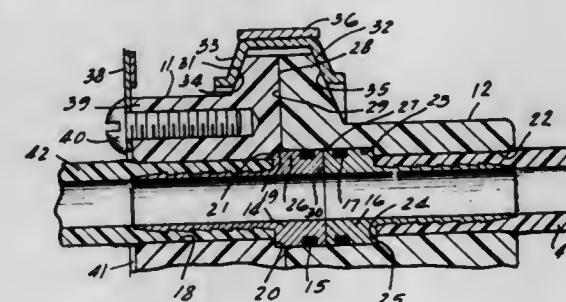
## FLUID COUPLING ASSEMBLY

Gene Arthur Tracy, Hugo, Minn., assignor to The Cornelius Company, Anoka, Minn.

Filed Oct. 20, 1971, Ser. No. 190,931

U.S. Cl. 285-137 R

6 Claims



A fluid-coupling assembly includes a pair of rigid housings clamped together including parallel bores therethrough into

which flexible hoses project. A rigid barbed ferrule is disposed within the inner end of each of the hoses, and all of the ferrules have a fluid seal with one of the housings.

3,753,576

## VEHICLE SAFETY DEVICE

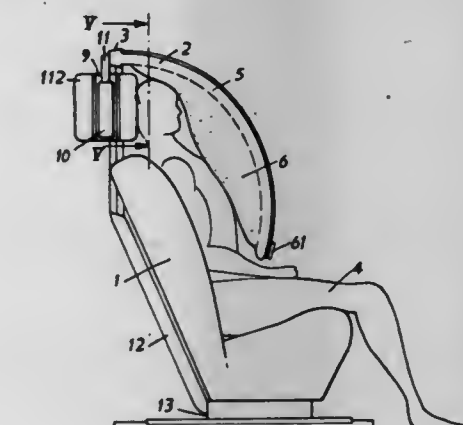
John F. Gorman, Corner Cottage The Street, Effingham, Surrey, England

Filed Sept. 29, 1971, Ser. No. 184,834

Int. Cl. B60r 21/08

U.S. Cl. 280-150 AB

22 Claims



A vehicle safety device comprising an expandable composite element provided with a mounting for location in a vehicle and which is expandable from an inoperative retracted position to an operative expanded position, and means for rapidly filling the element with a filler material to cause the expansion, the element including an outer shield which expands first and an inner shield which extends inwardly therefrom the expansion of which is commenced after expansion of the first shield has started.

3,753,577

## SPORTING VELOCIPED

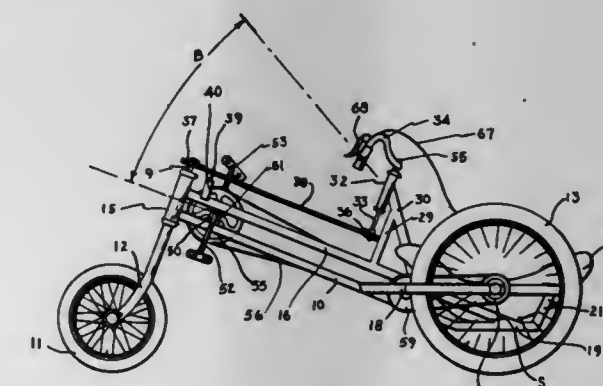
Russell G. Robinson, 19301 McLaren Street, Huntington Beach, Calif.

Filed Mar. 2, 1971, Ser. No. 120,120

Int. Cl. B62k 5/06, 9/02

U.S. Cl. 280-261

7 Claims



A sport vehicle is described which comprises a three-wheeled velocipede having an arrangement of seat, pedal assembly and handle bars that achieves maximum maneuverability and speed. This arrangement comprises seat means positioned on the frame between the rear wheels, preferably below their axle height, pedal and crank assembly means positioned on the forward portion of the frame at an elevation that is preferably about the seat with interconnecting drive means to one or both rear wheels, and handle bar means between the seat and pedal assembly for steering the vehicle.



3,753,578

## FRONT FORK CONSTRUCTION FOR A CYCLE

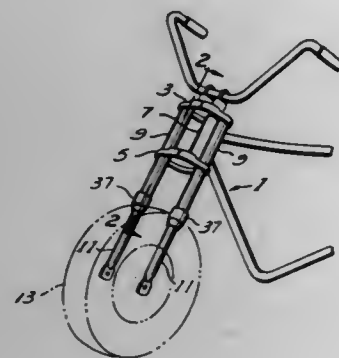
Herbert E. Rupp, II, Mansfield, Ohio, assignor to Rupp Industries, Inc., Mansfield, Ohio

Filed Feb. 25, 1972, Ser. No. 229,395

Int. Cl. B62k 21/02

U.S. Cl. 280—276

5 Claims



A front fork construction for a cycle in which circumferential rib and groove engagements near the lower end of an inner bearing or lining tube retain it in the upper load tube and retain a ferrule in fixed position on the upper tube and in sliding engagement with the lower tube for excluding dust from the sliding joint between the tube.

3,753,579

## MOTORCYCLE-UTILITY TRAILER

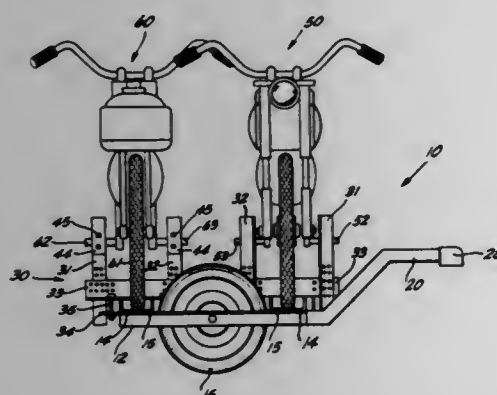
Matthew Kurilich, Jr., 615 Reposado Dr., La Habra, Calif.

Filed Aug. 9, 1971, Ser. No. 170,047

Int. Cl. B60p 3/06

U.S. Cl. 280—400

15 Claims



A motorcycle-utility trailer characterized primarily by a small, lightweight, generally rectangular frame member having a side-to-side width which is substantially greater than the front-to-back length thereof whereby one or more motorcycles may be positioned on the trailer and carried in a direction transverse to their lengths. The trailer has no suspension and the wheels thereof are rigidly connected to the frame member. A coupling extends from the front of the frame member for connection of the trailer to a trailer hitch. First and second pairs of spaced posts extend vertically upwardly from the front and back of the frame member, the spacing between the posts of each pair being approximately equal to the spacing between the centers of the pegs of a motorcycle. Finally, means are provided for connecting the pegs of a pair of motorcycles to such posts to prevent lateral or longitudinal movement of the motorcycles but permitting limited vertical movement thereof.

3,753,580

## STEERING SYSTEM FOR TRAILERS

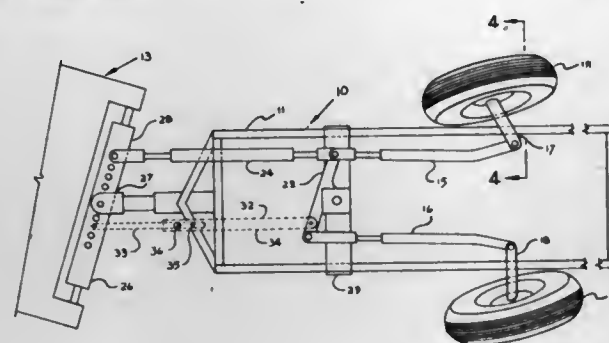
Henry Folkert, Rt. 1, Box 107, Granger, Wash.

Filed Jan. 3, 1972, Ser. No. 214,580

Int. Cl. B62d 53/00

U.S. Cl. 280—443

8 Claims



A steering system for trailers and other non-powered wheeled vehicles that are pulled or towed. A novel linkage arrangement is provided to turn the wheels of the trailer in response to a turning of the pulling vehicle whereby the wheels of the trailer will track in the same path as the wheels of the pulling vehicle. Further provision is made so that the wheels of the trailer can turn and still clear apparatus or structures on the tractor frame that fit closely between the upper portion of the wheels of the trailer when said wheels are in a straight position.

3,753,581

## ADVERTISING BROCHURE CONTAINING DIE CUT SHEETS

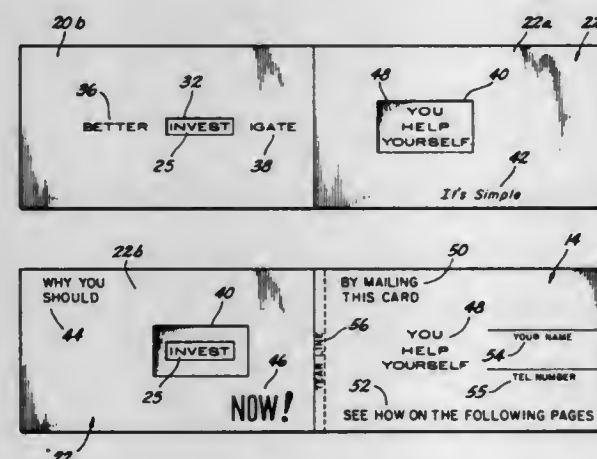
Kenneth M. Kamstra, St. Paul, Minn., assignor to Kamstra Communications, Inc., St. Paul, Minn.

Filed Mar. 27, 1972, Ser. No. 238,193

Int. Cl. B42d 15/00

U.S. Cl. 283—56

13 Claims



The sheets constituting the front and back covers of the brochure have a tear-out sheet therebetween. A first plurality of additional sheets are disposed intermediate the brochure's front cover and the tear-out sheet, and a second plurality of intermediate sheets are located between the tear-out sheet and back cover. Die cut openings or windows of increasing size are formed in the first plurality of intermediate sheets, whereas die cut openings of the same size are provided in the second plurality of intermediate sheets. Primary and secondary information or message areas are provided on the various sheets, including the cover sheets, and these areas are oriented or juxtaposed with respect to the various openings so that the primary information, or a portion thereof, will be seen through the window openings in combination with different secondary information which becomes visible as the pages are turned. The particular information area (or areas) visible at any one time depends on whether the tear sheet is still in the brochure or not.

## ERRATUM

For Class 285—137 see:  
Patent No. 3,753,575

3,753,582

## COUPLING UNIT

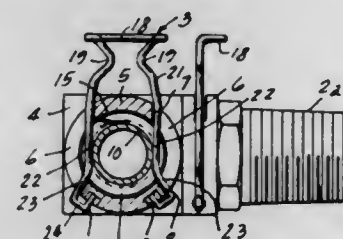
Charles H. Graham, Los Altos, Calif., assignor to Anarak Incorporated, Mountain View, Calif.

Filed Nov. 9, 1971, Ser. No. 196,975

Int. Cl. F16l 37/14

U.S. Cl. 285—305

4 Claims



An easily operable quick-acting coupling unit including a pair of telescopic members, the female member carrying resilient locking means, and the male member being shaped for engagement by said locking means when inserted in the female member by a snap-in action; said locking means being movable to a release position to permit separation of said members.

3,753,583

## EXPANDING-TYPE FASTENING DEVICE FOR DETACHABLE INTERCONNECTION OF HOLLOW STRUCTURAL DETAILS

Adrian Gottfried Offenbroich, Sodra Forstadsgaten 49, 211 43 Malmö, Sweden

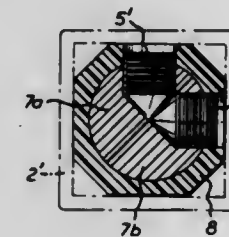
Filed Nov. 9, 1971, Ser. No. 197,056

Claims priority, application Sweden, Nov. 10, 1970, 15146/70

Int. Cl. F16b 7/00

U.S. Cl. 287—54 A

1 Claim



An expanding-type fastening device for detachable interconnection of hollow structural details comprises an expansible core made of rigid material, such as metal, and a coating of elastic material, such as plastic, fixedly arranged on the core.

3,753,584

## UNIVERSAL JOINT CONSTRUCTION WITH RELEASABLE PARTS

Georg Kindel, Lemförde, Hann, and Jurgen Ulderup, Haldem, both of Germany, assignors to Lemförde Metallwaren AG, Lemförde/Hann, Germany

Filed Apr. 24, 1972, Ser. No. 246,811

Claims priority, application Germany, June 11, 1971, P 21 29 145.2

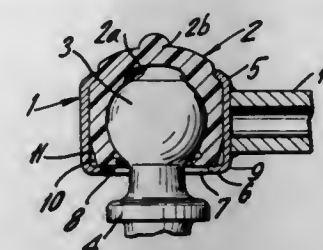
Int. Cl. F16c 11/06

U.S. Cl. 287—85 A

6 Claims

A releasable universal joint construction includes a tubular housing with a socket member of resilient material disposed in the housing in resilient engagement therewith. The socket member has at least one open end defining a joint pin insertion

opening with an annular projecting collar extending into the opening. The socket wall is of a thickness in the vicinity of the collar to permit the collar and the wall to be displaced inwardly in said housing upon insertion of the ball head of a joint



pin to permit passage of the ball head beyond the collar. The collar then forms an inwardly projecting portion below the ball head when the ball head is seated on the spherical seat defined by the socket member.

3,753,585

## TRENCHDUCT CONNECTOR UNITS

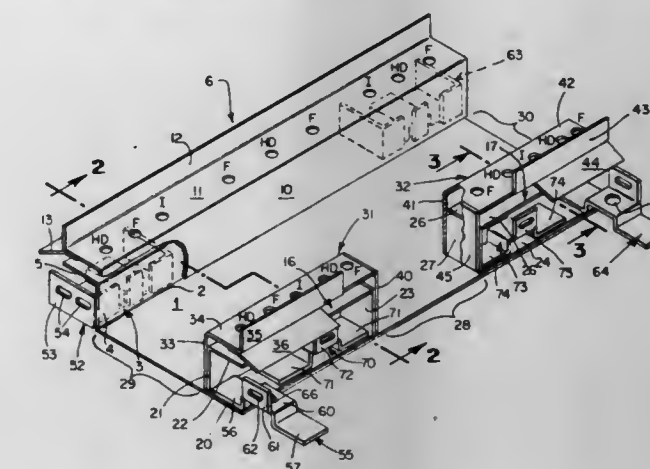
John P. Casto, Vienna, W. Va., assignor to Textran Inc., Providence, R.I.

Filed Apr. 7, 1972, Ser. No. 242,070

Int. Cl. E04f 17/08

U.S. Cl. 287—189.36 R

6 Claims



Units for connecting trenchduct runs arranged in T or X or L type patterns. A unit has specially configured sides providing side and end openings for alignment with the trench runs together with specially configured couplers compatible with the conventional coupling devices on the trench. The units may be constructed for either single or double adjust trench.

3,753,586

## FLEXIBLE SYNTHETIC RESIN SEAL HAVING MANUALLY DEFORMABLE CLOSURE MEANS

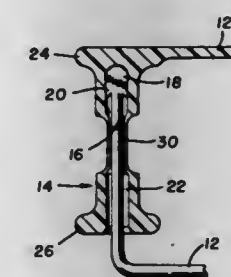
Richard A. Patterson, St. Paul, Minn., assignor to The United Seal Company, Columbus, Ohio

Filed Apr. 24, 1972, Ser. No. 247,005

Int. Cl. B65d 55/06

U.S. Cl. 292—322

1 Claim



A closed-loop security seal for detecting unauthorized opening of a closure of a freight car, meter casing, or the like,



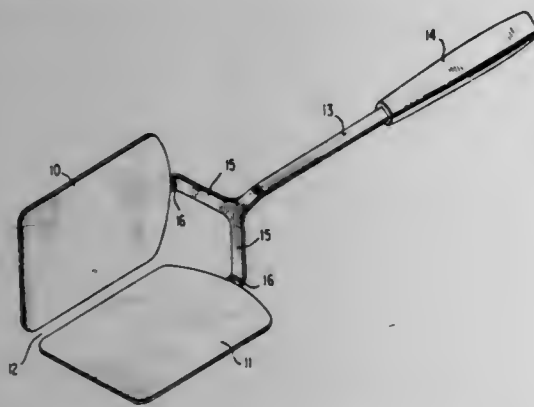
consisting of a one-piece body of molded synthetic resin composition which includes a flexible strap portion formed at one end with a barbed head and at its opposite end with a deformable socket member arranged to lockingly receive the head. The seal is locked against unauthorized opening by manually deforming the socket member around the barbed head.

3,753,587

## DUAL BLADE SPATULA

Joseph F. Godlewski, Gaithersburg, Md., assignor to Vincent K. McMahon, Gaithersburg, Md., a part interest  
Filed Mar. 13, 1972, Ser. No. 233,918  
Int. Cl. A47J 43/28

U.S. Cl. 294-7



A spatula for manipulating food articles on a grill or pan features a pair of independently supported spatula blades held at a right dihedral angle with a gap or passage between the two blades at the vertex of the dihedral angle. The separated construction of the blades facilitates cleaning and renders manufacturing economical. The spatula blades are supported in balanced relationship on a common handle parallel to the vertex but connected with the blades by right angular extensions which facilitate entering the spatula in a rimmed pan or receptacle.

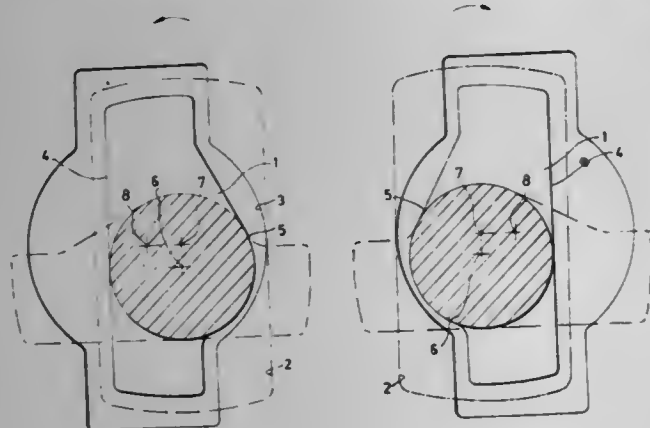
3,753,588

## CONTAINER LIFTING TWIST-LOCK

Hans Ulrik Backteman, Bromma, Sweden, assignor to AB Backtemans Patent, Bromma, Sweden  
Filed June 11, 1971, Ser. No. 152,259  
Claims priority, application Sweden, June 12, 1970, 8229/70  
Int. Cl. B66c 1/66

U.S. Cl. 294-82 R

4 Claims



A locking device for use with a container lifting yoke and adapted for insertion into the top hole of containers constructed in accordance with either ISO or Sealand specification. The locking device includes a locking member having a cross sectional shape enabling insertion into the top holes of both ISO and Sealand containers, and a support shaft for the locking member to turn the latter 90° to lock the locking member below the hole in the container. The locking member is mounted eccentrically on the shaft and rotation of the shaft

itself is effected about an axis which is eccentric to the vertical centers of the holes in the ISO and Sealand containers.

3,753,589

## MULTIPLE BOTTLE GRIPPER

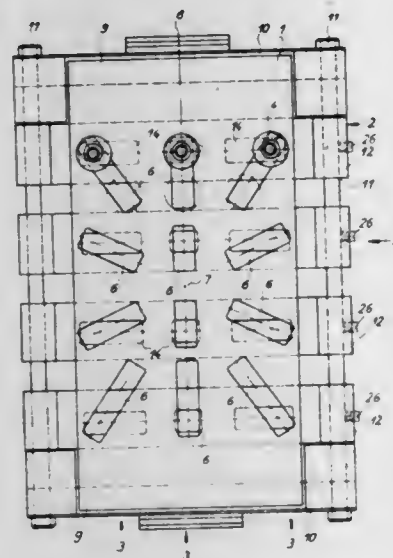
Winfried Hahn, Dortmund-Brackel, Germany, assignor to Holstein & Kappert Maschinenfabrick Phonix GmbH, Dortmund, Germany

Filed Feb. 28, 1972, Ser. No. 229,791  
Claims priority, application Germany, Feb. 26, 1971, P 21 09 172.5

Int. Cl. B65g 47/26

7 Claims U.S. Cl. 294-87 R

22 Claims



Multiple bottle gripper in which a plurality of gripper bells or lifting cups are supported on support means in a plurality of transverse rows and in each row spaced from each other so as to be also arranged in a plurality of longitudinal rows and in which adjusting means are provided for adjusting the position of the gripper bells relative to each other in the direction of the transverse rows and in a direction normal thereto.

3,753,590

## FOLDING CARAVAN

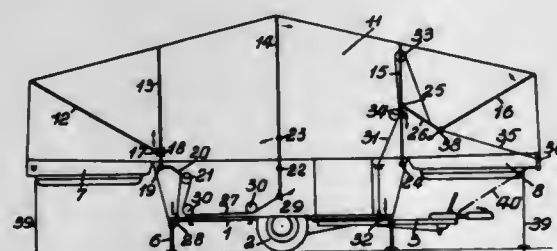
Albert Couix, Tournon, France, assignor to Societe Anonyme Trigano-Vacances, Paris, France

Filed May 10, 1971, Ser. No. 141,884  
Claims priority, application France, May 25, 1970, 7018881; July 31, 1970, 7029126

Int. Cl. B60p 3/34

U.S. Cl. 296-23 R

16 Claims



Folding caravan comprising a frame equipped with wheels and a harness, a body closed by two lids and containing the canvas for a tent which may be stretched over the said body when the two lids are opened, characterized in that the frame comprises five ribs of which three are articulated on the body whilst the other two are each articulated on one of the previously mentioned ribs in such a way as to obtain a middle rib articulated on the body, and on each side two ribs, one articulated on the body the other articulated or hinged on the preceding rib, in such a way that the opening or closing of the lid automatically and instantaneously cause the folding or unfolding of the tent which is supported by the frame.

3,753,591

## FLAT BED MATERIAL TRANSPORTING VEHICLE

Robert A. Pratt, Oak Brook, Ill., assignor to Portec, Inc., Oak Brook, Ill.

Continuation of Ser. No. 874,105, Nov. 5, 1969, abandoned.

This application Feb. 8, 1972, Ser. No. 224,428

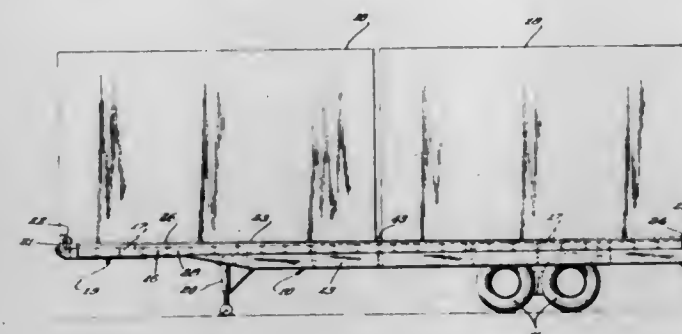
Int. Cl. B60p 1/64; B65j 1/22

U.S. Cl. 296-35 A

11 Claims

U.S. Cl. 298-10

14 Claims



Flat bed transporting vehicle for containers, farm and road machinery and other vehicles and lading, having a series of anchor channels extending along the vehicle for the length of the vehicle and unitized with the frame structure of the vehicle to form a unitary part of the chassis frame supporting beams, in which couplers for containers or tie-downs for anchor chains or tie-downs winches may be locked in a selected position in the channels and stored in the channels when not in use. Where the vehicle is used for transporting containers, the couplers are positionable above the level of the channels and bed of the vehicle, to couple adjacent ends of containers to the bed of the vehicle, and are locked in extended positions by retaining sockets at the corners of the containers and are released to be retracted beneath the tops of the channels for storage or adjustment along the channels upon removal of the containers from the couplers.

3,753,592

## LOUNGE

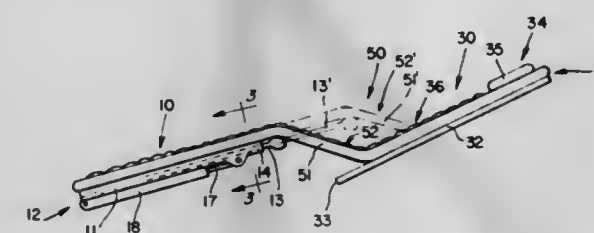
Carl Robert Jensen, 1555 14th St., Mitchell, Nebr.

Filed Feb. 11, 1971, Ser. No. 114,619

Int. Cl. A47c 3/00, 7/02

U.S. Cl. 297-284

12 Claims



A lounge, or chair, especially a dental lounge, provided with a head supporting member and a seat portion. The seat portion is adjustable such that the head of a person reclining in the lounge is located at the head supporting member irrespective of his size. The seat portion comprises a flexible sling secured between an upwardly inclined leg support member and an upwardly inclined back support member, the back support member being offset downwardly from the leg support member. The seat portion is adjustable by moving a sling adjustment member, moveably mounted beneath the sling, in a direction generally longitudinally of the leg support member. The sling assumes a position between the leg support member and the back support member responsive to the position of the sling adjustment member thus setting the position of the seat portion at a desired position relative to the head support. The head of the person in the chair can thus be located at the head support irrespective of the person's size.

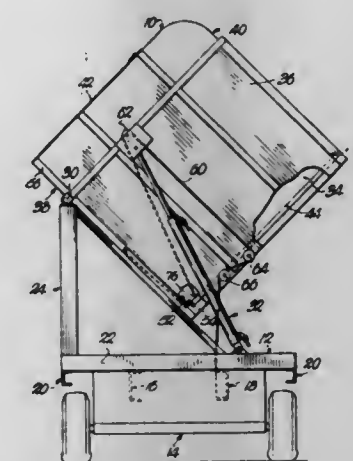
3,753,593

## TILTABLE MATERIAL-RECEIVING BIN HAVING ACTUATED DUMPING FLOOR

Bernard L. Wells, and Hermann V. Stoessel, both of Wichita, Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Apr. 21, 1971, Ser. No. 135,986

Int. Cl. B60p 1/16



A bin for receiving forage or the like in the field during harvest is tiltable about an elevated axis for dumping the contents into a wagon box, trailer or truck. The bin has a floor swingable therein at one end of the floor for raising the contents in the bin as the latter is tilted. When the bin reaches its fully tilted position, the floor extends obliquely across the bin from one corner to another. Thus the floor assumes a position having an angle of repose such as to effect a full uniform flow of the material.

3,753,594

## METHOD OF PRODUCING HYDROCARBONS FROM AN OIL SHALE FORMATION CONTAINING HALITE

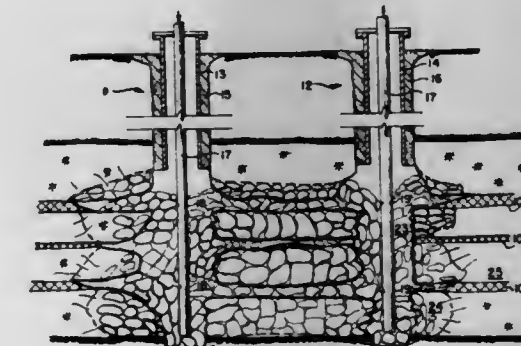
Thomas N. Beard, Denver, Colo., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 770,964, Oct. 28, 1968, abandoned. This application Sept. 24, 1970, Ser. No. 75,037

Int. Cl. E21b 43/28

U.S. Cl. 299-4

5 Claims



A method of producing hydrocarbons and optionally halite from a subterranean oil shale formation containing zone(s) of halite, by penetrating said formation with at least one borehole and leaching or dissolving the halite from the formation with a solvent fluid so as to form a cavern(s) and/or interconnected cavities, followed by fracturization and/or rubbleization of the oil shale surrounding the caverns or cavities, and thereafter injecting into the fractured and/or rubbleized zones, a pyrolyzing fluid to effect insitu hydrocarbon recovery therefrom.



3,753,595

**LONGWALL MINING MACHINE OVERHANGING FACE SIDE OF CONVEYOR**

Willy Lanfermann, Bochum, Germany, assignor to Gebr. Elckhoff Maschinenfabrik Und Eisengieserei m.b.H., Bochum, Germany

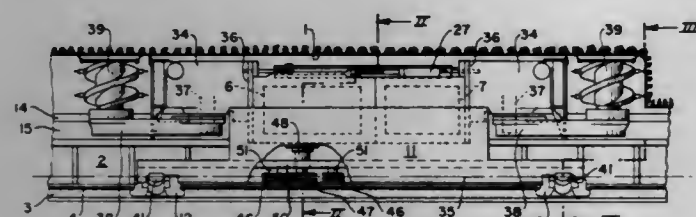
Filed Mar. 16, 1972, Ser. No. 235,155

Claims priority, application Germany, Mar. 19, 1971, P 21 13 399.3

Int. Cl. E21c 29/10

U.S. Cl. 299—43

10 Claims



A coal cutting machine extends across a conveyor that is spaced from the working face of a coal mine, and across most of the space between it and the working face. One side of the machine is supported on the side wall of the conveyor along its gobbing side. The opposite side of the machine is supported by a skid on the foot wall of the mine. Between the conveyor and the working face the machine houses a winch and drive motor, and a cutter head housing is connected to an end of the machine body in the same area and contains a horizontal axle that projects from the conveyor side of the housing. Mounted on this axle is the inner end of an arm that extends lengthwise of the machine away from the cutter housing. The outer end of the arm carries a roll cutter that extends laterally from it across the housing.

3,753,596

**MINING MACHINE WITH CHAIN DRIVEN PROPULSION**

Gerald Richard Oldham Pentith, Yorkshire, England, assignor to Pitcraft Limited

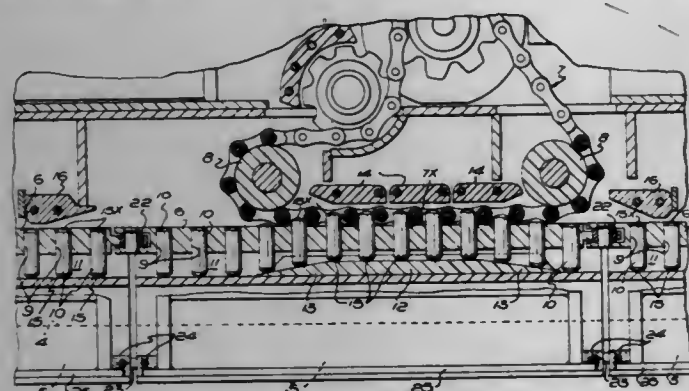
Filed May 12, 1972, Ser. No. 252,591

Claims priority, application Great Britain, May 22, 1971, 16,532/71

Int. Cl. E21c 29/00

U.S. Cl. 299—43

14 Claims



A mining machine movable along an armored flexible conveyor each pan of which is provided with a rigid longitudinal guide rod for the machine, the machine having a winch-driven chain guided into a run alongside the guide rods, and each guide rod having a series of pockets housing reciprocable towards and away from the run of the chain, each pocket being open to the chain and at the end remote from the chain open to a longitudinal slot along which a shoe carried by the machine is movable, and the shoe having tapering ends, so that as the shoe moves with the machine in either direction along the guide rods the pegs are urged to project from the pockets into engagement with the links of the chain in the run alongside the guide rods, to effect the driving of the machine along the conveyor.

3,753,597

**ROTARY MINING HEAD WITH FLUID CONNECTOR MEANS FOR NOZZLE**

Albert Graham French, Willington, England, assignor to Coal Industry (Patents) Limited, London SW1, England

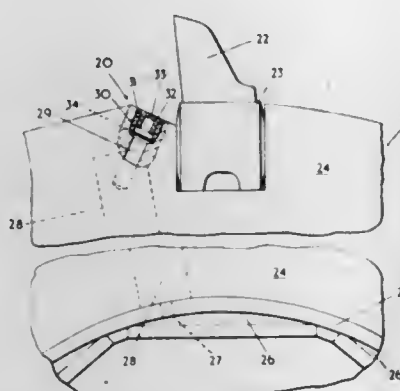
Filed Dec. 3, 1971, Ser. No. 204,603

Claims priority, application Great Britain, Dec. 22, 1970, 60,772/70

Int. Cl. E21c 13/00

U.S. Cl. 299—81

4 Claims



A cutter head for a mineral mining machine has connecting means for conveying dust suppression fluid to the cutting zone of the head. The connecting means comprises a tubular bush of synthetic plastics material which is inserted into a bore formed in the head. An apertured threaded member, conveniently a nozzle, is co-operable with the bush aperture such that when the member is screwed into the bush, the bush is expanded into the bore of the cutter head. In this way the member and the bush are releasably securable within the bore.

3,753,598

**HYDRAULIC ANTISKID VEHICLE BRAKING SYSTEM, HAVING TWO MODES OF OPERATION**

Giancarlo Michellone, Cambiano; Luigi Doano, Revigliasco d'Asti; Marco Perugia, Turin, and Diamante De Ambri, Belnasco, all of Italy, assignors to FIAT Societa per Azioni, Turin, Italy

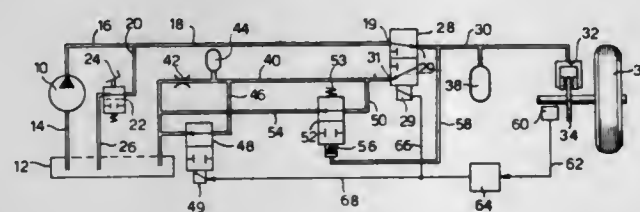
Filed July 27, 1971, Ser. No. 166,533

Claims priority, application Italy, Mar. 5, 1971, 67775 A/71; Apr. 6, 1971, 68143 A/71

Int. Cl. B60t 8/12

U.S. Cl. 303—21 F

5 Claims



An hydraulic anti-skid braking system for vehicles, having two different modes of operation depending on the braking pressure required to cause the wheels to slip or for wheel locking to become imminent. If the surface is slippery the braking pressure required to cause sliding is not high and a rapid, substantially complete release of braking pressure takes place when the anti-skid device operates. If the surface has a good grip a high braking pressure is required to cause the wheels to slip and in this case a partial rapid release of pressure followed by a gradual release of pressure takes place when the antiskid device operates, to prevent excessive lurching during operation of the anti-skid device and to assist in a satisfactory anti-skid operation despite changing surface conditions.

3,753,599

**PNEUMATIC ANTI-SKID VEHICLE BRAKING SYSTEM, HAVING TWO MODES OF OPERATION**

Giancarlo Michellone, Cambiano, Turin; Marco Perugia, Turin, and Renzo Moretti, Cambiano, Turin, all of Italy, assignors to FIAT Societa per Azioni, Turin, Italy

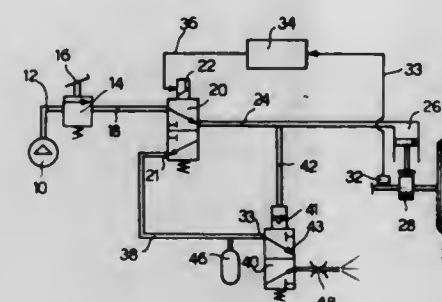
Filed July 28, 1971, Ser. No. 166,846

Claims priority, application Italy, Dec. 30, 1970, 71335 A/70

Int. Cl. B60t 8/06

U.S. Cl. 303—21 F

6 Claims



An anti-skid braking system having two separate modes of operation depending on the road conditions is disclosed. In this system there is a device sensitive to the braking pressure which is required to cause the wheels to skid which operates to modify the operation of the device which releases the braking pressure so that if the braking pressure is below a certain threshold value (indicating that the surface is slippery) the braking pressure is released substantially instantaneously whereas if the braking pressure is above the threshold value (indicating that the road surface is dry and holding well) the braking pressure is initially only partially released rapidly, thereafter being released gradually until it has fallen below the threshold value whereupon it is again substantially instantaneously released down to atmospheric pressure, so that on dry surfaces the pressure is not completely released when skidding is imminent to avoid any jerkiness that would be deleterious to the road holding.

3,753,600

**AUTOMATIC BRAKE PRESSURE CONTROL DEVICE FOR PNEUMATIC ANTI-SKID VEHICLE BRAKING SYSTEMS**

Carmelo Gemmellaro, Turin, Italy, assignor to FIAT Societa per Azioni, Turin, Italy

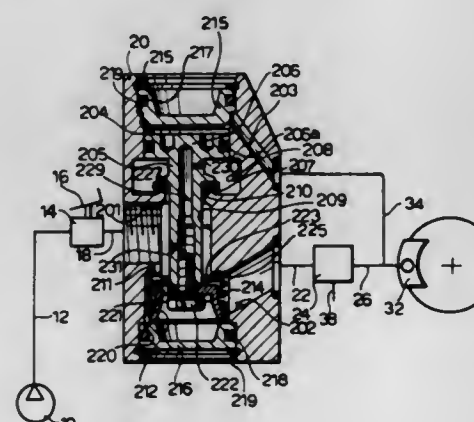
Filed July 20, 1972, Ser. No. 273,579

Claims priority, application Italy, July 24, 1971, 69488 A/71

Int. Cl. B60t 8/06

U.S. Cl. 303—21 F

5 Claims



This invention provides a brake pressure control device for connection in series with the control valve of an anti-skid pneumatic braking system having an axially movable piston the position of which is determined by the difference between

the pressure in a chamber communicating with the brake actuator itself and a chamber communicating with the brake pressure supply through a first floor restricting passage. The piston is normally in a closed position, but when the pressure at the brake actuator is released by the action of the anti-skid control valve upon detection of imminent wheel locking the piston moves into an operative position in which it places the said chamber in direct communication with the brake pressure supply while at the same time limiting the pressure supply to the brake control valve to a second restricted passage preventing sharp re-application of the brakes by the control valve.

3,753,601

**FLUID ACTUATED BRAKE SAFETY DEVICE**

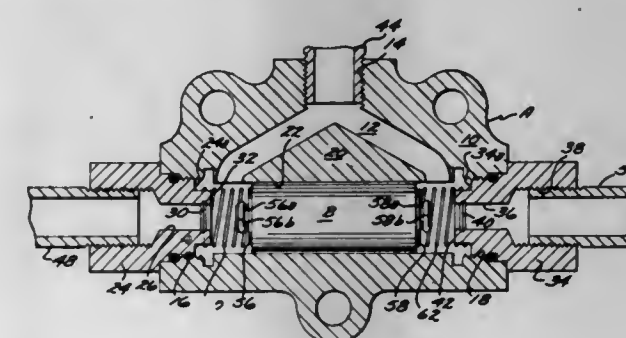
James R. Hensley, 1325 Nutmeg, Escondido, Calif.

Filed Aug. 9, 1971, Ser. No. 170,122

Int. Cl. B60t 17/22

U.S. Cl. 303—84 A

7 Claims



A safety device for use with two concurrently operable fluid actuated brake assemblies. The device is intermediately positioned between a master cylinder and the two brake assemblies. Upon a leak developing in one of the brake assemblies a valve member that forms a part of the safety device moves from a first to a second position to prevent further discharge of fluid to the defective brake assembly. The safety device allows the non-defective brake assembly to continue to operate in a normal manner.

Upon the valve member moving to a second position, an electrically operated warning light is illuminated to warn the driver of the vehicle on which the safety device is installed that one set of brake assemblies is inoperative. The safety device has two longitudinally spaced resilient O-rings associated with the valve member, with each O-ring serving both to effect a seal when the valve member moves to a second position, as well as to lock the valve member in this second position. A second form of the safety device utilizes a spring-loaded detent to hold the valve member in a second position.

3,753,602

**ADAPTER FOR FIBERGLASS TOOL HANDLES AND OTHER FIBERGLASS CONNECTIONS**

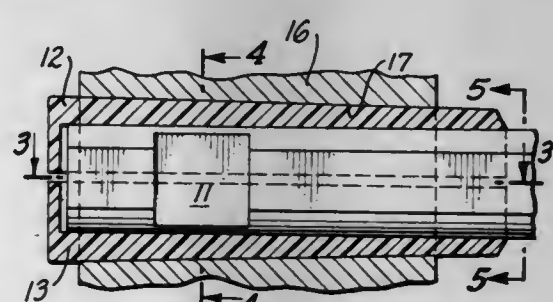
Joseph Allen Carmien, Sun Valley, Calif., assignor to Nupla Corporation, Sun Valley, Calif.

Filed Jan. 28, 1972, Ser. No. 221,615

Int. Cl. B25g 3/28

U.S. Cl. 306—33

1 Claim



An adapter for connecting tool heads to fiberglass tool handles and for making other fiberglass attachments. An adapter



which is preferably formed in two sections is mounted around and over the end of the tool handle. Interlocking means or frictional engagement are provided to hold the adapter in place. The tool head is provided with an interior opening which is formed complementarily to the tapered exterior of the adapter. The head is driven into place around the adapter by striking the end of the handle on the ground. The adapter is capable of cold flow to fill in a substantially perfect manner the area between the tool handle and head.

3,753,603

# BEARING ASSEMBLIES FOR THE ROLLERS OF A ROLLER CONVEYOR

Bernard Pinner, Wednesbury, and Edmund Charles King, Sedley, Dudley, both of England, assignors to Brockhouse Conveyor Bearings Limited, Tipton, Stafford, England

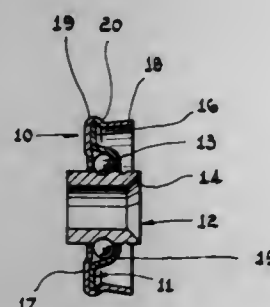
Filed Dec. 2, 1971, Ser. No. 204,099

Claims priority, application Great Britain, Dec. 8, 1970, 58,146/70

Int. Cl. F16c 35/00

U.S. Cl. 308—20

3 Claims



A bearing assembly for fitting in the ends of a tube which forms a roller of a roller conveyor, such bearing assembly comprising an outer pressing which has a skirt and an annular plate, an inner pressing forming an outer part of a ball race and a center roller forming an inner part of a ball race, and having a central bore for fitting on a spindle. The skirt is frusto-conical and extends from a rolled-over flange at the periphery of the outer pressing, such flange also engaging over the periphery of the inner pressing, and the end of the roller tube being peened over into engagement with the skirt when the bearing assembly is fitted into the end of the tube.

3,753,604

# PRESSURE FLUID DISTRIBUTOR AT AN HYDROSTATIC BEARING

Torsten Henry Arsenius, Goteborg, Sweden, assignor to SKF Industrial Trading and Development Company, N.V., Amsterdam, Netherlands

Filed June 11, 1971, Ser. No. 152,068

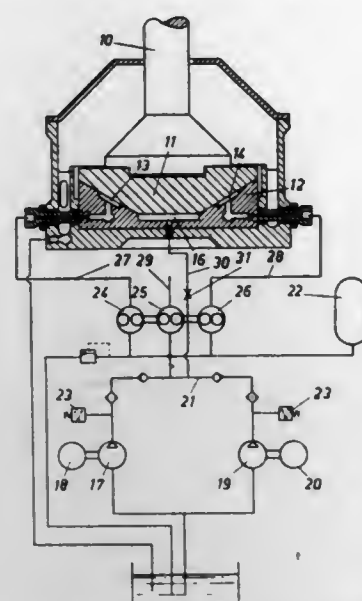
Int. Cl. F16c 17/06

U.S. Cl. 308—160

5 Claims

A hydrostatic bearing is provided with a number of pockets in its bearing surface, said pockets being supplied with a pressure fluid which actually carries the load and lubricates the bearing surface. Each pocket may be supplied with fluid from its own pump, but a simplified piping arrangement will be obtained if a common supply pump is used. In that case, however, there is a risk that a possible occasional displacement between the bearing parts will bring about an unexpectedly large outflow at one or some of the pockets, which will endanger the function of the bearing. The invention proposes the use of a distributor acting as a metering unit and consisting of

a number of interconnected displacement pumps driven by the fluid. A tendency to increased leakage at one pocket, thus,



will not mean a correspondingly increased flow through the distributor at the pertaining metering unit as the other units will brake the units tending to run more freely.

3,753,605

# ANTI-FRICTION BEARING ASSEMBLY WITH CENTRIFUGAL FILM LUBRICATION ON CAGE SURFACES

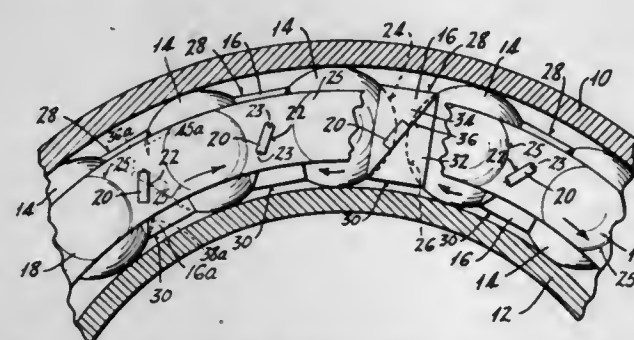
Kenneth G. Lehmann, 5 Kent Rd., Easton, Conn.

Filed July 6, 1971, Ser. No. 159,707

Int. Cl. F16c 33/30

U.S. Cl. 308—187

5 Claims



An anti-friction bearing assemblage comprising two race members with rolling bearing elements held captive between the members. The illustrated embodiment shows ball bearings; however, roller bearings may be utilized as well. Uniform spacing is maintained between the roller elements by a multi-part cage comprising a pair of circular flat side rings between which hollow-surfaced spacer blocks are secured. The spacer blocks alternate with the roller elements of the bearing, and have concave surfaces closely conforming thereto. Reliefs are provided on the concave surfaces of the spacer blocks to provide leading or entrance cavities which hold the oil or grease lubricant. At one concave surface of each spacer block the reliefs communicate with a lubricant feed slot which in turn communicates with radially extending passages disposed in the blocks. Side edges or surfaces of the blocks are sloped and constitute a camming means which tends to force radially inward the oil or grease lubricant. Under centrifugal action such lubricant is conducted to the relief surfaces of the blocks, where it is picked up by the surfaces of the roller members so as to form continuous lubricating films between the roller members or balls on the one hand and the spacer blocks on the other hand. Maximum lubrication and minimum friction between the rolling elements and the blocks constituting the cage are therefore attained, being aided by centrifugal force as the turnable portions of the bearing rotate, this being in addition to the cohesion of lubricant on the surfaces of the elements.

3,753,606

# FILM STORING CABINET

Jiro Ozeki, No. 15, 2-chome, Senkawa-cho, Tokyo, Japan

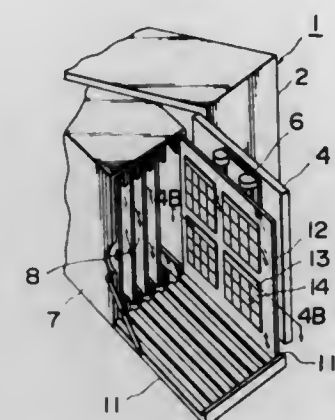
Filed Feb. 29, 1972, Ser. No. 230,439

Claims priority, application Japan, Aug. 28, 1971, 46/77156; Feb. 10, 1972, 47/16899

Int. Cl. A47p 63/00

U.S. Cl. 312—223

4 Claims



A film storing cabinet, comprising an outer casing with a door means and a film box swingably secured to the inside of the casing through a shaft means. The film box is selectively enclosed by the casing by closing the door means. Upon opening the door, the film box may swing about the shaft means so as to move its open end to the outside of the casing, and films or film-holding sheets slidably stored in the film box can selectively be brought out for inspection of films carried by the film-holding sheets.

3,753,607

# OPTICAL IMAGE TRANSMITTING STRUCTURE

Ichiro Kitano, Higashinada-ku, Kobe-shi, Hyogo-ken; Ken Koizumi, Itami-shi, Hyogo-ken, and Hiroshi Matsumura, Higashi-ku, Osaka-shi, Osaka-fu, all of Japan, assignors to Nippon Selfoc Kabushiki Kaisha (a.k.a. Nippon Selfoc Co., Ltd.), Tokyo-to, Japan

Continuation of Ser. No. 852,333, Aug. 22, 1969, abandoned.

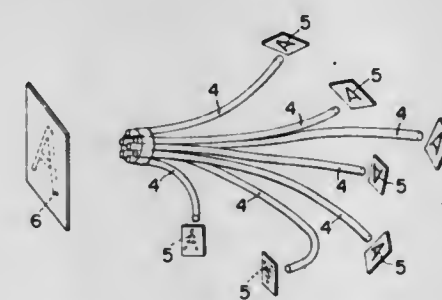
This application Jan. 17, 1972, Ser. No. 218,492

Claims priority, application Japan, Aug. 27, 1968, 43/61371

Int. Cl. G02b 5/16

U.S. Cl. 350—96 B

6 Claims



An optical image transmitting device capable of transmitting an image of an object to a plurality of locations comprises a plurality of optical fibers which are bundled together at their one ends and are separated from each other at their other ends, each of the optical fibers having a refractive index distribution represented substantially by the following equation

$$n = N(1 - ar^2)$$

where N represents the refractive index at the center point thereof in a cross section of the fiber, n represents the refractive index at a radial distance r from the center point, and a is a positive constant, whereby plural images of one object field can be respectively produced at the separated end faces of the optical fibers.

3,753,608

# OPTICAL POLARIZATION SPOT SIZE CHANGING DEVICES

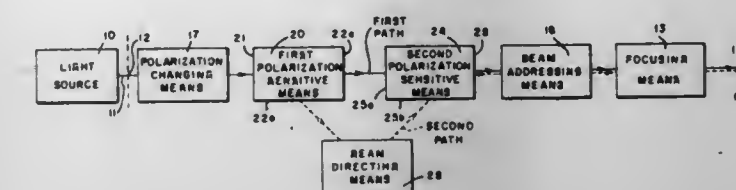
Enrique Bernal G., Minnetonka, Mich., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 15, 1971, Ser. No. 134,246

Int. Cl. G02f 1/26

U.S. Cl. 350—150

27 Claims



In a beam-addressed optical memory, the spatial pattern of the focused light spot is selectively changed by making the light from the source traverse either a first or a second path. The focused light spot has a first spatial pattern when the light beam traverses the first path and a second, different, spatial pattern when the light beam traverses the second path.

3,753,609

# LIQUID CRYSTAL DISPLAY

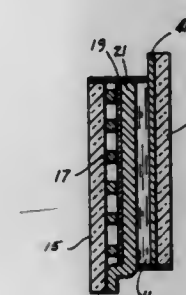
Marshall Leibowitz, Englewood, N.J., assignor to Ing. C. Olivetti and Co., S.p.A., Ivrea, Italy

Filed Dec. 8, 1971, Ser. No. 205,864

Int. Cl. G02f 1/16

U.S. Cl. 350—160 LC

4 Claims



A liquid crystal display in which a layer of liquid crystal material is confined between a pair of substrates in which two sets of parallelly disposed electrodes are disposed on one of the substrates at an angle with one another with a layer of dielectric material between the sets. Excitation voltage is applied between selected adjacent pairs of electrodes from each of the sets for energizing a selected portion of the liquid crystal material. A biasing electrode may be disposed on the other of said substrates for decreasing the field necessary to cause excitation of the liquid crystal material.

3,753,610

# FRESNEL LENS MOUNTING

Bernard U. Samuel, c/o Bernard Associates, Inc., P. O. Box 2737, Atherton, Calif.

Filed Jan. 11, 1972, Ser. No. 216,439

Int. Cl. G02b 7/02

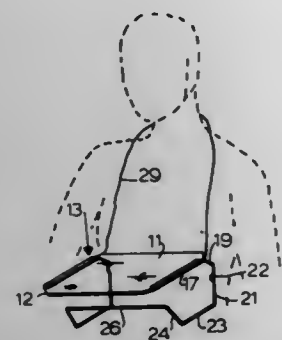
U.S. Cl. 350—248

7 Claims

A wire frame supports a plastic fresnel lens mounted thereon. The frame is bent in a plurality of stretches, enabling



the lens to be supported on a table or other surface in different positions so that the work may be viewed from various angles



for reading, handicraft, and other purposes. By suspending the frame by a cord from the neck, the lens may be used to magnify work held in the lap, etc.

3,753,611

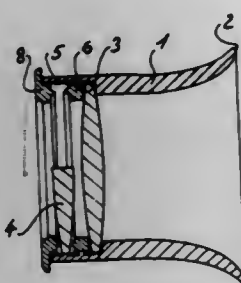
### BIFOCAL MAGNIFYING GLASS TO BE HELD IN FRONT OF ONE EYE

Ejvind Ebbesen, Torvegade 56, Copenhagen, Denmark  
Filed Sept. 9, 1971, Ser. No. 178,887

Claims priority, application Denmark, Sept. 16, 1970, 4749  
Int. Cl. G02b 7/02

U.S. Cl. 350-249

7 Claims



The invention relates to a magnifying glass to be held in front of one eye and having one or more turnable lens systems with different fields of vision.

3,753,612

### FRAMING DEVICE FOR A CONTINUOUSLY MOVING MOTION PICTURE FILM

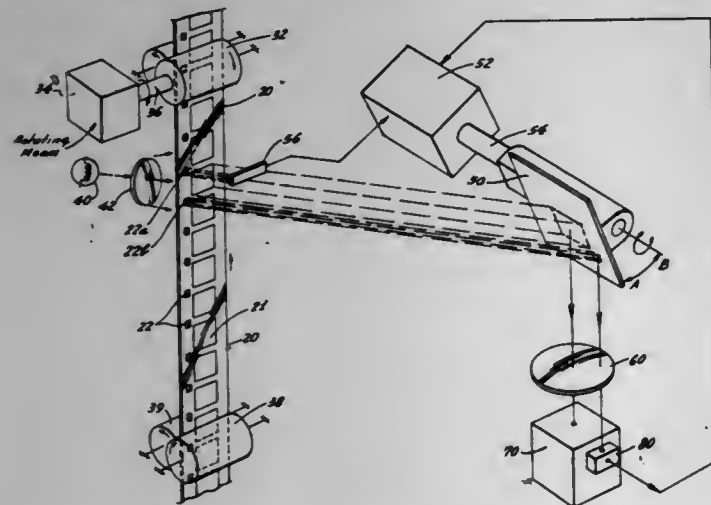
Bernard J. Okey, Redondo Beach, and Daniel J. Marshall, San Pedro, both of Calif., assignors to The Magnavox Company, Torrance, Calif.

Continuation-in-part of Ser. No. 24,054, March 26, 1970. This application Nov. 10, 1971, Ser. No. 197,335

Int. Cl. G03b 41/10

U.S. Cl. 352-109

30 Claims



A device for framing a continuously moving motion picture film having a plurality of index marks, including a means for

providing a beam of light for projecting images of index marks on the film or index marks directly related to the index marks on the film. A feed means continuously moves the film past the beam of light. A first detector is in alignment with the beam of light for receiving the projected images of the marks in alignment therewith for providing a coarse drive signal having an amplitude related to the position of the reflected image. A reflector is positioned to reflect the images of the marks in alignment therewith. A second detector is positioned to detect images reflected by the detector for providing a fine drive signal related to the positions of the received projected image. A drive assembly is coupled to receive the coarse drive signal and the fine drive signal for providing angular rotation to the reflector at a rate related to the instantaneous summation of the electrical amplitudes of the received signals.

3,753,613

### MOTION PICTURE CAMERA WITH ADJUSTABLE SHUTTER MEANS

Herbert Reinsch, Kongen; Gottfried Kuhne, Birkmannsweller, and Wolf Schirmer, Stuttgart, all of Germany, assignors to Robert Bosch Photokino GmbH, Stuttgart, Germany

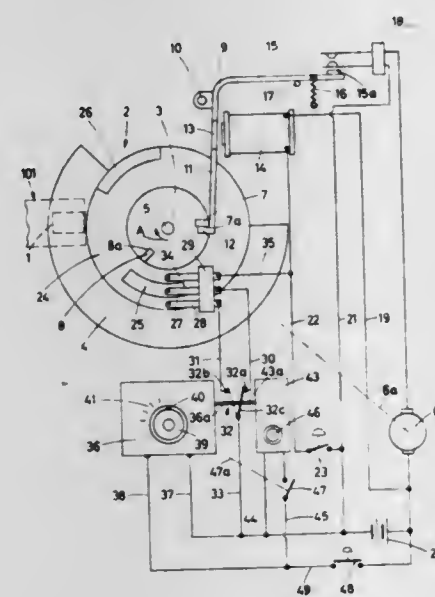
Filed Feb. 24, 1972, Ser. No. 228,872

Claims priority, application Germany, Mar. 8, 1971, P 21 10 923.9

Int. Cl. G03b 17/46

U.S. Cl. 352-121

12 Claims



A motion picture camera wherein a rotary shutter is movable between first and second angular positions in which its blade respectively overlies and is out of register with the light-admitting aperture. An adjustable first pulse generator is provided to effect movements of the shutter from the first to the second position at preselected intervals to thereby start exposure with long exposure times. A second pulse generator is activated when the shutter assumes its second position and effects a movement of the shutter back to the first position with a delay which is a function of scene brightness but is invariably shorter than a preselected interval. The two pulse generators control a two-way switch which can cause an electromagnet to disengage an intercepting lever from the shutter whereby the lever starts the motor which rotates the shutter from the first to the second position when the switch is actuated by the first pulse generator and from the second to the first position when the switch is actuated by the second pulse generator.

3,753,614

### CINEMATOGRAPHIC PROJECTOR

Bernardus Johannes Kuppens, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

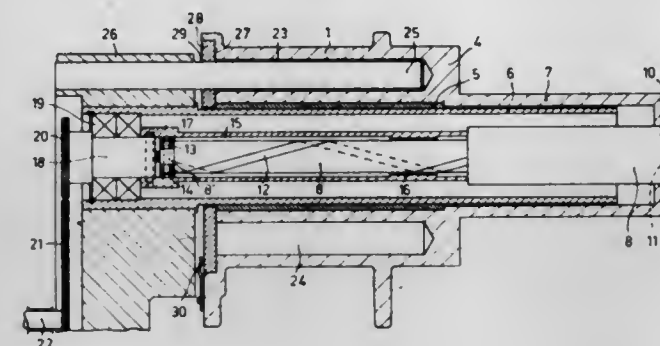
Filed Apr. 24, 1972, Ser. No. 247,157

Claims priority, application Netherlands, May 4, 1971, 7106038

Int. Cl. G03b 3/00

U.S. Cl. 352-142

6 Claims



Cinematographic projector including a translatable and rotatable objective turret which is secured to a spindle in which a helical groove has been formed. The spindle is surrounded by a rotatably supported and axially immovable sleeve which internally is provided with a projection engaging in the groove in the spindle and is rotatable by a drive motor. When the motor is started the turret is initially moved in a straight line to an extended position until a stop provided on the spindle abuts against the projection of the sleeve, whereupon the spindle and the turret are rotated as an integral unit together with the sleeve. By reversing the direction of rotation of the motor the turret is returned in a straight line.

3,753,615

### SCANNING APPARATUS

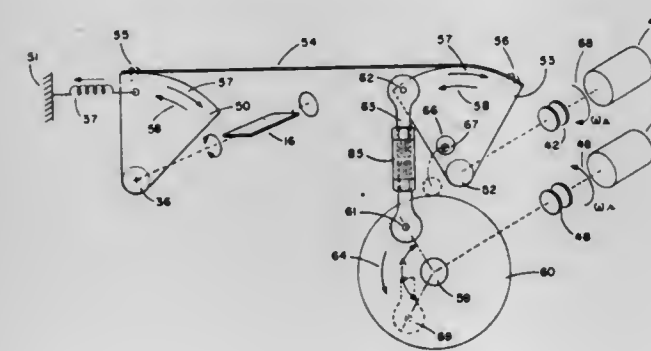
Daniel Richard Erny, Boonton, and Merrill Brandle, Wanaque, both of N.J., assignors to Van Dyk Research Corporation, Whippany, N.J.

Filed Apr. 26, 1972, Ser. No. 247,872

Int. Cl. G03g 15/04

U.S. Cl. 355-8

11 Claims



An optical scanning arrangement for use in a xerographic copier, in which a mirror is rotated through a predetermined angle to scan the document to be copied. The angle through which the mirror is rotated varies according to the length of the document. A spring returns the mirror to its initial rest position. A shaft rotating at a fixed angular velocity is coupled to the mirror through an overrunning clutch, so as to limit the speed at which the mirror returns to its rest position to a velocity corresponding to that of the shaft. A linkage is provided to reduce the angular velocity of the mirror as the rest position of the mirror is approached, thus minimizing shock to the scanning mechanism.

3,753,616

### LASER DOPPLER VELOCIMETER DETECTOR

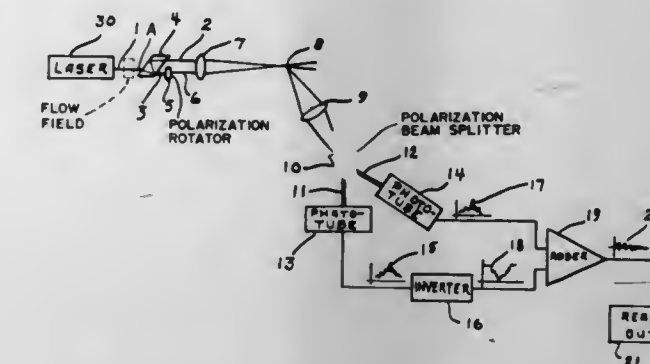
Winfried H. Goethert, Tullahoma, Tenn., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 22, 1971, Ser. No. 200,718

Int. Cl. G01p 3/36

U.S. Cl. 356-28

2 Claims



A laser doppler velocimeter detector for determining velocity information in flow fields in which a laser beam utilized in the flow field is split into a pair of beams, one of which has its plane of polarization rotated 90°. A portion from each of the oppositely polarized beams is mixed to produce the desired doppler information. Polarization beam splitting is provided producing two beams, each containing doppler shifted information. Each of the beams is detected to provide a pair of representative electrical signals, one of which is subsequently inverted and added to the uninverted to result in a signal having only the frequency content of the original doppler information.

3,753,617

### METHOD OF AND APPARATUS FOR COMPARING ONE ARTICLE WITH ANOTHER SIMILAR ARTICLE

Kurt Ehrat, Zurich, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

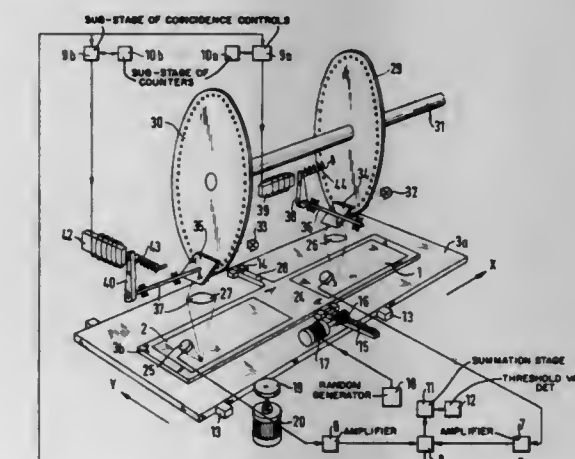
Filed Feb. 18, 1972, Ser. No. 227,387

Claims priority, application Switzerland, Feb. 26, 1971, 2904/71

Int. Cl. G01k 9/08; G01b 11/24

U.S. Cl. 356-71

24 Claims



A method and apparatus for comparing one article with another similar article, the article being for example documents or bank notes to detect forgeries or discrepancies. The method comprises scanning with a beam of light a randomly selected discrete area of a document under examination, a corresponding discrete area of a standard document and correlating the values obtained from light reflected from the scanned areas to obtain a value indicating substantial identity of the areas. Preferably more than one area is scanned and the position of each area to be scanned is selected in a random fashion and the correlation values obtained for each of the



corresponding areas scanned indicating whether or not the document under examination is genuine. Apparatus is also provided for carrying out the above method and comprises in one form a support for the document under examination and the standard document which is moved continuously in one direction and randomly in another direction orthogonal to the one direction, a scanner being provided over each document to scan the aforementioned corresponding discrete areas.

3,753,618

**MONOCHROMATOR**

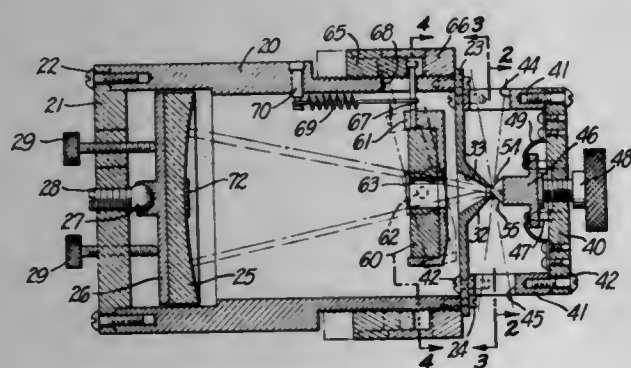
Floyd C. Haley, La Canada, Calif., assignor to Ultra-Violet Products, Inc., San Gabriel, Calif.

Filed Feb. 10, 1972, Ser. No. 225,248

Int. Cl. G01J 3/18, 3/04

U.S. Cl. 356—100

8 Claims



A compact monochromator with entrance and exit slits nearly incident permitting insertion and removal of the monochromator at a focal point without requiring change in the system. A monochromator with entrance and exit slits each formed by an edge and a mirror. A monochromator with entrance slit and mirror directing the beam through an aperture in a grating to a collimating mirror, defining a light path from the entrance slit and mirror to the collimating mirror to the grating and back to the collimating mirror to the exit mirror and slit.

3,753,619

**INTERFERENCE SPECTROSCOPY**

Leslie William Thorpe, Beckenham, Kent, England; Geoffrey Charles Hayward, and James Leslie Charles Waters, both of Glenrothes, Fife, Scotland, assignors to Beckman R.I.C., Ltd., Glenrothes, Fife, Scotland

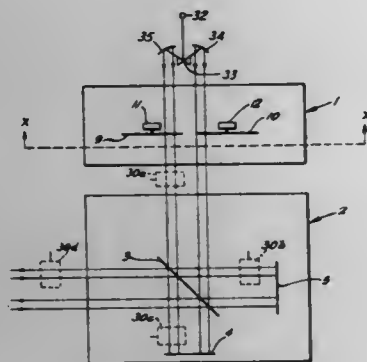
Filed Oct. 26, 1971, Ser. No. 192,598

Claims priority, application Great Britain, Oct. 27, 1970, 50,975/70

Int. Cl. G01J 3/42; G01b 9/02

U.S. Cl. 356—106 S

7 Claims



Spectroscopic apparatus for obtaining spectral information about a sample including means for producing two parallel beams of radiation adapted to selectively pass through the sample.

Spectroscopic apparatus comprising means for producing two parallel beams of radiation adapted to selectively pass through a sample; means upon which each of the beams is incident for dividing said beams into partially reflected and partially transmitted components; means for superimposing the reflected and transmitted components of each beam upon each other to recombine the respective beams, said superimposing means including at least one reflecting means for reflecting one of the components of each beam which is movable in a direction parallel to the direction of incidence of the beam components; means for modulating the intensity of each beam at a different frequency; detector means adapted to receive radiation from each of said modulated beams; and means for measuring the amplitudes of the components of the detector output produced by each of the respective beams.

3,753,620

**IN-SITU TREATMENT OF ROADWAY**

Leonard John Minnick, Cheltenham, Pa., assignor to IU Conversion Systems, Inc., Philadelphia, Pa.

Division of Ser. No. 780,902, Dec. 3, 1968, Pat. No. 3,634,115.

Filed June 7, 1971, Ser. No. 150,777

Int. Cl. E01c 7/36

U.S. Cl. 404—76

2 Claims

A new bituminous coal fly ash is sulfo-pozzolanically reactive and contains combined sulfate in stated proportions relative to alkaline earth metal oxide content. Load-supporting compositions of this fly ash combined with aggregate, and a method of applying the new fly ash to an existing surface.

3,753,621

**CONCRETE-WORKING MACHINE WITH WALKING VIBRATORS**

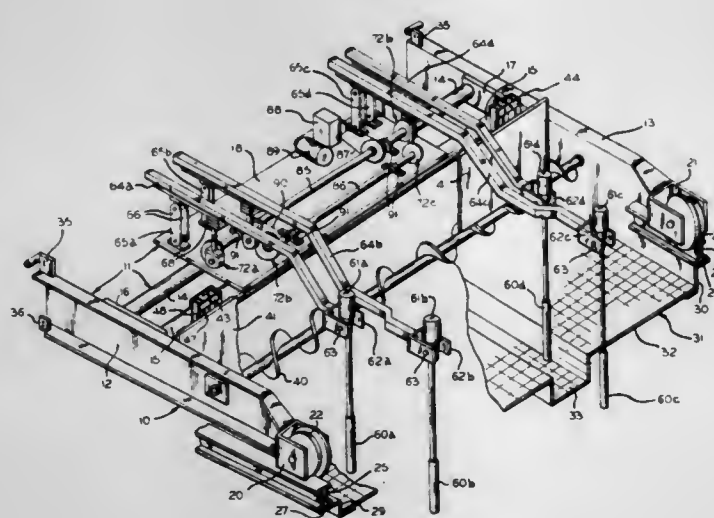
Charles Harry Dale, Rock Island, Ill., assignor to East Moline Metal Products Company, East Moline, Ill.

Filed Apr. 16, 1971, Ser. No. 134,694

Int. Cl. E01c 19/38

U.S. Cl. 404—116

14 Claims



Concrete-working machine component with concrete-spreading auger, vertically adjustable strike-off plate, forwardly projecting, vertically oscillatable arms bearing depending vibrators which reciprocate into and out of the concrete, and crank or cam drives for said arms.

3,753,622

**DRILL SHANK AND CHUCK ASSEMBLY FOR A DRILL PRESS**

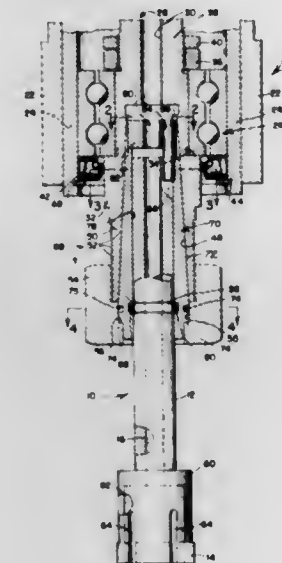
Harold C. Miller, Chicago, Ill., assignor to Super-Cut, Inc., Chicago, Ill.

Filed Sept. 3, 1971, Ser. No. 177,774

Int. Cl. B23b 31/08, 51/06

U.S. Cl. 408—59

1 Claim



A drill shank and chuck assembly adapted for use in a drill press or the like and embodying an adapter collet which, by a detent action, enables drill substitution to be effected without drill press adjustment.

3,753,623

**TURBO MOLECULAR VACUUM PUMP**

Max Wutz, Hanau, Germany, assignor to W. C. Heraeus GmbH, Hanau, Germany

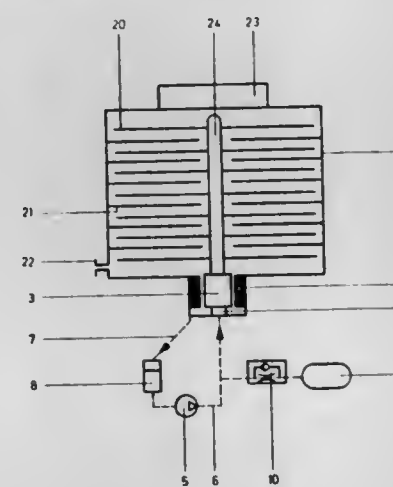
Filed July 27, 1972, Ser. No. 275,750

Claims priority, application Germany, July 30, 1971, P 21 38 152.2

Int. Cl. F04b 17/00

U.S. Cl. 417—424

16 Claims



A housing retains stationary turbine blade rings, extending radially inwardly therefrom; interleaved between the stationary blade rings are rotatable blades, secured to a shaft; the shaft has a lower hollow portion surrounding an upright bolt, extending from the housing. Lubricant under pressure is introduced through a duct centrally of the bolt between the top surface of the bolt and the bottom surface of the lower portion of the shaft, which forms a hollow surrounding the bolt, to journal the bolt, in a hydrodynamic or hydrostatic bearing, and prevent splatter of lubricating oil into the high vacuum region above the lower end of the shaft, and where the turbine blade rings are located.

3,753,624

**BORING TOOL FOR SMALL DIAMETERS**

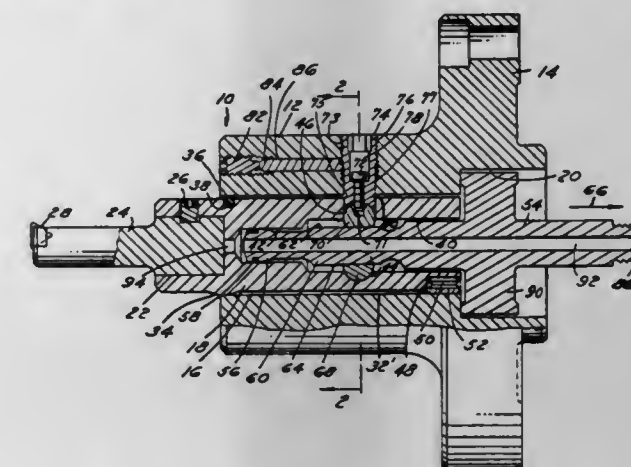
Robert W. Walker, Detroit, and Victor Milewski, Troy, both of Mich., assignors to The Valeron Corporation, Detroit, Mich.

Filed Aug. 20, 1971, Ser. No. 165,818

Int. Cl. B23b 29/034

U.S. Cl. 408—159

16 Claims



A boring tool having internal means for adjusting the cutting diameter comprising a housing pivotally supporting a tool shank therewithin and wedge means positioned within the shank to provide radial adjustment of the cutting point upon axial linear actuation of the wedge means.

3,753,625

**CUTTING TOOL HOLDER OR ADAPTOR**

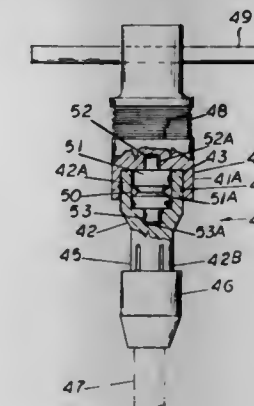
Ralph S. Fabrizio, 108 Kenwood Ave., and Nicholas J. George, 192 Winfield Dr., both of Stratford, Conn.

Filed July 28, 1971, Ser. No. 166,749

Int. Cl. B25b 13/00

U.S. Cl. 408—239

17 Claims



This disclosure is directed to a cutting tool holder, wrench or adaptor, as for example, a tap wrench and the like, having a body portion which includes a flexible bellows torque drive which permits limited angular displacement between the body of the holder or adaptor and the center line of the tool bit to maintain alignment between the cutting tool bit and the hole or tap being formed in an associated work piece during a cutting or forming operation. The tool holder further includes a shear safety to prohibit any breakage of the tool bit in the event the applied torque moment exceeds those forces which would otherwise break the tool bit.

3,753,626

**AUTOMATIC CONTROL SYSTEM**

Ray M. Bacchi, Oakland, Calif., assignor to De Laval Turbine Inc., Oakland, Calif.

Filed Aug. 27, 1970, Ser. No. 67,540

Int. Cl. F04b 49/02

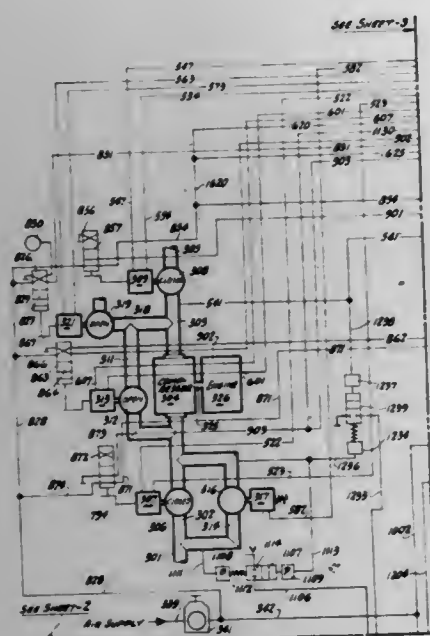
U.S. Cl. 417—1

4 Claims

An internal combustion engine drives a reciprocating compressor installed with various flow control valves in a gas



pipeline. A pneumatic system using logic elements and control boards controls the starting, running and stopping of the engine and compressor and the working of the valves either from a point at the site or from a remote point. There are several



choices of the relative amount of control by an attendant or automatically and including automatic imposition of load and response to variations in load and also automatic response to anomalous or dangerous conditions.

3,753,627

## PUMP BYPASS LIQUID CONTROL

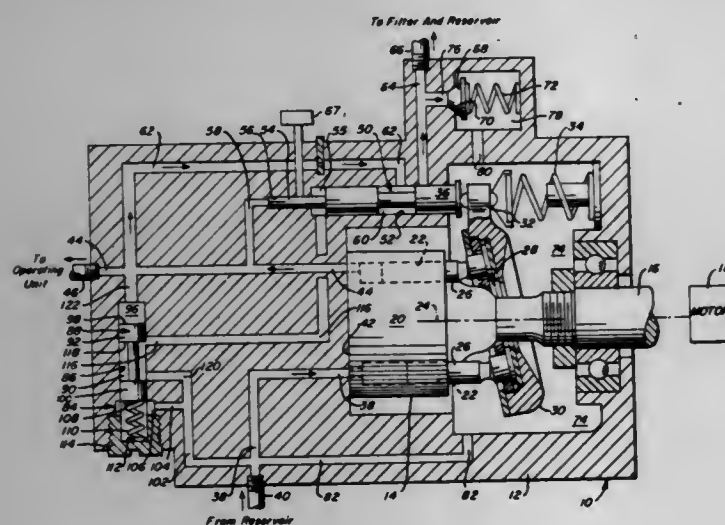
Elmer F. Ward, 1041 N. LaLima Dr., Tustin, Calif.

Continuation-in-part of Ser. No. 836,312, June 25, 1969, abandoned. This application Apr. 9, 1971, Ser. No. 132,749

Int. Cl. F04b 49/00

U.S. Cl. 417-213

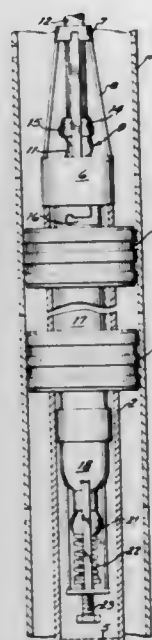
6 Claims



A fluid circulation system having a primary flow circuit for supplying fluid under pressure to an operating unit for performing a desired control function and a secondary flow circuit operative under regulated pressure conditions of said primary flow circuit for effecting a regulated control of the fluid being circulated in said secondary flow circuit. The pressure and rate of flow of fluid in the secondary flow circuit is a function of the pressure and rate of flow of fluid in the primary circuit.

3,753,628  
**ROTARY TYPE OIL OR WATER PUMP**  
 John G. Becker, 260 Euclid Ave., Long Beach, Calif.  
 Filed May 15, 1972, Ser. No. 253,165  
 Int. Cl. F04b 49/00, 47/02  
 U.S. Cl. 417-310

6 Claims



This invention relates to a rotary type oil or water pump in which a convoluted stator is provided in which a helical screw rotor operates to force liquid to the surface. I provide a pump in which pump failures are reduced due to preventing the accumulation of fine sand or silt in the pump by providing a spring-pressed check valve which automatically opens to eject sand or silt when excessive weight of this accumulation bears against a check valve. I also provide a means of raising or lowering the pump and the operating parts thereof by a single run of the pump either into or out of the well.

## ERRATUM

For Class 417-520 see:  
 Patent No. 3,753,632

3,753,629

## COMBINATION HYDRAULIC MOTOR DRIVEN HYDRAULIC PUMP AND AIR COMPRESSOR ASSEMBLY

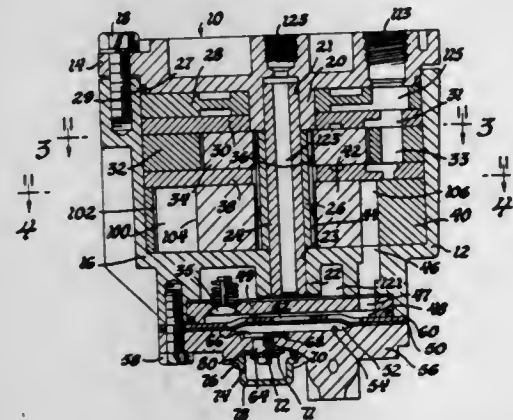
George W. Jackson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 28, 1972, Ser. No. 247,325

Int. Cl. F04b 9/10, 35/02

U.S. Cl. 417-388

3 Claims



A hydraulic pump driven by a reaction motor energized by pressurized fluid, in one application, from a vehicle power steering system. The hydraulic motor includes a reaction rotor

driving a pump rotor. Hydraulic fluid is pressurized by the pump and applied against one side of a diaphragm air compressor. The diaphragm responds to inlet and discharge pulses in the hydraulic pump pressurizing air in a chamber on the other side of the diaphragm. Inlet and exhaust valves are associated with the air pressurizing chamber regulating flow of inlet air into and discharge of pressurized air out of the chamber during cyclic operation of the pump. In preferred form; the motor, pump and diaphragm compressor are incorporated into an integral unit and air pressurized by the compressor is supplied to a vehicle leveling system.

## ERRATUM

For Class 417-424 see:  
 Patent No. 3,753,623

3,753,630

## INTERNAL COMBUSTION ENGINE

Susumu Sadahiro, 1700, 2-chome, Ikebukuro, Toshima-ku, Tokyo, Japan

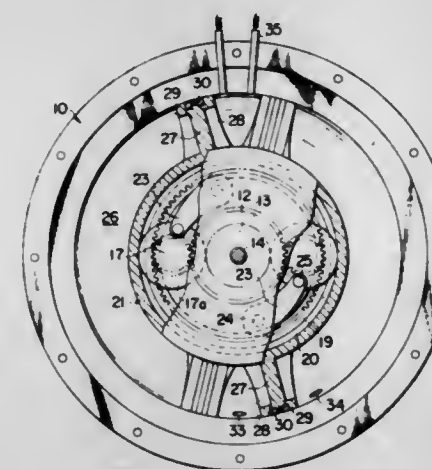
Filed Sept. 20, 1971, Ser. No. 182,080

Claims priority, application Japan, Sept. 25, 1970, 45/84237

Int. Cl. F01c 1/00; F04c 1/00, 17/00

U.S. Cl. 418-36

3 Claims



A pair of bottomed cylindrical members which are rotatable relative each other are installed in a casing so as to pressure-tightly define an annular space therewithin. This annular space is divided into several chambers by a diametrically opposed pair of vanes on the periphery of each of the aforesaid members, the vanes being pressure-tightly slidable therethrough. A rotatable disk is firmly mounted on a shaft extending axially through the casing and is connected with the respective bottomed cylindrical members by planetary gearing thereby to cause the diametrically opposed pairs of vanes to turn through the annular space in such a manner that each pair is alternately revolved through a predetermined angle while the other pair remains substantially unactuated.

3,753,631

## PISTON MACHINE

Adolf Stelzer, 176-4, Dalba, A-8605 Kaptenberg, Austria

Filed Oct. 12, 1971, Ser. No. 188,255

Claims priority, application Austria, Oct. 12, 1970, 29132

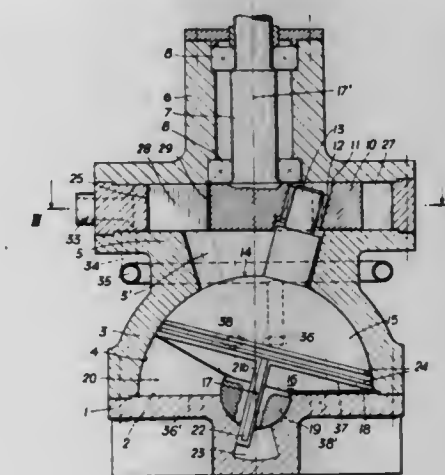
Int. Cl. F01c 1/02, 11/00; F04c 23/00

U.S. Cl. 418-3

2 Claims

A piston machine comprising a casing having a hemispherical internal surface and a substantially plane internal surface, a piston body mounted in said casing and comprising a spherical segment and a conical member, having an obtuse apex angle, mounted on the piston body, the centre of the spherical segment coinciding with the theoretical apex of the conical

member, the spherical segment bearing against the hemispherical internal surface, the said substantially plane internal surface passing through the centre of the conical member, at least one plate projecting radially from the piston body and lying sealingly against the casing, said at least one plate subdividing the said substantially plane internal surface, the conical member having a generatrix disposed at least closely adjacent to the substantially plane internal surface of the casing and adapted to perform a wobbling or gyrating movement thereon, a pin extending outwardly of the spherical segment and connected thereto, the axis of the pin coinciding with the axis of



the conical member, a shaft mounted in the casing, the shaft being perpendicular to the substantially plane internal surface, the shaft being disposed at an acute angle to the axis of the pin, the sum of the said acute angle together with the obtuse apex angle of the conical member amounting to 180°, and a crank disc on the shaft, the crank disc having, on one side of the centre thereof, a bore in which the piston body pin is rotatably mounted, whereby, when the piston body performs a rolling movement in relation to the substantially plane internal surface, the pin imparts a rotary movement to the crank disc and hence to the shaft, and vice versa.

3,753,632

## PUMP

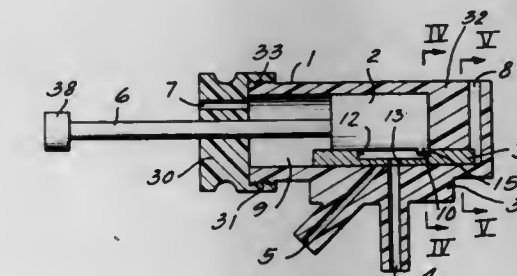
Archle W. Mills, 2941 S. Michigan Ave., Chicago, Ill.

Filed Dec. 1, 1971, Ser. No. 203,551

Int. Cl. F04b 7/04

U.S. Cl. 417-520

5 Claims



A novel pump for food or other material which comprises a cylindrical shaped housing which slidably receives therein a cylindrical shaped piston. A longitudinal portion of the piston is removed and engages a sliding valve which is mounted in the cylinder. The sliding valve is formed with a depression in which a projection of the piston extends such that when the projection engages the slide valve it moves it between intake and outlet ports. The pump requires no springs or valve actuating structures other than the piston itself and thus a simple and sanitary pump structure is formed.



3,753,633

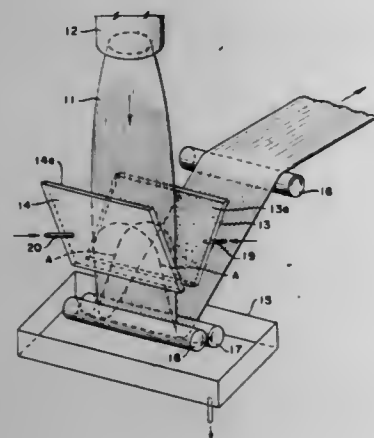
**TUBULAR WATER QUENCH APPARATUS WITH WATER FILM COOLING**

Peter H. Van Kralingen, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.  
Division of Ser. No. 849,849, Aug. 13, 1969, Pat. No. 3,700,763. This application Jan. 20, 1972, Ser. No. 219,278  
Claims priority, application Great Britain, Dec. 31, 1968, 61,899/68

Int. Cl. B29d 23/04; B29c 17/07

U.S. Cl. 425-71

5 Claims



Film of an organic thermoplastic polymer is manufactured by drawing an extruded, inflated, hot, tubular film from an extruder and passing the film into contact with layers of cooling liquid supported by symmetrically disposed collapsing elements adapted to effect a partial but not complete collapse of the tubular film to the lay flat form, cooling liquid being simultaneously supplied to a plurality of locations distributed over the surfaces of the collapsing elements at a rate sufficient to maintain layers of cooling liquid thereon.

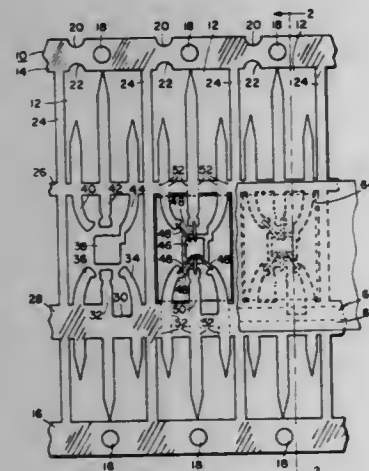
3,753,634

**MOLDING MEANS FOR STRIP FRAME SEMICONDUCTIVE DEVICE**

Thomas G. Bliven, 1834 N. 87th St., Scottsdale, Ariz., and John R. Hugill, 3617 E. Coolidge, Phoenix, Ariz.  
Filed Oct. 9, 1970, Ser. No. 79,601  
Int. Cl. B29c 1/00; B29f 1/10

U.S. Cl. 425-123

9 Claims



In the step of plastic encapsulation of a semiconductor device, the inner ends of a group of leads comprising part of a lead frame, the semiconductor chip and the connections between the chip and the inner ends of the leads, are put into a cavity of a mold and fluid encapsulating material is forced into the cavity to surround the elements that are in the cavity with encapsulating material. A lead frame, which may be supplied in strip form, is provided, a part of which is so formed as to act as a gate for the admission of fluid encapsulating material into the mold cavity.

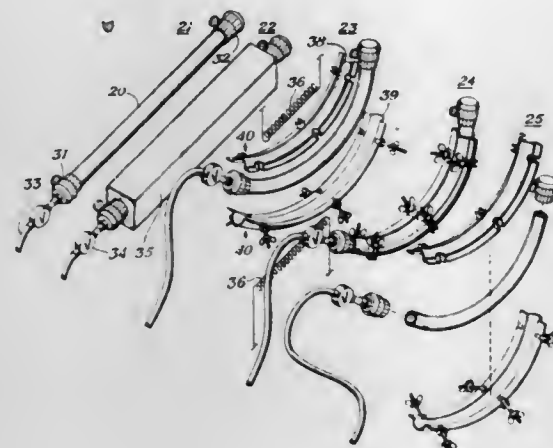
3,753,635

**APPARATUS FOR PRECISION BENDING OF PLASTIC PIPE**

Louis H. Barnett, 3631 Encanto Dr., Fort Worth, Tex.  
Filed Mar. 25, 1971, Ser. No. 127,931  
Int. Cl. B29c 17/00

U.S. Cl. 425-162

10 Claims



The specification discloses a process and system for bending plastic pipe to form a desired elbow. In one embodiment there is imposed a super atmospheric pressure within the interior of a segment of the pipe by applying a fluid pressure to the interior of the pipe. The segment of the pipe is heated to its softening temperature and then bent to a predetermined degree of bend while maintaining the fluid pressure on the interior wall to form an elbow with a minimum of distortion of the side walls. Bending is carried out in conformance with a jig. With the formed elbow in the jig, it is cooled while maintaining the fluid pressure on the interior walls. The fluid pressure then is removed and the elbow is released from the jig.

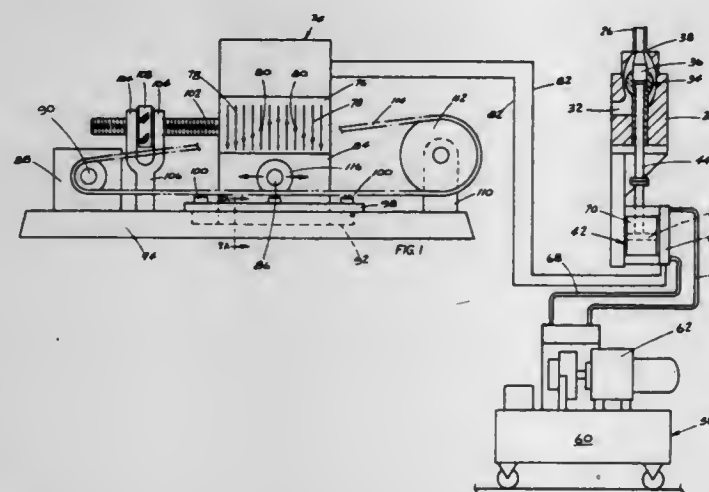
3,753,636

**PHASE VARIATOR FOR BLOW MOLDING EQUIPMENT**

William C. Waterloo, York, Pa., assignor to Graham Engineering Corporation, York, Pa.  
Filed Mar. 12, 1971, Ser. No. 123,594  
Int. Cl. B29d 23/04

U.S. Cl. 425-163

19 Claims



A phase variator for a blow molding machine to (1) adjust and orient the profile of a parison relative to movable mold cavities as they are positioned around the parison prior to inflating the parison, and (2) regulate the timing with which the variations in the profile (i.e. wall thickness) are imparted to the parison. Such regulations may be made and adjusted while the machine is operating.

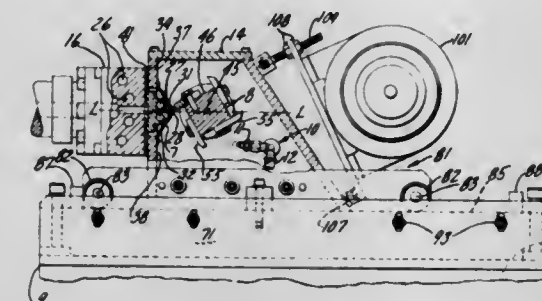
3,753,637

**COOLED-CUTTER HOT-DIE PELLETIZER**

Joseph Gasior, Bloomfield, and Anthony W. Pomper, Edison, both of N.J., assignors to Midland-Ross Corporation, Cleveland, Ohio  
Filed Feb. 14, 1972, Ser. No. 225,993  
Int. Cl. B29c 17/14

U.S. Cl. 425-313

8 Claims



Described herein is apparatus for pelletizing thermoplastic extrudable materials utilizing a fish-tail type die and a rotating-cylinder type cutter wherein cooling of the cutter is effected without cooling of the die.

3,753,638

**APPARATUS FOR SHEETING DOUGH**

Naaman R. Simpson, 5801 S. 28th St., Fort Smith, Ark.  
Filed May 18, 1971, Ser. No. 144,450  
Int. Cl. A21c 3/02; B29c 3/02

U.S. Cl. 425-363

21 Claims



Sheeting dough on a horizontal table by operating a powered roller in horizontal planes back-and-forth over the dough while gradually moving the roller downwardly in horizontal planes towards the table to effectively work and spread the dough into a sheet of desired thickness and consistency. The roller is rotatably mounted through a linkage on a carriage which is reciprocable in tracks extending along opposite sides of the table. The carriage is driven by an endless chain connected through a pulley system to be driven thereby. The linkage which mounts the roller on the carriage is adjustable by a hand lever to change the elevation of the roller relative to the table while the roller is moving over the table in use. In one embodiment, an attachment is provided on the carriage for cutting the dough into pre-determined shapes after it is rolled into the desired thickness.

3,753,639

**BLOW MOLDING DIE**

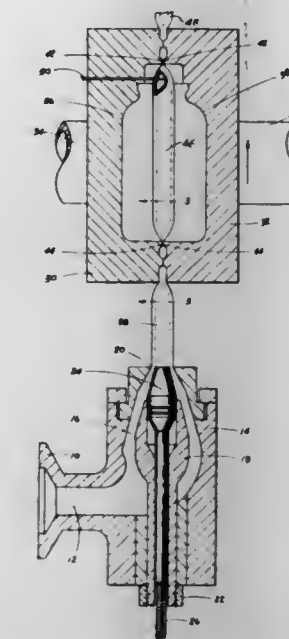
William C. Waterloo, York, Pa., assignor to Graham Engineering Corporation, York, Pa.  
Filed Mar. 12, 1971, Ser. No. 123,596  
Int. Cl. B28b 11/08

U.S. Cl. 425-387

3 Claims

Dies for forming hollow articles, by blowing into a plasticated synthetic resin parison in a mold cavity formed in a pair of supplementary dies which are provided with means operable adjacent one end of the die cavities to force a limited

amount of the parison toward one end of the mold cavity to insure the forming in one end of a hollow molded article a seam produced by pinching one end of a section of the parison from



the oncoming supply thereof in such manner that the seam has a thickness no less than that of the portions of the article adjacent said seam.

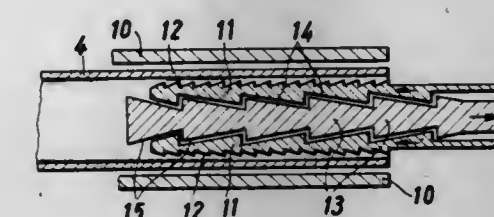
3,753,640

**APPARATUS FOR FORMING SYSTEM COMPONENTS OF EXTRUDED HOLLOW CHAMBER PROFILES**

Hans-Werner Duepree, Osnabrueker Landstrasse 154, Avenwedde, Germany  
Filed Sept. 3, 1971, Ser. No. 177,666  
Int. Cl. B29c 23/00

U.S. Cl. 425-392

2 Claims



This disclosure teaches a structural system with extruded plastic members having hollow (preferably rectangular) profiles with their ends open. Connecting plugs are provided for engagement into the open ends for attachment to the members. Embossed toothings at the open ends interfacing the plugs and the members secure their attachment. Embossing devices are used to emboss the toothings on the internal and external surfaces.

3,753,641

**MOLD FOR ARTICLES HAVING UNDERCUT PORTIONS**

Howard M. Turner, Oak Forest; Domas Adomaitis, Chicago, and Elmer J. Bolk, Lombard, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.  
Filed Dec. 22, 1969, Ser. No. 887,015  
Int. Cl. B29c 1/16

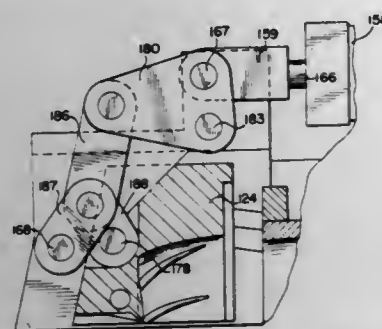
U.S. Cl. 425-450

4 Claims

A partible mold has complementary body parts defining a principal portion of the mold cavity and at least one independently movable end part defining a cavity portion having undercuts relative to parting of the mold at the principal parting line. The end part is movable relative to the mold body in a



direction generally parallel to the principal parting line, the parting line between the separately movable end part and the associated body part being transverse to the principal parting line. The end part is retractable from the complementary body part to clear the undercut portions of the article for parting of



the body parts and ejection of the article. The end part and its actuating mechanism are carried on extension wings of the complementary body part for handling as a unit in an automatic molding machine. After ejection of the article, the end part is closed for clamping operation in association with the body of the mold.

3,753,642

## HIGH-CAPACITY LIQUIFIED FUEL GAS BURNER

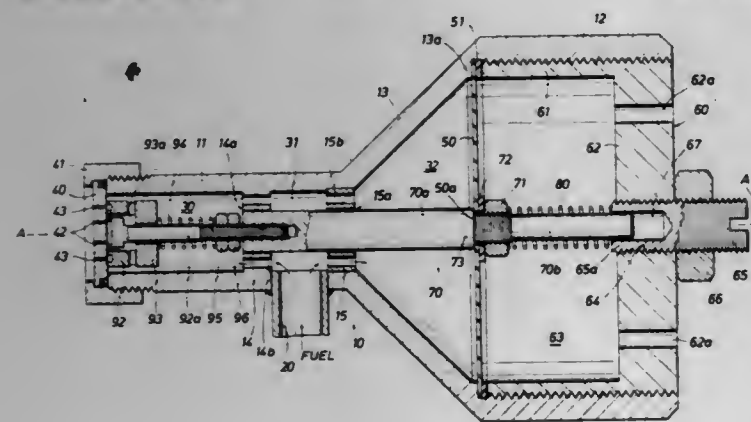
Guy Lamoureux, Grand-Couronne, France, assignor to Shell Oil Company, New York, N.Y.

Filed Apr. 27, 1972, Ser. No. 248,075

Int. Cl. F23n

U.S. Cl. 431-89

9 Claims



A liquid fuel burner for LPG, the nozzle of which comprises at least two concentric series of orifices which are opened in

succession by withdrawing a corresponding series of obturating valves connected with pressure sensitive controlling means (e.g., a membrane). The opening of the various series of valves is automatically controlled by the pressure of the liquid fuel supplied to the nozzle. By providing for more than one series of discharge openings the ratio of max. to min. discharge rates is very high, thus enabling ignition at a low discharge rate.

3,753,643

## WICK-BURNING CANDLE WITH MULTIPLE POINTS OF LIGHT EMISSION IN ITS BODY

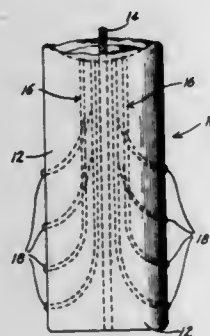
Eddie R. Golden, 6912 Redwood Hwy., Grants Pass, Oreg.

Filed June 21, 1972, Ser. No. 264,767

Int. Cl. F23q 2/32

U.S. Cl. 431-126

5 Claims



A wick-burning candle is provided which includes a body of conventional, moldable, combustible material and which is characterized by the fact that it further includes a multiplicity of light transmitting fibers whose introductory ends are directly exposed to the candle flame and whose light emitting ends are located at distributed points in the periphery of the candle, so that the lighting of the candle causes the points of light emission in the candle body to glow.

## CHEMICAL

3,753,644

## PROCESS FOR THE CONTINUOUS DYEING OF SYNTHETIC FIBRE MATERIALS

Rutger Neeff, Leverkusen, and Robert Kuth, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 29, 1970, Ser. No. 50,937

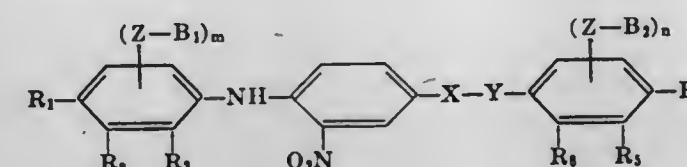
Claims priority, application Germany, July 24, 1969, P 19 37 666.0

Int. Cl. D06p 1/00

U.S. Cl. 8-25

11 Claims

Process for the continuous dyeing of synthetic fibre materials from organic solvents, characterised by impregnating the fibre materials with dye liquors which contain nitro dyestuffs of the formula



in which R<sub>1</sub> - R<sub>4</sub> represent, independently of one another, a hydrogen, fluorine, chlorine or bromine atom, a hydroxyl, alkoxy, alkoxy-carbonyloxy, alkylcarbonyloxy, arylcarbonyloxy, aroxy-carbonyloxy, nitro, cyano, phenoxy, acylamino, aminocarbonyl, aminosulphonyl, acyl, alkoxy-carbonyl, aroxy-carbonyl or a trifluoromethyl group, X is a -SO<sub>2</sub>- or -C(=O)- group, Y is -O- or -NH-, and Z is a single C-C bond or -O-, m and n are a number from 0 - 3, and B<sub>1</sub> and B<sub>2</sub> stand for a C<sub>1</sub> - C<sub>6</sub> alkyl, cycloalkyl or aralkyl radical, with the proviso that the sum total of the carbon atoms altogether contained in the substituent or substituents B amounts to at least 3 and at most 10, and that the sum total of m and n is at least 1, and subjecting the materials to a heat treatment.

The dyeings obtained are distinguished by a high dyestuff yield, very good texture as well as outstanding fastness properties, in particular, very good fastness to thermofixing, washing, rubbing and light.

3,753,645

## CONTINUOUS DYEING OF POLYESTER FIBERS WITH WATER-IMMISCIBLE HALOGENATED HYDROCARBONS AND AMINO ANTHRAQUINONE DYESTUFFS

Rutger Neeff, Leverkusen; Peter Wegner, Cologne; Volker Hederich, Cologne, and Robert Kuth, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 30, 1970, Ser. No. 59,727

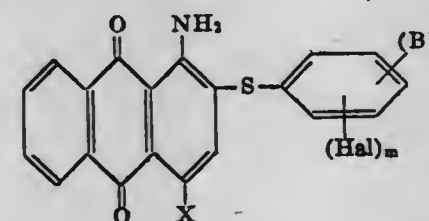
Claims priority, application Germany, Aug. 6, 1969, P 19 39 897.1

Int. Cl. C09b 1/02, 1/16, 1/56; D06p 1/20

U.S. Cl. 8-39

12 Claims

Process for the continuous dyeing of synthetic fiber materials from organic solvents, characterised in that the fibre materials are impregnated with dyeing liquids which contain anthraquinone dyestuffs of formula



in which Hal represents chloro or bromo, X represents hydrogen, hydroxy, amino or acylamino and B represents al-

kyl, cycloalkyl or aralkyl and wherein m is a number from 0 - 2 and n a number from 0 - 3 and subjecting the fibre materials subsequently to a heat treatment.

The dyeings obtained are distinguished by a high dyestuff yield, very good build-up and excellent fastness properties, especially very good fastness to thermofixing, washing, rubbing and light.

3,753,646

## NEW PROCESS OF TEXTILE FABRICS DYEING

Willy Hess, Limas, and Jean-Francois Gamaury, Nogent sur Oise, both of France, assignors to Soltex, Paris, France

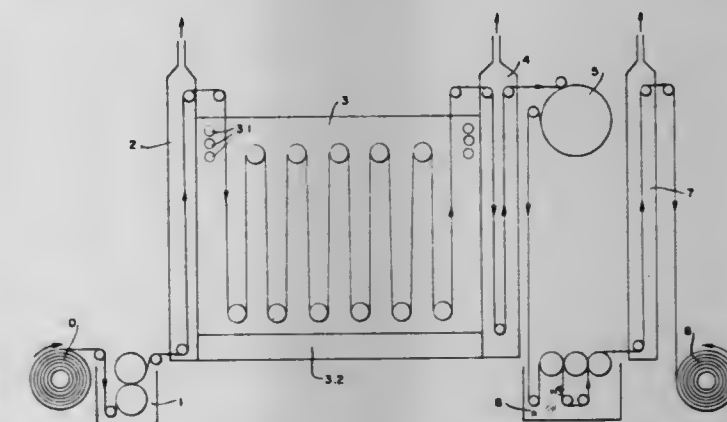
Filed July 28, 1970, Ser. No. 58,973

Claims priority, application France, July 30, 1969, 6925648; Jan. 12, 1970, 7001303

Int. Cl. C09b 67/00; D06p 1/84

U.S. Cl. 8-85

10 Claims



An anhydrous dyeing process comprising (a) achieving a fabric padding in a dyeing bath having a small capacity and containing at least one polar organic solvent chosen so that it dissolves the coloring agents used sufficiently at room temperature (solvent A); (b) defilling fabric in a closed enclosure filled with vapors of another solvent C, non-miscible with A, having a boiling point lower than solvent A and in which the coloring agents used are insoluble; (c) then sending the textile material into another closed enclosure, brought to the boiling temperature, of solvent C, in which solvent C is evaporated and recovered; (d) then, after cooling and quick rinsing in a convenient solvent to remove the non-fixed particles of coloring agents and residual quantities of solvent A, circulating the fabric in a last heated enclosure in order to remove and recover the rinsing solvent and finally winding the dyed fabric, ready for use.

3,753,647

## LIQUID OXYGEN COMPATIBLE DYE PENETRANT METHOD FOR METAL DEFECT INSPECTION

Orlando G. Molina, Westminster, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Mar. 5, 1970, Ser. No. 16,803

Int. Cl. D06p 1/68

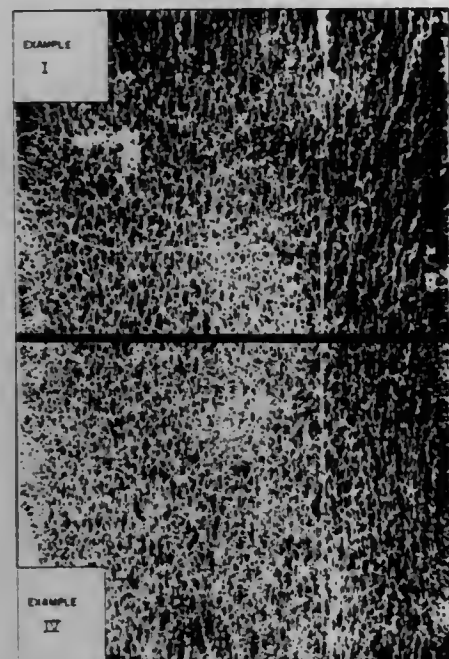
U.S. Cl. 8-85

6 Claims

A liquid fluorescent dye penetrant containing a high volume concentration of a liquid halocarbon is taught as a very sensitive microdefect detector on metal surfaces. The dye penetrant is insensitive to chemical reaction or detonation



with liquid oxygen in a standard impact safety test. The liquid dye penetrant safety factor is important in inspection of metal



components later fabricated into rocket motor systems, which use liquid oxygen (LOX) in propellant systems, or the like powerful liquid oxidizers.

3,753,648

#### PERMANENT PRESS FABRIC RESIN AND PROCESSES THEREFORE

Thomas M. Powanda, Middlesex; Lawrence B. Holzman, West Orange, and James E. Tracy, Bernardsville, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 20, 1971, Ser. No. 135,778

Int. Cl. D06m 15/54; C07d 51/42

U.S. Cl. 8—115.7

7 Claims

2,7-dioxo-4,5-dimethyl-decahydropyrimido-[4,5-d]-pyrimidine is reacted with glyoxal and the resulting adduct methylolated with formaldehyde to produce the corresponding methylolated derivative which exhibits very desirable properties as a permanent press resin for fabrics.

3,753,649

#### TREATMENT OF KERATINOUS FIBRES AND FABRICS

Bryan Dobinson, Duxford; Derek James Rowland Massey, Linton; Kenneth Winterbottom, Whittlesford, and Brian Robinson, Meston, all of England, assignors to Clba-Gelgy AG, Basel, Switzerland and I. W. S. Nominee Company Limited, London, England

Filed Feb. 10, 1971, Ser. No. 114,398

Claims priority, application Great Britain, Feb. 26, 1970, 9,477/70

Int. Cl. D06m 3/06, 15/00

U.S. Cl. 8—127.6

15 Claims

This invention relates to a process for modifying keratinous material, and, in particular, to a process for rendering the material resistant to shrinkage and to a process for imparting durable press characteristics to the material. This process comprises treating the material with a resin having at least two thiol groups per molecule and containing a radical of a polyhydric alcohol, bound to this radical, at least two poly(oxyalkylene) chains, at least two radicals of a thiol-containing aliphatic carboxylic acid or of a thiol-containing aliphatic alcohol. As curing catalyst a sulfur-containing organic compound is used.

3,753,650

#### METHOD OF DYEING FIBERS

Shiro Shimauchi; Norihiro Minemura; Takeshi Matsui; Kenji Ito Osaka; Takeo Shima; Shoji Kawase, and Masataka Oshima, all of Iwakuni, Japan, assignors to Teijin Limited, Kita-ku, Osaka, Japan

Division of Ser. No. 804,294, March 4, 1969, Pat. No.

3,666,403. This application Feb. 29, 1972, Ser. No. 230,497

Int. Cl. D06p 5/04

U.S. Cl. 8—171

3 Claims

A method of dyeing a textile fiber selected from the group consisting of the modified polyester, polyvinyl chloride, polyacrylonitrile and cellulose acetate fibers, such method comprising dyeing the fibers with an anionic dyestuff in the presence of at least one compound selected from tertiary tributyl phosphine and triphenyl phosphine.

3,753,651

#### METHOD AND APPARATUS FOR SURFACE STERILIZATION

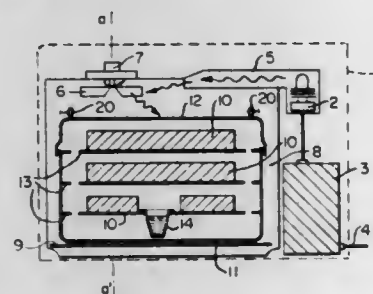
Raymond M. G. Boucher, New York, N.Y., assignor to Wave Energy Systems Inc., New York, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,337

Int. Cl. A61l 1/00, 3/00

U.S. Cl. 21—54 R

16 Claims



A method and apparatus for the rapid sterilization of a contaminated surface which involves the use of microwave energy fields combined with a humid atmosphere having a relative humidity of at least 50 percent. The material to be sterilized is placed into a self-sealed container at least partially transparent to microwaves. Said container is then introduced into an oven cavity. The moist atmosphere is confined inside the container walls. Through both thermal and non-thermal effects, surface decontamination by electromagnetic radiation takes place in a matter of minutes. The apparatus of the invention eliminates potential oven walls contamination and is entirely safe from the radiation view point. It can be operated by unskilled personnel.

3,753,652

#### METHOD OF RECORDING LIQUID FLOW OVER A SOLID SURFACE

Hans Ulrich Gassmann, Fribourg, and Ulrich Frauchiger, Marly, both of Switzerland, assignors to Clba-Gelgy AG, Basel, Switzerland

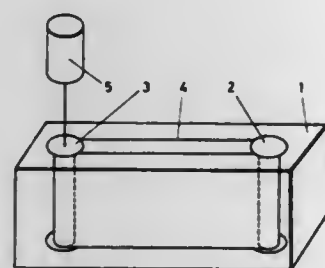
Filed Feb. 3, 1971, Ser. No. 112,155

Claims priority, application Switzerland, Feb. 13, 1970, 2135/70

Int. Cl. D06p 3/12; G01n 33/00; G03c 5/24

U.S. Cl. 23—230 R

11 Claims



This invention relates to a method of recording liquid flow over a solid surface: The solid surface is covered with a thin

coating film which contains a diffusible substance. A liquid is caused to flow over the coated surface. The liquid contains in dissolved form a substance which reacts with said diffusible substance to yield a reaction product, preferably a colored reaction product, that is visible in the coating and sparingly soluble in the flowing liquid. The method is particularly useful for testing the conditions in photographic processing baths in a simple manner.

3,753,653

#### METHOD AND APPARATUS FOR GASEOUS-PHASE CHEMICAL REACTION ANALYSIS

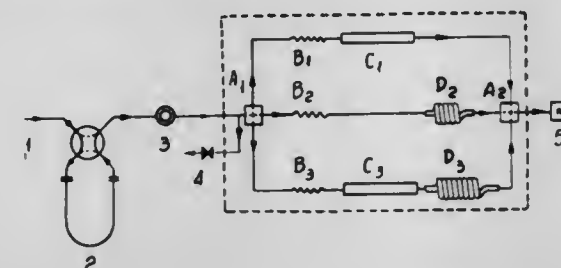
Antonio Mario Brieva, Vicente Lopez, and Nestor Luis Soullages, LaPlata, both of Argentina

Filed Mar. 1, 1971, Ser. No. 119,681

Int. Cl. G01n 31/08, 31/12

U.S. Cl. 23—230 R

18 Claims



Method and apparatus for gas analysis by chemical reaction in the gas phase, and determination of the components by chromatographic detecting means, comprising the steps of injecting a sample into a gaseous carrier stream, dividing the sample-carrying gaseous carrier stream into at least two parts for being conveyed through independent supply branches, passing at least one of the branched streams through a chemical reactor for selectively modifying the composition of the sample, adjusting the residence of the parts in the branches to different times, and conveying the branched parts or streams into a passage leading to the detecting means, so that they will arrive there separately and without interference.

The invention also relates to an apparatus for carrying out the method, for analyzing the gases by chemical reaction and determination of the components by chromatographic detecting means.

3,753,654

#### METHOD FOR DETERMINING ORGANIC MATERIALS IN WATER

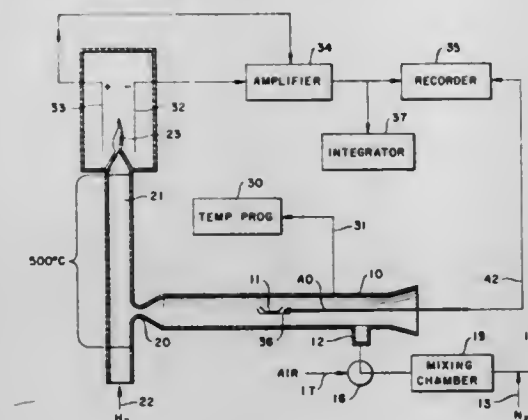
Frank T. Eggertsen, Orinda, Calif., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 013,416, Feb. 24, 1970, abandoned. This application July 14, 1971, Ser. No. 162,691

Int. Cl. G01n 33/18, 25/20

U.S. Cl. 23—230 PC

5 Claims



A method for estimating the amount and volatility of organic materials in contaminated water samples wherein a sample of the contaminated water is moved into a heated furnace and the vapors swept directly into a flame-ionization detector.

3,753,655

#### PROCESS FOR ISOLATION AND SEPARATION OF THYROID HORMONES

Bernhard Schreiber; Gunter Knapp, both of Graz, and Hans Spitz, Herrengasse, all of Austria

Filed Nov. 9, 1971, Ser. No. 197,133

Int. Cl. B01d 15/08; C07c 101/72; G01n 33/16

U.S. Cl. 23—230 B

8 Claims

A process for isolating and separating the thyroid hormones triiodothyronine and thyroxine from blood serum which comprises first isolating the hormones from the serum by means of a mixed cationic-anionic dextran ion exchanger, and then separating the hormones from each other by the use of an anionic dextran ion exchanger. This procedure permits the satisfactory removal of interfering substances from the serum without decomposing the two thyroid hormones and can be used with advantage on a small scale, for example, in a clinical diagnostic kit.

3,753,656

#### GAS CHROMATOGRAPH

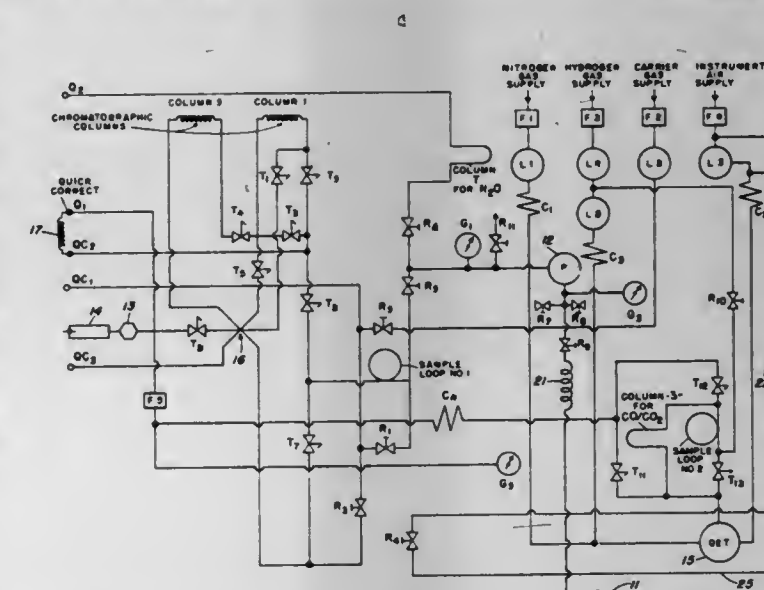
James H. Matson, Kent, Wash., and Robert Goings, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 7, 1971, Ser. No. 132,029

Int. Cl. G01n 31/08, 31/10

U.S. Cl. 23—232 E

15 Claims



The inventive gas chromatograph employs the response of a flame ionization detector to test air and liquid and gaseous oxygen and nitrogen for the presence and amounts of the following impurities: total hydrocarbons, individual hydrocarbons, carbon monoxide/carbon dioxide, water and freons. The invention is portable and may be used for quality control and quality assurance testing and has a sensitivity in the range of parts per million (ppm) by volume. The invention can accept a low pressure range of gases for analysis and is designed to sample fluids at cryogenic temperatures for a direct analysis from closed piping systems. The invention further utilizes two chromatographic columns, is designed to permit carrier gas backflushing of each of these columns and further features the backflushing of one column into the other column.

3,753,657

#### AUTOMATIC TEST TUBE TRANSPORTER AND SAMPLE DISPENSER HAVING SOLID STATE CONTROLS

Harvey T. Downing, Huntsville; Charles V. Lawson, Arab, and Byron E. Sturgis, Huntsville, all of Ala., assignors to Micromedic Systems, Inc., Philadelphia, Pa.

Filed June 11, 1971, Ser. No. 152,189

Int. Cl. G01n 21/00

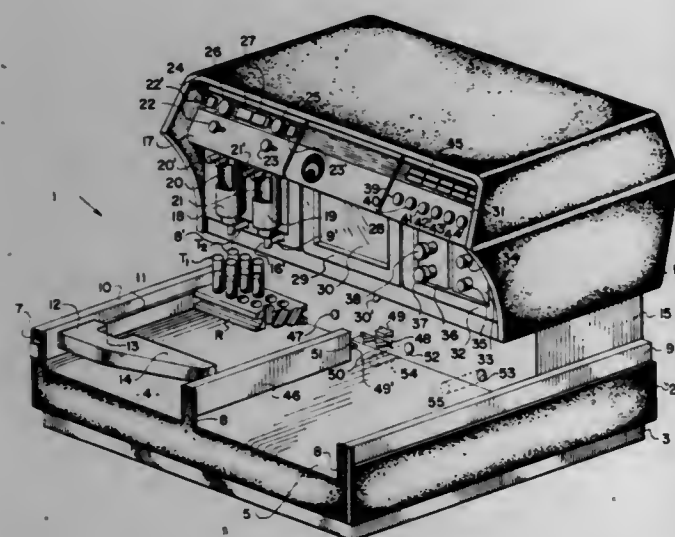
U.S. Cl. 23—253 R

48 Claims

An automatically controlled test tube transporter apparatus which advances a test tube rack containing two rows of recep-



tacles for test tubes under a vertically movable aspirating and dispensing tip or nozzle which is adapted to move down into adjacent tubes and aspirate or discharge depending on the test to be performed. The tip is operationally in communication with a twin pipette metering and dispensing apparatus which includes a linearly adjustable eccentric mechanism which drives the pipette pistons with a motion of adjustable sinusoidal amplitude. The apparatus includes a solid state control circuit which includes a binary shift register. The pipettes may be adjusted to either work in parallel or alternating



strokes. An automatic tip wiping mechanism, controlled by the operation of the tip, is provided to insure precision in the processing. The apparatus is adapted to be set for continuous operation or for individual test tube processing cycle operation. Empty racks can be advanced without engaging the tip and pump apparatus. The pipetting mechanism may be operated separately without the operation of the transporting mechanism. A malfunction and alarm logic circuit gives a warning in case of certain malfunctions and stops the apparatus.

3,753,658

**CARBON BLACK APPARATUS**

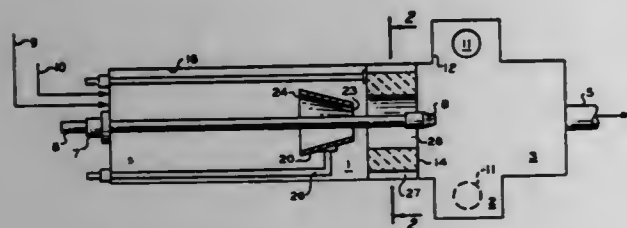
Eulas W. Henderson, Bartlesville, Okla., and Glenn J. Forseth, Phillips, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 769,281, Oct. 21, 1968, Pat. No. 3,619,141. This application Mar. 15, 1971, Ser. No. 124,494

Int. Cl. C09c 1/50; F23c 5/06

U.S. Cl. 23—259.5

7 Claims



A carbon black reactor which comprises an axial zone, a combustion zone and a carbon black producing zone in contiguous alignment, said axial zone having choke means slidably positionable therein, said choke means having an axial passageway therethrough, and at least one aperture providing open communication between the downstream end of said choke and the upstream end of said choke.

3,753,659

**DOSING OF LIQUIDS**

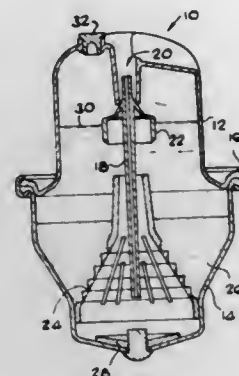
Johann Nicolaas Raubenheimer, Bedfordview, Republic of South Africa

Claims priority, application South Africa, Mar. 2, 1970, 1366

Int. Cl. B01d 11/02, 15/02, 59/24; E03d 3/16, 3/18

U.S. Cl. 23—267 A

8 Claims



This invention concerns an apparatus for dosing liquids especially swimming pool water. The apparatus comprises a container for dosing liquid having an outlet as the only open part therefrom and means for enabling the container to be surrounded by liquid to be dosed. The container may be a transparent container immersed in the liquid to be dosed.

3,753,660

**HEATER FOR TUBE REACTORS**

Ferdinand Langenhoff, Ranzel; Erich Termin, Laufenburg; Otto Bleh, Bergheim, Sieg, and Rico Kolb, Ranzel, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, Postfach, Germany

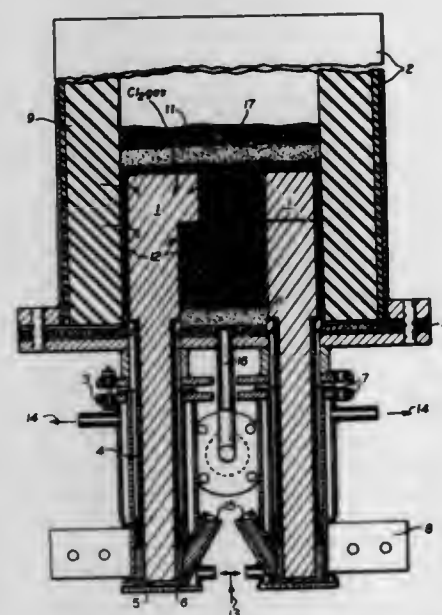
Filed Nov. 20, 1970, Ser. No. 91,408

Claims priority, application Germany, Sept. 16, 1969, P 19 46 718.6

Int. Cl. H05b 3/66; B01d 1/00

U.S. Cl. 23—277 R

3 Claims



In a tubular reactor carrying a bed of solid material into which carbon electrodes project for heating the material upon passage of a current, the outside ends of said electrodes being connected to metallic conductors in turn connected to a supply of current, the invention involves pouring lead about the end of each electrode to effect improved contact between the electrode and its respective metallic conductor. The process involving use of such electrodes to react carbon with chlorine and the oxide of silicon or metals such as vanadium, titanium or zirconium is also covered.

3,753,661

**APPARATUS FOR THE PREPARATION OF FILAMENTARY MATERIAL**

Frank Holmes Simons, Matthews, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

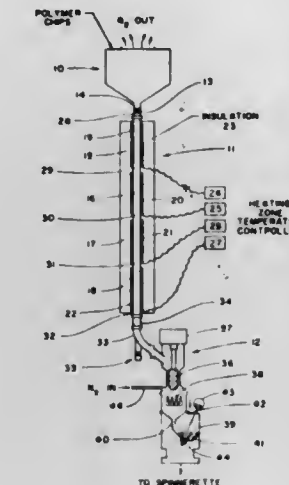
Continuation of Ser. No. 857,257, July 23, 1969, abandoned.

This application Feb. 8, 1971, Ser. No. 113,597

Int. Cl. C08g 35/00

U.S. Cl. 23—285

2 Claims



Apparatus for the manufacture of linear condensation polymers of increased relative viscosity employing in combination a means for feeding pre-formed particulate polymeric material of lower viscosity to a heating means which heats the material to a temperature lower than its melting point and subsequently passing the heated particulate material to a melting means for melting the particulate material whereby the melted material can be extruded.

3,753,662

**SYNTHESIS REACTOR WITH PARTICULAR COOLING MEANS FOR EXOTHERMIC REACTIONS AT HIGH PRESSURE**

Giorgio Pagani, and Giorgio Gramatica, both of Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 675,988, Oct. 17, 1967, abandoned.

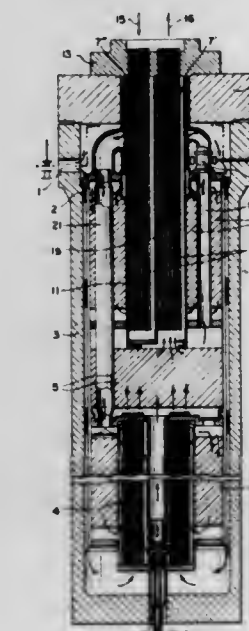
This application Nov. 3, 1970, Ser. No. 86,413

Claims priority, application Italy, Oct. 18, 1966, 28,961 A/66

Int. Cl. B01J 9/04

U.S. Cl. 23—289

7 Claims



Apparatus for high pressure-exothermic and catalytic reactions in the gaseous phase, for instance the synthesis of ammonia or methanol, has a substantially cylindrical shape and contains more than one superimposed catalyst bed and a cool-

ing heat exchanger of the tube bundle type, the tube bundle is contained in a substantially cylindrical and coaxial shell and is longitudinally and completely partitioned into first and second separate halves by a plane baffle which substantially contains the axis of said tube bundle. The outlet opening on the shell side of the first half is directly connected to the inlet of a first catalyst bed. The inlet opening on the shell side of the second half is directly connected to the outlet of said first catalyst bed. The outlet opening on the shell side of the second half is directly connected to the inlet of a subsequent catalyst bed.

3,753,663

**BLANK FOR SHADOW MASK FOR COLOR TELEVISION PICTURE TUBE**

Joseph M. Black, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

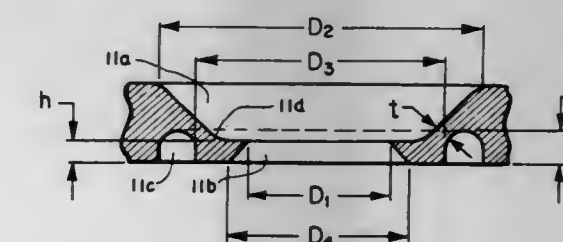
Division of Ser. No. 850,408, Aug. 15, 1969, Pat. No.

3,653,900. This application Oct. 7, 1971, Ser. No. 187,487

Int. Cl. B21c 37/00

U.S. Cl. 29—190

5 Claims



The shadow mask of a color picture tube is formed by etching a blank to provide a field of apertures individually having a large diameter portion and a coaxially aligned, small diameter portion attached to the former by a thin wall section. In screening a tube which is to utilize such a shadow mask for color selection, the phosphor materials are deposited on the screen in a photographic process involving the exposure of a layer of photosensitive material by actinic energy directed through the small diameter portions of the mask apertures. After screening has been accomplished, the thin wall sections are etched away, leaving the mask with apertures of large diameter, larger than the phosphor deposits on the screen.

3,753,664

**HARD IRON ELECTROPLATING OF SOFT SUBSTRATES AND RESULTANT PRODUCT**

Otto J. Klingenmaier, Warren, and John T. McWatters, Roseville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1971, Ser. No. 202,014

Int. Cl. C23b 5/04, 5/50; B23p 3/22

U.S. Cl. 29—191

4 Claims

Substrates having low surface strengths are plated with high stress iron by first depositing a layer of low stress iron on the substrate before plating the high stress iron. The low stress iron layer acts like a buffer to mitigate the surface disruptive affects of the high stress iron on the substrate.

3,753,665

**MAGNETIC FILM PLATED WIRE**

Richard O. McCarty, and Fred E. Luborsky, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 658,942, Aug. 7, 1967, abandoned.

This application Nov. 12, 1970, Ser. No. 89,002

Int. Cl. B21f 19/00; C23b 5/58

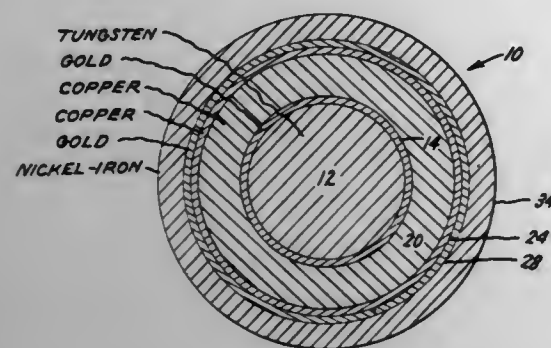
U.S. Cl. 29—191.6

5 Claims

A small diameter magnetic film plated wire for memory devices is constructed utilizing an inner core selected from the



group consisting of tungsten and molybdenum. In a preferred embodiment of the magnetic film plated wire, a tungsten core is successively overlaid with a gold strike layer, a rapidly



deposited relatively thick copper conductive layer, a slowly deposited smooth copper layer, a gold layer and a circumferentially oriented magnetic nickel-iron film.

3,753,666

#### NOBLE METALS HAVING A HIGH EMITTANCE COATING OF IRON TITANATE

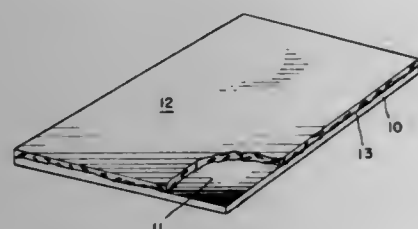
David F. Carroll, Hermosa Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 4, 1967, Ser. No. 687,594

Int. Cl. C23c 5/00; C23d 5/10

U.S. Cl. 29-195

5 Claims



A method of applying a high-emittance coating to the noble metals and intra-alloys thereof, the coating being applied by plasma arc spraying iron titanate powder on the surface of the noble metal.

A substrate of a noble metal or intra-alloy thereof having a high emittance coating of iron titanate bonded thereon.

3,753,667

#### ARTICLES HAVING ELECTROLESS METAL COATINGS INCORPORATING WEAR-RESISTING PARTICLES THEREIN

Willy Metzger, Rudi Ott, Gunter Pappe, and Helmut Schmidt, all of Solingen-Merscheid, Germany, assignors to General American Transportation Corporation, Chicago, Ill.

Division of Ser. No. 698,127, Jan. 16, 1968, Pat. No.

3,617,129. This application Sept. 28, 1970, Ser. No. 76,273

Int. Cl. B32b 15/00

U.S. Cl. 29-195

23 Claims

There are disclosed processes for electroless metallizing workpieces to provide thereon a metal coating incorporation therein non-metallic wear-resisting particles and the coated workpieces produced by such processes, the processes comprising contacting the workpieces with an electroless metallizing bath consisting of an aqueous solution of a metal salt and an electroless reducing agent therefor and a quantity of non-metallic wear-resisting particles, wherein the particles are essentially insoluble in the plating bath and are non-catalytic and inert with respect thereto, the particles being present in the bath in an amount by weight no greater than about four times the weight of the metal in the bath expressed as free metal, and maintaining the particles in suspension throughout

the bath during the metallizing of the workpiece; the electroless coating with the wear-resisting particles therein may be heat treated by heating to an elevated temperature in the range 100°C. to 600°C. for one hour or more further to harden the coating.

3,753,668

#### DIFFUSION COATED METALLIC SUBSTRATE

Howard D. Flicker, North Miami, Fla., assignor to API Corporation, Miami, Fla.

Filed Apr. 16, 1970, Ser. No. 29,303

Int. Cl. C23c 3/04, 9/00

U.S. Cl. 29-196

7 Claims

A diffusion coated metallic substrate is formed by providing a coating metal or element and a balancing metal or element on the substrate and adjusting the amount of the coating and balancing elements or metals so that the resulting coating has a coefficient of thermal expansion approximately the same as the substrate. A large atomic volume element is included in the coating to fill void flaws in the coating.

3,753,669

#### COINAGE MATERIALS

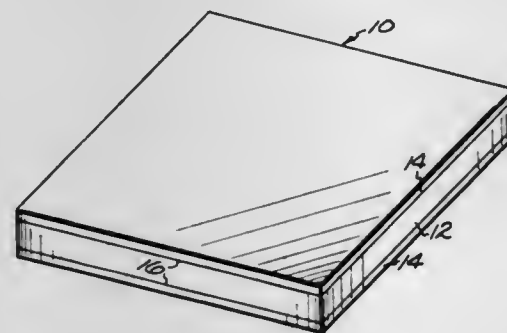
Richard L. Churchill, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 22, 1971, Ser. No. 210,656

Int. Cl. B23p 3/00, 3/06

U.S. Cl. 29-199

10 Claims



Novel and advantageous metal laminates of low cost, non-magnetic materials, and coins made from the laminates, comprise outer cladding layers of coin silver or cupronickel metal-lurgically bonded to opposite sides of a core layer of nickel silver to provide substantially uniform color along the edges of the laminates and coins and to provide the coins with properties useful in coinage discrimination.

3,753,670

#### HYDROCARBON FUEL COMPOSITIONS

Aart Strang, Amsterdam, Netherlands, and Isaac C. H. Robinson, Chester, England, assignors to Shell Oil Company, New York, N.Y.

Filed June 30, 1970, Ser. No. 51,363

Claims priority, application Great Britain, June 30, 1969, 32906/69

Int. Cl. C10I 1/22

U.S. Cl. 44-72

4 Claims

Liquid hydrocarbon fuel compositions, especially gasolines, containing certain hydrocarbyl polyamines, effectively nullify and/or inhibit fouling of vital parts of internal combustion engines.

3,753,671

#### PRODUCTION OF SYNTHETIC NATURAL GAS AND HYDROGEN FROM THE GASIFICATION OF CARBONACEOUS MATERIALS

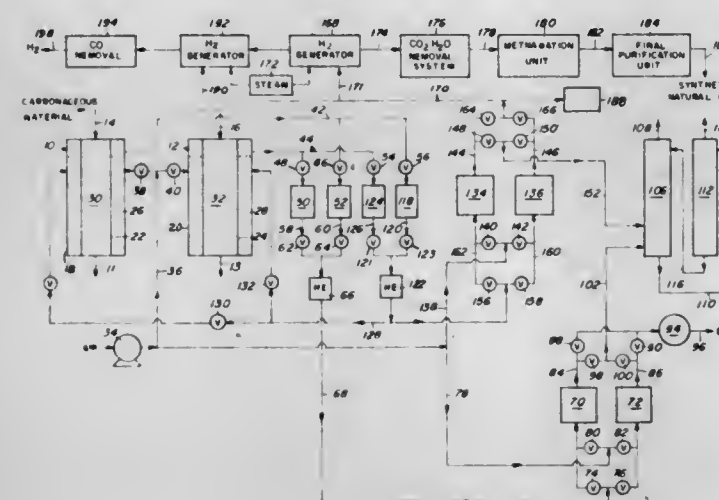
Lawrence E. Leas, Simi, Calif.; Robert L. Leas, and Cecil J. Johnson, Columbia City, Ind., assignors to Leas Brothers Development Corporation, Columbia City, Ind.

Filed July 9, 1971, Ser. No. 161,196

Int. Cl. C10J 3/04

U.S. Cl. 48-210

7 Claims



A method of producing synthetic natural gas using the gasification products of coke, coal, or other carbonaceous materials.

3,753,672

#### METHOD FOR FORMING GLASS FIBERS

Lawrence E. Curtiss, Englewood, N.J., assignor to Basil I. Hirschowitz and C. Wilbur Peters, Ann Arbor, Mich., part interest to each

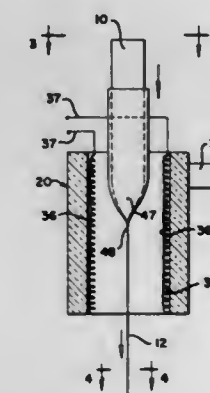
Division of Ser. No. 657,325, May 6, 1957, Pat. No. 3,589,793.

This application June 28, 1971, Ser. No. 157,585

Int. Cl. C03c 25/02; C03b 5/26

U.S. Cl. 65-3

6 Claims



A method of forming an optical light transmitting glass coated glass fiber from a clear optical solid first glass body having a predetermined index of refraction and a second glass body surrounding the first glass body and having a lower index of refraction than the first body comprising: in one continuous step heating adjacent ends of the two glass bodies to a temperature, where the glass is sufficiently plastic to be drawn, and drawing glass from the heated ends while maintaining their temperature substantially constant to form a fiber comprising a continuous glass core of one predetermined index of refraction and a continuous glass coating of a lower index of refraction which is fused with the core in one solid mass and is adapted to prevent light from escaping from the core into the coating.

3,753,673

#### PRESS BENDING OF GLASS SHEETS

John Pickard, Studley, and Thomas Cartledge, Teesside, both of England, assignors to Triplex Safety Glass Company Limited, London, England

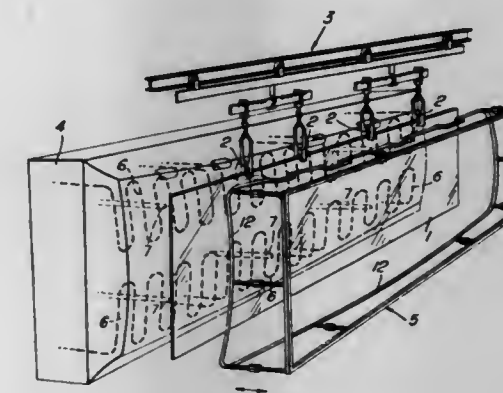
Filed July 2, 1969, Ser. No. 838,612

Claims priority, application Great Britain, July 12, 1968, 33,394/68

Int. Cl. C03b 23/02

U.S. Cl. 65-106

7 Claims



A glass sheet is bent to a required curvature between two relatively movable complementary bending dies which deform the glass sheet, which is heated to a temperature at which it is pliable. The respective overall heat losses from the two major surfaces of the glass sheet are adjusted during the bending operation so as to be substantially equal. For example, heat loss to one die may take place predominantly by conduction and the temperature of this die may be controlled, by means of heaters, to regulate the conductive heat loss associated with this die and effect the required heat loss balance.

3,753,674

#### THERMAL TEMPERING OF GLASS HAVING SHORT STRAIN POINT-TO-SOFTENING POINT INTERVAL

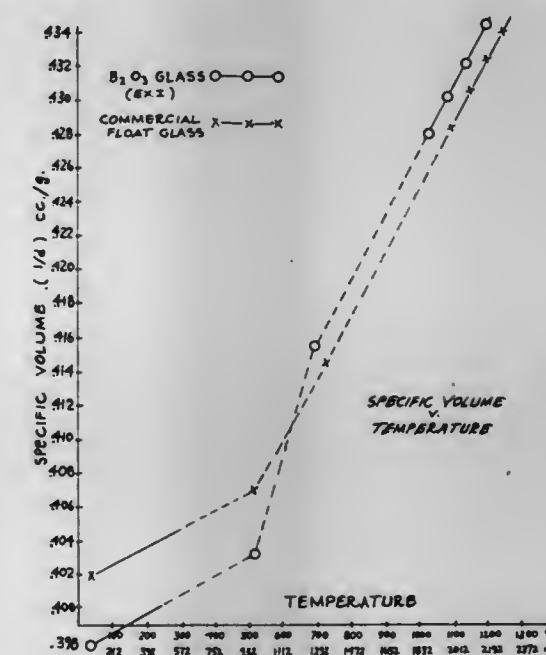
Stanley M. Ohlberg, Pittsburgh, and Leighton E. Orr, Tarentum, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 10,641, Feb. 11, 1970, abandoned. This application Jan. 18, 1971, Ser. No. 107,353

Int. Cl. C03b 27/00

U.S. Cl. 65-114

5 Claims



Thermal tempering propensity of alkali-alkaline earth-silica glass can be enhanced by changing the chemical composition such that the temperature interval between the softening point and the strain point is decreased. Addition of B<sub>2</sub>O<sub>3</sub> and/or TiO<sub>2</sub> in commercial alkali-alkaline earth-silica glass yields the above-mentioned result.







3,753,685

**GAS BLOWING METHOD INTO FLUIDIZED BED**  
Osamu Tajima; Kouji Moriyama, both of Kawasaki, and Daizo Kunii, Tokyo, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan, by said Tajima and Moriyama

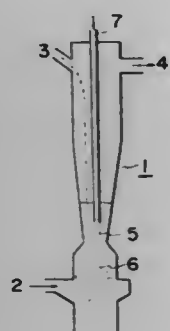
Filed Nov. 17, 1970, Ser. No. 90,413

Claims priority, application Japan, Nov. 28, 1969, 44/95150

Int. Cl. C21b 1/02

U.S. Cl. 75-9

1 Claim



A method of blowing reactant gas into a fluidized bed wherein a feeding pipe is inserted from the upper part of the fluidized bed so as to blow the reactant gas in position most effective for reaction.

3,753,686

**RECOVERY OF COPPER, NICKEL, COBALT AND MOLYBDENUM FROM COMPLEX ORES**

Thomas C. Wilder, Cambridge, and John J. Andreola, Reading, both of Mass., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed July 16, 1970, Ser. No. 55,608

Int. Cl. C21b 1/02; C22b 3/00, 15/18

U.S. Cl. 75-21

8 Claims

Copper, nickel, cobalt and molybdenum may be leached from complex ores containing manganese, iron, copper, nickel, molybdenum, and cobalt after the complex ore is roasted with a carbon containing material.

3,753,687

**A PROCESS OF TREATING IRON OXIDE PELLETS WITH A CHLORIDE AND PRODUCING IRON PELLETS THEREFROM**

Conrad B. Bare, Coopersburg, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Dec. 7, 1970, Ser. No. 95,936

Int. Cl. C21b 13/08

U.S. Cl. 75-33

5 Claims

Balled iron ore concentrates which have been soda-roasted and leached to extract non-ferrous metal values, such as vanadium and chromium, therefrom are soaked in an aqueous solution of ferrous chloride ( $\text{FeCl}_2$ ) or waste hydrochloric acid pickle liquor or calcium chloride ( $\text{CaCl}_2$ ) for a time sufficient to saturate the partially hardened pellets. The pellets, a carbonaceous reducing agent and a desulfurizing agent are charged into a furnace. The charged materials are heated to a temperature, for example, about 2,050° F., for a time in a reducing atmosphere to reduce a substantial portion of the iron oxide therein to metallic iron.

3,753,688

**METHOD OF MELTING METAL**

Anatoly Alexeevich Cherny; Vladimir Alexandrovich Grachev, both of Penza; Lev Mikhailovich Marlenbakh, Moscow; Ivan Lukich Kurbatsky, Penza; Stepan Frolovich Fomin, Penza; Efim Davidovich Sosnovsky, Penza, and Nikolai Semenovich Pavlenko, Penza, all of U.S.S.R.

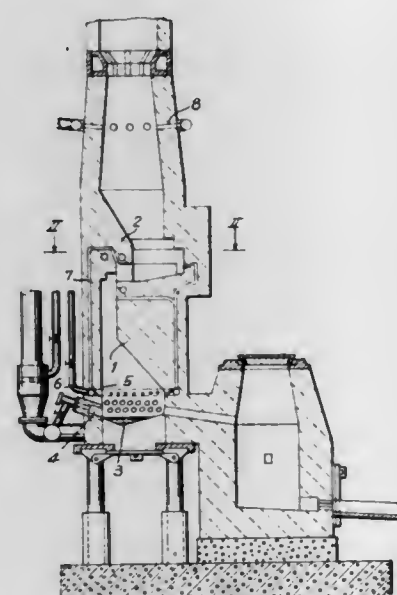
Continuation of Ser. No. 29,773, April 28, 1970, abandoned, which is a continuation of Ser. No. 658,472, Aug. 4, 1967,

abandoned. This application Feb. 22, 1972, Ser. No. 228,248 Claims priority, application U.S.S.R., Aug. 6, 1966, 1096478

Int. Cl. C21b 11/02, 13/02

U.S. Cl. 75-43

4 Claims



Metals are melted in a gas cupola furnace by introducing a hydrocarbon such as natural gas to the high temperature regions of the furnace, preferably after preheating the hydrocarbon.

3,753,689

**PROCESS FOR OBTAINING A RAPID MIXING OF LIQUID METALS AND SLAG IN ORDER TO ACCELERATE SOME REACTIONS BETWEEN THE TWO PHASES**

Aldo Ramacclotti, Rome, Italy, assignor to Centro Sperimentale Metallurgico SpA, Rome, Italy

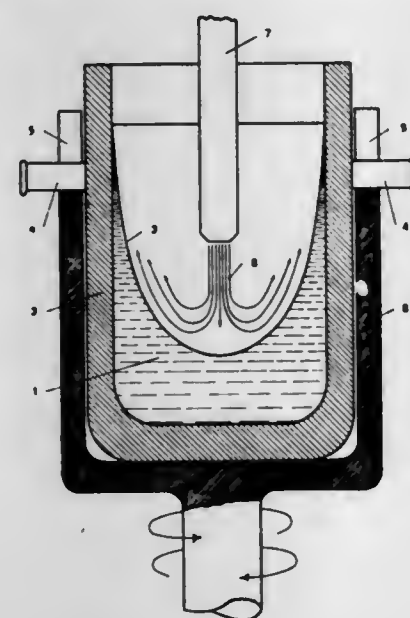
Filed June 25, 1970, Ser. No. 49,782

Claims priority, application Italy, July 1, 1969, 19000 A/69

Int. Cl. C21c 7/00, 7/06

U.S. Cl. 75-51

8 Claims



A process for emulsifying the constituents of a molten bath found in metallurgical refining applications. Immiscible con-

stituents are delivered to a stationary reactor; the reactor is rotated about the vertical axis thereof; rotation is ceased for less than thirty seconds; and rotation of the reactor about the vertical axis occurs in the opposite direction. Gases are blown axially at and over the surface of the molten bath to provide a particular gaseous atmosphere.

3,753,690

**TREATMENT OF LIQUID METAL**

Edward Frederick Emley, Chalfont St. Giles, and Malcolm Victor Brant, Stoke Poges, both of England, assignors to The British Aluminium Company Limited, Gerrards Cross, England

Continuation-in-part of Ser. No. 835,872, June 2, 1969, abandoned. This application Sept. 10, 1970, Ser. No. 71,112 Claims priority, application Great Britain, Sept. 12, 1969, 45,163/69

Int. Cl. C22b 21/06, 9/10

U.S. Cl. 75-68 R

14 Claims

A process for removing non-metallic constituents in molten metal, particularly aluminium and its alloys. In one treatment the metal is flowed through a multiplicity of flux-lined channels which are conveniently provided by a bed of flux-coated granules of a size such that the channels are large enough not to become clogged during use. In another treatment the metal is degassed by continuously passing it through a containing vessel while passing a substantially inert gas such as nitrogen therethrough under a flux cover; this can be followed by passing the metal through the flux-lined channels.

3,753,691

**PROCESS FOR EXTRACTING COPPER FROM SULFIDE ORES**

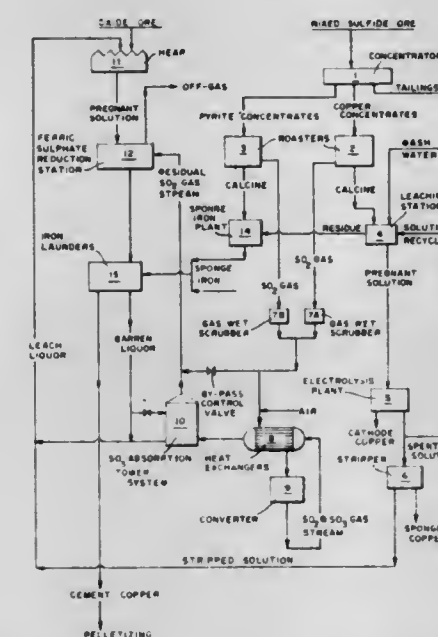
Kenneth M. Grover, Pound Ridge, N.Y.; George B. Knecht, and John J. Tully, both of Stamford, Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Jan. 14, 1970, Ser. No. 2,891

Int. Cl. C22b 15/08

U.S. Cl. 75-101 R

10 Claims



A process for extracting nonferrous metal values from ores by leaching said ores with an aqueous sulphuric acid solution produced by absorbing sulphur trioxide in barren leach liquor coming from hydrometallurgical operations. The process provides wet scrubbing a sulphur dioxide bearing gas, catalytically oxidizing at least a portion of the moisture laden scrubbed sulphur dioxide bearing gas to produce a gas stream containing controlled amounts of sulphur dioxide and sulphur trioxide, absorbing the sulphur trioxide values in barren leach liquor to produce aqueous sulphuric acid for leaching said ores and utilizing said sulphur dioxide values to reduce ferric sulphate to ferrous sulphate present in the pregnant solution resulting from said acidic leaching operation.

3,753,692

**PROCESS FOR THE COPRODUCTION OF ZINC AND SULPHURIC ACID FROM ZINC SULPHIDE ORES**

Kenneth Arthur Bouchier, Bundoor, Victoria, and Donald Fergusson Stewart, Doncaster, Victoria, both of Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Victoria, Australia

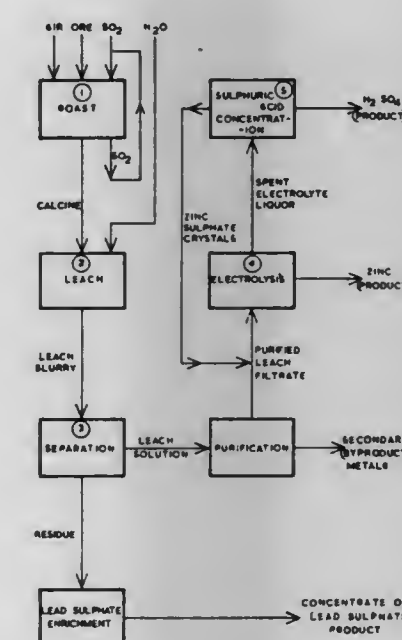
Filed Aug. 4, 1970, Ser. No. 60,908

Claims priority, application Australia, Aug. 20, 1969, 59791/69; May 21, 1970, 1283/70

Int. Cl. C01g 9/00; C01b 17/72

U.S. Cl. 75-115

4 Claims



A process for the production of zinc and sulphuric acid comprising leaching solid zinc sulphate with an aqueous liquor to form a leach liquor, electrolyzing the latter to obtain zinc and a spent electrolyte comprising sulphuric acid, concentrating the sulphuric acid content in the spent electrolyte to precipitate the bulk of the residual zinc sulphate as a solid, separating the latter and so obtaining a sulphuric acid filtrate, and recycling said precipitated zinc sulphate to the electrolysis step in the next cycle by dissolving it in the aqueous leach liquor fed to the electrolysis step. Preferably the starting material (zinc sulphate) is obtained by a controlled oxidation (sulphating) roast of zinc sulphide ore or zinc containing residues obtained in zinc manufacturing processes.

3,753,693

**CHROMIUM-NICKEL-MANGANESE-NITROGEN AUSTENITIC STAINLESS STEEL**

Ronald H. Espy, Randallstown, Md., assignor to Armco Steel Corporation, Middletown, Ohio

Filed May 6, 1971, Ser. No. 141,005

Int. Cl. C22c 39/20

U.S. Cl. 75-128 A

9 Claims

An austenitic stainless steel having good austenite stability, a very low work hardening rate and excellent weld ability by fillerless fusion welding techniques comprising from 17 to 19 percent chromium, from 4 to 10 percent nickel, from 11 to 13 percent manganese, from 0.01 to 0.16 percent nitrogen, 0.06 maximum carbon, up to 1 percent silicon, up to 2 percent molybdenum, up to 1.5 percent copper, and remainder iron except for incidental impurities. The 0.2 percent yield strength of the steel in the annealed condition ranges from about 172.5 to 345 MN/m<sup>2</sup> (25 to 50 ksi). The alloys have particular utility in applications involving cold heading.



3,753,694

**PRODUCTION OF COMPOSITE METALLIC ARTICLES**  
 Frank A. Badia, Ringwood, N.J.; Donald F. MacDonald, Warwick, and Frank J. Ansuini, Suffern, both of N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.  
 Filed July 6, 1970, Ser. No. 52,713  
 Int. Cl. C22c 1/10

U.S. Cl. 75—135

Composites formed of incompatible constituents, i.e., constituents which are mutually insoluble, are produced by introducing at least one such constituent in coated form into a molten bath of the other, the bath being subjected to the influence of a vortex.

25 Claims

3,753,695

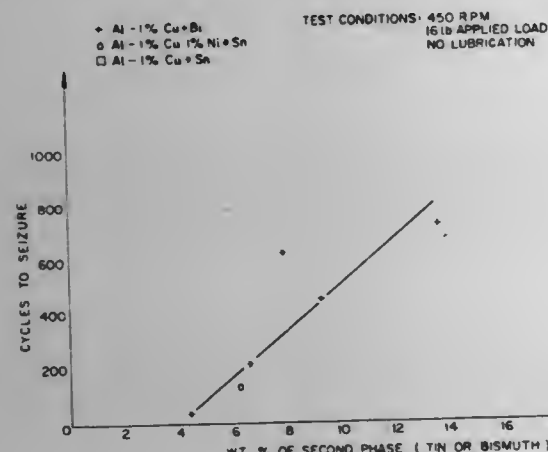
**BEARING MATERIALS**

Kenneth Lloyd, London, England, assignor to The Glacier Metal Company Limited, Alpertown, England  
 Filed Feb. 11, 1971, Ser. No. 114,660

Claims priority, application Great Britain, Feb. 13, 1970, 7,058/70

Int. Cl. C22c 21/02

U.S. Cl. 75—143



The invention is a bearing material of which a major constituent is aluminum characterised by between 1 percent and 16 percent (preferably between 3 percent and 7 percent or between 7 percent and 10 percent or between 10 percent and 16 percent of bismuth by weight, and optionally including 0-3 percent copper, 0-3 percent nickel, 0-3 percent manganese, 0-11 percent silicon.

3,753,696

**HIGH STRENGTH COPPER ALLOY HAVING AN EXCELLENT FORMABILITY AND PROCESS FOR PRODUCING THE SAME**

Motonobu Shibata, Inazawa, and Yoshitsugu Mishima, Tokyo, both of Japan, assignors to NGK Insulators, Ltd., Aichi, Japan

Filed Jan. 22, 1971, Ser. No. 108,994

Claims priority, application Japan, Sept. 2, 1970, 45/76893

Int. Cl. C22c 9/04; C22f 1/08

U.S. Cl. 75—157.5

1 Claim

A high strength copper alloy having excellent formability consisting of from 0.2 to 0.5 percent by weight of beryllium, from 2.0 to 12.0 percent by weight of aluminum, from 0.5 to 10.0 percent by weight of zinc and the remainder of copper is disclosed. The copper alloy disclosed can be produced by melting a copper-beryllium master alloy, aluminum, zinc and copper so as to provide the above specified composition, casting the alloy into an ingot, hot working the ingot at about 800°C, cold working the ingot into the specified dimension, and then subjecting it to solution annealing at a temperature of from 800°C to 950°C followed by hardening either by cold working or ageing.

3,753,697

**TUNGSTEN FREE ALLOY**

John Hockin; Carl H. Lund, both of Arlington Heights, and Wilbert P. Danesi, Deerfield, all of Ill., assignors to Martin Marietta Corporation, New York, N.Y.

Filed Jan. 18, 1971, Ser. No. 107,338

Int. Cl. C22c 19/00

4 Claims



U.S. Cl. 75—171

High temperature nickel-base alloy containing a base of nickel and about 5.5 percent aluminum, about 0.02 percent boron, about 0.18 percent carbon, about 15 percent cobalt, about 10 percent chromium, about 1.5 percent hafnium, about 3 percent molybdenum, about 4.0 percent titanium, about 1 percent vanadium, about 0.1 percent zirconium.

3,753,698

**NICKEL-BASE ALLOY**

Carl H. Lund, Arlington Heights, Ill., assignor to Martin Marietta Corporation, New York, N.Y.

Filed Jan. 22, 1971, Ser. No. 108,846

Int. Cl. C22c 19/00

U.S. Cl. 75—171

3 Claims



A cast nickel-base alloy containing about 5.75 percent aluminum, about 0.015 percent boron, about 0.11 percent carbon, about 10 percent cobalt, about 8 percent chromium, about 1.5 percent hafnium, about 2 percent molybdenum, about 4 percent tantalum, about 1 percent titanium, about 8 percent tungsten and about 0.08 percent zirconium.

3,753,699

**REFRACTORY METAL ALLOYS FOR USE IN OXIDATION ENVIRONMENTS**

Wallace T. Anderson, Jr., Huntington Beach, and Ralph A. Mendelson, Westminster, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 30, 1971, Ser. No. 214,351

Int. Cl. C22c 27/00

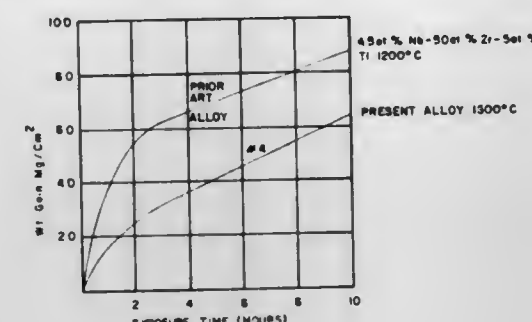
U.S. Cl. 75—174

2 Claims

A refractory metal alloy comprising principally columbium and titanium with lesser amounts of hafnium, vanadium, tungsten, aluminum, and molybdenum provides excellent resistance to air oxidation at high temperature.

The preferred composition range is as follows:

Columbium 48-54 percent; Titanium 23-25 percent; Hafni-



um 9.75-17.5 percent; Vanadium 2-8.75 percent; Tungsten 2.25-2.75 percent; Aluminum 1.8 percent; and Molybdenum 0.7 percent; all parts by weight.

3,753,700

**HEAT RECOVERABLE ALLOY**

John D. Harrison; Jai Y. Choi, both of Palo Alto, and Peter R. Marchant, San Francisco, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed July 2, 1970, Ser. No. 52,112

Int. Cl. C22c 15/00

U.S. Cl. 75—175.5

2 Claims

An alloy capable of having the property of heat recoverability imparted thereto comprising 49.1 to 50.2 atomic percent of titanium, 2.1 to 4.7 atomic percent of iron and the remainder nickel.

3,753,701

**REFRACTORY METAL ALLOYS FOR USE IN OXIDATION ENVIRONMENTS**

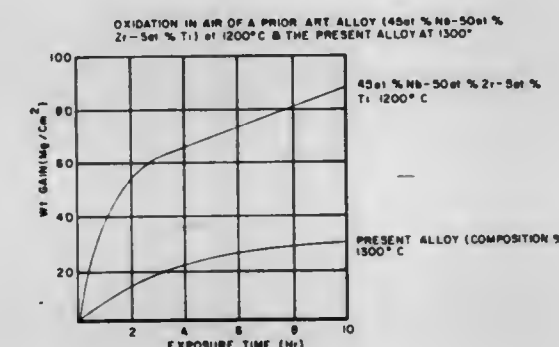
Wallace T. Anderson, Jr., Huntington Beach, and Ralph A. Mendelson, Westminster, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 30, 1971, Ser. No. 214,352

Int. Cl. C22c 15/00

U.S. Cl. 75—175.5

2 Claims



A refractory metal alloy comprising principally columbium and titanium, with lesser amounts of beryllium, chromium, silicon and yttrium provides excellent resistance to air oxidation at high temperature.

The broad composition range is as follows:

Columbium 32.5-46 percent; Titanium 50.5-57.5 percent; Beryllium 0-8 percent; Chromium 2.15-2.6 percent; Silicon 0-8 percent; and Yttrium 0-0.1 percent; all parts by weight.

3,753,702

**PARTICULATE ZINC ALLOYS**

Schrade F. Radtke, New Canaan, Conn., and John A. Lund, Vancouver, British Columbia, Canada, assignors to International Lead Zinc Research Organization, Inc., New York, N.Y.

Continuation of Ser. No. 651,676, July 7, 1967, abandoned.

This application Mar. 9, 1971, Ser. No. 122,509

Int. Cl. C22c 17/00

U.S. Cl. 75—178 R

4 Claims

Zinc base particulate alloys exhibiting both high tensile strength and high ductility, and containing titanium uniformly dispersed throughout the zinc matrix, with the zinc alloy having the form of small particles prepared by a melt-fragmentation process, such as atomisation or shotting. The zinc alloy may also contain small amounts of other metals, such as chromium, nickel and aluminum.

3,753,703

**SINTERED MOLYBDENUM BORON ALLOY**

Friedrich Benesovsky, Reutte, Tirol, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.

Filed Oct. 13, 1969, Ser. No. 865,682

Claims priority, application Austria, Oct. 11, 1968, A-9933

Int. Cl. B22f 1/00; C22c 1/00; C22b 49/00

U.S. Cl. 75—200

7 Claims

This application relates to a sintered molybdenum boron alloy optionally containing other additives including tungsten, zirconium and hafnium with the boron content of the alloy being less than about 0.2 weight per cent and preferably between 0.005 and 0.01 weight per cent.

3,753,704

**PRODUCTION OF CLAD METAL ARTICLES**

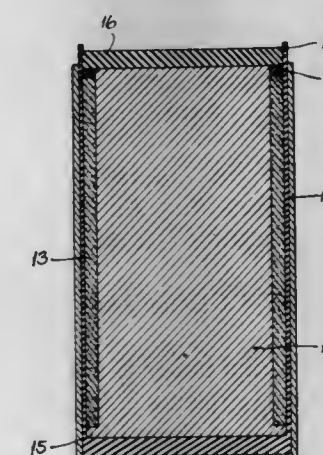
Charles Ernest Manilla; Harold Hilton Honaker, and David Olen Gothard, all of Huntington, W. Va., assignors to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 630,987, April 14, 1967, Pat. No. 3,652,235. This application Aug. 25, 1970, Ser. No. 66,788

Int. Cl. B22f 7/04, 7/02

U.S. Cl. 75—208 R

4 Claims



Production of clad stock, e.g., bar, tubing, pipe, etc., wherein the cladding is prepared by pressing metal powders to desired form, the green form is sintered and coextruded hot with the core or basis material. Highly corrosion resistant



cladding metals can be applied to basis materials of iron-group metals including common structural materials and high recovery of the cladding material is obtained. Externally or internally clad tubes have a cladding of 50 percent nickel-50 percent chromium alloy on substrates of steels, nickel alloys, including nickel-chromium alloys, etc., can readily be produced for use in applications requiring resistance to severe corrosive conditions at various temperatures.

3,753,705

# AGGLOMERATION IMAGING PROCESS USING HARDENABLE MATERIAL

William L. Goffe, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 1, 1969, Ser. No. 862,907

Int. Cl. G03g 5/00; G03c 5/16, 5/24

U.S. Cl. 96—1 R

35 Claims

An imaging system comprising providing an imaging member comprising an agglomerable layer in contact with an imagewise hardenable-softenable layer and imagewise hardening said member. An image is developed by imagewise softening said member to cause relative transparentizing in the imagewise softened areas due to an agglomeration of the agglomerable layer in the imagewise softened portions of said member.

3,753,706

# PHOTOELECTROSOLOGRAPHIC IMAGING METHOD WHEREIN AN ABSORBENT MATERIAL IS USED

Joseph G. Sankus, Jr., Fairport, N.Y., and Nicholas L. Petruzzella, Columbus, Ohio, assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1969, Ser. No. 872,282

Int. Cl. G03g 13/10, 13/22

U.S. Cl. 96—1 R

78 Claims

A migration imaging system having a migration imaging member comprising a softenable layer, migration material and an absorbent blotter member, which imaging member may be imaged by forming a latent image on said member, softening the softenable layer and removing residual materials by removing the absorbent blotter member.

3,753,707

# METHOD OF CONTROLLING EXPOSURE DURING PHOTOGRAPHIC PRINTING OF VARIABLE CONTRAST MATERIAL

Theodor Burger, Munich; Erhard Hellmig, Leverkusen, both of Germany, and Jacques Leon Vanheerentals, Schoten, Belgium, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 714,187, March 19, 1968, abandoned. This application Aug. 13, 1971, Ser. No. 171,764  
Claims priority, application Germany, Apr. 26, 1967, A 55553

Int. Cl. G03c 5/04

U.S. Cl. 96—27

8 Claims

Variable contrast printing paper is exposed to light passing through a negative in two extreme colors for a total exposure time which is selected as a function of the maximum or minimum density of the negative by talking into consideration the sensitivity of printing paper. The ratio of exposures to light in the two extreme colors within the total exposure time is selected as a function of the density range, maximum density or minimum density of the negative by way of a calibration curve which is determined for the particular charge of printing material.

3,753,708

# PHOTOELECTRORETIC IMAGING PROCESS EMPLOYING QUINACRIDONE PIGMENTS

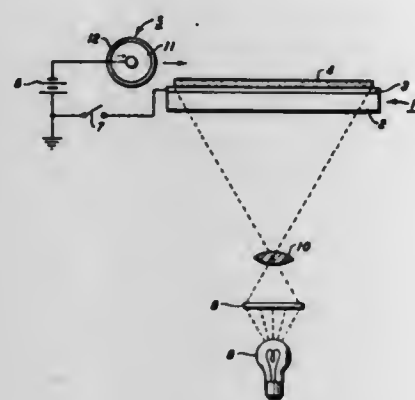
Lester Weinberger, Mt. View, Calif., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 129,078, March 29, 1971, Pat. No. 3,705,901, Continuation-in-part of Ser. No. 754,634, Aug. 22, 1968, abandoned. This application Apr. 10, 1972, Ser. No. 243,521

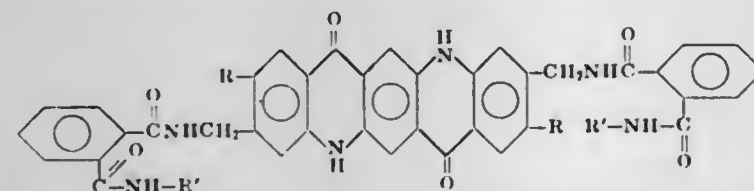
Int. Cl. G03g 13/00, 5/00

U.S. Cl. 96—1 PC

8 Claims



A novel composition having the formula:



wherein R = CH<sub>3</sub>, C<sub>2</sub>H<sub>5</sub>, OCH<sub>3</sub>, OC<sub>2</sub>H<sub>5</sub>, or a halogen and wherein R' = an aromatic, heterocyclic, alicyclic or aliphatic group is disclosed. Methods of preparing said composition and of using said composition in electrophoretic imaging processes are also disclosed.

3,753,709

# CROSSLINKED RESIN OVERCOATED ELECTROPHOTOGRAPHIC ELEMENTS USEFUL IN LITHOGRAPHY

William J. Staudenmayer, Pittsford; William E. Yoerger, and Donald A. Smith, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 25, 1971, Ser. No. 119,050

Int. Cl. G03g 5/06

U.S. Cl. 96—1.5

18 Claims

Electrophotographic elements are provided with a conversion-free overcoat of a layer comprising a cross-linkable polymer and a crosslinking agent therefor. These elements are useful as lithographic printing masters without the need for a separate conversion step after development.

3,753,710

# PREPARATION OF CERAMICS

Rexford W. Jones, and William B. Thompson, both of Columbus, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. Nos. 796,897, Feb. 5, 1969, abandoned, and Ser. No. 849,493, Aug. 12, 1969, abandoned, and Ser. No. 849,492, Aug. 12, 1969, abandoned, and Ser. No. 877,430, Nov. 17, 1969, abandoned, and Ser. No. 32,407, April 27, 1970, abandoned. This application June 28, 1971, Ser. No. 157,723

Int. Cl. G03c 5/00

U.S. Cl. 96—36.1

19 Claims

Method for forming ceramics and more particularly for fabricating screens for colored television tubes comprising

coating a cathode ray tube faceplate with a solid, light-sensitive organic layer capable of developing a R<sub>d</sub> of 0.2 to 2.2, preferably a R<sub>d</sub> of 0.4 to 2.0; exposing said light-sensitive organic layer to actinic radiation in image-receiving manner to establish a potential R<sub>d</sub> of 0.2 to 2.2; applying to said layer of organic material, free flowing phosphor particles having a diameter, along at least one axis of at least about 0.3 micron but less than 25 times the thickness of said organic layer; while the layer is at a temperature below the melting points of the phosphor powder and of the organic layer, physically embedding said phosphor particles as a monolayer in a stratum at the surface of said light-sensitive layer to yield an image having portions varying in density in proportion to the exposure of each portion; removing non-embedded particles from said organic layer to develop a discrete phosphor pattern, repeating said process to deposit a second phosphor and firing said faceplate to remove all of the organic material on the surface of the faceplate and fuse the phosphors to said faceplate.

Ceramics may be processed in the same manner and in those cases where the ceramic pigment comprises a conductive metal, the technique can be employed to prepare ceramic circuit boards.

3,753,711

# METHOD FOR PRODUCING PHOSPHOR SCREEN

Yoshichika Kobayashi, Ibaragi, and Kouzi Yakeno, Katano, both of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Dec. 13, 1971, Ser. No. 207,180

Claims priority, application Japan, Dec. 18, 1970, 45/116099

Int. Cl. G03c 5/00

U.S. Cl. 96—36.1

3 Claims

A phosphor screen for color picture tube is usually produced by the first step which comprises suspending a blue emission phosphor in an aqueous solution of photo-setting photosensitive material comprising polyvinyl alcohol and ammonium dichromate, applying thus obtained suspension to inner surface of face panel to form a photosensitive film, exposing said film through apertures of shadow mask and developing the exposed film to form dot phosphor film and the second and the third steps of forming the dot phosphor films of green and red emissions in this order by substantially the same procedure as that of the first step. According to the present invention, the dot phosphor films formed at said first and second steps are treated with chromic acid solution to harden said films, whereby color mixing, namely, so-called color fogging caused by a phosphor of other color emission used at the subsequent step is reduced and color purity of emission from phosphor screen face is improved.

3,753,712

# METHOD OF MAKING DIFFUSION DEVICES HAVING A MEMBRANE SUPPORT OF PHOTOINSOLUBILIZED PLASTIC

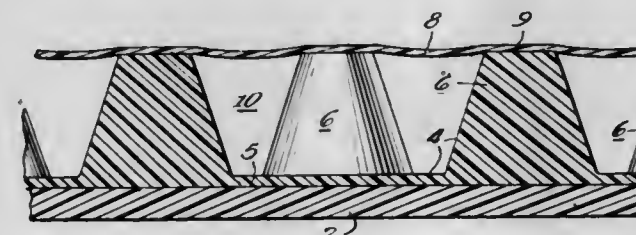
Howard A. Janneck, Chicago; F. Jesus Martinez, Palatine, and George W. Schnitzler, Park Ridge, all of Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed Nov. 23, 1970, Ser. No. 92,102

Int. Cl. B01d 31/00

U.S. Cl. 96—38.2

8 Claims



Mass transfer diffusion devices, such as artificial kidneys and membrane oxygenators, are provided having a membrane

support which comprises a supporting layer made from photoinsolubilized plastic. The supporting layer defines a plurality of projections of uniform height to support the membrane and to define fluid flow channels of uniform depth between the projections. The membrane support is fabricated by overlaying a photoinsolubilizable plastic layer with a master transparency having transparent and opaque areas disposed in a predetermined arrangement, passing light or other radiation through the transparency to insolubilize appropriate portions of the plastic layer, and then washing away the remaining soluble portions of the plastic layer.

3,753,713

# PROCESS FOR THE PRODUCTION OF A TOPOGRAPHICAL MAP HAVING A RELIEF CONTOUR EFFECT

Alfred M. Fraser, Silver Spring, Md.

Filed Mar. 29, 1972, Ser. No. 239,272

Int. Cl. G03c 5/04

U.S. Cl. 96—41

3 Claims

A photo-mechanical process for the production of a topographical map having a relief contour effect wherein a positive print is obtained through a shifted overlay including a positive transparency form of the map, a positive mask transparency of selected contour lines of the map, and a negative transparency form of the map; thereafter obtaining a negative print with the use of the negative form, the mask and the positive form individually; and finally preparing a final print through the negative and positive prints.

3,753,714

# IMAGE FORMATION BY RADIATION AND INTENSIFICATION

Mitsunori Sugiyama; Ikuo Fujimura; Masao Takano, and Minoru Sonoda, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 23, 1970, Ser. No. 91,750

Claims priority, application Japan, Nov. 21, 1969, 44/93424  
Int. Cl. G03c 1/92

U.S. Cl. 96—45.1

17 Claims

A method for forming an image by radiation, which comprises:

- closely contacting a photographic light-sensitive material having a silver halide emulsion layer on only one side of a support thereof with a fluorescent intensifying screen, and
- subsequently subjecting the light-sensitive material to the steps of:
- radiation
- development
- fixation, and
- intensification.

said resulting combination characterized in that the emulsion surface and fluorescent surface are facing each other.

3,753,715

# PHOTOPOLYMERIZABLE COPYING MATERIAL

Kurt-Walter Klupfel, Wiesbaden-Sonnenberg, and Ursula Elter, Wiesbaden-Blebrich, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Blebrich, Germany

Filed July 19, 1971, Ser. No. 163,999

Claims priority, application Germany, July 23, 1970, P 20 36 585.6

Int. Cl. G03c 1/68

U.S. Cl. 96—86 P

9 Claims

This invention relates to a photopolymerizable copying material comprising a support, a photopolymerizable copying layer thereon containing a photoinitiator and a low molecular weight vinyl or vinylidene compound polymerizable by exposure to light, and a top layer only slightly permeable to oxygen and transparent to actinic light, said top layer containing, as an oxygen inhibitor, at least one low molecular weight film-forming compound soluble in water at 20° C.



3,753,716

## METHOD FOR ANTISTATIC TREATMENT OF PLASTIC FILMS

Masao Ishihara; Koichi Horigome, both of Tokyo; Masaru Kanbe, Yamana-shi-ken; Masahide Tamura, and Motoo Kogure, both of Tokyo, all of Japan, assignors to Konishiroki Photo Industry Co., Ltd., Tokyo, Japan

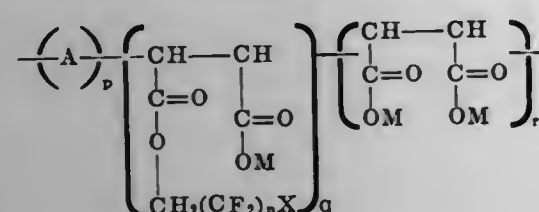
Filed Feb. 4, 1972, Ser. No. 223,698

Int. Cl. G03c 1/82

U.S. Cl. 96—87 A

2 Claims

A method for antistatic treatment of plastic films, characterized by treating the films with a solution containing a copolymer having the general formula,



wherein A is a vinyl monomer; M is a hydrogen atom, an alkali metal or a cation of ammonium or the like; X is a hydrogen or fluorine atom; n is an integer of 1 to 8; and p, q and r are mole percentages of the copolymer components, where p is 40 to 60, q+r is 100-p mole%, and [q/(q+r)]×100 is 10 to 100.

3,753,717

## PHOTOGRAPHIC MATERIAL

Alexei Alexeevich Titov; Jury Vasilievich Smirnov; Jury Shabsaevich Mashkovsky; Ernest Dmitrievich Tamitsky; Vladimir Nikitovich Chursin; Ljudmila Leonidovna Antonova, and Tamara Stepanovna Selitskaya, all of Moscow, U.S.S.R.

Filed Feb. 3, 1972, Ser. No. 223,338

Int. Cl. G03c 1/00

U.S. Cl. 96—88

3 Claims

A photographic material, comprising a support with a mixture applied thereto, said mixture comprising an organic dye such as methylene blue or thionine blue, a water-soluble salt of silver, gold, platinum or palladium and disodium salt of ethylenediaminetetraacetic acid or triethanolamine. The content of said components in said mixture is the following (g per m<sup>2</sup> of the support surface area):

organic dye  
water-soluble salt of silver,  
gold, platinum or palladium  
disodium salt of ethylene-  
diamine tetraacetic acid or  
triethanolamine

5·10<sup>-2</sup>—5·10<sup>-2</sup>1·10<sup>-2</sup>—5·10<sup>-2</sup>

2.5—20

Said mixture may also comprise gelatine or polyvinyl alcohol in an amount of 2—50 g per m<sup>2</sup> of the support surface area.

The photographic material according to the invention exhibits light sensitivity both in ultraviolet and visible regions of the spectrum. This permits to use this photographic material to produce negative and positive images when taking photographs and reproducing coloured objects.

3,753,718

## PHOTOSENSITIVE MEDIUM COMPRISING A CYCLIC ACETAL OF FURFURAL, A LOWER HALOALKANE, AND SILICA

William F. Lonczak, Chicopee, Mass., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Feb. 4, 1972, Ser. No. 223,775

Int. Cl. G03c 1/00

U.S. Cl. 96—88

9 Claims

Improved, negative-working, copying materials are prepared by coating a paper or film substrate with an amine-

free formulation comprising a cyclic acetal of furfural, a photosensitive lower haloalkane, a binder resin and silica. Images are formed on the copying materials by exposure to ultraviolet light and fixed by heating.

3,753,719

## LIGHT-SENSITIVE COLOR PHOTOGRAPHIC MATERIAL

Kenro Sakamoto; Isamu Fushiki, both of Tokyo, and Eichi Sakamoto, Hanno, all of Japan, assignors to Konishiroki Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 19, 1971, Ser. No. 126,360

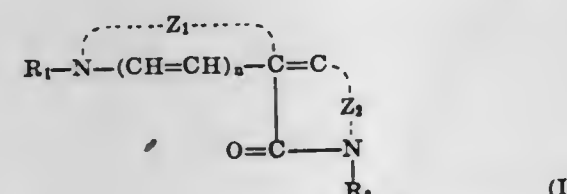
Claims priority, application Japan, Mar. 20, 1970, 45/23143

Int. Cl. G03c 1/40, 1/08

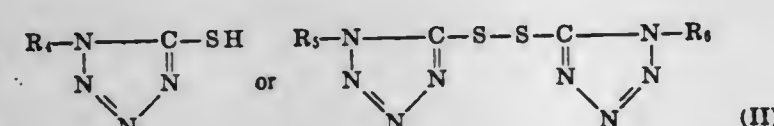
U.S. Cl. 96—100

4 Claims

A new combination of a merocyanine type compound of the formula (I)



wherein R<sub>1</sub> is a lower alkyl group; R<sub>2</sub> is a lower alkyl, lower alkenyl or aryl group; Z<sub>1</sub> represents a non-metallic atom group necessary to complete a 5- or 6-membered heterocyclic ring nucleus; Z<sub>2</sub> represents a non-metallic atom group necessary to complete a 5-membered ring; and n is 0 or 1, in combination with at least one compound of the formula



wherein R<sub>4</sub>, R<sub>5</sub> and R<sub>6</sub> are individually a hydrogen atom, or an alkyl, alkenyl, aryl or aralkyl group, and R<sub>5</sub> and R<sub>6</sub> may be the same or different, is found to be useful in a light-sensitive silver halide color photographic material to improve graininess of the resulting color image when said photographic material is subjected to imagewise exposure to light and color development.

3,753,720

## SOLDER RESISTANT PHOTOPOLYMER COMPOSITIONS

Harold A. Kloczewski, Pasadena; Joseph D. Moyer, Silver Spring; David E. Kramm, Laurel, and William Ross Schaeffer, Baltimore, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 10, 1972, Ser. No. 216,824

Int. Cl. G03c 1/70

U.S. Cl. 96—115 R

3 Claims

This invention relates to heat and solder resistant, photopolymer compositions which can be imaged and developed and processes of using same. The solder resistant, photocurable, photoresist compositions comprise a polythiol, polyene and silicone oil. The liquid compositions, when applied to a printed circuit board and cured imagewise as desired to a solid in the presence of a free radical generator, permit passage of the board through a bath of molten solder to secure electrical components thereto. When the free radical generator is actinic radiation, e.g., UV light, a curing rate accelerator, e.g., benzophenone is usually added to the composition.

3,753,721

## PHOTOGRAPHIC MATERIALS

Allan G. Millikan, Webster, and Mary Jane W. Brizee, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 13, 1970, Ser. No. 63,606

Int. Cl. G03c 1/28

U.S. Cl. 96—130

20 Claims

Light-sensitive silver halide grains having an average size of up to 0.2 micron are sensitized with a noble metal sensitizer at a concentration of at least 50 mg. noble metal per mole of silver, and a sulfur sensitizer at a weight ratio of sulfur to noble metal of about 1:15 to 1:75; said silver halide grains being spectrally sensitized with a photographic spectral sensitizing methine dye.

3,753,722

## ANIMAL FEED SUPPLEMENT

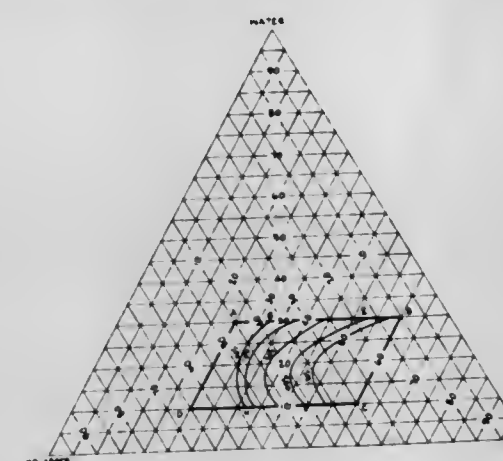
Harlan L. Beucler, Wayzata, Minn., assignor to Cargill, Incorporated, Minneapolis, Minn.

Continuation-in-part of Ser. No. 816,195, April 15, 1969, abandoned. This application Aug. 27, 1971, Ser. No. 175,493

Int. Cl. A23k 1/02, 1/22

U.S. Cl. 99—2 ND

18 Claims



A urea-mollases animal feed supplement containing less than 30 weight percent water and at least 25 weight percent urea solids.

3,753,723

## ANIMAL FEED AND METHOD OF MAKING SAME

Hugh E. Henderson, 1664 Algama, Okemos, Mich.; John Talmage Huber, 1086 Haslett Rd., Haslett, Mich., and Douglas Barrie Purser, 17 Dunkley Ave., Applecross, Australia

Continuation-in-part of Ser. No. 846,552, July 31, 1969, abandoned, Continuation-in-part of Ser. No. 826,620, May 21, 1969, abandoned. This application July 31, 1970, Ser. No. 60,081

Int. Cl. A23k 1/00

U.S. Cl. 99—9

15 Claims

A method for producing feed for ruminant animals wherein an aqueous ammonia solution is uniformly mixed with fermentable plant material. The mixture is fermented under anaerobic conditions, converting the ammonia to consumable nitrogen compounds. The ammonia may be added in admixture with molasses and mineral salts.

3,753,724

## LIQUEUR PREPARATION FROM MILK

Harry Silby, deceased, late of Miami, Fla. (by Mayme Silby, executrix), assignor to Wire Sales Company, Chicago, Ill. Continuation-in-part of Ser. No. 32,438, April 27, 1970, abandoned. This application May 5, 1971, Ser. No. 140,370

Int. Cl. C12g 3/04

U.S. Cl. 99—30

12 Claims

A liqueur is prepared by fermenting a mixture of uncooked milk, alcohol, sugar, lemon and vanilla. No distillation is involved and all pure flavorings and colorings are utilized. After fermentation and filtration of solids, additional uncooked milk is added to the filtrate for a second fermentation step. The solids recovered after the filtration contain fat from the milk and may be used for other purposes.

3,753,725

## METHOD FOR ENZYMATIC CONVERSION OF LACTOSE TO GLUCOSE AND GALACTOSE IN LACTOSE CONTAINING FLUIDS

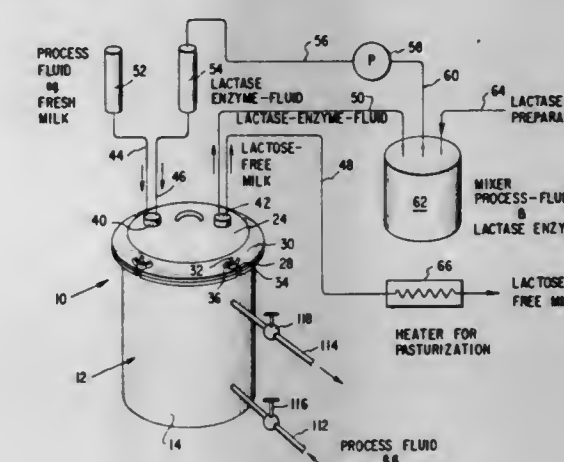
Roger J. Williams, and Marvin Kendall Young, both of Austin, Tex.

Filed Mar. 11, 1971, Ser. No. 123,166

Int. Cl. A23c 9/14

U.S. Cl. 99—54

9 Claims



A process-fluid containing lactose, such as milk, flows through a first chamber that is juxtaposed to a second chamber and separated therefrom by a semi-permeable membrane. An enzyme-fluid, which is a fluid similar to the process-fluid but containing lactose, flows through the second chamber to convert the lactose in the fluids in the chambers to glucose and galactose at a rate dependent upon the temperature and concentration of the enzyme. The membrane allows lactose, glucose and galactose to pass between the chambers but prevents passage of the lactose from the second chamber due to its large molecular weight. The levels of glucose and galactose are controlled by constantly removing such substances with a fluid, similar to the process-fluid, that flows at a rapid rate in a third chamber surrounding the other chambers and separated therefrom by a semi-permeable membrane.

3,753,726

## REDUCING BITTERNESS PERCEPTION OF COFFEE BEVERAGES AND PRODUCTS

William P. Clinton, Monsey; Joel R. Kaplan, Ossining, and Phillip J. Capasso, Goshen, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed June 9, 1971, Ser. No. 151,534

Int. Cl. A23f 1/04

U.S. Cl. 99—65

6 Claims

Coffee beverage products are treated to reduce the level of bitterness perceived by the beverage consumer by producing coffee products which will yield beverages containing an effective amount of a food acid such as citric acid. Alternatively effective amounts of the food acid may be added to the coffee beverage itself.



3,753,727

## METHOD OF RESTRUCTURING RICE

John C. Whelan, Woodland, Calif., assignor to Adams & Whelan, Woodland, Calif.

Filed Dec. 28, 1970, Ser. No. 102,077

Int. Cl. A231 1/10, 1/18

U.S. Cl. 99—81

9 Claims

Rice is restructured by quickly heating a mass of natural rice at substantially atmospheric pressure to a temperature of about 300° F and then passing the rice mass while so heated between rotating rolls, preferably metal, and yieldably pressed together, so that the heated rice is mechanically squeezed and then is discharged, preferably by gravity, whereupon the rice grains enlarge in all dimensions.

3,753,728

## PROCESS FOR PRODUCTION OF SOY-CONTAINING BREAKFAST CEREALS

William T. Bedenk, Springfield Twp., Hamilton County, and David E. O'Connor, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 5, 1970, Ser. No. 78,274

Int. Cl. A231 1/18

U.S. Cl. 99—81

16 Claims

Process for making ready-to-eat breakfast cereal containing soy protein. Soy protein is made more palatable by subjecting it to a partial hydrolysis reaction in the presence of a specific mixture of proteolytic enzymes. A mixture of proteolytic enzyme papain and at least one other proteolytic enzyme has the effect of more efficiently causing the partial hydrolysis of soy protein than does a single enzyme at the same addition level.

3,753,729

## METHOD FOR PREPARING FOOD SNACK COMPOSITIONS

Van Deursen Harms, Homewood; Edward R. Jensen, Hinsdale, and Robert E. Langan, Wilmette, all of Ill., assignors to CPC International Inc.

Continuation-in-part of Ser. No. 867,895, Oct. 20, 1969, abandoned. This application Feb. 10, 1972, Ser. No. 225,289

Int. Cl. A231 1/18, 1/10

U.S. Cl. 99—82

9 Claims

A process for preparing a food snack which uses a particulate starch material having a specified abrasion rating in combination with a small proportion of an oleaginous material and water. This combination is extruded under pressure and at elevated temperature to a puffed, ready-to-eat product.

3,753,730

## PROCESS FOR FLAVORING RICE, COMPOSITIONS USED THEREWITH, AND PRODUCTS OBTAINED THEREBY

Carmine Donnarumma, Washington Twp., Bergen County; Harvey Farber, Forest Hills, both of N.J.; Charles H. Grimm, Woodmere, N.Y.; Simpey Kuramoto, Ridgewood, N.J.; Don Marmo, Farmingdale, and Herbert S. Stein, Rosedale, both of N.Y.

Filed Oct. 16, 1970, Ser. No. 81,623

Int. Cl. A231 1/10, 1/26

U.S. Cl. 99—83

14 Claims

Processes for altering the flavors of particulate grain products which comprise applying a composition comprising a flavoring agent, an edible, cold water-insoluble film-former, and a vehicle to a particulate grain product; drying the distributed composition to form a flavor-containing film on the grain product; and optionally distributing the coated flavored grain through a larger mass of uncoated grain particles; as well as products obtained thereby. The flavor of rice, such as "miracle rice," is altered by applying a solution containing a carbonyl flavoring material as the flavoring agent.

3,753,731

## PROCESS AND APPARATUS FOR FERMENTATION

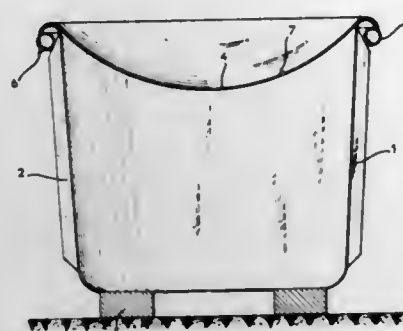
Charles Christ, 65 rue de Paris, Connerre, France

Filed Mar. 16, 1971, Ser. No. 124,711

Int. Cl. A231 1/00; A23b 7/00

U.S. Cl. 99—103

1 Claim



The present invention concerns a process and apparatus for fermentation in a vacuum. The apparatus is useful in the fermentation of a mass, specifically, the fermentation of vegetables such as cabbage, the apparatus consisting of an air-tight container, preferably suitable for storage on a pallet, and equipped with means of creating a vacuum therein.

3,753,732

## RAPIDLY DISINTEGRATING BAKERY ENRICHMENT WAFER

Melvin J. Boroshok, Yonkers, N.Y., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 19, 1971, Ser. No. 135,480

Int. Cl. A21d 2/00; A231 1/30

U.S. Cl. 99—91

3 Claims

A hard, non-fragile enrichment wafer which nevertheless disintegrates quickly in water is made by adding a portion of the starch to the nutrients, compressing the mixture into tablets, comminuting the tablets, then adding the remainder of the starch to the comminuted tablets, mixing and recompressing into wafers.

3,753,733

## METHOD OF PREPARING A COMPOSITE PIE

Carl F. Bell, P.O. Box 145, East Aurora, N.Y.

Filed June 21, 1971, Ser. No. 155,124

Int. Cl. A21d 13/08

U.S. Cl. 99—92

2 Claims

A method of making a composite pie comprising a plurality of separate and differently flavored layers of filling enveloped within a shell of crust. A divider of crust is interposed between adjacent layers of fillings for separating and isolating such layers from each other.

3,753,734

## SHELF STABLE PANCAKE AND WAFFLE PRODUCTS

Milton Kaplow, White Plains, and Robert E. Klose, Bronx, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Continuation of Ser. No. 813,321, April 3, 1969, abandoned.

This application Nov. 4, 1971, Ser. No. 195,870

Int. Cl. A21d 13/08; A231 3/34; A21d 15/00

U.S. Cl. 99—92

4 Claims

Shelf-stable pancake batters and pancakes which may be stored for long periods of time without refrigeration in non-hermetic packages are prepared by including in the batter water soluble solids at least equal to the moisture in the batter with edible polyhydric alcohols constituting the principal source of the water soluble solids.

3,753,735

## METHOD OF MAKING AN EXPANDED CRISP SNACK FOOD PRODUCT

Dirk R. D'Arnaud Gerkens, Breda, Netherlands, assignor to Nibb-It Products Association Ltd., Zurich, Switzerland

Filed Aug. 10, 1970, Ser. No. 62,645

Int. Cl. A231 1/12

U.S. Cl. 99—100 P

3 Claims

Describes a method of making a snack food product from potato material having a reducing sugar content of above three percent on the dry basis, mixed with dried gelatinized starch to produce a reducing sugar content in said mixture of between one and two percent by weight, which mixture is seasoned with salt and other flavoring materials, and made into an extrudable mass by the addition of water, the mass extruded, the extruded material is dried and fried into a crispy expanded snack product.

3,753,736

## METHOD OF PACKING ASPARAGUS FOR THE GROWING FIELD

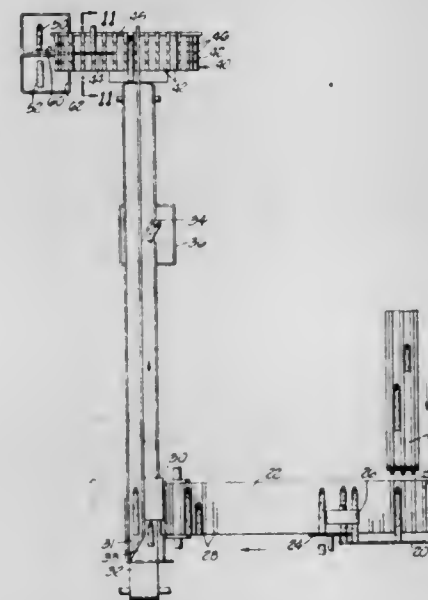
George R. Barker, Banning, Calif.

Division of Ser. No. 770,722, Oct. 25, 1968, Pat. No. 3,548,577. This application Aug. 24, 1970, Ser. No. 66,238

Int. Cl. A231 1/00

U.S. Cl. 99—100 R

1 Claim



A method of harvesting asparagus utilizing an asparagus harvester which engages the growing asparagus in the field, saws the asparagus below the ground, releases the asparagus butt first onto a grooved belt, then conveys the asparagus up an incline where the asparagus is conveyed butt first onto a second grooved conveyor belt and against a stop member; this conveyor belt travels perpendicular to the first belt. After the asparagus comes to a stop, the butt portions which were growing underground are sawed off by a second saw, and the remainder of the spears are allowed to travel along this belt until they reach a sorting member at which they are sorted into two predetermined lengths; the short spears are passed directly from this member into one box. The longer spears are oriented tip first and are carried up a conveyor belt to another grooved conveyor running perpendicular and horizontal to the last conveyor. Here the longer spears are sawed to a predetermined maximum tip length and routed to a container. The remaining cut made here are "center cuts," which are likewise routed to a container.

3,753,737

## OMELET PREPARING AND PROCESS

S. Duane Latham; Robert D. Seeley, both of Crestwood; Henry F. Reltz, and Ronald F. Reltz, both of St. Louis, all of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Filed Oct. 12, 1970, Ser. No. 79,922

Int. Cl. A231 1/32

U.S. Cl. 99—113

5 Claims

The invention comprises a process for producing a folded egg omelet using an egg batter mixture. The mixture is deposited into a preheated omelet cooking pan which has hinged sides which are folded upwardly together after partial cooking of the omelet. The omelet batter is deposited into the preheated foldable pan and is heated from the top and from the bottom. After direct heating is terminated, flavoring ingredients or inclusions are deposited onto the partially cooked omelet and CO<sub>2</sub> and steam are allowed to escape before the pan is closed. The omelet while folded continues to cook from the residual heat in the omelet cooking pan.

3,753,738

## OXA-THIA-BICYCLO [3.3.0] OCTADIENES AS FLAVORING AGENTS

Fritz Gautschi, Commugny/Vaud; Bruno Willhalm, Geneva, both of Switzerland, and George Hermann Buchi, Cambridge, Mass., assignors to Firmenich & Cie, Geneva, Switzerland

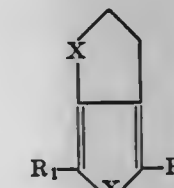
Division of Ser. No. 887,776, Dec. 23, 1969, Pat. No. 3,652,593. This application Aug. 13, 1971, Ser. No. 171,778

Int. Cl. A231 1/26; A24b 15/04

U.S. Cl. 99—140 R

2 Claims

Foodstuffs, beverages, animal feeds, pharmaceutical preparations, and tobacco products are flavored with compounds represented by the formula



wherein one of the symbols X represents oxygen and the other sulphur and R<sub>1</sub> and R<sub>2</sub> are hydrogen or methyl radicals. The flavoring compounds or their solutions can be used either alone or in combination with other flavor ingredients.

3,753,739

## LOW CALORIE DRY SWEETENER COMPOSITION

John A. Cella, Lake Forest, and William H. Schmitt, Elmhurst, both of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Filed Nov. 5, 1970, Ser. No. 87,303

Int. Cl. A231 1/26

U.S. Cl. 99—141 A

8 Claims

Pulverulent free-flowing water-soluble low calorie sweetener compositions having the general appearance of sucrose are produced by preparing a strong aqueous solution or slurry of an aspartyl-phenylalanine methyl ester sweetener at a relatively low temperature, admixing therewith a heated aqueous starch hydrolysate having a D.E. of zero to 20, and promptly thereafter, feeding the mixture to the preheater of a spray drier and thereupon spray drying said mixture to provide an expanded dry pulverulent composition containing a low moisture content.



3,753,740

**EASILY PEELABLE SAUSAGE CASING**

Albin F. Turbak, and Henry J. Rose, both of Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed Dec. 23, 1969, Ser. No. 887,722

Int. Cl. A22c 13/00

U.S. Cl. 99—176

8 Claims

Sausages, such as frankfurters and bolognas, formed in synthetic casings are more easily peeled by soaking the casings or coating the inner surface, either at the time of manufacture or after stuffing with sausage emulsion, with water-soluble or water-dispersible high molecular weight film forming or substantive carbonyl or sulfonyl containing derivatives of a fluorocarbon. The soluble fluorocarbon derivative is preferably a fluoro or perfluoro ester, amide, ketene, isocyanate, etc. The fluorocarbon derivative is preferably applied to frankfurter sausage casing in the form of a solution or dispersion at the time of manufacture just prior to drying the casing. Fluorocarbon solution or dispersion may also be applied to the soak water for larger casings of the type used for bolognas or may be applied internally to coat such casings at the time of preparation. The use of casings soaked or impregnated with these water-soluble or water-dispersible fluorocarbons facilitates removal of the casing from the smoked and/or cooked sausages at a time when untreated casings could not be peeled from the sausage.

3,753,741

**PROCESS OF PREPARING SLICED CANNED HAM**

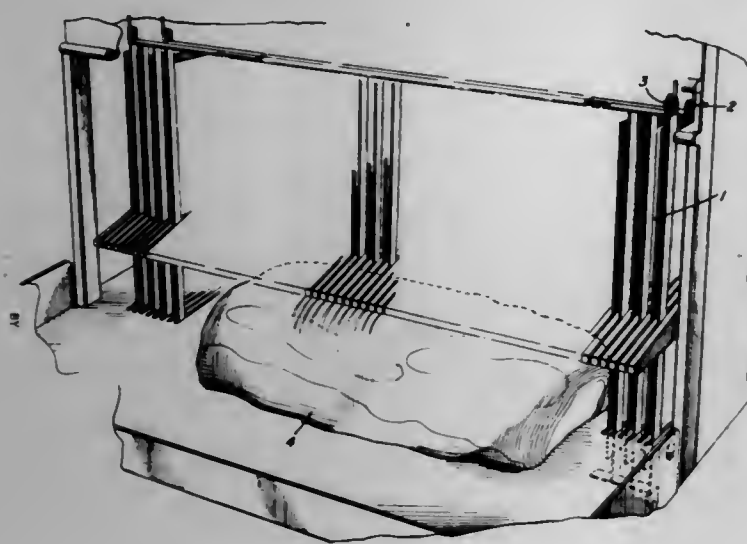
Maurice Z. Stewart, Dubuque, Iowa, assignor to Dubuque Packing Company, Dubuque, Iowa

Filed Jan. 21, 1971, Ser. No. 108,474

Int. Cl. A22c 18/00; A23b 1/00

U.S. Cl. 99—187

3 Claims



Sliced, canned meat, and in particular, ham or pork shoulder picnic, is prepared by a two-stage cooking process wherein the unsliced meat is first sealed in a container and subjected to an initial cooking and then chilled, removed from the container, sliced in such a manner that the ham retains its original configuration, and resealed along with minor amounts of honey and meat juices in a second container and finally subjected to a second cooking process. By this invention, a presliced, canned meat is obtained which retains the shape into which it was formed prior to slicing without the need for strings or bindings around the meat and which has been cooked, subsequent to slicing, in honey.

3,753,742

**ELECTROLESS PLATING PROCESSES FOR ROOM TEMPERATURE DEPOSITION NICKEL**

Harry F. Bell, Wappingers Falls; David W. Rich, Poughkeepsie, and Matthew C. Smith, Pleasant Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 124,590, March 15, 1971, abandoned. This application May 6, 1972, Ser. No. 241,586

Int. Cl. C23c 3/02

U.S. Cl. 106—1

7 Claims

A metal alkoxide additive enhances deposit rate, stability and efficiency at room temperature of certain electroless nickel plating systems. These are systems which utilize hypophosphite as a reducing agent and as a source of phosphorous for strengthening the deposits. The additive apparently operates to: (a) significantly retard bath decomposition at room temperatures; (b) activate the hypophosphite reducing agent, which characteristically is poorly reactive at room temperature, thereby promoting higher reduction rates; and (c) promote more efficient utilization of the bath materials. The sequence and method of combination of bath ingredients materially affects the bath efficiency.

3,753,743

**METHOD FOR PREPARING GLASS BATCH**

Hisashi Kakuda; Shiro Takahashi, and Junji Aki, all of Kitakyusyu, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

Filed Dec. 17, 1971, Ser. No. 209,067

Claims priority, application Japan, Dec. 18, 1970, 45/113093

Int. Cl. C03c 1/00, 3/04

U.S. Cl. 106—52

4 Claims

In a method for preparing a glass batch using caustic soda solution as the main source of Na<sub>2</sub>O for the glass, silica and other solid glass raw materials are first admixed and then the caustic soda solution is fed to the mixture. Preheated glass cullet is added to the mixture during the mixing operation, so that the water from the caustic soda solution is evaporated to provide a glass batch which is easily melted and refined and also is easily handled.

Preferably, hot gas containing carbon dioxide is supplied during the mixing operation.

3,753,744

**GRAPHITE-ALUMINA-SILICON CARBIDE BASE REFRACTORY**

Isamu Komaru; Kenzo Takeda, and Kazuo Yuki, all of Osaka, Japan, assignors to Nippon Crucible Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 212,394

Int. Cl. C04b 35/52

U.S. Cl. 106—56

5 Claims

This invention provides a graphite-alumina-silicon carbide base refractory having good erosion resistance, spalling resistance and durable for oxidizing attack at elevated temperature. This refractory contains more than 85 wt. percent of main components of graphite (including combined carbon), alumina and silicon carbide (the weight ratio of graphite:alumina:silicon carbide being 10-38:60-80:2-18), and these three main components are combined with each other by a carbon bond which contains glassy material (2-6 wt. percent) and forms the network structure.

3,753,745

**ZIRCONIUM OXIDE SERIES SPRAYING MATERIAL**

Masaharu Shiroyama, and Eiji Noguchi, both of Fukuoka, Japan, assignors to Nippon Tungsten Company, Ltd., Fukuoka-shi, Japan

Filed June 4, 1971, Ser. No. 150,098

Claims priority, application Japan, June 4, 1970, 45/48517

Int. Cl. C04b 35/48

U.S. Cl. 106—57

2 Claims

Zirconium-oxide series spraying materials in a powdered form prepared by mixing zirconium oxide powder with nickel or nickel oxide powder, pressing the mixture into a block, sintering the same under an oxidizing or reducing atmosphere into a briquette, then grinding the same and size-grading the resulting particles.

3,753,746

**PERMEABLE REFRACTORY PRODUCTS**

Otto Koerner, Rothstrasse 1062, Wiesbaden, Germany

Continuation-in-part of Ser. No. 676,061, Oct. 18, 1967,

abandoned. This application Jan. 15, 1971, Ser. No. 106,709

Claims priority, application Great Britain, Oct. 19, 1966, 46,850/66

Int. Cl. C04b 35/04

U.S. Cl. 106—58

10 Claims

A porous refractory body, primarily a porous plug for the refractory lining of a vessel containing molten metal through which plug gas can be blown into the metal. This body has a cold crushing strength of not less than 200 kg/cm<sup>2</sup> and consists of a coarse-grained refractory material with a minimum quantity of a suitable binding agent, and has permeable pores of a cross section not less than 0.05 mm and a gas permeability of at least 100, and preferably more than 500 nanoperm. The hot bending strength or modulus of rupture of the body at 1,400° C is from 20 - 60 kg/cm<sup>2</sup>. The refractory material is mixed with the binding agent, and the mixture is compressed with a pressure of at least 300 kg/cm<sup>2</sup> before firing to bring substantially all of the grains into contact with adjacent grains.

3,753,747

**HYDRATION RESISTANCE FOR DOLOMITE GRAIN**

Ronald Staut, Cherry Hill, N.J., assignor to General Refractories Company, Philadelphia, Pa.

Filed Oct. 1, 1971, Ser. No. 185,869

Int. Cl. C04b 35/04, 35/06

U.S. Cl. 106—58

10 Claims

The hydration resistance of a low-flux CaO · MgO refractory is increased by incorporating at least 0.01 percent by weight of a stabilizing agent selected from the group consisting of Al<sub>2</sub>O<sub>3</sub>, V<sub>2</sub>O<sub>5</sub>, aluminum fluoride, MgF<sub>2</sub>, and CaF<sub>2</sub>, and mixtures thereof to increase the total content of the stabilizing agent in the refractory grain to from 0.01 percent to about 1.0 percent by weight.

3,753,748

**HYDRAULIC CEMENT RETARDER COMPOSITION**

Robert C. Martin, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 42,569, June 1, 1970, Pat. No. 3,662,830.

This application Dec. 23, 1971, Ser. No. 211,688

Int. Cl. C04b 7/02

U.S. Cl. 106—90

1 Claim

In a method of cementing at relatively high ambient temperatures employing an aqueous hydraulic cement slurry, the improvement comprising admixing therewith an effective amount of both (1) a salt of lignosulfonic acid and (2) boric acid or a borate whereby a synergistic retarding effect on the setting rate of the slurry is attained without any accompanying adverse effects.

3,753,749

**CONCRETE COMPOSITIONS**

William Owen Nutt, Warlingham, England, assignor to The Cement Marketing Company Limited, London, England

Continuation-in-part of Ser. No. 41,305, May 28, 1970,

abandoned. This application Aug. 12, 1971, Ser. No. 171,351

Int. Cl. C04b 7/02

U.S. Cl. 106—93

7 Claims

In concrete compositions based on hydraulic cement, improved properties in respect of workability, especially mouldability, capacity for being impelled along a pipe as by pumping, and frost resistance in the concrete, are obtained by incorporating in the composition a minor proportion of dispersed cellulose fibres such as paper making fibres.

3,753,750

**PROTECTING GRAIN IN STORAGE AREAS BY AN OXYCHLORIDE CEMENTITIOUS COMPOSITION**

Harvey J. Davis, Springfield, Mo., assignor to M & D Enterprises, Inc., Springfield, Mo.

Filed Sept. 28, 1970, Ser. No. 76,130

Int. Cl. C04b 7/00

U.S. Cl. 106—106

3 Claims

Protecting grain in storage areas by providing wall structures defining grain storage areas with an oxychloride cementitious composition formed by mixing dry magnesium chloride, magnesium oxide, asbestos, a particle waterproofing agent, granular material, and a mineral filler with sufficient water to form a plastic cementitious composition to be formed into walls for storage areas or placed on existing walls of existing grain storage areas with the composition and walls thereof being rigid when cured. The composition is characterized by having sufficient porosity to permit air movement therethrough and thereby prevent formation of condensation resulting from rapid temperature drop outside the storage area and the composition inhibits growth of mold.

3,753,751

**LIGHT WEIGHT BODIES OF COTTON FIBER REINFORCED HYDROUS ALKALINE EARTH METAL SILICATE THERMAL INSULATION MATERIAL**

Richard F. Shannon, Lancaster, Ohio, assignor to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Division of Ser. No. 639,070, May 17, 1967, Pat. No.

3,562,084. This application Mar. 12, 1970, Ser. No. 26,466

Int. Cl. C04b 15/06

U.S. Cl. 106—120

15 Claims

A synthetically prepared body of molded high temperature thermal insulation material composed essentially of a matrix of chemically combined alkaline earth metal silicate interspersed with cotton fibers tenaciously anchored into the matrix and providing reinforcement and increased structural strength and integrity to the insulation material. The cotton fibers are interspersed in the matrix of the insulation material in the form of individual or wound groupings of filaments, strands or rovings or the like and/or in the form of an open network fabric of interlocked or interwoven cotton fibers such as cotton mesh or cotton netting or the like.

3,753,752

**SOIL CONTROL EMULSIONS**

Armin C. Pitchford, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 26, 1971, Ser. No. 192,348

Int. Cl. C08h 13/00; C08k 1/62; C09d 3/24

U.S. Cl. 106—277

2 Claims

A base oil consisting of asphalt and an aromatic oil is dispersed in an aqueous nonionic emulsifying solution to form an oil-in-water emulsion which is useful as a soil control agent.



3,753,753

## METHOD OF TREATING CLAY TO IMPROVE OPTICAL PROPERTIES

David B. Kirby, Midland, and Roger D. Kroening, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 12, 1971, Ser. No. 115,114  
Int. Cl. C08h 17/06

U.S. Cl. 106—288 B

5 Claims

A method of improving the optical properties of clay which comprises forming an aqueous mixture of clay with magnesium oxide, and aging the mixture.

3,753,754

## MIXED PHASES OF SPHERE STRUCTURE

Franz Hund, Krefeld-Bockum, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 27, 1971, Ser. No. 166,374

Claims priority, application Germany, July 31, 1970, P 20 38 007.8

Int. Cl. C09c

U.S. Cl. 106—288 B

6 Claims

Synthetic mixed phases of sphere structure corresponding to the general formula  $MMeZX_n$  or  $MMeZX_nY$  and comprising as host components pure or isotype mixed phases in which  $M$  = calcium and/or barium,  $Me$  = titanium and/or tin,  $Z$  = silicon,  $X$  = oxygen and  $Y$  = fluorine and/or hydroxyl, comprising at least about 0.1 percent by weight of at least one guest component in place of the aforementioned host components without any change in the sphere structure or in the electroneutrality, the guest component for  $Z$  being a di-valent to pentavalent cation with an ionic radius of less than about 0.6 Å. and/or a zinc cation, for  $Me$  being a mono- to hexavalent cation with a radius of from about 0.45 Å. to about 1.0 Å. and for  $M$  being a mono- to tetra-valent cation with a radius of greater than about 0.9 Å., the stoichiometric quantities for  $(Me+M):Z:(X+Y)$  being about 2:1:5.

3,753,755

## SHEET MATERIAL COATED WITH HEAT HARDENABLE TACKY ADHESIVE

Melvin M. Olson, Richfield, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 855,361, Sept. 4, 1969, which is a continuation-in-part of Ser. No. 785,839, Nov. 5, 1968, abandoned. This application Apr. 26, 1971, Ser. No. 137,660  
Int. Cl. C09j 7/02

U.S. Cl. 117—3.1

10 Claims

Sheet material coated with heat-hardenable, tacky adhesive to form adhesive tapes, bonding films and similar products. The tacky adhesive layer provides for temporarily adhering one structure to another at ordinary temperatures and can be subsequently heat-hardened to a strong, permanent bond. Another aspect of the invention relates to the tacky, heat-hardenable adhesive compositions themselves.

3,753,756

## RETICULATED POLYURETHANE FOAM AND METHOD OF MAKING SAME

Walter E. Lox, 427 Shabbona, Park Forest, and William Petrich, 3426 Maple Lane, Hazel Crest, both of Ill.

Filed Sept. 10, 1971, Ser. No. 179,547

Int. Cl. B44c 1/22

U.S. Cl. 117—8

5 Claims

Reticulated polyurethane foam produced by contacting the flexible foam, either of the polyether or polyester type, with orthotoluidine. In the highly preferred embodiment of the invention, the reticulation by means of ortho-toluidine is accompanied by coating the strands and nexi of the polyurethane skeletal structure with polyvinylpyrrolidone to render the polyurethane substantially non-toxic.

3,753,757

## TWO STEP POROUS BOILING SURFACE FORMATION

Arthur Rodgers, Clarence, and Robert J. Weiner, Tonawanda, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed May 15, 1970, Ser. No. 37,649

Int. Cl. B44d 1/092, 1/094

U.S. Cl. 117—22

12 Claims

A method of coating metal substrates with a porous metal layer, comprising the steps of:

- providing a metal substrate to be porous metal coated;
- applying a liquid binder solution consisting essentially of at least one high volatility solvent component and at least one low volatility component in a layer from 0.002 to 0.040 inch thick onto said metal substrate;
- applying a 0.005 to 0.050 inch thick layer of metal powder 30–500 mesh onto the binder layer so that the binder layer wets the metal powder coating and is saturated thereby and retains substantially all of said powder against said metal substrate;
- evaporating substantially all of the high volatility component of said liquid binder solution at about ambient temperature;
- heating the metal powder coated metal substrate of (d) to temperature sufficient to evaporate substantially all of the binder low volatility component;
- further heating the metal powder coated metal substrate to temperature sufficient to bond the metal powder to itself and to the metal substrate so as to form a porous metal layer having interconnected surface and subsurface cavities; and
- cooling the porous metal layer bonded metal substrate.

3,753,758

## OPEN PACK HEAT TREATMENT OF METAL SHEET MATERIAL USING SIZED PARTICLES AS SPACING MEANS

James J. Shanley, Montgomery County, Md., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed Sept. 15, 1970, Ser. No. 72,545

Int. Cl. C23c 11/04

U.S. Cl. 117—25

26 Claims

Chromized ferrous metal sheet material is prepared by a novel open pack chromizing process. In practicing the process, an adhesive composition, an adherent particulate coating of a source of chromium, and dispersed adherent spacing particles are applied on at least one side of the ferrous metal sheet material. The spacing particles are substantially uniform in size and larger than the chromium particles. The adhesive composition has an adhesive characteristic under the conditions of the process whereby an adherent coating containing the inert particles and chromium particles is formed in the absence of compaction. A plurality of layers of the coated sheet material are assembled into a pack, and the resulting open pack is subjected to an elevated chromizing temperature in a protective atmosphere and in the presence of a halogen-containing energizer to produce chromized ferrous metal sheet material. The adhesive for the spacing particles and chromium particles preferably includes the halogen-containing energizer. The invention further provides composite ferrous metal sheet material coated with the adhesive, the chromium particles and the spacing particles which is especially useful for preparing open packs for chromizing. The invention is also useful when practicing other processes wherein ferrous metal or other metal sheet material is heat treated, such as carburizing, decarburizing, nitriding and diffusion processes in general wherein a metallic or a non-metallic substance is intimately contacted with the ferrous metal or other metal sheet material and diffused into the surface thereof.

3,753,759

## METHOD OF MANUFACTURING ARC DISCHARGE LAMPS

Andre C. Bouchard, Peabody; Peter W. Gaudet, Lynn, and Martha J. B. Thomas, Winchester, all of Mass., assignors to Sylvania Electric Products, Danvers, Mass.

Continuation of Ser. No. 694,815, Jan. 2, 1968, abandoned.

This application Sept. 3, 1971, Ser. No. 177,835

Int. Cl. B44d 1/44; C03c 17/30

U.S. Cl. 117—33.5 L

4 Claims

An atmosphere of nitrogen dioxide is used in baking phosphor-coated lamps during manufacture, thereby reducing the baking time and temperature required for elimination of the organic binders in the phosphor coating. Improved lamp efficiency and maintenance also results from the use of the nitrogen dioxide.

3,753,760

## LIQUID ELECTROSTATIC DEVELOPMENT USING AN AMPHIPATHIC MOLECULE

George E. Kosel, Park Ridge, N.J., assignor to Philip A. Hunt, Palsades Park, N.J.

Continuation-in-part of Ser. No. 810,841, March 26, 1969, abandoned. This application Jan. 30, 1970, Ser. No. 7,253

Int. Cl. G03g 13/10

U.S. Cl. 117—37 LE

28 Claims

A liquid toner with a number of solids less than those conventionally used in a multi-component liquid toner, obtained by combining the functional characteristics of plural previous different kinds of solids into a complex molecule, thereby obtaining better image fixation, improved resistance to preferential depletion, improved image definition, clear background, improved shelf life, improved functional life and a broad color range.

3,753,761

## PRESSURE SENSITIVE RECORDING PAPER

Yojiro Sugahara, Tokyo; Kaichiro Miyazawa, Tsuruoka; Tadahisa Nakazawa, and Masahiro Maeno, both of Nakajyo, all of Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 775,126, Nov. 12, 1968, Pat. No. 3,622,364

This application Aug. 31, 1971, Ser. No. 176,743

Int. Cl. B41m 5/22

U.S. Cl. 117—36.2

4 Claims

A pressure sensitive recording paper comprising a paper substrate and a coating thereon comprising a color former which comprises a member selected from the group consisting of acid-treated dioctahedral montmorillonite clay minerals and mixtures of such minerals with natural dioctahedral montmorillonite clay minerals, the minerals having a secondary color development property,  $K_2$ , of at least 1.40, the value of  $K_2$  being represented by the formula

$$K_2 = R_{430}/R_{550} + \frac{1}{2}(1 - R_{550})$$

wherein  $R_{430}$  and  $R_{550}$  are reflectances of light having wavelengths 430 mμ and 550 mμ, respectively, when the minerals are developed by benzoyl leuco methylene blue.

3,753,762

## METHOD OF GALVANIZING

William H. Garrison, Richmond, Va., assignor to American Spin-A-Batch Company, Richmond, Va.

Continuation of Ser. No. 771, Jan. 5, 1970, abandoned. This application May 22, 1972, Ser. No. 255,806

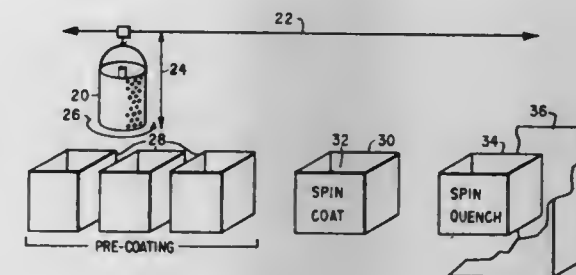
Int. Cl. C23c 1/02

U.S. Cl. 117—51

16 Claims

A method of galvanizing batches of articles wherein the articles are placed in a perforate basket which is suspended from a rail above a workpath. The thusly suspended articles are first dunked in pickling, rinsing and fluxing solutions and then into

a zinc bath where the basket and articles are spun to remove flux. The basket is then removed from the bath, moved directly to a position over a quench tank and again spun so that spelter falls into the tank for removal as shot. The basket



and articles are also spun while being lowered into the quench tank; after the quenching step; and during certain of the other above described steps so as to result in varying degrees of product improvement.

3,753,763

## COATINGS FOR COLUMBIUM AND COLUMBIUM BASE ALLOYS

Barry D. Reznik, Brooklyn, N.Y., assignor to The United States of America as represented by the Atomic Energy Commission, Washington, D.C.

Filed Jan. 24, 1964, Ser. No. 340,112

Int. Cl. C23f 14/00; C23b 11/00; B23p 3/20

U.S. Cl. 117—62

9 Claims

A method of protectively coating columbium and columbium-base substrates for service at temperatures above 2000° F comprising spray coating the substrate with a slurry consisting of a powdered mixture of silicon, aluminum and silver in a lacquer followed by diffusion treating the coated substrate in an inert atmosphere at a temperature in the range of 1900° F. to 2300° F. to form a layer of silicide intermetallic compounds adjacent the substrate and a layer of silver-silicon-aluminum alloy overlaying the first layer.

The invention described herein was made in the course of, or under a contract with the U.S. Atomic Energy Commission.

3,753,764

## PHOTOGRAPHIC DIFFUSION TRANSFER PRODUCT AND PROCESS

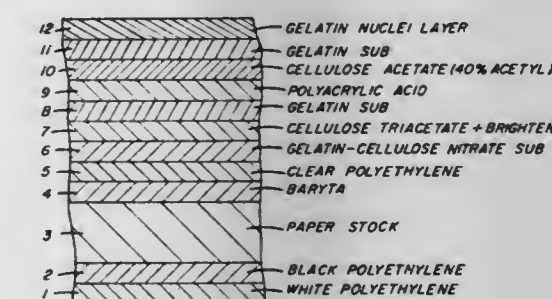
John A. Haefner, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 19, 1970, Ser. No. 91,043

Int. Cl. B05c 9/04

U.S. Cl. 117—68

6 Claims



A receiving sheet for use in a diffusion transfer process comprises a polyolefin surface such as polyethylene over



which is coated a cellulose ester layer such as cellulose triacetate, an acid layer such as polyacrylic acid, a timing layer and an image receiving layer. The image receiving layer can be a nucleated layer for use in black-and-white diffusion transfer or a mordanted layer for use in color diffusion transfer.

### 3,753,765 CONDUCTIVE CARBON ANTISTATIC BACKING FOR PHOTOGRAPHIC FILM

James Gail Morgan, Cranbury, and Delmar Francis Schumacher, Freehold, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 20, 1971, Ser. No. 182,153  
Int. Cl. G03c 1/82; C08k 1/16

U.S. Cl. 117—76 F 10 Claims  
An opaque film element suitable for photographic inverse transfer elements comprising a dimensionally stable hydrophobic macromolecular organic film base containing a sufficient amount of a dispersed black pigment to provide an optical density of at least 8.0 and bearing on one surface a non-tacky anchoring layer of a vinylidene chloride/alkyl acrylate/itaconic acid terpolymer, said layer being coated with an antistatic composition comprising an aqueous dispersion containing a coalescible ternary copolymer of methyl methacrylate/ethyl acrylate/methacrylic acid, finely divided, highly conductive, carbon black and optionally, particles of a polyfluoroethylene resin, the resulting layer having a resistivity of  $<10^7$  ohms per square. The opposite surface may have an anchoring layer as described above or may be otherwise treated to receive a colloid receptive layer for diffusion inverse transfer processes or a colloid-silver halide emulsion layer.

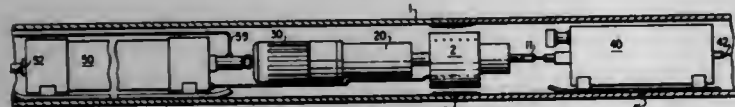
### 3,753,766 METHOD FOR SEALING PIPELINES

George A. Brown, Casselberry, Fla., and Francis Michael Hinds, Decatur, Ala., assignors to Southern Line Cleaning, Inc., Casselberry, Fla.

Filed Jan. 6, 1971, Ser. No. 104,424  
Int. Cl. B44d 1/02

U.S. Cl. 117—97

5 Claims



A slinger nozzle or head assembly is moved through a pipeline to coat the interior thereof. The nozzle is normally positioned adjacent joint seams or other leak sites and rotated to develop centrifugal action. A cureable sealing composition is fed into the nozzle to be thrown by centrifugal force outwardly through openings in the sides of the nozzle. The sealing composition can then be distributed about the leak site on the interior surface of the pipeline. The operative assembly includes a closed circuit TV camera in a protective casing (or other detector) to which can be attached the slinger head followed by a supply container having a load of sealing composition. The composition is cureable and can be of the epoxy type with varying proportions of fillers to control the viscosity and catalyst curing agent to regulate the curing time. An inhibitor and/or accelerator can be included to prolong or lessen the pot life of the composition, particularly at higher temperatures.

### 3,753,767 METHOD OF SUGAR-COATING TABLETS

Wallace E. Becker, Franksville, Wis., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,367  
Int. Cl. B44d 1/08

U.S. Cl. 117—100 A 4 Claims  
Tablets are sugar-coated with an aqueous sugar-coating solution which comprises about 5 percent to 30 percent by weight of calcium sulfate dihydrate. The coating solution is adaptable to automatic application which greatly reduces the time normally required for sugar-coating tablets. The tablets obtained possess good elastic and mechanical strength.

### 3,753,768 ALUMINUM PLATING PROCESS

Eiichi Ichiki; Kazuo Iida; Yasuhiko Inoue, and Yoshihiro Kondo, all of Niihama, Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

Filed Oct. 30, 1970, Ser. No. 85,823

Claims priority, application Japan, Nov. 1, 1969, 44/87965  
Int. Cl. C23c 1/102

U.S. Cl. 117—107.2 38 Claims  
Aluminum plating according to which aluminum film formed has no cracks and pin-holes on its surface, a uniform thickness, excellent luster and is strongly bonded to the substrate can be attained by heat treating a substrate covered with aluminum at 400° C the melting point of aluminum for 10 seconds 30 minutes in an inert atmosphere said heat treatment being preceded by or followed by treating of the covered substrate with a surface treating agent comprising active hydrogen-containing compound, oxygen or halogen and thereafter taking out thus treated substrate into the air.

### 3,753,769 COATING COMPOSITION AND PLASTIC ARTICLES COATED THEREWITH

Robert H. Steiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 561,367, June 29, 1966, abandoned. This application July 2, 1971, Ser. No. 159,532  
Int. Cl. C08j 1/40; C08f 45/52

U.S. Cl. 117—122 H 2 Claims  
An acrylic based terpolymer coating composition, adapted for use in coating polyolefin films, comprising an interpolymer of (a) from about 2 to about 15 parts by weight of an  $\alpha$ - $\beta$ monoethylenically unsaturated carboxylic acid and (b) from about 85 to about 98 parts by weight of neutral monomer esters comprising an alkyl acrylate ester and an alkyl methacrylate ester.

### 3,753,770 FIRE RETARDANT COMPOSITIONS CONTAINING NITROGEN-PHOSPHOROUS-HALOGEN ADDUCTS

George L. Braude, and Eldon E. Stahly, both of Ellicott City, Md., assignors to W. R. Grace & Co., Washington Research Center, Columbia, Md.

Filed Nov. 30, 1971, Ser. No. 203,420  
Int. Cl. B44d 1/22

U.S. Cl. 117—138 4 Claims  
A process of producing flame resistant layers, which comprises treating cured resins or cured formed resinous bodies with the vapor of phosphorus trichloride and thereafter subjecting the treated resins to the vapors of ammonia. Satisfactory flame resistance is given by concentrations of the halide moiety of between 5 and 20 percent by weight of the resin.

### 3,753,771 PROTECTIVE FINISH FOR SYNTHETIC FIBERS

Frank Holmes Simons, Charlotte, N.C., assignor to Fiber Industries, Inc., Charlotte, N.C.

Filed July 30, 1971, Ser. No. 167,811  
Int. Cl. B44d 1/22

U.S. Cl. 117—138.8 F 16 Claims  
Protection of synthetic fibers or yarns, e.g., polyamide homopolymers and copolymers, from harmful heat/moisture effects, such as that encountered in steam jet bulking, by coating the fibers or yarns with a small but effective amount of a water-soluble, alkaline polyethylene glycol.

### 3,753,772 METHOD AND COMPOSITION FOR PROVIDING ANTISTATIC AND ANTI-SOILANT PROPERTIES IN HYDROPHOBIC FIBERS

Sidney Cohen, Hillsdale, N.J., and Morton Schlesinger, New York, N.Y., assignors to Mill-Master Onyx Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 665,957, Sept. 7, 1967, abandoned. This application June 28, 1971, Ser. No. 157,635  
Int. Cl. D06m 13/02; C09r 3/16

U.S. Cl. 117—139.5 F 4 Claims  
A method of treating hydrophobic fibrous material to provide both an antistatic and anti-soilant coating which consists of applying to the fibrous material, such as a carpet or rug, a composition containing, as the active ingredient, a condensation product of higher saturated fatty acid and either tetraethylene pentamine or triethylene tetramine.

### 3,753,773 COATING OF POLY-PARA-HETEROCYCLIC-XYLENE POLYMER

Stuart M. Lee, Palo Alto, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 67,458, Aug. 27, 1970, abandoned. This application Apr. 26, 1972, Ser. No. 247,623  
Int. Cl. C23c 13/04

U.S. Cl. 117—161 UA 9 Claims  
A deposition process and product obtaining a coating on an object of a poly-para-heterocyclic-xylylene polymer wherein a dimer is vaporized in a front portion of the chamber obtaining diradicals of para-xylylene, and deposited on a surface of the object in a third portion of the chamber thereby obtaining a coating of the poly-para-heterocyclic-xylylene polymer on the surface of the object.

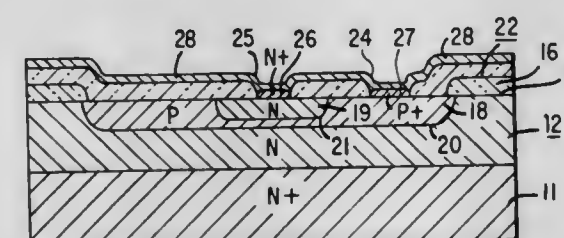
### 3,753,774 METHOD FOR MAKING AN INTERMETALLIC CONTACT TO A SEMICONDUCTOR DEVICE

Harold Seymour Veloric, Morristown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,340  
Int. Cl. B44d 1/18; H01g 9/00

U.S. Cl. 117—212

7 Claims



The method includes the step of depositing a semiconductor layer on a surface of a semiconductor body. A metal layer,

selected from the metals which will form an intermetallic compound with the semiconductor layer, is deposited on the semiconductor layer and treated to form an intermetallic compound. The treatment step and the thickness of the metal and semiconductor layers is controlled in order to control the depth to which the intermetallic contact extends into the body.

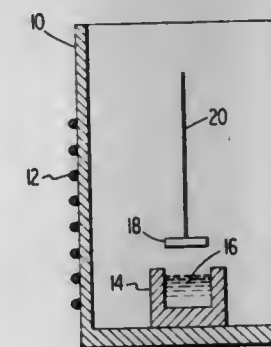
### 3,753,775 CHEMICAL POLISHING OF SAPPHIRE

Paul Harvey Robinson, and Richard Oren Wance, both of Trenton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 1, 1971, Ser. No. 122,620  
Int. Cl. C23b 5/62; B44d 1/18

U.S. Cl. 117—213

7 Claims



The [1102] crystallographic oriented surface of a sapphire body is chemically polished by heating the body to a temperature of between 1,000°C and 1,200°C and contacting the surface of the body with vapors of borax.

### 3,753,776 METHOD OF REMOVING DEPOSITS FORMED IN BAUXITE EXTRACTION

Gunter Winkhaus, Koeln-Suelz; Gerhard Wargalla, and Fritz Kampf, both of Luenen, all of Germany, assignors to Vereinigte Aluminium-Werke Aktiengesellschaft, Bonn, Germany

Filed Sept. 30, 1970, Ser. No. 76,996  
Claims priority, application Germany, Sept. 30, 1969, P 19 49 287.6

Int. Cl. C23g 1/02; C01f 7/14

U.S. Cl. 134—3 7 Claims  
In the continuous extraction of bauxite with sodium aluminate liquor wherein the bauxite is decomposed at a temperature above 180°–200°C, a deposit forms on the walls of the vessel. The deposit, more than 50 percent of which may consist of titanium dioxide, is difficult to remove. It has been found that this deposit can be removed by treatment with a mixture of hydrochloric and hydrofluoric acids when moved continuously over the surface of the deposit. It has also been found that the deposit can be removed with high-velocity jets of water, preferably containing a surface-tension reducing agent. Deposits formed at temperatures below 180°–200°C consist principally of sodium aluminum silicate and can be removed with hydrochloric or sulfuric acid.

### 3,753,777 SURFACE CLEANING METHOD

Donald L. Thomsen, Minneapolis, and Ferdinand J. Herpers, Jr., Minnetonka, both of Minn., assignors to Tennant Company, Minneapolis, Minn.

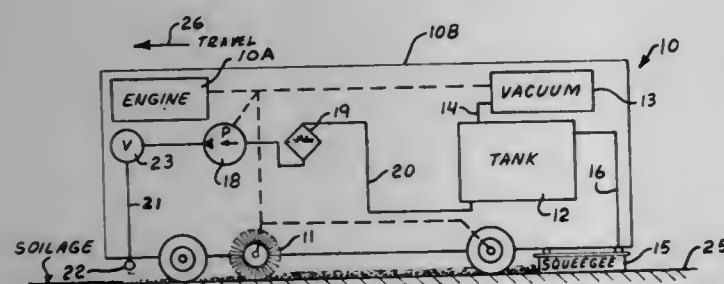
Filed Oct. 13, 1971, Ser. No. 188,760  
Int. Cl. B08b 7/04, 3/08, 1/04

U.S. Cl. 134—6 22 Claims

A method for cleaning surfaces such as floors and pavements that includes incorporating a polyelectrolyte in the



cleaning solution and a surface scrubbing machine for carrying out the process. As specifically disclosed, the method comprises applying the cleaning solution to the surface together with agitating the solution on the surface to cause formation of flocs, removing the floc containing solution from the surface by, for example, squeegeeing, and returning the recovered solution to a solution tank and, if desired, separating out the flocs. With a scrubbing machine the solution tank is on the machine, and the agitation may be provided by, for example, a



rotary brush on the machine, or by applying the cleaning solution to the surface by forcing the solution under pressure through discharge nozzles. Although not necessary for some cleaning operations, in others a detergent or soap compatible with the polyelectrolyte is incorporated in the solution. With various combinations of polyelectrolyte and detergent, the addition of a suitable flocculation aid such as metallic salts to the solution enhances the degree of flocculation and the strength and size of the flocs.

3,753,778

## METHOD OF FORMING NEGATIVE ELECTRODES

Harold A. Christopher, Scotia, N.Y.; Doris E. Faires, Gainesville, Fla.; Ethel L. Fonatella, Burnt Hills, and Randall N. King, Johnstown, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed July 25, 1972, Ser. No. 274,851

Int. Cl. H01m 35/30

U.S. Cl. 136—24

4 Claims

A method of forming a dry, fully-charged negative electrode includes electrochemically charging completely initially electrodeposited cadmium hydroxide thereby forming spongy metallic cadmium which is formed further into an electrode.

3,753,779

## METHOD OF MAKING ZINC ELECTRODES

John Franko, New York, and William J. Ryan, Bethpage, both of N.Y., assignors to Leeson Corporation, Warwick, R.I.

Filed June 14, 1968, Ser. No. 736,952

Int. Cl. H01m 43/02

U.S. Cl. 136—31

5 Claims

Improved anodes comprising dendritic zinc suitable for use in electrochemical devices such as primary and secondary cells and methods for preparing the anodes are disclosed. These methods are: (1) coating a porous support with, or shaping an electrode from already-prepared zinc dendrites; (2) in situ reduction of a porous substrate coated with a zinc compound; and (3) electrodeposition of zinc dendrites from a solution of a zinc compound onto a porous support. The above methods include various washing steps which prevent side reactions between the zinc dendrites and other substances which may be present during the production and use of the anodes. Various molding and shaping steps may also be included, and in situ amalgamation, or amalgamation of the finished anodes is generally desirable. These anodes have unusually high surface area, porosity and efficiency.

3,753,780

## FLUCTUATION SENSITIVE FUEL CELL REPLENISHMENT CONTROL MEANS

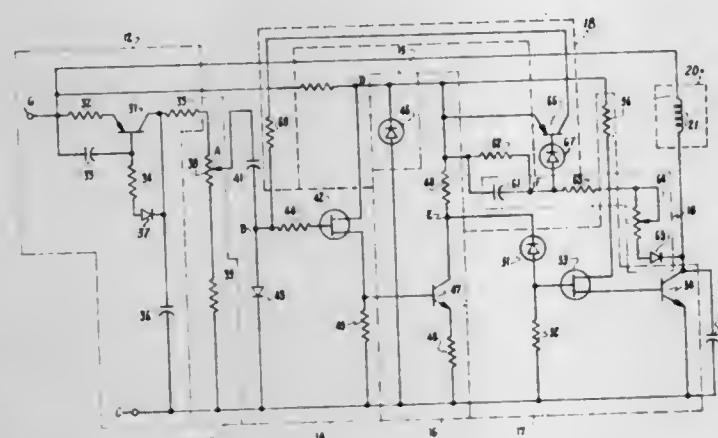
Donald L. Fetterman, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 30, 1971, Ser. No. 185,009

Int. Cl. H01m 27/12

U.S. Cl. 136—86 B

3 Claims



This invention relates, in general, to electrical energy source regulation means and in particular, to means for replenishment of selected energy sources, such as fuel cells, having a voltage-load function characteristic curve which must be maintained at all load levels for optimum performance of the system. In this invention, electronic control means adapted to sense minute fluctuations in the output voltage and load current serve to actuate replenishment means, as appropriate, to maintain the voltage level per each load point on the characteristic curve.

3,753,781

## DRY CELL HAVING THIN FILM SEAL

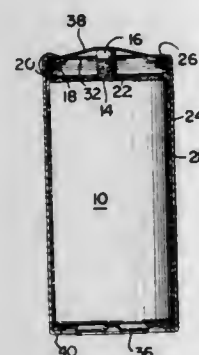
Ronald S. Parker, and Ronald Reilly, both of Teheran, Iran, assignors to Union Carbide Iran S.A., Teheran, Iran

Filed Apr. 4, 1972, Ser. No. 240,919

Int. Cl. H01m 21/00

U.S. Cl. 136—107

4 Claims



A method for packaging a dry cell in an outer metal jacket and a dry cell construction employing a thin film seal covering one terminal of the cell, the seal being locked between the metal jacket and an insulating sleeve surrounding the cell.

3,753,782

## ELECTRODE FOR ELECTROCHEMICAL REDUCTION OF OXYGEN AND PROCESS FOR ITS PRODUCTION

Klaus Beccu, Trolnex/GE; Manfred Gutjahr, Carouge/GE; Jack Ambert, Onex/GE, and Helmuth Keiser, Vessy, all of Switzerland, assignors to Battelle Memorial Institute, Carouge/GE, Switzerland

Filed June 22, 1971, Ser. No. 155,613

Claims priority, application Switzerland, June 23, 1970, 9628/70

Int. Cl. H01m 13/00

U.S. Cl. 136—120 FC

12 Claims

An electrode for electrochemical reduction of oxygen in an alkaline electrolyte and a process for the production of such electrode, comprising moulding a powder mixture containing as catalyst materials for activating oxygen conversion at least two of the metals nickel, cobalt, iron and manganese and active carbon and sintering the particles of the powder mixture to form an electrode body thereof containing non-stoichiometric mixed carbides.

3,753,783

## BATTERY, COMPONENTS, AND METHOD OF MAKING

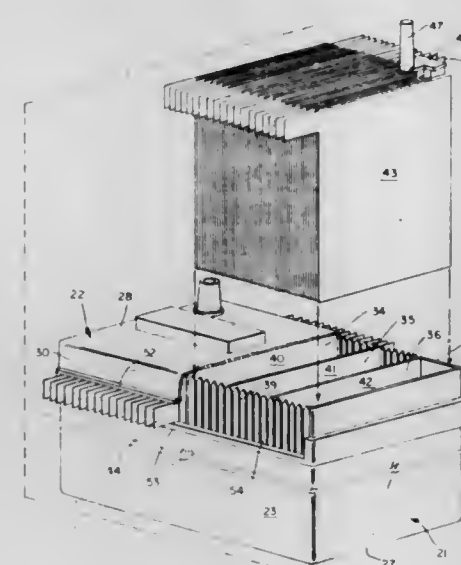
William J. Eberle, Reading, Pa., assignor to General Battery Corporation, Reading, Pa.

Filed Nov. 24, 1971, Ser. No. 201,818

Int. Cl. H01m 5/00, 35/32

U.S. Cl. 136—134 R

14 Claims



A battery is provided, generally of the lead acid storage battery type, having spaced plates therein, with selected plates connected together in electrically conductive fashion, and with plates on opposite sides of cell partitions being connected, wherein particularly novel types and placements of such connections facilitate low resistance in connections between plates and preferably facilitate inclusion of greater quantities of acid within a battery, by effecting such connections externally of the battery casing.

3,753,784

## SEPARATOR FOR MAINTENANCE-FREE CELLS

Werner Eisenacher, Hildesheim, and Eckart von Roda, Diekhöfen, both of Germany, assignors to Robert Bosch, G.m.b.H., Stuttgart, Germany

Filed Sept. 28, 1970, Ser. No. 76,071

Claims priority, application Germany, Oct. 3, 1969, P 19 49 958.2

Int. Cl. H01m 3/02, 3/04

U.S. Cl. 136—145

11 Claims

A separator for a maintenance-free cell consisting of several layers and being sufficiently porous to serve as the electrolyte

holder. At least one of the layers is micro-porous, resistant to migration of heavy metal ions, and proof against short circuits.

3,753,785

## ACID MIXING METHOD

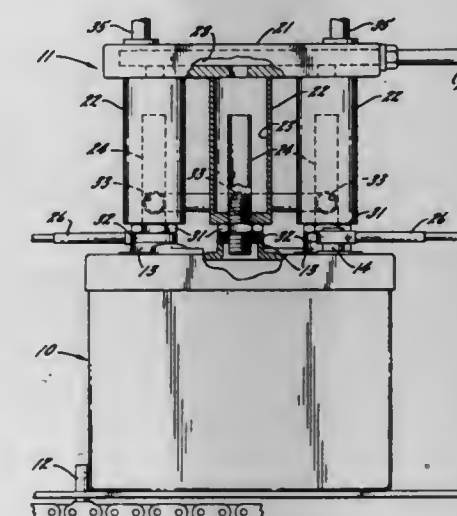
Thomas L. Oswald, St. Paul, Minn., assignor to Gould Inc., Mendota Heights, Minn.

Filed Mar. 29, 1972, Ser. No. 239,203

Int. Cl. H01m 45/00

U.S. Cl. 136—161

5 Claims



A method for adjusting upward the acid concentration of the electrolyte in a lead-acid battery "formed" by charging with electrolyte at low acid concentration, in which high concentration acid electrolyte is added to the battery, the battery is charged for a short time interval at high current to produce violent gassing and thus drive a substantial portion of the electrolyte out of the battery, vacuum is applied to draw off the gas, and the then-mixed electrolyte is allowed to flow back into the battery.

3,753,786

## METHOD AND APPARATUS FOR ADJUSTING BATTERY ELECTROLYTE CONCENTRATION

Thomas J. Asta, St. Paul, Minn., assignor to Gould Inc., Mendota Heights, Minn.

Filed Mar. 29, 1972, Ser. No. 239,023

Int. Cl. H01m 45/00

U.S. Cl. 136—161

4 Claims

After formation, a substantial portion of the dilute acid electrolyte is driven from each cell of a lead acid battery by applying a charging current to the battery and a vacuum chamber to each cell. An adjustable amount of this electrolyte is separated for removal from each cell by a standpipe, and the remaining electrolyte is returned to the respective cells. A fixed amount of high acid concentration electrolyte is then added to each cell so that the resulting mix is at the desired acid concentration level for normal operation of the battery. By adjusting the amount of removed dilute electrolyte in accordance with battery size and capacity, a proper final acid concentration level results from adding a given amount of high concentration acid to the cells of each size and type of battery.



3,753,787

**SPRING LOADED THERMOCOUPLE UNIT AND MOUNTING CAP THEREFOR**

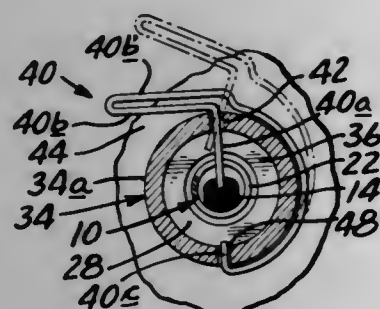
Winfield Scott Webb, Deerfield, Ill., assignor to Gulton Industries, Inc., Metuchen, N.J.

Filed Sept. 15, 1971, Ser. No. 180,795

Int. Cl. H01v 1/02

U.S. Cl. 136—221

11 Claims



There is combined with a thermocouple unit, having a coil spring encircling and mounted on at least the front end portion thereof so the spring can be compressed forwardly while the front end of the thermocouple unit is pressed against the inner wall of a bore, a mounting cap having a longitudinally extending passageway. The mounting cap has means for attaching the same at the outer end of the bore and a retractable abutment means which is most advantageously an inwardly extending and resiliently urged member extending laterally across at least part of the mounting cap passageway and connecting with a lift handle on the outside of the mounting cap which is raised to retract the abutment to permit the thermocouple unit to be quickly and easily moved within the mounting cap passageway and pressed against the end of the bore while maintaining the spring under compression. Release of the handle unit establishes an abutment for the compressed spring upon release of the thermocouple unit, and the end of the abutment frictionally engages the thermocouple unit to inhibit relative rotational movement between the mounting cap and the thermocouple unit.

3,753,788

**NON-RIBBING FERRITIC STEEL AND PROCESS**

John Edward Fogarty; Stanley Paul Odar, both of Canton, and Glenn Donald Angerman, Massillon, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Division of Ser. No. 814,188, July 7, 1969, abandoned. This application Oct. 15, 1971, Ser. No. 189,787

Int. Cl. C22c 39/16; C21d 7/14

U.S. Cl. 148—2

4 Claims

Low carbon ferritic stainless steel containing about 14–18 percent chromium, 0.0005 to 0.005 percent boron, up to about 0.12 percent, and preferably 0.02 to 0.12 percent columbium, characterized by substantial freedom from ribbing in unidirectionally hot rolling and thence unidirectionally cold rolling into thin gauge strip; also cold rolled strip in long lengths made of said steel and methods of producing same.

3,753,789

**MAKING CAST STEEL RAILWAY WHEELS**

William James Kucera; Albert Thomas Wendt, both of Elmhurst, Ill., and Louis Sandor, Hammond, Ind., assignors to Amsted Industries, Incorporated, Chicago, Ill.

Filed Feb. 23, 1972, Ser. No. 228,690

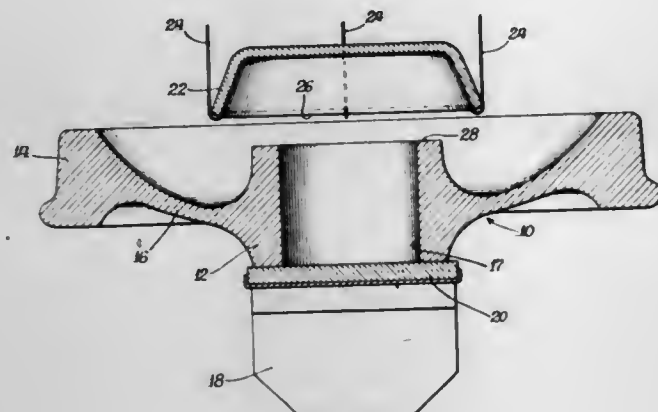
Int. Cl. C21d 1/28

U.S. Cl. 148—3

3 Claims

In the cooling of a steel railway car wheel having relatively thick hub and tread portions and a relatively thin plate portion, it is important that undue stresses are not set up in the

plate portion and, simultaneously, that the tread is hardened for good wear qualities while the hub is kept soft for easy machinability. These objectives are achieved by providing a conveyor having suspended thereover, at spaced intervals, non-metallic insulating disks having a diameter approximately equal to or slightly larger than the wheel hub diameter, mov-



ing the wheels in intermittent steps along the conveyor so that the wheels stop for a predetermined period of time directly under successive disks until the hubs have cooled from a temperature of about 1,700° F. to below the critical transformation temperature which is about 1,200° F., the other portions of the wheels having cooled at a faster rate.

3,753,790

**HEAT TREATMENT TO DISSOLVE LOW MELTING PHASES IN SUPERALLOYS**

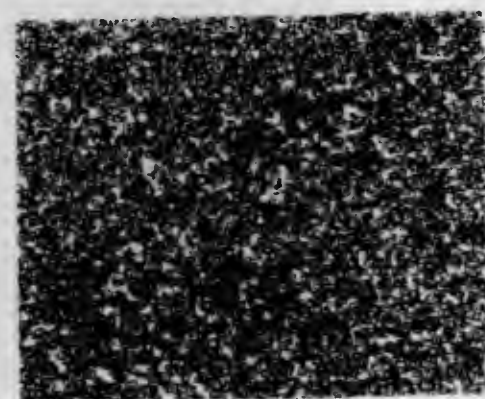
James L. Walker, Schenectady, and Thomas F. Sawyer, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 100,053, Dec. 21, 1970, abandoned. This application Aug. 2, 1972, Ser. No. 277,373

Int. Cl. C22f 1/10

U.S. Cl. 148—3

4 Claims



A progressive heat treatment of a superalloy is disclosed wherein the segregated low melting phases are dissolved in solid solution and diffused through the structure without melting the matrix metal and without incipiently melting any of the low melting phases. The heat treatment begins at a temperature just below that of the lowest melting constituent and finishes at a temperature below the fusion temperature of the alloy. The time of heat treatment at each successive increasing temperature is sufficient to accomplish enough diffusion to avoid melting on subsequent temperature increases, until the various phases are substantially solutionized.

3,753,791

**HEAT-TREATMENT OF ZINC/ALUMINIUM ALLOYS**

Colin John Swanson, Horfield, England, assignor to Imperial Smelting Corporation (Alloys) Limited, London, England

Filed Jan. 4, 1971, Ser. No. 103,911

Claims priority, application Great Britain, Jan. 1, 1970, 29/70

Int. Cl. C22f 17/00

U.S. Cl. 148—11.5 R

10 Claims

Zinc/aluminum alloys containing 18 to 40 percent aluminum are rendered superplastic by annealing in the single-phase solid region, cooling to below 275° C at not more than 10° C per minute, and, simultaneously with and/or subsequently to cooling, working to at least 90 percent reduction above 200° C at least half of which working is carried out below 275° C. Optionally the alloy is cooled below 200° C and then reheated to the given range for some or all of the working.

3,753,792

**METHOD OF ACHIEVING THERMALLY BALANCED HOT WIRE RELAY TYPE DEVICES**

Hugh Jean Tyler, Santa Ana, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

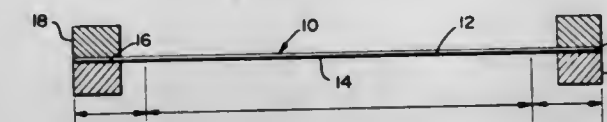
Division of Ser. No. 838,501, July 2, 1969, Pat. No. 3,684,994.

This application Dec. 9, 1971, Ser. No. 206,393

Int. Cl. C22f 1/10

U.S. Cl. 148—13

10 Claims



A hot wire relay type device, formed from an alloy composition exhibiting a characteristic of mechanical shape memory as a result of martensitic-type transformation, is produced for use as a heat reactive controller in such manner that the supported terminal portions do not react to heat or, at the very least, heat above the transition temperature simultaneously with the portion of the device intermediate such terminal portions whereby the wire achieves a thermal balance throughout its entire body.

3,753,793

**METHOD FOR COOLING METAL WEBS**

Elmar Wagener, Neukirchen-Vluyn, Germany, and Frantisek Jansch, U Pergamenky, Czechoslovakia, assignors to DEMAG Aktiengesellschaft, Duisburg, Germany

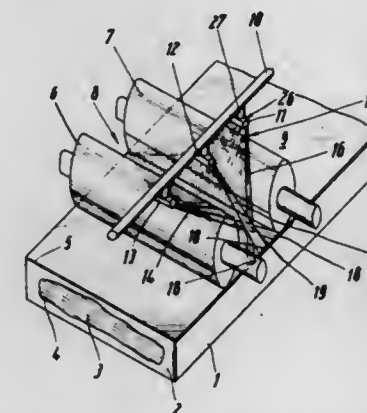
Filed Oct. 27, 1971, Ser. No. 192,885

Claims priority, application Germany, Nov. 3, 1970, P 20 53 947.3

Int. Cl. C22f 1/00

U.S. Cl. 148—13

7 Claims



The disclosure relates to a method and to an apparatus for cooling continuously cast webs of metal. Several coolant jets are produced continuously and at least two jets are projected to a hotter, slowly cooling zone of the surface of the webs.

3,753,794

**INTERLAYER FOIL FOR DIFFUSION BONDING**

Daniel F. Paulonis, Killingworth; David S. Duvall, Middletown, and Rodney H. Hawkins, Naugatuck, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 20, 1972, Ser. No. 236,500

Int. Cl. C22c 19/00

U.S. Cl. 148—32

5 Claims

For use in the diffusion bonding of the nickel-base superalloys, a normally brittle interlayer material significantly matched in composition to the superalloy is provided as a thin ductile foil of relatively low overall melting point.

3,753,795

**SPARK PLUG ELECTRODE**

John Herbert Weber, Sloatsburg, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 2, 1971, Ser. No. 168,364

Int. Cl. C22c 19/00

U.S. Cl. 148—32

8 Claims

A spark plug electrode is made of a dispersion-strengthened nickel alloy containing small amounts of aluminum and, optionally, chromium.

3,753,796

**ROLLED STEEL HAVING HIGH STRENGTH AND LOW IMPACT TRANSITION TEMPERATURE AND METHOD OF PRODUCING SAME**

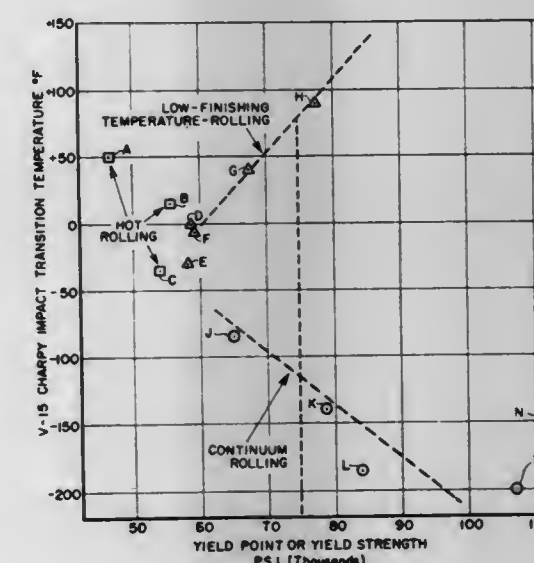
George F. Melloy, and Joseph D. Dennison, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 786,844, Dec. 20, 1968, Pat. No. 3,645,801, which is a continuation-in-part of Ser. No. 741,372, June 27, 1968, abandoned. This application June 24, 1971, Ser. No. 156,215

Int. Cl. C21d 9/46

U.S. Cl. 148—36

4 Claims



Rolled steels characterized in their as-rolled condition by an unexpected combination of high strength and low impact transition temperature. The product is produced by rolling a steel workpiece containing both austenite and ferrite, preventing complete recrystallization at any time thereafter, and continuing the rolling of said workpiece as it is cooling in the temperature range between the  $A_1$  temperature and 600°F.

**ERRATUM**

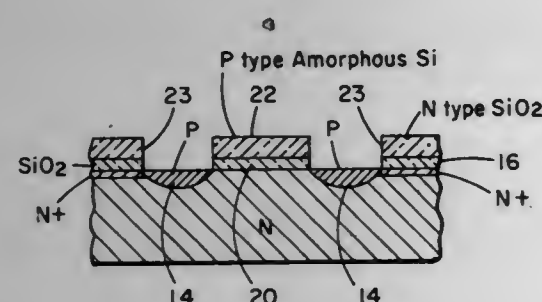
For Class 148—50 see: Patent No. 3,753,454







connection leads to the transistors run along the surface of the silicon substrate, being insulated therefrom, the silicon material between the source or drain area of the substrate for one transistor and the source or drain of another transistor may act as a channel between such other sources or drains. This channel may be turned on by the voltage applied to the gate connection or lead, causing improper operation of the several



transistors. To prevent this, the surface of the doped silicon is more highly doped between the sources and drains of adjacent transistors than it is at the channel area of the substrate for the several transistors. This may be accomplished by applying a doped silicon dioxide or glass over the whole surface of the doped silicon substrate, this doped glass then being removed from the channel areas of the substrate.

### 3,753,807 MANUFACTURE OF BIPOLAR SEMICONDUCTOR DEVICES

Raymond Alan Hoare, and Kenneth George McQuhae, both of Ottawa, Ontario, Canada, assignors to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed Feb. 24, 1972, Ser. No. 228,909  
Int. Cl. H011 7/36, 7/54

U.S. Cl. 148—188 5 Claims  
A method of making bipolar semiconductors in which the base contact regions and the emitter region are defined by one masking step. A layer of polycrystalline silicon is formed on a substrate, the polycrystalline layer being removed at the positions for the base contact regions and the emitter produced beneath the remaining part of the layer by diffusion from the polycrystalline silicon which has been doped with a suitable emitter region dopant.

3,753,808  
METHOD OF MAKING A HIGH FREQUENCY LIGHT  
EMITTING  $\text{GaAs}_{1-x}\text{P}_x$  ( $0 < x < 0.6$ ) DIODE  
Yuichi Ono, Kokubuji; Masahiko Ogirima, Tokyo; Toshimitsu Shinoda, Hamura, and Kazuhiro Kurata, Hachioji, all of Japan, assignors to Hitachi, Ltd., Japan  
Filed Feb. 12, 1971, Ser. No. 114,758  
Claims priority, application Japan, Feb. 12, 1970, 45/11452  
Int. Cl. H011 7/44

U.S. Cl. 148—189 7 Claims  
A method of making a high efficiency light emitting  $\text{GaAs}_{1-x}\text{P}_x$  ( $0 < x < 0.6$ ) diode, wherein Zn is diffused as acceptor into an n-type crystal by using a diffusion source, whose composition lies, in a Ga-P-Zn phase diagram, in a triangular region, the three apices of which are  $\text{Zn}_3\text{P}_2$ , GaP and the point where the content in P is lowest in the region having a higher content in P among two liquid phase regions; a window through which light generated at a p-n junction formed therein can emerge from the crystal with high external quantum efficiency is thereby formed by an enrichment in P at the same time as the surface layer of an n-type  $\text{GaAs}_{1-x}\text{P}_x$  ( $0 < x < 0.6$ ) crystal is converted into a p-type layer.

3,753,809  
METHOD FOR OBTAINING OPTIMUM PHOSPHOROUS  
CONCENTRATION IN SEMICONDUCTOR WAFERS  
Claude E. Galer, Pleasant Valley; Edward G. Grochowski, and Maurice M. Roy, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 9, 1970, Ser. No. 1,632  
Int. Cl. H011 7/44

U.S. Cl. 148—189 9 Claims  
A selected source concentration of  $\text{POCl}_3$  is passed over a plurality of wafers in a furnace in a turbulent flow by positioning baffles between the source of the concentration and the wafers and a baffle on the side of the wafers remote from the source. This turbulent flow produces substantial uniformity of the phosphorous concentration in each of the wafers. By selecting the source concentration of  $\text{POCl}_3$  in accordance with the flow rate, a substantially straight junction is formed in each of the wafers by the diffusion of the phosphorous into the wafers.

3,753,810  
 $\text{NH}_4\text{NO}_3$ -NITROCELLULOSE COATED WITH  
NITROCELLULOSE AND AL  
Louis Leneveu, and Frank Pierre Antoine Villey-Desmeserets, both of Pont de Buis, France, assignors to Etat Français represente par le Ministre d'Etat Charge de la Defense Nationale-Delegation Ministerielle pour l'Armement-Direction des Poudres  
Filed Mar. 31, 1972, Ser. No. 240,299  
Claims priority, application France, Apr. 6, 1971, 7112028  
Int. Cl. C06b 19/02

U.S. Cl. 149—8 16 Claims  
A novel propellant composition comprises granules of ammonium nitrate and nitrocellulose, in the ratio between 0.22 and 1, the granules being coated with at least one layer of nitrocellulose containing powdered aluminum, the aluminum being in the proportion between 1 and 5 percent by weight of the compositions. The composition exhibits improved water resistance, lower water absorbency and ignition is facilitated. According to one embodiment, nitrocellulose is replaced by polyvinyl nitrate in the proportion of up to 40 percent based on the weight of the mixture of polyvinyl nitrate and nitrocellulose.

3,753,811  
IGNITER COMPOSITION  
Elmo C. Julian; Frank G. Crescenzo, both of China Lake, Calif., and Robert C. Meyers, deceased, late of China Lake, Calif. (by Bette C. Meyers, executrix)  
Filed June 13, 1957, Ser. No. 665,613  
Int. Cl. C06c 1/00

U.S. Cl. 149—19 2 Claims  
1. A composition consisting essentially of about 30 to about 85 weight percent of a material selected from the class consisting of polytetrafluoroethylene and polytrifluorochloroethylene; about 15 to about 70 weight percent of a material selected from the class consisting of magnesium, aluminum, boron, titanium, zirconium, thorium, mixtures thereof and lithium nitride; about 1 to about 10 weight percent of a material selected from the class consisting of potassium dichromate, manganese dioxide, ammonium nitrate and ammonium perchlorate; and from about 1 to about 10 weight percent of a material selected from the class consisting of lead fluoride and sodium fluoride.

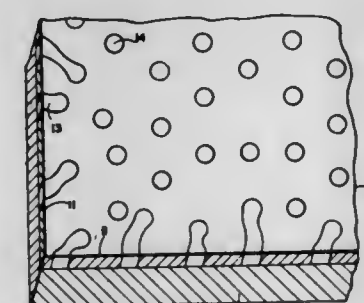
3,753,812  
PROPELLANT COMPOSITIONS WITH HYDROXY-  
TERMINATED COPOLYMERS OF BUTADIENE AND  
FERROCENE DERIVATIVES  
Mart G. Baldwin, Newtown, Pa., and Samuel F. Reed, Jr., Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army  
Division of Ser. No. 886,601, Nov. 25, 1969, Pat. No. 3,718,633.  
This application June 28, 1971, Ser. No. 161,266  
June 28, 1971, Ser. No. 161,266  
Int. Cl. C06d 5/06

U.S. Cl. 149—19 2 Claims  
The copolymers of vinyl ferrocene (VF) and butadiene are disclosed along with preparative procedures therefor. The copolymers are produced in an organic solvent when polymerization is initiated by an azo type initiator selected from the initiators consisting of azo-bis-(2-methyl-5-hydroxyvaleronitrile), azo-bis-(hydroxyethyl-2-methyl propionate), and azo-bis-(2-methyl-3-hydroxy propionitrile). The copolymers serve as a binder for solid propellant compositions and also serve to increase the burning rate of solid propellants wherein used.

3,753,813  
DENSE PROPELLANT CONTAINING  
FLUOROPOLYMERS AND HEAVY METAL COMPONENT  
Arthur Jack Dierolf, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.  
Filed Nov. 24, 1971, Ser. No. 203,109  
Int. Cl. C06d 5/06

U.S. Cl. 149—19 3 Claims  
A dense propellant composition for use in the first stage rocket engine of a multistaged missile system. The composition comprises Viton A, Teflon, mercuric oxide, and uranium-aluminum alloy.

3,753,814  
CONFINEMENT OF BUBBLE DOMAINS IN FILM-  
SUBSTRATE STRUCTURES  
George R. Pulliam; Paul J. Besser; Jack E. Mee, and David M. Heinz, all of Orange County, Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.  
Filed Dec. 28, 1970, Ser. No. 101,741  
Int. Cl. H011 1/09; H05k 3/06, 3/08  
U.S. Cl. 156—3 8 Claims



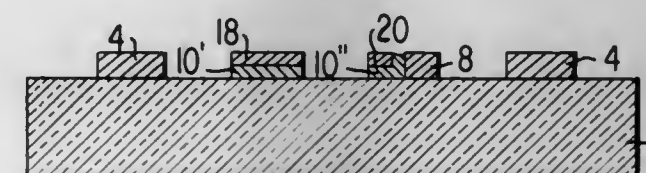
This invention described a method which controls the presence of bubble domains near the edge of a magnetic film in a film-substrate structure. The magnetic film is etched with a suitable etchant, for example boiling phosphoric acid, to provide a smooth, well-defined edge. The newly formed edge of the film repels the bubble domains therefrom thereby causing the bubble domains to be confined substantially to the center of the strip of film or to the center of the film disc.

3,753,815  
METHOD AND BATH FOR TREATING TITANIUM  
Albert C. Burton, Baltimore, and George C. Pierpont, Ellicott City, both of Md., assignors to Armco Steel Corporation, Middletown, Ohio  
Filed Sept. 22, 1971, Ser. No. 182,847  
Int. Cl. C23g 1/10

U.S. Cl. 156—6 9 Claims  
Method of treating titanium and titanium alloys, especially hot-worked products such as bar, rod, wire and various flat-rolled forms so as to remove seams, fissures and the like, as well as a desired amount of surface metal. The products are immersed in a bath comprising some 5 percent to 15 percent by volume hydrofluoric acid, with remainder phosphoric acid and water, maintained at such temperature and for such time as to remove a desired quantity of metal and yield a dull, satiny-like finish free of pitting and ready for further processing. Where desired, the products may be subjected to a preliminary treatment in a molten salt bath, such as sodium hydroxide, and washed in water, this to best condition the products for metal removal.

3,753,816  
METHOD OF REPAIRING OR DEPOSITING A PATTERN  
OF METAL PLATED AREAS ON AN INSULATING  
SUBSTRATE  
Nathan Feldstein, Kendall Park, and Harold Bell Law, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.  
Filed Nov. 18, 1971, Ser. No. 200,156  
Int. Cl. C231 1/02, 17/00

U.S. Cl. 156—11 4 Claims



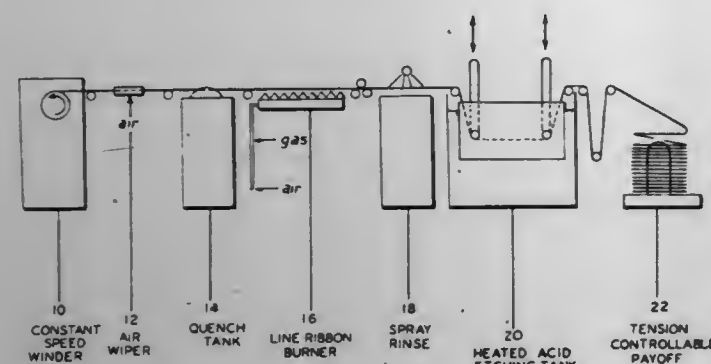
The method comprises depositing a thin layer of a first metal having a relatively high degree of solubility in a particular etchant over both plated areas (if a previously deposited pattern is being repaired) and unplated areas on a substrate, this first metal being catalytic to electroless deposition of a second metal to be subsequently deposited, electrolessly depositing on the first metal either an overall pattern of areas of a second metal which has a relatively low degree of solubility in the etchant or a pattern limited to parts of a previously deposited pattern that were missing or incompletely formed, and then treating the plated areas with the etchant, where desired, so that the first metal is removed where it is not covered by the second metal but the second metal is substantially unaffected.

3,753,817  
METHOD FOR PROCESSING WIRE  
George N. Gelssler, West New York, and Harry Clark Smith, Upper Montclair, both of N.J., assignors to Wilbur B. Driver Company, Newark, N.J.  
Continuation-in-part of Ser. No. 19,606, March 16, 1970, abandoned. This application July 16, 1971, Ser. No. 163,148  
Int. Cl. C231 1/04

U.S. Cl. 156—18 4 Claims  
A method for producing a heat and corrosion resistant, iron-nickel chromium-alloy wire with a roughened and ox-



idized surface by first etching the surface of the wire with an acid mixture of nitric, hydrochloric and acetic acids and



thereafter passing the wire along a flame to oxidize the surface and anneal the entire body of the wire simultaneously.

3,753,818

### AMMONIACAL ETCHING SOLUTION AND METHOD UTILIZING SAME

John Gove Poor, Brunswick, Maine, and Grace F. Hsu, Rockville, Conn., assignors to Conversion Chemical Corporation, Rockville, Conn.

Continuation-in-part of Ser. No. 35,263, May 6, 1970, which is a continuation-in-part of Ser. No. 834,542, June 18, 1969, abandoned. This application Jan. 26, 1972, Ser. No. 221,088 Int. Cl. H05k 3/06; C23g 1/18

U.S. Cl. 156—19

24 Claims

An aqueous ammoniacal etching solution for metallic surfaces contains, at makeup, ammonium haloacetate, ammonium hydroxide, and a promoter selected from the group consisting of soluble iodide, bromide and noble metal compounds; preferably, the solution also contains a soluble cupric compound. The solution may be used for spray or immersion etching of copper, cadmium, zinc, aluminum and alloys of such metals.

3,753,819

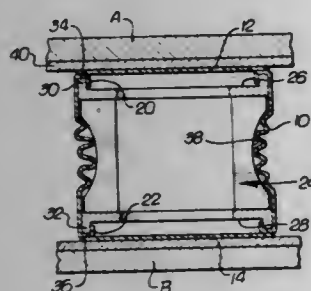
### METHOD OF MAKING TUBULAR FLEXIBLE BAG WITH LAP WELDED ENDS

Carlos A. Mollura, 2824 Del Oro Ln., Fullerton, Calif.

Filed Aug. 9, 1971, Ser. No. 170,209 Int. Cl. B29d 23/10

U.S. Cl. 156—69

8 Claims



A length of plastic material is rolled to form a tube, the ends being lapped and partially welded to leave an access opening to the inside of the bag. The bag is then telescoped over welding die or form having the general configuration of the tube, but axially compressed. The tube is then accordion folded about the thin form so that the ends of the tube can be wrapped around peripheral rims of the form. End pieces are then welded in place, the form is removed through the access opening and the partially welded lap joint forming the access opening is sealed.

### 3,753,820 METHOD AND APPARATUS OF FRICTION WELDING TWO ROTATING BODIES IN A PREDETERMINED RELATIVE ROTATIONAL RELATION

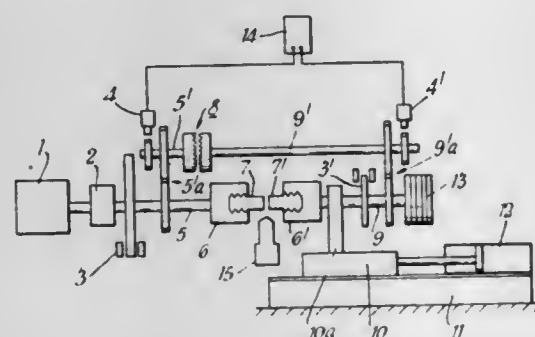
Yuji Ishikawa, Nagoya, and Mitsuhiro Numata, Anjo, both of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 18, 1971, Ser. No. 144,598

Claims priority, application Japan, May 27, 1970, 45/44846 Int. Cl. B29c 27/08; B32k 27/00

U.S. Cl. 156—73

12 Claims



The invention is a method of and apparatus for rotational position-setting friction welding, in which two bodies to be welded together are pressed together and the one member is rotated relative to the other member to generate heat by friction. The rate of relative rotation of the two bodies is then reduced to a predetermined value and when this predetermined value is reached the two bodies are brought into a predetermined relative rotational relationship and welded together.

3,753,821

### METHOD OF RETREADING PNEUMATIC TIRES WITHOUT A MOLD

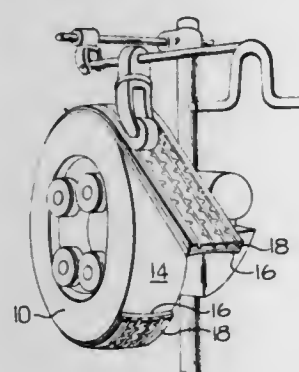
Bradley E. Ragen, Spruce Pine, N.C., assignor to Brad Ragen, Inc., Spruce Pine, N.C.

Filed Feb. 1, 1971, Ser. No. 111,461

Int. Cl. B29h 5/04, 17/36

U.S. Cl. 156—96

5 Claims



Method of retreading pneumatic tires by the application to a previously used pneumatic tire carcass of a cured rubber tread band wherein proper adhesion of tread band to the previously used tire carcass is facilitated by use of an uncured rubber strip of predetermined cross-sectional configuration concave to fit the carcass. The tread is applied to a relaxed carcass and its length is preselected as less than the circumference so that on vulcanizing at the same temperature as the shrink temperature of the carcass (about 200°F), the tread will just surround the carcass. The composition of the uncured strip is selected to vulcanize at this same temperature.

3,753,822

### METHOD OF MAKING A MULTI-LAYER OPTICAL ISOLATION

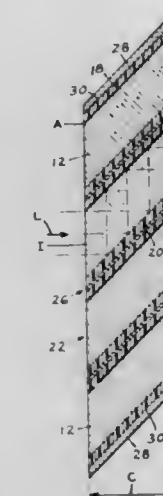
Philip L. Heinrich, Fairfield, Conn., assignor to Laser Optics, Inc., Danbury, Conn.

Filed Mar. 25, 1971, Ser. No. 128,354

Int. Cl. B32b 17/00

U.S. Cl. 156—101

3 Claims



An optical reflector structure, with broad band rejection characteristics, for isolating a particular band of wavelengths of interest. The optical reflector comprises a stack of flat substrates, each one of which has a coating, which is reflective at the bandwidth of interest, disposed along at least one of its faces. The optical reflector structure is interposed into a beam of light with the planes of the coatings at a predetermined angle to the beam of light. In one embodiment the predetermined angle is 45°. The bandwidth of interest is reflected by a first set of the coatings to another set of coatings while the remaining light is absorbed by the substrates or opaque coatings on the substrates in one embodiment or by a coating of light-absorbing material disposed behind the reflective coating relative to the incident light in another embodiment.

3,753,823

### METHOD OF MANUFACTURING A WATER MATTRESS

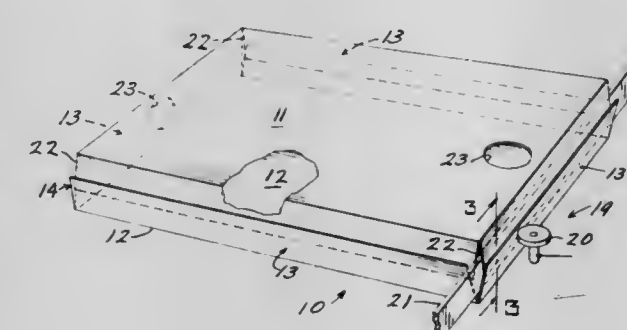
Ralph L. Kuss, Findlay, Ohio, assignor to R. L. Kuss & Co., Inc., Findlay, Ohio

Filed Mar. 2, 1972, Ser. No. 231,289

Int. Cl. B31f 7/00

U.S. Cl. 156—145

4 Claims



A method of manufacturing a water filled mattress is disclosed. A vinyl chloride sheet is pattern cut to a desired configuration, folded upon itself to form an envelope having top and bottom layers and one integral continuous sidewall, and sealed around overlapping adjoining edges of the layers on three sides. The resulting lapped seams form a water-tight integral sidewall on the envelope. The new method of construction includes steps for electrically welding the lapped seams and electrically bonding sealable air outlet and water inlet fittings in the surface of the envelope.

3,753,824

### PROCESS OF MANUFACTURING CARRYING BAGS WHICH COMPRISE U-SHAPED CARRYING HANDLES OF PLASTICS MATERIAL SHEETING

Frank Bosse, Ibbenburen-Dorenthe, Germany, assignor to Windmoller & Holscher, Westphalia, Germany

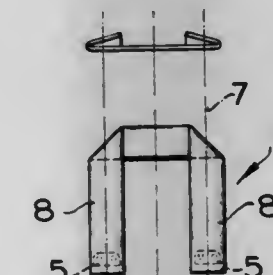
Filed Mar. 12, 1971, Ser. No. 123,580

Claims priority, application Germany, Mar. 13, 1970, P 20 12 084.7; Nov. 4, 1970, P 20 54 277.2

Int. Cl. B31f 1/08

U.S. Cl. 156—227

5 Claims



The end portions of the strip are first folded toward the center of the strip during the folding of the carrying handle. The folded strip end portions are then engaged and rotated through 90° in mutually opposite senses about respective axes, which are spaced apart by the desired distance between the center lines of the legs of the carrying handles.

3,753,825

### PROCESS FOR THE PRODUCTION OF SHEETS OF CELLULOSE NITRATE OR CELLULOSE ACETATE

Harald Stock, Oberpleis, Germany, assignor to Dynamit Nobel AG, Troisdorf, Germany

Filed Jan. 28, 1970, Ser. No. 6,402

Claims priority, application Germany, Feb. 4, 1969, P 19 05 293.8

Int. Cl. B32b 31/12

U.S. Cl. 156—277

8 Claims

The present invention is directed to a process for the production of sheets of cellulose nitrate or cellulose acetate with sharply defined, differently colored zones which comprises producing a sheet of said material according to the "block method" utilizing pressures and heat, desiccating and pressing said sheet and treating the desired zones of the sheet surface with a printing process, thereby applying the desired coloring material to said sheet, said coloring material containing a binder of the same material from which the sheet is produced.

3,753,826

### METHODS OF MAKING NONWOVEN TEXTILE FABRICS

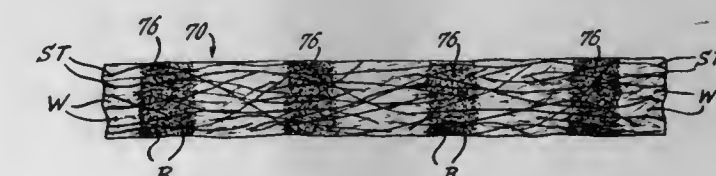
Charles H. Plummer, Princeton, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Mar. 17, 1971, Ser. No. 125,239

Int. Cl. B32b 31/12

U.S. Cl. 156—277

10 Claims



A nonwoven textile fabric having excellent softness, drape, and hand, good long and cross tensile strength, good wet abrasion resistance and good washability, and good absorptive



capacity and opacity comprising: a relatively flat, sheet-like fibrous structure of from about 30 percent by weight to about 90 percent by weight of overlapping and intersecting structural fibers having an average length of from about 1/4 inch to about 1 1/4 inches or more, and from about 70 percent by weight to about 10 percent by weight of relatively short fibers having an average length of from about 1/6 inch to about 1/25 inch or less; said structural fibers being bonded together by a closely-spaced, non-migrating, intermittent print pattern of discrete synthetic resin binder areas, and said relatively short fibers being bonded together by a substantially uniform, overall application of a relatively soft, synthetic resin binder in an amount of from about 2 percent by weight to about 10 percent by weight, based on the total weight of the finished non-woven textile fabric. Methods of making such nonwoven textile fabrics, and particularly methods involving the use of wet-forming manufacturing techniques, are also included.

3,753,827

# METHOD OF MAKING LAMINATED ASBESTOS CEMENT PLATES

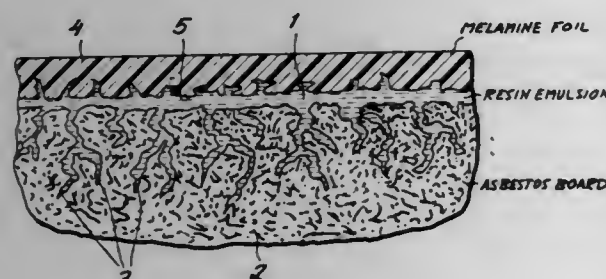
Harald Kober, Wanne-Eickel, Germany, assignor to G. Siempeckamp & Co., Krefeld, Germany

Filed May 14, 1971, Ser. No. 143,569

Int. Cl. C09J 5/02; B32b 13/04

U.S. Cl. 156—307

4 Claims



An asbestos-cement plate or sheet is coated with a resorcinol/formaldehyde dispersion or emulsion which is precondensed in and on the asbestos plate. A melamine/aldehyde foil is then applied and bonded under heat and pressure to the substrate.

3,753,828

# METHOD OF PREPARING OXYGEN IMPERMEABLE FILM LAMINATE

Stanley Manne, South Holland, and Myron S. Beyer, Danville, both of Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Division of Ser. No. 731,563, May 23, 1968, Pat. No. 3,622,439, Continuation-in-part of Ser. No. 658,764, Aug. 7, 1967. This application June 11, 1971, Ser. No. 152,361

Int. Cl. C09J 3/14

U.S. Cl. 156—333

3 Claims

Impermeable plastic film laminates for use in the packaging of food products and other materials are formed by an improved method in which polyethylene or other plastic films are laminated to plastic films such as nylon, polyester, cellophane, polypropylene, polyethylene, polyvinyl chloride, etc., by adhesive lamination with an oxygen and moisture vapor impermeable saran-containing adhesive, the adhesive preferably including a polymeric polyisocyanate. The polyethylene portion of the laminate provides for heat sealability of the resulting film laminate. The nylon, polyester, cellophane, polypropylene, etc., film gives flex strength, abrasion resistance, gloss, vacuum formability, etc., to the film laminate. The saran adhesive gives an impermeable film laminate upon curing. In the manufacture of the film laminate, a pressure sensitive but curable saran adhesive is applied to one of the plies of the film laminate on an ordinary plastic film coater or printing press and the two films combined and rolled

up on a windup reel. The pressure applied to the film laminate in the windup reel is the laminating force applied to the film and the film laminate is cured simply by being stored under pressure of being wound on the rolls. After curing of the saran adhesive, the plastic film plies cannot be easily separated.

3,753,829

# PLASTIC BAG FABRICATING, DISPENSING AND SEALING UNIT

Max Freeman, Great Neck, N.Y.

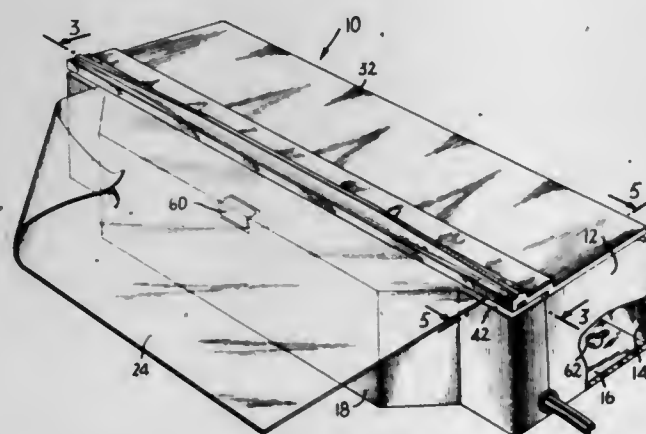
Continuation of Ser. No. 82,621, Oct. 21, 1970, abandoned.

This application Dec. 6, 1971, Ser. No. 205,110

Int. Cl. B32b 31/20

U.S. Cl. 156—367

17 Claims



A plastic bag fabricating, dispensing and sealing unit includes a housing formed with a compartment and closed with a hinged lid that receives a cartridge containing a roll of double-layered folded plastic film open at one side. A wire mounted on the housing extends along an insulating strip. A circuit to heat the wire is energized by closing and pressing the lid against the housing. An insulating strip on the lid presses the plastic film against the heated wire, thereby severing and sealing and layers of plastic film to form a bag. After filling the bag, the remaining opening therein can be sealed by inserting it between the housing and lid and closing and pressing the lid against the housing.

3,753,830

# APPARATUS FOR LAMINATING A PLASTIC SHEET ONTO A SURFACE OF A HOLLOW BODY

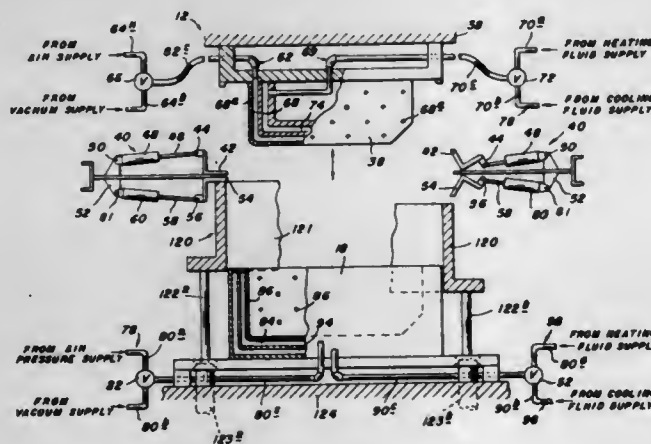
Ira G. Cruckshank, Rolling Meadows, and Thomas J. Snodgrass, Lake Forest, both of Ill., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed July 13, 1970, Ser. No. 54,533

Int. Cl. B29c 17/04

U.S. Cl. 156—382

31 Claims



Apparatus for and a method of laminating a plastic sheet onto a surface of a hollow body are disclosed. The apparatus has a frame, a male die mounted on the frame, a female die

mounted on the frame in registry with the male die and in spaced relation to the male die, the female die being adapted to receive the hollow body. Clamping means are operable to receive the plastic sheet and to clamp the plastic sheet in position for the thermoforming operation. Heating means are adjacent to the clamping means for heating the clamped plastic sheet to its softening temperature. The clamping means is first movable with the clamped plastic sheet into the heating means so that the plastic sheet is heated to its softening temperature. The clamping means is then movable with the clamped heated sheet into registry with the male die and the female die. Sealing means are on one of the male die and the female die for sealing against one member of the clamping means and the clamped heated plastic sheet and to define therewith a sealed chamber. The male die has a first vacuum and fluid pressurizing means for applying vacuum and fluid pressure to the male die. A first drive means is connected to the male die for reciprocating the male die toward and away from the female die. The first drive means is operable to move the male die toward the clamped heated sheet and to form the clamped heated sheet about the male die. The first drive means is then operable to move the male die and the clamped formed heated sheet into the hollow body in the female die, and the first vacuum and fluid pressurizing means is operable to apply fluid pressure against the clamped formed heated sheet to apply the clamped formed heated sheet to the surface of the hollow body.

3,753,831

# FOLDING APPARATUS

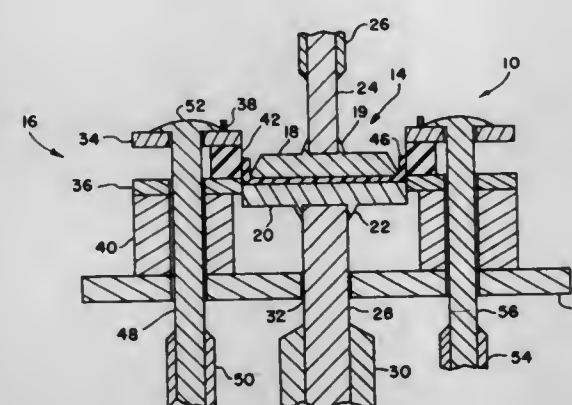
Alton R. Copithorne, Rowley, Mass., assignor to Boston Machine Works Company, Lynn, Mass.

Filed Aug. 28, 1970, Ser. No. 67,773

Int. Cl. B32b 3/04

U.S. Cl. 156—479

4 Claims



The invention is directed to an apparatus and method for simultaneously folding the entire peripheral portion of a workpiece or part thereof. The apparatus comprises a shaping die having upper and lower elements, an elastomer sandwiched between the upper and lower elements, a press having upper and lower die members, and means for actuating the shaping die and press. The die elements and elastomer are formed with an internal hole which is adapted for reception of the upper and lower die members. The profiles of the die members conform substantially to the aperture profile of the internal hole and are in registration therewith. When the upper and lower elements are urged toward each other, the elastomer is compressed and bulges into the internal hole and engages the peripheral portion of the workpiece, whereby the entire margin of the workpiece or any portion thereof as desired is folded simultaneously.

3,753,832

# EDGE BANDING MACHINE

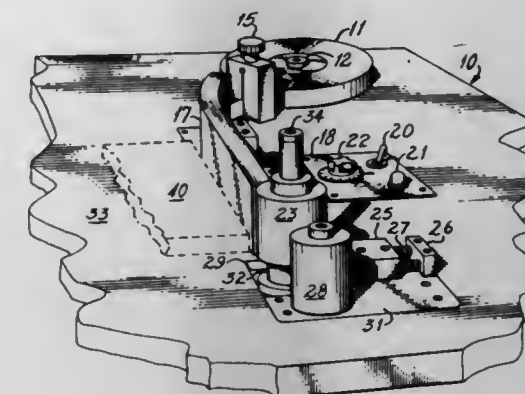
Lee E. Veneziale, Jr., Tyrone, Pa., assignor to Westvaco Corporation, New York, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,455

Int. Cl. B32b 31/20, 31/18

U.S. Cl. 156—499

6 Claims



Apparatus and method is disclosed for applying a continuous edge band to a panel of woody material which comprises a plurality of elements strategically mounted on a smooth, flat working surface including a bracket for guiding the edge banding material to a heated, curved platen or heating bar, a resiliently mounted pressure roller containing a grooved guide slot in the face surface thereof, and a finishing roller each mounted in sequence.

3,753,833

# WEB SUPPLY APPARATUS

Kirk W. Bassett, Paxton, and Richard A. Butler, Jr., Brookline, both of Mass., assignors to Butler Automatic, Inc., Canton, Mass.

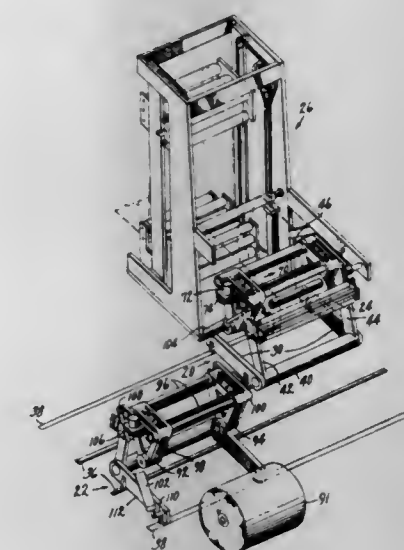
Filed Feb. 16, 1970, Ser. No. 11,654

Int. Cl. B32b 31/08; B65h 19/16

4 Claims

U.S. Cl. 156—504

16 Claims



The invention relates to web supply apparatus of the type wherein web is unwound alternately from each of two similar mobile roll stands each movable in the direction of its web roll axis between an unwind position usually in line with a web consuming machine and a loading position laterally offset from the path of the web. The two roll stands generally move on floor supported tracks between their loading and unwind positions and each is equipped with a portion of a web splicing device so constructed that, in the loading position a ready web roll having been picked up from the floor has its leading end so prepared and mounted that when the ready roll stand is moved to the unwind position, the ready web may be spliced automatically to the trailing end of the running web by the co-action of the two splicer halves mounted on the unwinding and ready roll stands.



3,753,834

## APPARATUS FOR SPLICING MAGNETIC TAPE

James L. King, Sudbury, Mass., assignor to King Instruments, Corp., Hudson, Mass.

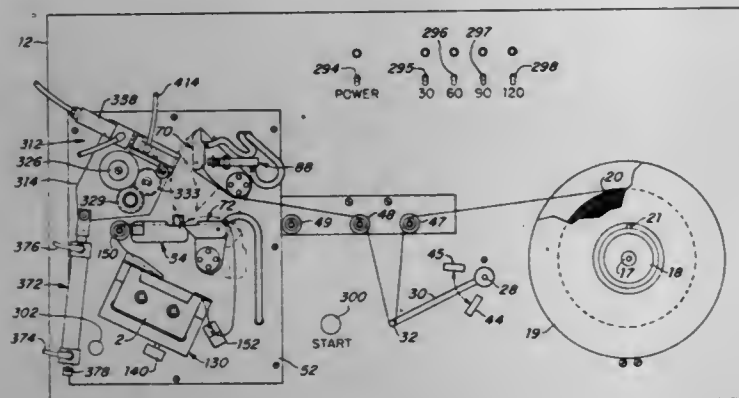
Division of Ser. No. 9,552, Feb. 9, 1970, Pat. No. 3,637,153.

This application Apr. 28, 1971, Ser. No. 138,204

Int. Cl. B31f 5/06; B65h 19/20

U.S. Cl. 156—506

14 Claims



Apparatus for splicing magnetic tape comprising a stationary splicing block and two moveable splicing blocks, said splicing blocks each having a surface for supporting tape, and means for moving said two moveable splicing blocks alternately into and out of selected positions in which their said surfaces are contiguous with the said surface of the stationary block.

3,753,835

## SPLICING TAPE DISPENSER-APPLICATOR

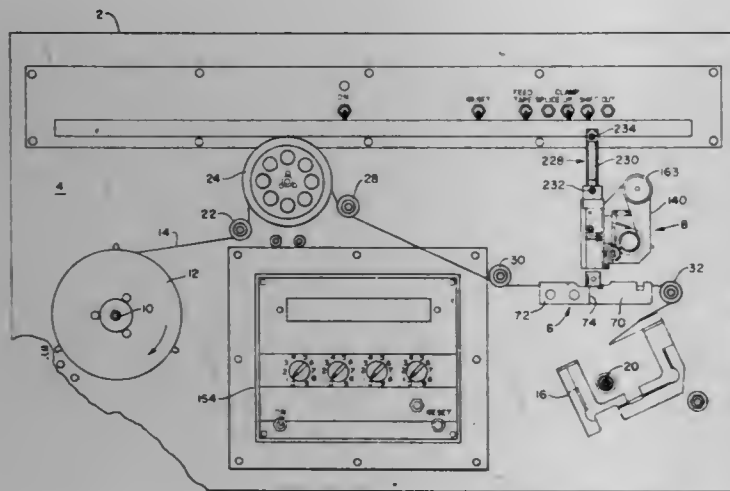
James L. King, Sudbury, Mass., assignor to King Instrument Corporation, Waltham, Mass.

Filed June 21, 1971, Ser. No. 155,023

Int. Cl. B31f 5/00; B26d 5/20

U.S. Cl. 156—506

17 Claims



The invention is a mechanism for dispensing and applying adhesive-coated splicing tape. The mechanism is particularly useful in a machine for splicing magnetic tapes and winding magnetic tapes into cassettes. The invention comprises a carriage that supports a supply spool for splicing tape, feeding means for pulling splicing tape off of the supply spool and advancing it along a predetermined path, means for reciprocating the carriage vertically toward and away from a splicing station, means for indexing the feeding means so as to advance a selected amount of tape when the carriage is moving away from the splicing station, and means for severing a piece from the leading end of the splicing tape and pressing it against tapes to be spliced located at the splicing station.

3,753,836

## STAMP APPLYING HEAD

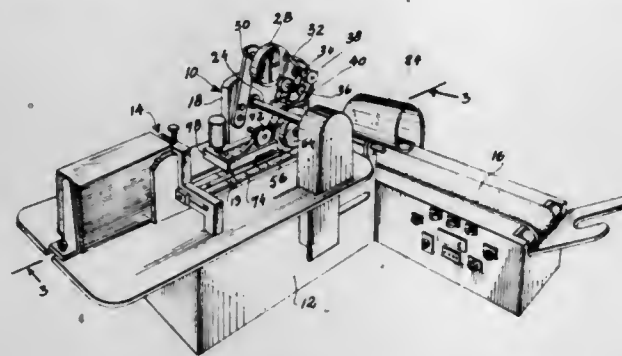
Ronald J. Buckholz, Bay Shore, N.Y., assignor to Designed Mailing Accessories, Inc., Bay Shore, N.Y.

Continuation-in-part of Ser. No. 25,951, April 6, 1970, abandoned, and a continuation-in-part of Ser. No. 58,543, July 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 729,336, May 15, 1968, abandoned. This application Aug. 10, 1971, Ser. No. 170,485

Int. Cl. B65c 9/14, 9/18, 9/22

U.S. Cl. 156—521

15 Claims



For high-speed application of postage stamps to letters, a spindle to hold the roll of postage stamps, guide rollers to guide a strip of stamps from the roller, a slit to cut each stamp individually at its perforations from the strip and vacuum means for securing the loose stamp, moistening or applying glue to the stamp and securing the stamp to a moving mail piece. The vacuum means includes a vacuum wheel having a vacuum port at its circumference and connecting holes leading to the side of the vacuum wheel, a non-rotating valve plate against the side of the vacuum wheel alternately admitting and blocking vacuum to the vacuum port and a source of constant vacuum.

3,753,837

## PACKAGING MACHINE FOR SEALING FLEXIBLE TAPE TO CARTONS

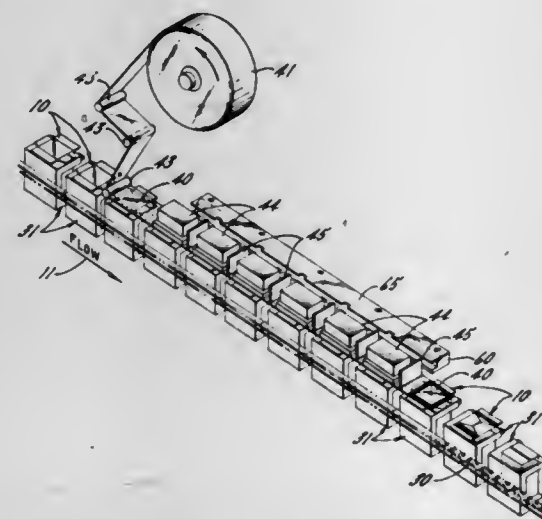
Robert F. Lense, Rockford, Ill., assignor to Rexham Corporation, New York, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,301

Int. Cl. B32b 31/04; E04b 2/00

U.S. Cl. 156—552

4 Claims



A flexible tape is sealed to the outfolded flaps of a carton while the latter is being supported in a holder and advanced along a predetermined path. The holder is formed with a relieved depression to enable vertical deflection of a raised portion of one of the dust flaps during sealing and thereby make the inner surface of such flap flat and planar so as to effect a better seal between the flap and the tape. A bar sustains part of the sealing thrust exerted on the carton holder and carries a flexible leaf spring which yieldably backs and supports one of the side flaps during sealing.

3,753,838

## APPARATUS FOR PRODUCING DOUBLE FACED CORRUGATED PAPERBOARD

Helmut Brandenburg, Wuppertal-Ronsdorf, Germany, assignor to Gebr. Eickhoff, Maschinenfabrik Und Eisengies-serel m.b.H., Bochum, Germany

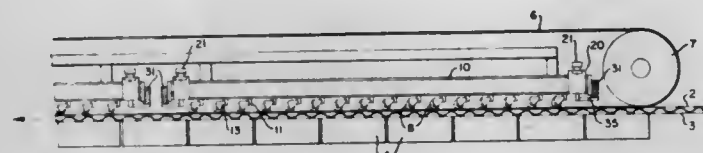
Filed Feb. 17, 1972, Ser. No. 227,120

Claims priority, application Germany, Feb. 22, 1971, P 21 08 378.3

Int. Cl. B31f 1/20

U.S. Cl. 156—555

9 Claims



Apparatus in which a flat paper facing sheet is glued to a traveling corrugated paper sheet is provided with an endless traveling belt, the lower strand of which rests on an upper facing sheet. Resting on this lower strand of the belt is a plurality of weighting rolls arranged in rows extending lengthwise of the belt. Above each row of rolls there is a beam to which the rolls are pivotally connected. Each beam is adjustable vertically independently of the others in order to adjust the pressure of the rolls against the belt. The beams are prevented from moving lengthwise.

3,753,839

## CARTON TAPING TOOL

Reiner Funke, Cologne-Bayenthal, and Franz Faust, Porz, both of Germany

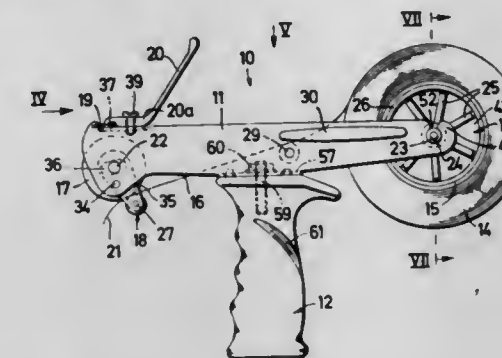
Filed Sept. 28, 1970, Ser. No. 76,016

Claims priority, application Germany, Oct. 11, 1969, P 19 51 339.4; Jan. 31, 1970, G 70 03 341.9

Int. Cl. B32b 31/18, 31/20

U.S. Cl. 156—577

34 Claims



A light weight manual type carton-taping tool with a pressure-sensitive tape supply roll-receiving drum at one end; a middle region piston grip; and, at the other end, a tape application guide and pressing roller and a small rotatable tape control roller between which the tape is led, the control roller mounted swingably to and from the pressing roller and provided with an over-running type clutch allowing forward tape feed and preventing tape retraction. A tape cutter blade is clamped roughly diametrically opposite the control roller by a leaf spring type resilient tape-end-wiping finger.

3,753,840

## FABRICATION OF CURVED GLASS SHEETS

Emile Plumet, Gilly, Belgium, assignor to Glaverbel, Water-mael-Boltsfort, Belgium

Filed Jan. 19, 1971, Ser. No. 107,723

Claims priority, application Great Britain, Jan. 19, 1970, 2,445/70

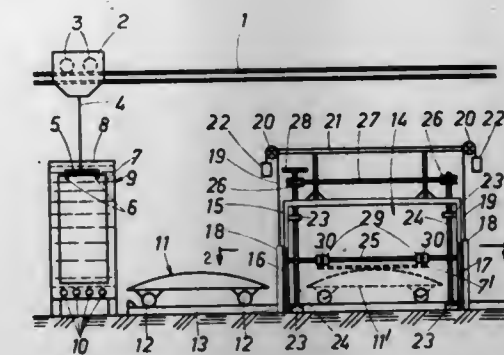
Int. Cl. C03b 23/02

U.S. Cl. 161—1

15 Claims

A process for bending glass sheets to form permanently curved sheets by subjecting the sheets to a surfacing treatment

which removes a layer from at least one surface of the sheet and thus removes or reduced pre-existing surface defects, the



surfacing treatment at least beginning before commencement of the bending operation.

3,753,841

## PRESSURE RECORDING SHEET

Seth Wheeler, Clark Summit, Pa., assignor to Litton Business Systems, Inc., New York, N.Y.

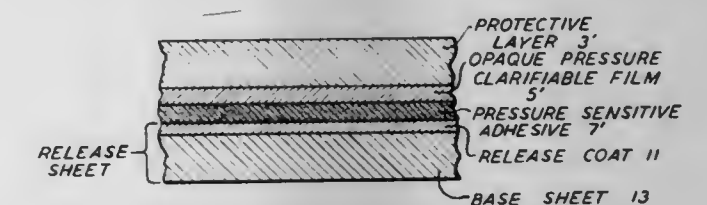
Continuation of Ser. No. 27,915, April 13, 1970, abandoned.

This application May 9, 1972, Ser. No. 251,847

Int. Cl. B41m 5/16; B32b 7/06

U.S. Cl. 161—6

1 Claim



Stock comprising a pressure recording sheet including a protective transparent overlay sheet, an opaque pressure clarifiable coating under said overlay sheet, and a base sheet adhesively secured to the bluish coat. The adhesive for securing the base sheet to the overlay sheet is of a color contrasting with the color of opaque coat so that in response to localized pressure on the overlay sheet, the opaque coat transparentizes and reveals the contrastingly colored adhesive to produce a record.

3,753,842

## NON-WOVEN TEXTILE FABRIC

E. Henry Pittman, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

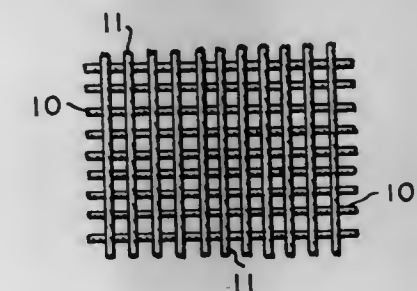
Division of Ser. No. 648,597, June 26, 1967, abandoned. This

application Sept. 9, 1970, Ser. No. 70,664

Int. Cl. B32b 5/12

U.S. Cl. 161—57

7 Claims



A non-woven textile fabric comprising a plurality of warp yarns and a plurality of fill yarns, said yarns being fibrous or filament yarns, preferably arranged in an oriented pattern and bonded together at their crossing points by an adhesive com-



position comprising the combination of a vinyl acetate polymer and a styrene-maleic anhydride copolymer. The adhesive composition is applied to the yarns or the fabric preferably as an aqueous emulsion, and the bond is effected by drying or subjecting the fabric to heat.

3,753,843

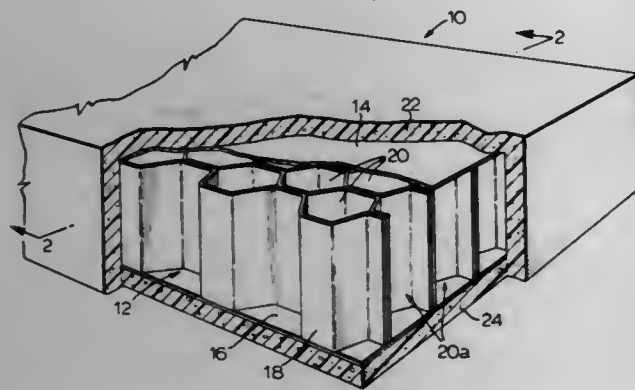
**MOLDED STRUCTURAL PANEL**

David John Hutchison, Toronto, Ontario, Canada, assignor to Monostruct Corporation Limited, Toronto, Ontario, Canada  
Filed June 29, 1970, Ser. No. 50,787

Int. Cl. B32b 3/12

U.S. Cl. 161-43

4 Claims



A panel comprises an essentially multi-cellular core and a seamless covering over major surfaces of the core and over at least a portion of the periphery thereof. The panel is produced in a mold by spacing the core away from the mold faces and molding the covering material around the core.

3,753,844

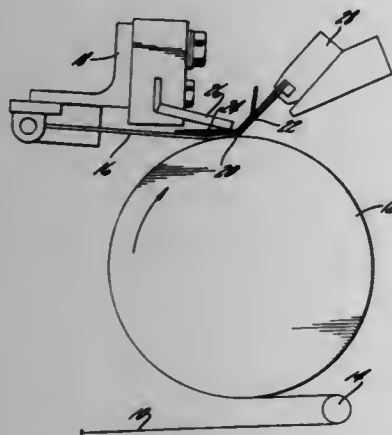
**COMPRESSIVELY DEFORMED CELLULOSIC LAMINATES WITH IMPROVED DRAPE, BULK, AND SOFTNESS**

Ralph V. Braun, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.  
Filed May 20, 1971, Ser. No. 145,210

Int. Cl. B32b 5/12

U.S. Cl. 161-57

12 Claims



A soft, bulky cellulosic laminate is illustrated. The laminate comprises an airlaid web of cellulosic fibers containing a pattern of highly compacted spot-bonded areas and fluffy mound regions of substantially unbonded fibers disposed between the bonded areas. The cellulosic web is united to a network of reinforcing elements, such as a scrim, drafted fiber web, or continuous filament web, with a layer of patterned adhesive containing open areas of a magnitude at least several times greater than the

spacings between the spot bond areas in the cellulosic web. The laminate is compressively deformed, such as by microcreping, to enhance softness and bulkiness by accentuating the unbonded and fluffy characteristics of the mounds in the cellulosic webs which are disposed within the opened areas of the adhesive layer.

3,753,845

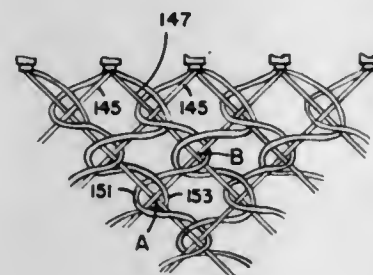
**NET STRUCTURES**

Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.  
Continuation-in-part of application Ser. No. 849,947, Aug. 12, 1969, now Patent No. 3,591,894. This application Nov. 18, 1970, Ser. No. 90,698

Int. Cl. B32b 7/08

U.S. Cl. 161-92

4 Claims



A net-like structure formed of strands and having strand junctions at each of which strands are disposed in crossing relationship with each other and are entwined by other strands.

3,753,846

**CUSHIONING AND COVERING MEANS FOR PORTABLE ELECTRICAL DEVICES**

Maurice Marie Achille Trouilhet, Lyon, France, assignor to Calor

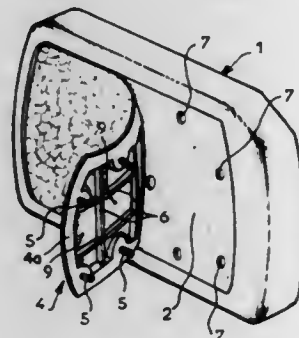
Filed Mar. 9, 1971, Ser. No. 122,377

Claims priority, application France, Mar. 17, 1970, 7009540; Feb. 12, 1971, 7104788

Int. Cl. F16f 15/12; B32b 3/26, 3/30

U.S. Cl. 161-111

4 Claims



The present invention essentially relates to an improved covering and cushioning means in particular for small electric hand-apparatus, of the type comprising at least one plastic plate applied on the wall of the said apparatus, said plate being provided on its inner face with a plurality of pins adapted to be inserted into corresponding holes provided in the said wall and which pins protrude beyond the other side of said wall and are headed or flattened in rivet-like manner on the other side of the said wall so said means will be held in position on the said wall.

3,753,847

**LAMINATED CONTAINER WALL STRUCTURE**

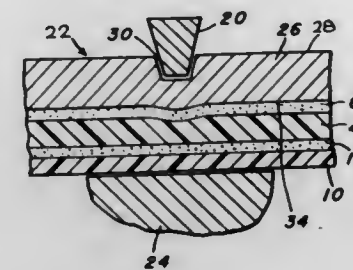
Herbert Gayner, Monroeville, Pa., and John N. Demsey, Jr., Oakland, Calif., assignors to Aluminum Company of America, Pittsburgh, Pa.

Original application May 16, 1969, Ser. No. 825,164, now Patent No. 3,632,461. Divided and this application Jan. 7, 1971, Ser. No. 104,677

Int. Cl. B32b 27/36, 27/38, 27/30

U.S. Cl. 161-116

5 Claims



A method of manufacturing a laminated metal container wall having an integral opening device. Providing a metal sheet, coating the sheet with an adhesive selected from the group consisting of epoxy, polyester and polyurethane and subsequently securing to the sheet by means of the adhesive a continuous layer of barrier material selected from the group consisting of low density polyethylene, high density polyethylene and cast polypropylene. Subsequently scoring said sheet to define a severable and/or removable sector and leaving residual metal along the score line of a thickness of about 0.002 to 0.006 inch. Simultaneously with the scoring operation reducing the thickness of the barrier material in the regions underlying the scoring through compressibly established flow without penetrating entirely through the layer. An outer protective material selected from the group consisting of a polyester, polyvinylidene chloride, polyvinyl chloride and medium or high density polyethylene may be continuously secured to the barrier material.

A laminated metal container wall made by the above method having a barrier material thickness of about 0.002 to 0.003 inch in the portion not underlying the score line and a reduced thickness in the portion underlying the score line. The barrier material having a continuous panel covering structure. An outer protective material selected from the group consisting of a polyester, polyvinylidene chloride, polyvinyl chloride and medium or high density polyethylene secured to the barrier material.

3,753,848

**INSULATION INSTALLATION**

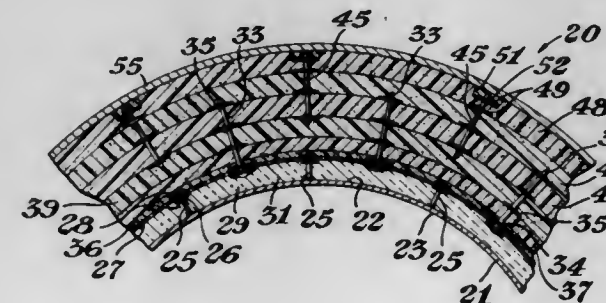
Robert B. Bennett, Westerville, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed June 23, 1971, Ser. No. 155,893

Int. Cl. B32b 3/00

U.S. Cl. 161-120

15 Claims



Curved surfaces are insulated with slabs, boards or planks of light weight insulating material by providing a plurality of outwardly projecting studs on the surface to be insulated, affixing to the studs a sheet member affixing

to the sheet member second studs displaced from the first studs, impaling a plurality of insulating elements on the second studs. A convenient means is provided for installing thermal insulation on regularly or irregularly curved surfaces.

3,753,849

**CEMENTATION MATERIAL AND CONSTRUCTIONS MADE THEREFROM**

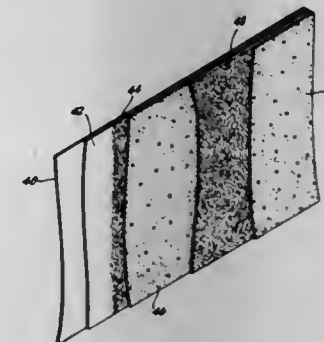
Raymond A. Duff, 1333 S. Baker, Santa Ana, Calif. 92707

Continuation-in-part of application Ser. No. 851,960, Aug. 21, 1969, now abandoned. This application Mar. 11, 1971, Ser. No. 123,221

Int. Cl. B32b 17/10, 27/38; C04 7/12

U.S. Cl. 161-162

18 Claims



A cementation material of construction comprised of an admixture of hydraulic cement, aggregate, epoxy resin, water reducing additive, and sufficient water to harden the cement. Also disclosed are reinforced concrete constructions formed of alternate integrally bonded layers of the cementation material and fiber-reinforced epoxy resin, and a method for manufacturing laminated concrete and fiber-reinforced epoxy resin constructions. The constructions can have a resinous surface coating integrally bonded thereto to enhance the appearance and serviceability of the construction.

3,753,850

**GOLD TOOLING PROCESS AND LAMINATE THEREFOR**

Jacques Brunet, Lyon, France, assignor to La Cellophane, Paris, France

No Drawing. Filed Mar. 14, 1972, Ser. No. 234,680  
Claims priority, application France, May 6, 1971, 7116329

Int. Cl. B32b 7/06, 31/20; B44c 1/16

U.S. Cl. 161-214

11 Claims

A process for transferring metals by a tooling method which comprises placing a metal-coated laminate on a substrate to be decorated, this metal laminate comprising a temporary support, a non-adherent and protective layer on the support, the layer comprising a polyester having a melting point below 150° C. formed by the polycondensation of saturated linear dicarboxylic acids and alkylene diols having from 2-6 carbon atoms, a thin film of a decorative metal on this non-adherent and protective layer and a layer of a heat-activated glue on the metal; transferring a portion of this metal layer corresponding to the pattern on a heat-setting iron to the substrate to be decorated and removing the metal-coated laminate leaving a metal tooled pattern on the substrate.

3,753,851

**METHOD FOR TREATING PULP DIGESTER BLOW GASES**

Charles S. Gaillard, New York, N.Y., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 22, 1971, Ser. No. 191,728

Int. Cl. D21c 11/08

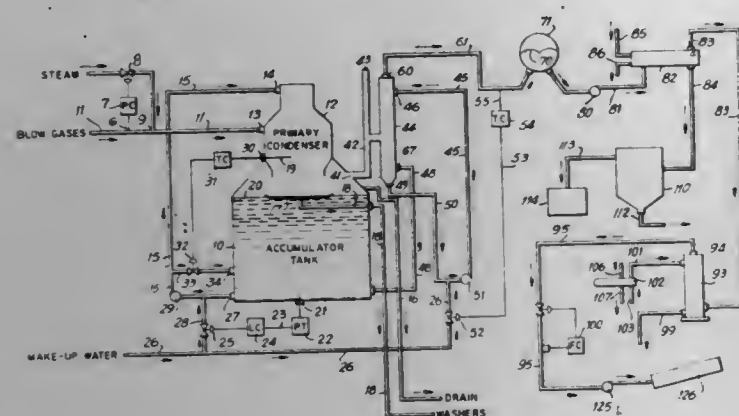
U.S. Cl. 162-15

5 Claims

Disclosed is a process for treating hot, odoriferous blow gases from a pulp digester whereby a significant portion



of the available heat is recovered, turpentine is recovered, a portion of the odoriferous gases are removed and recovered and the remaining gases are burned resulting in further heat recovery. The digester blow gases containing water vapor, turpentine vapor and gaseous odoriferous sul-



phur compounds are passed through a series of direct condensers to a gas storage means before being conducted to an indirect condenser. The uncondensed gases leaving the indirect condenser are scrubbed while the condensate mixture leaving the indirect condenser is conducted to a turpentine separating means.

3,753,852

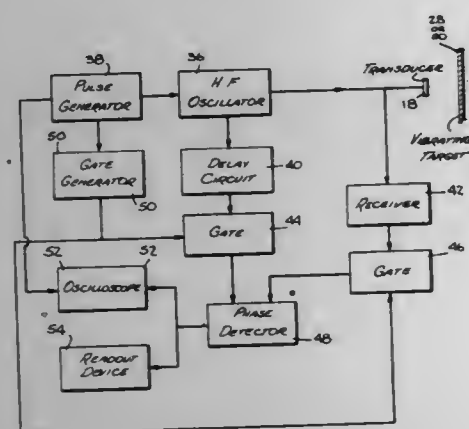
### ULTRASONIC SYSTEM FOR MONITORING VIBRATIONS IN A NUCLEAR REACTOR

Clyde C. Scott, 31043 Pierce Drive, Birmingham, Mich. 48009, and James P. Lagowski, 1755 Beverly Blvd., Berkeley, Mich. 48072

Filed Dec. 10, 1971, Ser. No. 206,811  
Int. Cl. G21c 17/00, 17/06; G01n 9/24

U.S. Cl. 176—19 R

5 Claims



Apparatus for detecting the frequency and amplitude of vibration of a preselected vibrating member inside a nuclear reactor vessel from an external point including a transducer mounted on the outside of the vessel for transmitting a signal to said member and receiving an echo back from the vibrating member, a pulse generator for generating repetitive pulses, a high-frequency oscillator triggered by the pulse generator, the transducer being excited by the high-frequency pulses for transmitting the signal, a delay circuit having a time delay equivalent to the time interval for ultrasonic pulses travelling between the transducer and the operating member, a phase detector, a gate circuit synchronized with the pulse generator for feeding the delayed transmitting pulses and the

corresponding receiving echoes simultaneously to the phase detector, and read-out means for the frequency and amplitude of vibration of the vibrating member.

3,753,853

### SAFETY DEVICE FOR PRESSURE VESSELS ESPECIALLY FOR NUCLEAR REACTORS

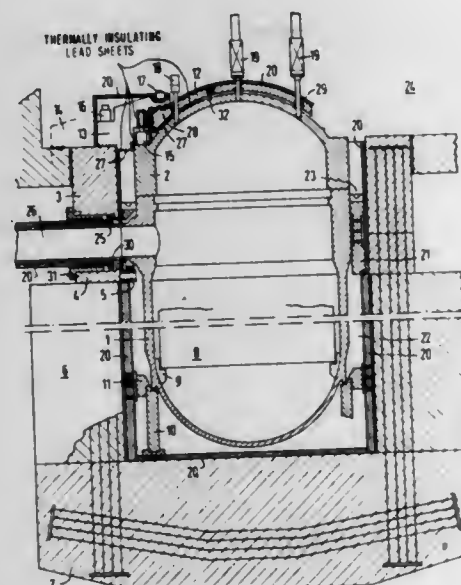
Hans-Peter Schabert, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany  
Filed Sept. 24, 1970, Ser. No. 74,988

Claims priority, application Germany, Sept. 25, 1969,  
P 19 48 522.4

Int. Cl. G21c 13/00

U.S. Cl. 176—38

11 Claims



Safety device for pressure vessel having a cover to which tubes are secured includes a capture cover disposed on the outside of the pressure vessel cover, the capture cover becoming effective for covering the pressure vessel pursuant to rupture of the pressure vessel cover, the capture cover being formed with openings through which the tubes secured to the pressure vessel cover extend and being removable from the pressure vessel together with the pressure vessel cover.

3,753,854

### PRODUCTION OF A FUEL CARBIDE WITH A JACKET OF FUEL NITRIDE, SULFIDE OR PHOSPHIDE

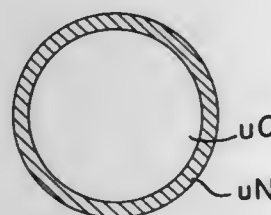
Horst Axel Karl Krauth, Wurzburg, Norbert Müller, Wolfgang, near Hanau am Main, and Paul Himmelstein, Frankfurt am Main, Germany, assignors to Nukem Nuklear-Chemie und-Metallurgie, G.m.b.H., Wolfgang near Hanau, Germany

Filed June 15, 1970, Ser. No. 46,171

Int. Cl. G21c 3/02, 21/00

U.S. Cl. 176—67

8 Claims



Nuclear fuel particles are prepared by forming a jacket of 1 to 10  $\mu$ m thick of uranium, plutonium or thorium nitride, sulfide or phosphide on fuel carbide particles having a size between 0.01 and 2 mm.

3,753,855

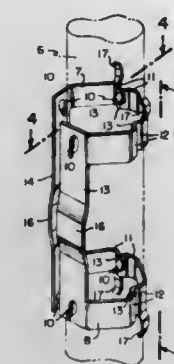
### MODULAR FUEL ROD SPACER ASSEMBLY FOR NUCLEAR REACTOR FUEL ASSEMBLIES

Harry A. Donck, New York, N.Y., assignor to United Nuclear Corporation, Elmsford, N.Y.  
Filed June 15, 1970, Ser. No. 46,234

Int. Cl. G21c 3/34

U.S. Cl. 176—78

9 Claims



A fuel rod spacer assembly comprises a cellular spacer array and, for each fuel rod, a bearing clip comprising a pair of linked split ring rod embracing portions proportioned to extend around substantially more than 180° of the rod circumference. A pair of spring tabs on the split rings are provided for releasably engaging the cellular spacing array in order to prevent longitudinal displacement of the bearing clip. This spacer assembly can be easily fabricated because the bearing clips need not be formed as a part of the cellular array. The fuel rods can be transversely loaded into the bearing clips and longitudinally loaded into the cellular array without contact against tight, previously-fixed spacers.

3,753,856

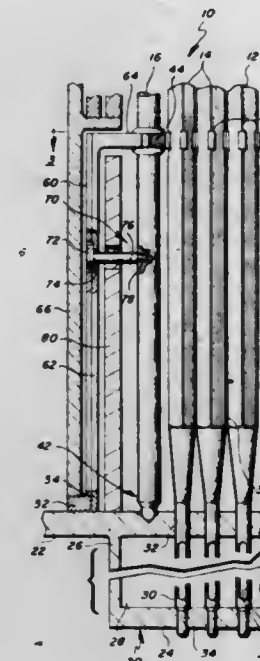
### CORE CLAMPING SYSTEM FOR A NUCLEAR REACTOR

Edward B. Ash, Canoga Park, Calif., assignor to Rockwell International Corporation  
Filed June 1, 1970, Ser. No. 42,362

Int. Cl. G21c 13/04

U.S. Cl. 176—87

3 Claims



A core clamping system for use with nuclear reactors wherein bimetallic elements are placed around a core so that at high temperature and flux conditions they act to exert an inwardly directed clamping force on a predetermined clamping plane thereby counteracting the tendency for the core to expand under those conditions and maintaining constant core geometry.

3,753,857

### PHOSPHATE MODIFIED PROTEINASE-ALTERED STARCH

Saul Rogols, Circleville, Ohio, Robert L. High, Charlotte, N.C., and James E. Green, Kilbourne, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.  
No Drawing. Continuation-in-part of application Ser. No. 773,959, Nov. 6, 1968. This application Mar. 8, 1971, Ser. No. 122,156

Int. Cl. C08b 19/04; C12b 3/06; D21b 3/28

U.S. Cl. 195—7

3 Claims

A phosphate modified, proteinase-altered starch prepared by effecting an enzymic reaction between a proteinase and the protein fragments of a starch molecule, and by the addition of a soluble, monobasic phosphate to the slurried starch. Although the phosphate modification may take place first, or simultaneously with the proteinase alteration, it is presently preferred that the proteinase alteration be accomplished first, because it appears to improve the extent of phosphate bonding. The phosphate modified, proteinase-altered starch of this invention is useful in improving the properties of paper, especially burst, tear, and tensile strength. Considerable improvement in opacity was also observed, because of the higher percentage of  $\text{TiO}_2$  retention possible with this starch derivative.

3,753,858

### METHOD OF CONVERTING GLUCOSE INTO FRUCTOSE

Yoshiyuki Takasaki, and Akira Kamibayashi, Chiba-shi, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Jan. 15, 1969, Ser. No. 791,309

Claims priority, application Japan, Jan. 20, 1968,  
43/3,433

Int. Cl. 13k 1/00, 9/00

U.S. Cl. 195—31 F

7 Claims

A method for converting glucose into fructose using a microorganism from the Streptomyces genus in which a glucose isomerizing enzyme is fixed in the microorganism by the step of treating the microorganism containing the enzyme at a temperature of about 60° C. to about 85° C.

3,753,859

### MICROBIOLOGICAL PROCESS FOR PREPARING THE AMINO ACIDS TRANS-4-n PROPYL-L-PROLINE AND TRANS-4-ETHYL-L-PROLINE

Bruce W. Churchill, Kalamazoo, Brenda J. Rakow, Portage, and Malcolm E. Bergy, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.  
No Drawing. Filed Jan. 24, 1972, Ser. No. 220,389

Int. Cl. C12d 1/02

U.S. Cl. 195—47

7 Claims

A microbiological process for preparing the amino acids trans-4-n propyl-L-proline and trans-4-ethyl-L-proline which are useful as intermediates for the preparation of antimicrobially active lincomycin antibiotics. Further, trans-4-n propyl-L-proline is useful to inhibit the production of lincomycin B in a lincomycin fermentation.

3,753,860

### PRESERVATION OF BOVINE STOMACHS FOR RENNET EXTRACTION

Richard B. Dardas, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,418

Int. Cl. C07g 7/026

U.S. Cl. 195—65

1 Claim

High recovery yields of rennet are obtained from calf and adult bovine stomachs preserved by dipping the stomachs in a 1 to 10% w/v. propylene glycol solution of a 1:1 mixture of the methyl and propyl esters of p-hydroxybenzoic acid, and storing under refrigeration.

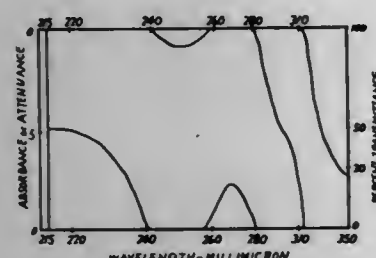


**3,753,861**  
**BINDING ENZYMES TO CARBONYL POLYMERS**  
 Peter Salvatore Forgiore, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.  
 No Drawing. Continuation-in-part of abandoned application Ser. No. 8,089, Feb. 2, 1970. This application Mar. 13, 1972, Ser. No. 234,299  
 Int. Cl. C07g 7/02

**U.S. Cl. 195—68**  
 A hydrophilic, sulfated carbonyl polymer having a catalytically active enzyme covalently bound thereto, a method for the production thereof and a method for converting substrates to their conversion products therewith, are disclosed.

**3,753,862**  
**METHOD OF MAKING FUNGICIDAL SUBSTANCE AGAINST CANDIDA AND CANDIDA-LIKE, YEAST-LIKE FUNGI**  
 Masami Oimomi, 1131 Mega, Shikama-ku, Himeji-shi, Hyogo-ken, Japan  
 Filed Mar. 15, 1971, Ser. No. 124,204  
 Claims priority, application Japan, Apr. 1, 1970, 45/27,661  
 Int. Cl. C12b 1/00

**U.S. Cl. 195—96**  
**4 Claims**



The method of making a fungicidal substance by culturing a strain of enterobacteric FERM No. 444 and extracting the substance from the culture.

**3,753,863**  
**REAGENT FOR MEDICAL TESTING WHICH CONTAINS A BENZIDINE-LIKE COMPOUND**  
 Roy E. Speck, Indianapolis, Ind., assignor to Bio-Dynamics, Inc., Indianapolis, Ind.  
 No Drawing. Filed Nov. 22, 1971, Ser. No. 200,842  
 Int. Cl. G01n 31/14

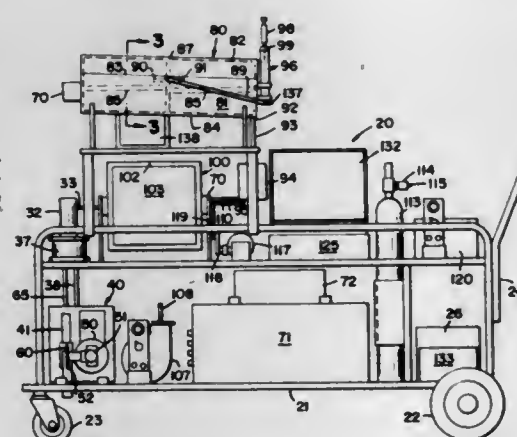
**U.S. Cl. 195—103.5 C**  
 A liquid reagent is disclosed which has improved stability. It has been found that reagents containing benzidine or benzidine-like compounds are made stable if they contain at least about 50% of a compound selected from the group consisting of 1,2-ethanediol, 1,2-propanediol, 1,3-propanediol, 1,4-butanediol, 2,3-butanediol and 1,2,3-propanetriol.

**3,753,864**  
**PRECIPITATING SOLUTION FOR AMYLASE ASSAY**  
 Arthur L. Babson and Susan R. Babson, Chester, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.  
 No Drawing. Filed Dec. 6, 1971, Ser. No. 205,294  
 Int. Cl. G01n 31/14

**U.S. Cl. 195—103.5 R**  
 A stable, temperature-independent precipitating agent solution comprising an aqueous solution of zinc chloride and ethylene glycol monoalkyl ether is provided for use in an improved amylase assay. In the assay, a fluid test sample containing an unknown concentration of amylase is incubated with a water-soluble, dyed starch substrate

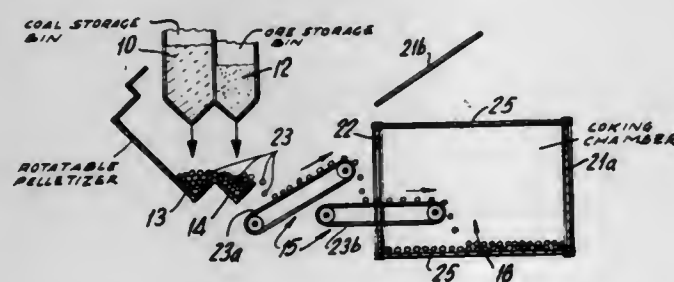
for a specified period of time, after which the precipitating agent solution of this invention is added to remove all dyed starch which has not been hydrolyzed by the amylase, and the optical density of the remaining supernatant fluid is measured to indicate amylase concentration in the test sample.

**3,753,865**  
**METHOD AND APPARATUS FOR PRESERVING HUMAN ORGANS EXTRACORPOREALLY**  
 Folkert O. Belzer, Mill Valley, and Chester W. Truman, Daly City, Calif., assignors to The Regents of the University of California, Berkeley, Calif.  
 Application Apr. 21, 1969, Ser. No. 825,099, which is a continuation-in-part of abandoned application Ser. No. 727,762, May 9, 1968. Divided and this application Mar. 12, 1971, Ser. No. 123,750  
 Int. Cl. A61b 19/00; A61m 1/03; C12k 9/00  
 U.S. Cl. 195—127



A human organ is stored, between removal from one body and implantation in another, in an apparatus mounted on a wheeled cart. The apparatus has a pulsatile pump for pumping plasma, a heat exchanger connected to the outlet of the pump for cooling the plasma to about 4° to 8° C., and a perfusion chamber to which the cooled plasma is supplied. The perfusion chamber includes a support for the organ and means for connecting the organ to the pulsing flow of cold plasma. Venous effluent from the organ is collected and conducted by gravity to a membrane oxygenator, which returns oxygenated plasma to the pulsatile pump for recirculation through the organ.

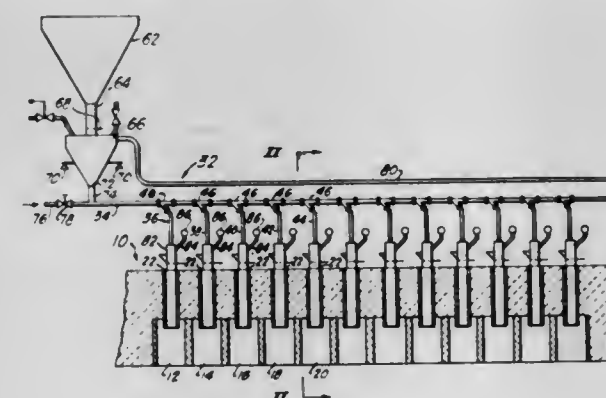
**3,753,866**  
**PROCESS AND APPARATUS FOR MAKING COKE OF EVEN SIZE**  
 Werner Wenzel, Hermann Schenck, Heinrich-Wilhelm Gudenau, and Enno Wieting, Aachen, Germany, assignors to Firma Carl Still  
 Filed Aug. 21, 1970, Ser. No. 65,935  
 Claims priority, application Germany, Aug. 28, 1969, P 19 43 763.9  
 Int. Cl. C10b 45/02, 53/08  
**U.S. Cl. 201—6**  
**3 Claims**



A process for producing coke of substantially even-size pieces from caking coals which in coking yield a coherent

cake, which comprises embedding materials in locally concentrated amounts into the coal to be coked capable of weakening the coherence of the cake at determined places, thereby subdividing the cake and rendering possible its breaking up into even-size pieces upon discharge from the coking chamber. The invention also comprises an apparatus for carrying out the process.

**3,753,867**  
**APPARATUS FOR CHARGING COKE OVENS**  
 Erich Wlemer, Hellweg, Germany, assignor to Heinrich Koppers Gesellschaft mit beschränkter Haftung, Essen, Germany  
 Filed Apr. 14, 1971, Ser. No. 133,850  
 Int. Cl. C10b 31/00  
**U.S. Cl. 202—262**  
**9 Claims**

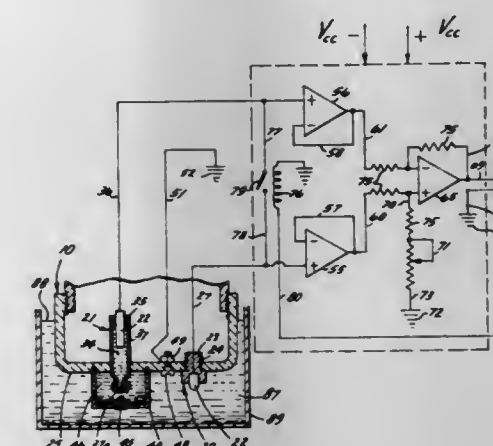


A plurality of coal conveying conduits extend longitudinally along the coke oven battery in spaced parallel relation to each other. Branch conduits connect the coal conveying conduits with pressure reducing apparatus therebelow. The pressure reducing apparatus is connected to the charging holes and is arranged to separate the carrier gas from the coal particles. The carrier gas is withdrawn by means of suction conduits and the coal particles flow by gravity through the charging holes into the coke oven chambers. Another embodiment of the invention includes a vehicle movable along the roof of the coke oven battery that has transfer bins thereon connectable to the respective branch conduits. The carrier gas is separated from the coal particles in the transfer bins and conveyed through suitable dust collecting apparatus before the carrier gas is vented to the atmosphere. Another embodiment includes a flexible conduit connecting the transfer bins to the source of coal and pneumatically conveying the coal particles through the flexible conduit.

**3,753,868**  
**METHOD OF DETERMINING DISSOLVED OXYGEN CONTENT**  
 James R. Arrington, Muskego, and Karl King, Milwaukee, Wis., assignors to American Limnatics Instruments, Inc.  
 Original application June 5, 1970, Ser. No. 43,863, now Patent No. 3,696,019. Divided and this application June 23, 1972, Ser. No. 265,747  
 Int. Cl. G01n 27/46  
**U.S. Cl. 204—1 T**  
**3 Claims**

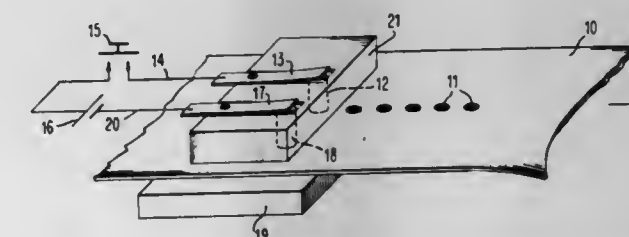
An electrode for sensing dissolved oxygen in an electrolytic media is composed of a core having a major portion of thallium and a minor amount of mercury and an outer coating of a saturated thallium-mercury amalgam thereon. The electrode is formed as a solid electrode core and the preferred amount of thallium is 87% by weight with the mercury being present in the amount of 13%. The

electrode composition is employed to sense dissolved oxygen in an electrolytic media and is substantially unaffected



by wide variations in temperature, pH, pressure, salinity and flow rate.

**3,753,869**  
**ELECTROCHEMICAL RECORDING METHOD**  
 Alphonse Ambrosia, Mahopac, and Carlos J. Sambucetti, Mohegan Lake, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.  
 Filed Dec. 20, 1971, Ser. No. 209,930  
 Int. Cl. B41M 5/20  
**U.S. Cl. 204—2**  
**18 Claims**



A dot matrix electrochemical recorder printing by electrolysis which includes plural silver electrode pins which rub against a paper recording medium impregnated with a conductive salt selected from an alkali, ammonium fluoride and ammonium oxalate alone with a reducing agent selected from ascorbic acid, stannous chloride, stannous sulfate, potassium hydroxide, and some reducing phenols and amines, such as paraaminophenol.

**3,753,870**  
**PROCESS FOR PRETREATING STEEL PLATES FOR ENAMELLING**  
 Hans Hoffmann, Leichlingen, Gerhard Trogel, Bergisch Neukirchen, Waldemar Immel, Solingen-Merscheid, Eberhard Knaak, Solingen-Ohligs, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany, and Friedr. Blasberg Gesellschaft mit Beschränkter Haftung und Co. Kommanditgesellschaft, Solingen-Merscheid, Germany  
 No Drawing. Continuation of abandoned application Ser. No. 864,516, Oct. 7, 1969. This application Dec. 2, 1971, Ser. No. 204,324  
 Int. Cl. C23b 5/08; C23d 3/00  
**U.S. Cl. 204—34**  
**7 Claims**

A process of pretreating steel plates for enamelling by degreasing, pickling, metallising, neutralising and drying, wherein metallising is carried out galvanically in an acid base which contains besides nickel and/or cobalt ions magnesium and chlorine ions; the nickel and cobalt is applied to the surface to be enamelled in quantities of from 0.3 up to 0.7 g./m.<sup>2</sup>, calculated as metal. Optionally, before the metallising step an electrolytically



degreasing and pickling step is performed. By the afore-said treatment the overall time consumption for pretreating is considerably shortened. The pretreating is suitable for steel surfaces to be enamelled and is of particular advantage with direct enamelling processes.

3,753,871

**MULTIHARDNESS ELECTRODEPOSITS**

Steve Eisner, Schenectady, N.Y., assignor to

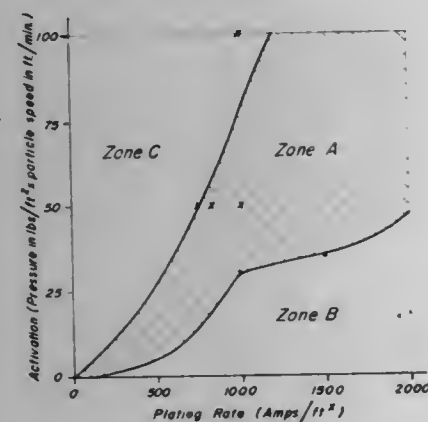
Norton Company, Troy, N.Y.

Filed Nov. 23, 1971, Ser. No. 201,360

Int. Cl. C23b 5/48, 5/20, 5/08

U.S. Cl. 204—35 R

4 Claims



Electrodeposits having zones of varying hardness are obtained by varying the degree of mechanical activation per unit volume of the electrodeposit during its formation.

3,753,872

**METHOD OF AND BATH FOR PRODUCING MICROCRACK CHROMIUM COATINGS**

Martin Köhl, Düsseldorf, and Ralf Ludwig, Neuss, Germany, assignors to Langbein-Pfahhauser Werke AG, Neuss, Rhine, Germany

No Drawing, Filed Jan. 10, 1972, Ser. No. 216,724

Claims priority, application Germany, Jan. 11, 1971,

P 21 00 971.2

Int. Cl. C23b 5/08, 5/32, 5/50

U.S. Cl. 204—41

5 Claims

A microcrack chromium coating is applied by electroplating it upon a coating of nickel, cobalt, nickel-cobalt, nickel-iron or iron-cobalt previously electrodeposited upon a substrate, e.g. of steel, from an electroplating bath containing 5 g./liter to the limit of solubility of at least one aromatic mono-, di- or polycarboxylic acid anhydride or salt. Preferably the aromatic carboxylic acid is benzoic acid, phthalic acid or phenylacetic acid and is present in an amount of 5 g./liter to 70 g./liter or the limit of solubility whichever is less, the electroplating is carried out at a temperature of 35 to 70° C. and the current density of 3 to 20 a./dm.<sup>2</sup>.

3,753,873

**PROCESS FOR THE ELECTRODEPOSITION OF A COLORED NICKEL-TIN ALLOY COATING**

Louis H. Cates, Scarsdale, N.Y., Stanley Geffon, St. Petersburg, Fla., and Samuel Geffon, New York, and Walter Schwartz, Bronx, N.Y., assignors to The Enequist Chemical Co., Inc. Brooklyn, N.Y.

Continuation of abandoned application Ser. No. 621,002, Oct. 6, 1967. This application Nov. 6, 1970, Ser. No. 87,604

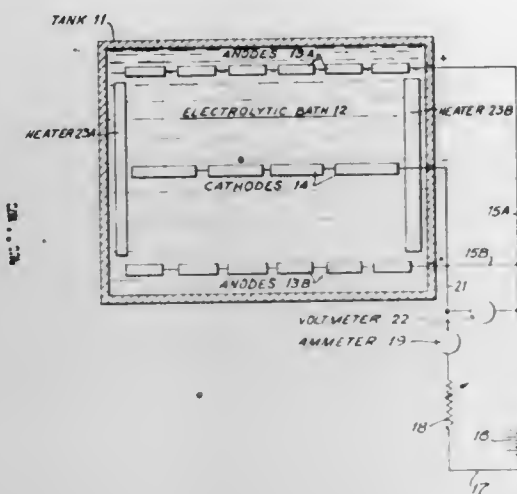
Int. Cl. C23f 5/38

U.S. Cl. 204—43

1 Claim

Electroplating apparatus for plating an article immersed in an electrolytic bath by applying a positive DC voltage to an anode immersed in the electrolytic bath and by applying a negative DC voltage to the article, comprises an electrolytic bath containing an aqueous solu-

tion of nickel in a range of 5 to 100 grams per liter and provided by one of a group consisting of nickel sulfate, nickel sulfamate, nickel fluoborate, nickel chloride, nickel carbonate, nickel cyanide, nickel acetate, nickel ethylene diamine tetra acetic acid, nickel oxide and nickel tartrate, tin in a range of 5 to 100 grams per liter and provided by one of a group consisting of sodium stannate, potas-



sium stannate, stannic chloride, stannous chloride, stannic sulfate, stannous sulfate, stannic fluoborate and stannous fluoborate, alkali cyanide in a range of 5 to 200 grams per liter provided by one of a group consisting of sodium cyanide and potassium cyanide, and at least one of a group consisting of copper, zinc, molybdenum, selenium and sulfur in a range of 0 to 20 grams per liter.

3,753,874

**METHOD AND ELECTROLYTE FOR ELECTRO-DEPOSITING A GOLD-ARSENIC ALLOY**

Richard Henry Zimmerman, Palmyra, and Richard Lee Breneman, Camp Hill, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 807,105, Mar. 13, 1969. This application Dec. 21, 1971, Ser. No. 210,609

Int. Cl. C23b 5/42

U.S. Cl. 204—43 G

28 Claims

An aqueous electrolyte solution having a pH from 5.5 to 8 for depositing hard, ductile, and bright arsenic containing gold has been provided; besides the various buffers and the alkali gold cyanide complex, a thio sulfate is added to facilitate the proper inclusion of arsenic in the gold deposit; salt compositions suitable for obtaining aqueous electrolytes, a method for depositing the arsenic gold, the gold alloy, and electrical devices having the arsenic gold deposit on a surface of these devices have also been disclosed.

3,753,875

**METHOD OF TREATMENT OF METALLIC SURFACES**

Philippe Yves Christian Douet, Saint-Etienne, Loire, France, assignor to Centre Stephanois de Recherches Mecaniques Hydromechanique et Frottement, Andrezieux-Bouthéon, Loire, France

No Drawing. Filed June 9, 1971, Ser. No. 151,478

Claims priority, application France, June 26, 1970,

7023726; Feb. 4, 1971, 7103716

Int. Cl. C23b 11/00

U.S. Cl. 204—56 R

4 Claims

A method of treatment of metallic surfaces in order to improve their resistance to wear and to seizure consists of electrolyzing a part having a metallic surface which serves as an anode in a bath consisting of water and one or a mixture of salts containing at least one element belonging to the group of elements constituted by sulphur,

selenium, tellurium, phosphorus, boron, silicon, fluorine, chlorine, iodine, bromine, arsenic, the temperature of the bath being comprised between the ambient temperature and the boiling temperature of the mixture of salt or salts and water. The bath may be composed of a mixture of water with alkaline sulphides, thiocyanates or iodides.

3,753,876

**PROCESS FOR ELECTROCHEMICAL FLUORINATION**

Peter Voss, Leverkusen, Hans Niederprum, Monheim, Rhineland; Gustav Kaule, Cologne, and Rudiger Trupp, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 10, 1972, Ser. No. 225,075

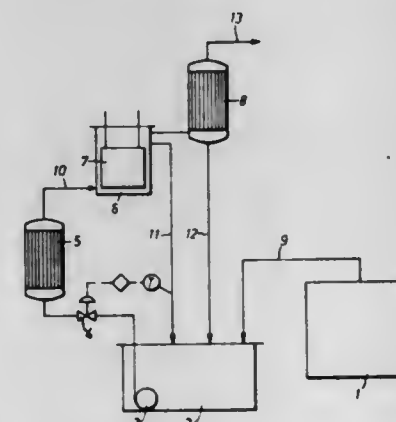
Claims priority, application Germany, Feb. 13, 1971,

P 21 06 870.2

Int. Cl. B01k 3/00; C22d 1/02; C23b 5/68

U.S. Cl. 204—59 R

7 Claims



Circulation of a mixture of composition to be fluorinated and anhydrous hydrofluoric acid as electrolyte through a cooling zone, an electrolytic cell and a relatively large storage zone while removing insoluble fluorination products from the electrolyte before a second passage through said cell.

3,753,877

**ELIMINATION OF FLOATING SLIME DURING ELECTROLYTIC REFINING OF COPPER**

Nils Folke Rune Lindstrom, Skelleftehamn, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed May 25, 1971, Ser. No. 146,663

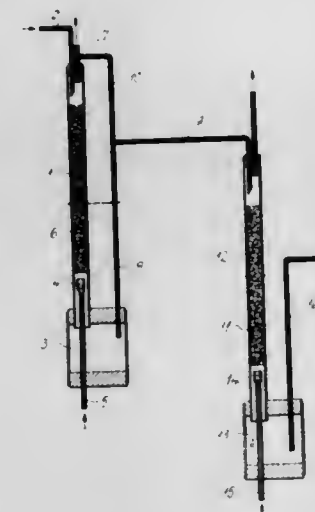
Claims priority, application Sweden, May 28, 1970,

7,380/70, 7,381/70, 7,382/70

Int. Cl. B01k 3/06; C22d 1/16

U.S. Cl. 204—106

19 Claims



A method for eliminating floating slime in the electrolytic refining of copper. The method uses a novel electrolyte which contains specific quantities of trivalent

arsenic, pentavalent arsenic and pentavalent antimony; the arsenic content being obtained and maintained by special procedural steps such as direct addition of the substances to the solution, reduction of existing quantities of As(V) in the solution or by increasing the arsenic content in the anode. The method also includes the expedient of increasing the current density of the electrolysis, by using the novel electrolyte in combination with periodic reversal of the current flow.

3,753,878

**METHOD OF ELECTROCHEMICALLY MACHINING TITANIUM OR TITANIUM ALLOY WORKPIECES**

Peter Gosger, Burg (Wupper), Germany, assignor to AEG-Elotherm G.m.b.H., Remscheid-Hasten, Germany

Filed Sept. 21, 1971, Ser. No. 182,462

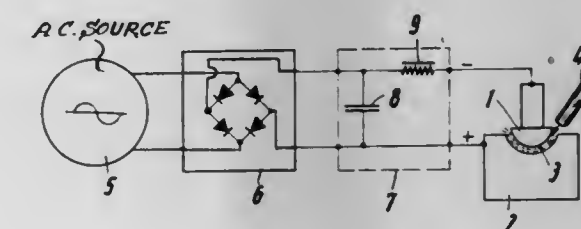
Claims priority, application Germany, Oct. 7, 1970,

P 20 49 196.7

Int. Cl. B23p 1/00

U.S. Cl. 204—129.1

3 Claims



A method and apparatus for electrochemically machining workpieces of titanium or titanium alloy which have not been hitherto amenable to such machining because of the rough surfaces which result. It has been found that substantially eliminating the ripple in the rectified A.C. signal applied to the workpiece for machining produces satisfactorily smooth surfaces on titanium or titanium alloy workpieces and this can be accomplished by passing the rectified signal through a low frequency filter circuit.

3,753,879

**METHOD AND MEANS FOR PRODUCING HOLES**

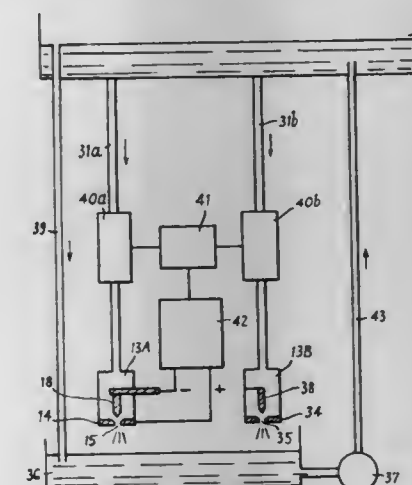
Timothy John Blee, Leamington Spa, England, assignor to Associated Engineering Limited, Leamington Spa, Warwickshire, England

Filed Feb. 3, 1971, Ser. No. 112,181

Int. Cl. B01k 3/00; B23p 1/00, 1/02

U.S. Cl. 204—129.2

16 Claims



This invention relates to the production, by electrochemical machining, of holes of the required flow characteristics, in workpieces such as injector nozzles of fuel injection equipment. According to this invention, after



a hole has been initially formed undersize, it is enlarged by passing therethrough a liquid electrolyte whilst a current flows between the workpiece and a tool associated therewith. The change in flow rate of electrolyte, or the change in pressure drop across the hole, is sensed as the hole is enlarged, and the electrochemical machining is stopped when the flow rate, or pressure drop, reaches a predetermined value.

3,753,880

# METHOD OF PRODUCING A TOOL FOR THE NON-CUTTING WORKING OF MATERIALS

Ursula Bauer-Steinke, and Bruno Maier, Worblingen, and Klaus Brethauer, Singen am Hohentwiel, Germany, assignors to Swiss Aluminum Ltd., Chippis, Switzerland  
No Drawing. Filed Aug. 10, 1971, Ser. No. 170,624  
Claims priority, application Switzerland, Aug. 14, 1970, 12,234/70

Int. Cl. C23b 1/00, 3/06

U.S. Cl. 204—129.5

1 Claim

In the method of producing tools for the non-cutting working of materials, for example the extrusion of metals and plastics, whereby the working surfaces are shaped by electro-erosive treatment, the surfaces are afterwards polished electrolytically.

3,753,881

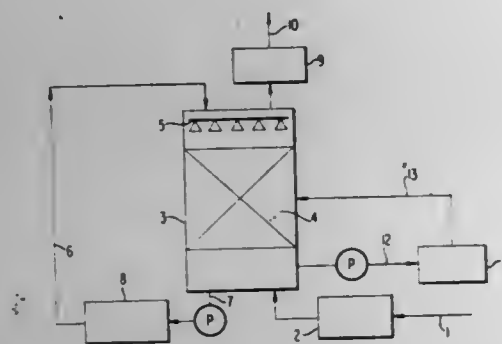
# ELECTROLYTIC PROCESS FOR DESTRUCTION OF ODOROUS IMPURITIES

Ernest R. Zabolotny, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.  
Filed Sept. 4, 1970, Ser. No. 69,802

Int. Cl. B01k 1/00; C01d 7/34

U.S. Cl. 204—130

7 Claims



A process for removing pollutant impurities and destroying oxidizable pollutant impurities in a gas stream comprises contacting the gas stream with an electrolytically regenerable liquid stream capable of oxidizing the pollutant impurities carried therein, separating the gas stream and the liquid stream and electrolytically regenerating the liquid stream whose oxidizing capability is reduced due to the destruction of pollutant impurities. The electrolytically regenerable liquid stream is recycled for further contacting with additional pollutant impurities. The specific improvement in such a process comprises subjecting the liquid stream, either on a periodic or continuous basis, to a low temperature crystallization whereby pollutant impurities which accumulate in the system and certain oxidation products can be crystallized from the liquid stream, e.g., nitrogenous contaminants. Destruction of oxidizable pollutant impurities also occurs at the electrodes of the regeneration means.

Apparatus for removing pollutant impurities and destroying oxidizable pollutant impurities carried in a gas stream comprises contact means to provide good mass transfer between the pollutants in the gas stream and an electrolytically regenerable liquid stream capable

of oxidizing the pollutant impurities, electrolytic regeneration means for the liquid stream which will regenerate the oxidizing capability of the electrolytically regenerable liquid stream, and crystallization means which will remove pollutant impurities and certain oxidation products which accumulate in the electrolytically regenerable liquid stream and which are not totally oxidized.

3,753,882

# METHOD FOR CONVERTING ALUMINUM AND ALUMINUM BASE, AND COPPER AND COPPER BASE MATERIAL SURFACES FROM A HYDROPHOBIC TO A HYDROPHILIC STATE

Leo Missel, Palo Alto, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.  
No Drawing. Filed Mar. 7, 1972, Ser. No. 232,608

Int. Cl. C23b 1/00, 5/50

U.S. Cl. 204—140

31 Claims

A method of converting an aluminum or aluminum base article surface from a hydrophobic to a hydrophilic state comprising the steps of making the surface to be converted the anode in a bath comprising an acid-free aqueous borax solution at a temperature between 100 and 200° F., and maintaining an applied anode current at a current density not exceeding 5 amperes/square foot for a total current application maximum of 300 coulombs/square foot. The hydrophilic surface produced is exceptionally amenable to subsequent coating by various paints such as epoxy base, melamine base, latex, oil base, etc.

Copper and copper base surfaces are similarly made hydrophilic in the same bath but with the difference in that the copper surface is made the cathode, the current density is at least 1 ampere/square foot, and minimum total current application of 30 coulombs/square foot is utilized. The bath need not be acid-free. The hydrophilic surface so made is extremely amenable to subsequent electroplating, resulting in improved adhesion.

3,753,883

# PROCESS FOR PROVIDING A HYDRIDE-FREE AND OXIDE-FREE SURFACE ON ZIRCONIUM AND ZIRCONIUM-ALLOY BODIES

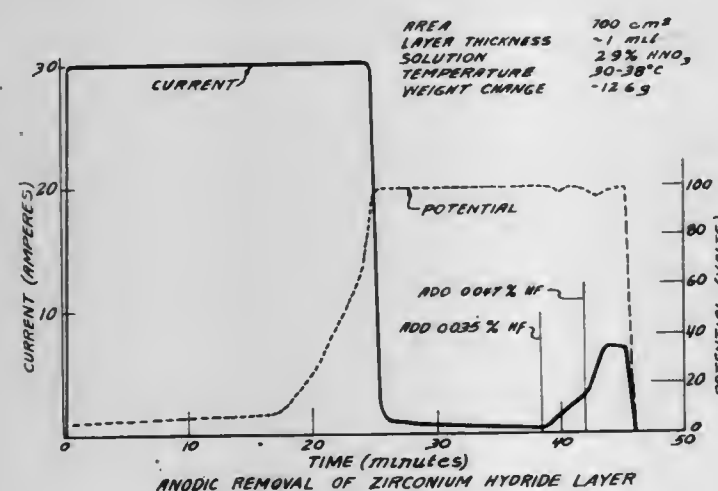
Bruce Griggs, Richland, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed June 26, 1972, Ser. No. 266,110

Int. Cl. C23b 1/00, 1/02

U.S. Cl. 204—144.5

7 Claims



A zirconium or zirconium-alloy body having a zirconium hydride surface layer is electrolytically anodized in aqueous nitric acid solution to remove the hydride surface. Fluoride ions are then added to the solution and

electrolytic anodization is continued. Chemical etching with HNO<sub>3</sub>-HF solution thereupon provides a hydride-free and oxide-free surface. Chemical etching may be in situ employing the anodization bath as etchant if the concentration of fluoride ions therein is high or a separate etchant solution may be employed.

3,753,884

# PROCESS FOR THE PHOTOSYNTHESIS OF HYDROCHLORATES OF CYCLOALKANONE OXIMES

Andre Nahmias and Georges Lucas, Paris, Rene Kern, Savigny-sur-Orge, and Claude Poulain, Orsay, France, assignors to Societe Anonyme dite: Aquitaine Total Organico, Paris, France

Filed Apr. 15, 1971, Ser. No. 134,275

Claims priority, application France, Apr. 21, 1970, 7014478

Int. Cl. B01j 1/10

U.S. Cl. 204—162 XN

7 Claims

A photosynthesis process is provided for the preparation of hydrochlorates of cycloalkanone oximes containing more than 5 carbon atoms, by the reaction under irradiation of nitrosyl chloride in a cycloalkane solution in which the nitrosyl chloride is prepared in situ in one section of the reactor, known as the non-oximating zone, separated by a partition with an overflow device from the oximating zone, from a solution of sulphuric nitrosyl acid, dispersed in a mixture of hydrochloric acid and a solvent of cycloalkane. The resulting sulphuric acid is removed from the reactor while the phase containing the nitrosyl chloride extracted by the solvent flows over the overflow device into the oximation zone.

3,753,885

# COUNTERCURRENT ELECTRODEPOSITION PROCESS

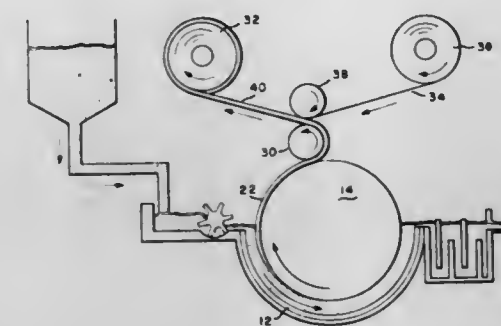
Fred H. Hammond, Jr., Wellesley, Mass., assignor to The Kendall Company, Walpole, Mass.

Filed Dec. 27, 1971, Ser. No. 212,418

Int. Cl. B01k 5/02; C23b 13/00

U.S. Cl. 204—181

10 Claims



A continuous electrodeposition method for producing a coherent, organic polymeric film from an aqueous dispersion of electrodepositable organic polymeric particles having a reference electrode at least partially immersed therein is disclosed. The method comprises continuously moving a depositing conductive surface so that a portion thereof is immersed at any one time in said aqueous dispersion of organic polymeric particles, while causing said aqueous dispersion to flow counter to the direction of movement of said depositing conductive surface, and subjecting the aqueous dispersion between said depositing conductive surface and said reference electrode to a D.C. electric field, thereby causing said organic polymeric particles to migrate towards said depositing conductive surface and form a coherent, organic polymeric film thereon.

3,753,886

# SELECTIVE DESTRUCTION OF BACTERIA

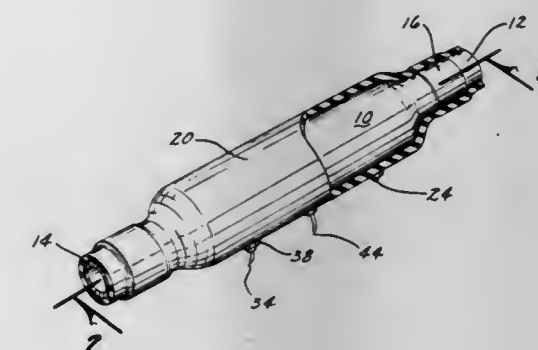
Robert R. Myers, deceased, by Helen T. Myers, Executor, 904 NE. 2nd St., Boca Raton, Fla. 33432

Continuation-in-part of abandoned application Ser. No. 710,202, Mar. 4, 1968. This application Feb. 11, 1971, Ser. No. 114,670

Int. Cl. C02b 1/82; C02c 1/00, 1/02

U.S. Cl. 204—186

1 Claim



A method and means for purifying water and water-base liquids whereby a controlled amount of alternating electrical current is passed through the liquid to destroy all forms of plant and animal life therein, thereby purifying the same. A hollow housing is utilized and has an elongated terminal provided therein which is electrically connected to a source of electrical energy. The housing is grounded and is covered with an insulative material. Liquid in the housing will act as a conductor between the terminal and the grounded housing thereby causing electrical current to flow therethrough which causes the liquid to be purified.

3,753,887

# ALKALI METAL SPECIFIC MEASURING ELECTRODE

Orah Kedem, Rehovot, Ester Loebel, Holon and Mordechai Furmansky, Petch Tikavah, Israel, assignors to Hydronautics, Incorporated, Laurel, Md.

No Drawing. Filed May 25, 1970, Ser. No. 40,350

Claims priority, application Israel, June 4, 1969, 32,341

Int. Cl. G01n 27/46

U.S. Cl. 204—195 M

14 Claims

An electrode for measuring the activity of alkali metal ions in solution, a solid membrane comprising a polymeric support material, an uncharged ion carrier and a solvent for the ion carrier in which the solvent may act as a plasticizer for the support and in which the support and the solvent together provide a negative charge to the membrane corresponding to an anion concentration of 10<sup>-6</sup> to 10<sup>-3</sup> milliequivalents per gram of solvent.

3,753,888

# ANODE FITTING

Sam Alewitz, Painesville, Ohio, assignor to Perfection Corporation, Madison, Ohio

Continuation-in-part of application Ser. No. 734,940, June 6, 1968, now Patent No. 3,542,663. This application Nov. 24, 1970, Ser. No. 92,355

Int. Cl. C23f 13/00

U.S. Cl. 204—197

6 Claims

An anode fitting for use in hot water tanks comprising a connector member adapted to be threadedly received within an opening in the water tank, a tubular intermediate member telescoped within the connector member and attached thereto, and a cylindrical electrode telescoped into the tubular intermediate member and secured











(e) fourth contacting the ethoxylated derivative with said aziridine at a fourth elevated temperature utilizing a mole ratio of said derivative to said aziridine of between about 3:1 and 1:2 to form said detergent-dispersant derivative.

3,753,908

# OXIDATION INHIBITED LUBRICATING OIL COMPOSITIONS WITH EXTREME PRESSURE PROPERTIES

Louis de Vries, Greenbrae, and Brian R. Kennedy, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

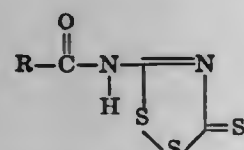
No Drawing. Filed Aug. 30, 1971, Ser. No. 176,292

Int. Cl. C10m 1/38

U.S. Cl. 252—47.5

5 Claims

Amido-substituted dithiazole-thiones are oxidation inhibitors for lubricating oils and impart extreme pressure properties. Said compounds having the structural formula:



wherein R is a hydrocarbyl group of at least 8 carbon atoms.

3,753,909

# XEROGRAPHIC TONER COMPOSITION

Lauren L. Hulse, Saratoga, William K. Carlton, San Jose, and Elinor J. Tanck, Cupertino, Calif., assignors to Memorex Corporation

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,696

Int. Cl. G03g 9/02

U.S. Cl. 252—62.1

1 Claim

A xerographic toner composition consisting essentially of finely divided resin particles produced by copolymerizing a mixture of two parts by weight of n-butylmethacrylate, 1.8-2.2 parts by weight styrene and 0.8-1.2 parts by weight of methylmethacrylate having finely divided carbon black intimately dispersed in the resin particles. Carbon black is dispersed in the resin particles in amount sufficient to give the resin-carbon black mixture a carbon black content in the range 12% to 18% by weight.

3,753,910

# ELECTROPHOTOGRAPHIC DRY TONER

Yoshinaga Mitsuhashi and Motoki Kojima, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 10, 1971, Ser. No. 170,665

Claims priority, application Japan, Aug. 15, 1970, 45/71,161

Int. Cl. G03g 9/02

U.S. Cl. 252—62.1

5 Claims

An electrophotographic dry toner which contains as a resin component a mixture comprising a solid epoxy resin as a main component and 2.5 to 25% by weight, based on the weight of said epoxy resin, of a polyvinyl acetal resin compatible with said epoxy resin. The toner is particularly applicable in transfer type printing.

3,753,911

# HIGH STRENGTH BARIUM TITANATE CERAMIC BODIES

Basil E. Walker, Jr., Oxon Hill, Md., and J. Richard Spann, McLean, and Roy W. Rice, Alexandria, Va., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed June 24, 1971, Ser. No. 156,493

Int. Cl. C04b 35/46

U.S. Cl. 252—62.9

5 Claims

The mechanical strength and densification of barium titanate ceramic bodies are enhanced by the addition of

small amounts of halide salts in combination with metal oxides. Transparency of barium titanate bodies are also attained by the addition of an alkali fluoride.

3,753,912

# FUNCTIONAL FLUIDS CONTAINING MORPHOLINE-INITIATED POLYGLYCOL CORROSION INHIBITORS

Robert J. Nankee and Robert Carswell, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation of abandoned application Ser. No. 829,790, June 2, 1969. This application Oct. 7, 1971, Ser. No. 187,534

Int. Cl. C09k 3/02

U.S. Cl. 252—77

5 Claims

The invention is novel functional fluids containing a small but effective amount of morpholine-initiated polyglycol to inhibit corrosion of metals in contact with such functional fluids.

3,753,913

# POLYCARBOXYLIC THIOETHER DETERGENT BUILDERS

Wadym Jarowenko, Plainfield, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed June 24, 1971, Ser. No. 156,525

Int. Cl. C11d 1/06

U.S. Cl. 252—89

5 Claims

Novel builders for use in synthetic detergent compositions, said builders comprising polycarboxylic thioethers and their alkali metal salts.

3,753,914

# SYNERGISTIC BLEACHING TEXTILE TREATING COMPOSITIONS WITH AN ANTIMICROBIAL ACTION

Peter Berth, Leichlingen, Horst Bellinger, Dusseldorf, and Klaus Hachmann, Hilden, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Aug. 5, 1971, Ser. No. 169,557

Claims priority, application Germany, Aug. 8, 1970, P 20 39 450.7

Int. Cl. C11d 7/54; D061 3/02

U.S. Cl. 252—95

23 Claims

A synergistic bleaching textile treating composition with an antimicrobial action comprising (a) an optionally substituted 2-hydroxydiphenylether, (b) a per-compound yielding H<sub>2</sub>O<sub>2</sub> in water, and (c) an activator for active oxygen. The composition can be utilized alone in aqueous solution or in combination with other customary components of textile treating compositions. The bleaching and antimicrobial action of the compositions is effective at temperatures down to room temperature.

3,753,915

# BIOLOGICAL CLEANING PREPARATION

Yvon Demangeon, Erment, France, assignor to Colgate-Palmolive Co., New York, N.Y.

No Drawing. Filed Apr. 16, 1971, Ser. No. 134,893

Int. Cl. C11d 7/54

U.S. Cl. 252—95

3 Claims

A biological cleaning preparation containing a proteolytic enzyme and a salt of an organic hydroperoxide.

3,753,916

# DETERGENT COMPOSITIONS CONTAINING PARTICLE DEPOSITION ENHANCING AGENTS

John J. Parran, Jr., Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Original application Sept. 27, 1967, Ser. No. 671,117. Divided and this application Mar. 11, 1971, Ser. No. 123,454

Int. Cl. C11d 9/50, 1/62

U.S. Cl. 252—107

5 Claims

Detergent compositions containing water-insoluble particulate substances, such as antimicrobial agents, and cer-

tain cationic polymers which serve to enhance the deposition and retention of such particulate substances on surfaces washed with the detergent composition.

3,753,917

# CURING AGENT FOR EPOXY RESINS TO IMPART EXCELLENT SOLVENT RESISTANCE

Johannes Spoelder, Au, Switzerland, and Max Schonbachler, Johannesburg, Transvaal, Republic of South Africa, assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed May 26, 1971, Ser. No. 147,245

Int. Cl. C08g 51/84

U.S. Cl. 252—182

1 Claim

As a curing agent for epoxy resin, a blend of an aromatic diamine and an aralkanol, such as benzyl alcohol, with viscosity increased and cross-linking of finished product enhanced by an epoxy novolac, accelerated by an aromatic acid such as salicylic acid. When mixed with a liquid polyepoxide, the curing agent gives prompt cure to a finished product having excellent solvent resistance.

3,753,918

# SOLUTION OF ALKALI METAL TRITHIOCARBONATE IN DIMETHYL SULFOXIDE

Rudiger D. Haugwitz, Highland Park, N.J., assignor to Olin Corporation

No Drawing. Original application Jan. 27, 1970, Ser. No. 6,300, now Patent No. 3,660,412. Divided and this application Mar. 21, 1972, Ser. No. 236,787

Int. Cl. C01b 31/26

U.S. Cl. 252—182

2 Claims

Carbon bisulfide is reacted with alkali metal hydroxide in dimethyl sulfoxide to form a solution of alkali metal trithiocarbonate.

3,753,919

# LIGHT SOURCE COMPRISING PERAMINOETHYLENES ON POROUS PARTICULATE SUPPORTS

Edward T. Cline, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 28, 1964, Ser. No. 421,729

Int. Cl. C09k 3/00

U.S. Cl. 252—188.3

11 Claims

Oxyluminescent light sources of some renewability comprising inert, solid, particulate supports capable of being crushed underfoot and of about 0.05-0.5 inch average particle size, e.g., vermiculite or urethane foam, impregnated with a tetrakis(disubstituted-amino)ethylene, e.g., tetrakis(dimethylamino)ethylene.

3,753,920

# FLUORIDE REPROCESSING OF BREEDER FUELS

Louis J. Anastasia, Midlothian, Erwin L. Carls, Glen Ellyn, Albert A. Chilenskas, Chicago, Johan E. A. Graae, and Albert A. Jonke, Elmhurst, Norman M. Levitz, Bellwood, Martin J. Steindler, Park Forest, and La Verne E. Trevorrow, Glen Ellyn, Ill., assignors to the United States of America as represented by the United States Atomic Energy Commission

Continuation of abandoned application Ser. No. 770,145, Oct. 24, 1968. This application Aug. 12, 1971, Ser. No. 171,315

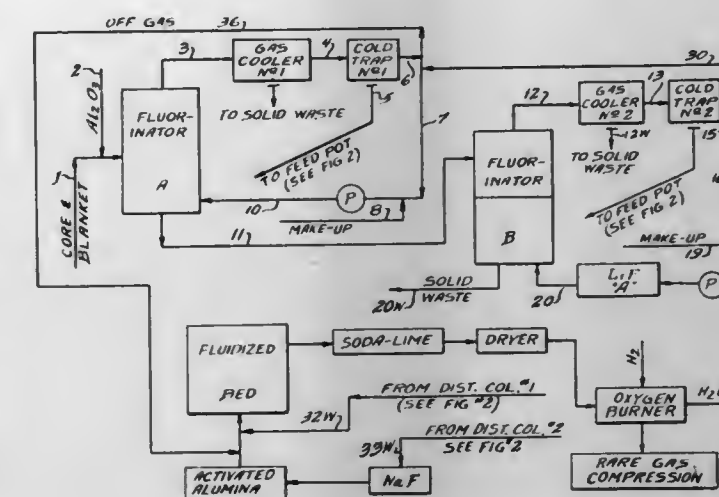
Int. Cl. C01g 43/06

U.S. Cl. 252—301.1 R

2 Claims

Spent fuel oxides are fluorinated to produce a plutonium-rich stream and a uranium-rich stream. Each stream is cold trapped to remove high boiling fission products and fed to a thermal decomposer, via a common feed pot which acts as a batch distiller. From the thermal decomposer, a

plutonium-rich stream is cold trapped and sent to a converter and a uranium-rich stream is purified by means of various traps and distillation columns and sent to the con-



verter. In the converter, the uranium-rich stream and plutonium-rich stream are combined and converted to mixed oxides.

3,753,921

# NOVEL DAYLIGHT FLUORESCENT PIGMENTS AND PROCESS FOR PREPARING THEM

Siegfried Noetzel, Mainz, and Edgar Fischer, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 31, 1972, Ser. No. 222,306

Claims priority, application Germany, Feb. 2, 1971, P 21 04 719.8

Int. Cl. C09k 1/02

U.S. Cl. 252—301.2 R

7 Claims

New daylight fluorescent pigments which contain an organic fluorescent dyestuff and as resin a condensation resin, consisting of copolymerizates of olefinically unsaturated compounds containing epoxy groups and hence copolymerizable vinyl compounds which are cross-linked with di- or polycarboxylic acids or the anhydrides thereof and a process for their preparation which comprises incorporating the organic fluorescent dyestuff into the condensation resin.

These daylight fluorescent pigments may be employed for preparing fluorescent paints, for example air-drying lacquers on the basis of alkyl resin or physically drying lacquers on the basis of acrylic resins, as well as for preparing fluorescent printing inks such as inks for screen printing, intaglio printing, book printing and offset-litho printing.

Due to their high resistance to heat, they are particularly suitable for fluorescent dyeing of plastics and enamels.

3,753,922

# PRODUCTION OF MICROCAPSULES

Yukio Shimosaka and Hiroshi Suzuki, Saidaiji, Japan, assignors to Japan Exlan Company Limited

Filed Oct. 1, 1971, Ser. No. 185,659

Claims priority, application Japan, Oct. 6, 1970, 45/87,771

Int. Cl. B01j 13/02; B44d 1/02

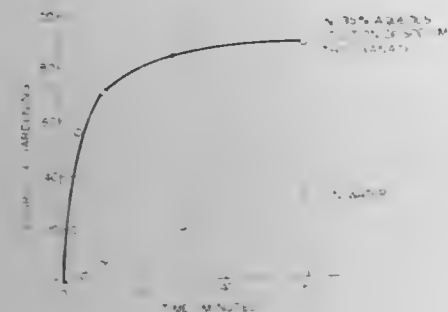
U.S. Cl. 252—316

3 Claims

Microcapsules are formed by dispersing a hydrophobic material, such as an ink, in an aqueous solution of a



thiocyanate containing a gellable hydrophilic colloid material, such as a protein, dissolved therein. The use of the



thiocyanate hastens hardening of the capsules and prevents generation of bubbles and cohesion of the microcapsules.

### 3,753,923 MANUFACTURE OF EXPANDED VERMICULITE EMPLOYING A UREA COMPOUND AND LOW TEMPERATURES

Takeo Wada, Osaka, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan  
No Drawing. Filed Oct. 4, 1971, Ser. No. 186,448  
Claims priority, application Japan, Oct. 12, 1970, 45/89,919

Int. Cl. C04b 2/02  
U.S. Cl. 252—378 R 10 Claims  
Expanded vermiculite is prepared by a process comprising impregnating vermiculite with at least a urea compound selected from the group consisting of urea and thiourea and heating the resulting composition at a temperature not lower than the decomposition point of the urea compound in the composition. The expanded vermiculite has desirable properties and is used in widely varied industrial application.

### 3,753,924 RUST INHIBITOR CONTAINING TANNINS WITH A CHELATION CATALYST AND A CROSS-LINKING AGENT

Rene P. Francau, Wetteren, Belgium, assignor to S.A. PRB Societe Anonyme, Brussels, Belgium  
No Drawing. Filed Sept. 16, 1970, Ser. No. 73,179  
Claims priority, application Belgium, Jan. 27, 1970, 49,855

Int. Cl. C23f 11/18, 11/14, 11/10  
U.S. Cl. 252—389 R 9 Claims  
The invention pertains to a rust inhibitor consisting of tannic acid and additives, said inhibitor comprising at least a tannic acid, a catalyst capable of initiating the chelation of iron atoms and a cross-linking agent.

### 3,753,925 CEREBROSPINAL FLUID CONTROL STANDARD

Allan L. Louderback, Temple City, and Anthony J. Fontana, Glendora, Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.  
No Drawing. Filed Mar. 24, 1972, Ser. No. 237,905  
Int. Cl. G01n 31/00  
U.S. Cl. 252—408 3 Claims  
A synthetic control standard for the determination of cerebrospinal fluid constituents is provided by diluting normal blood serum with an aqueous solution of glucose and saline to a total protein concentration of 30 to 145 mg. per 100 ml.

### 3,753,926 REGENERATION OF A COKE-DEACTIVATED CATALYST COMPRISING A COMBINATION OF PLATINUM, RHENIUM, AND HALOGEN WITH A POROUS CARRIER MATERIAL

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
No Drawing. Continuation-in-part of application Ser. No. 805,380, Mar. 7, 1969. This application Mar. 8, 1971, Ser. No. 122,149

Int. Cl. B01j 11/08; C10g 35/06  
U.S. Cl. 252—415 26 Claims  
A deactivated hydrocarbon conversion catalyst, which is a combination of a platinum group component, a rhenium component, and a halogen component with a porous carrier material and which has been deactivated by deposition of carbonaceous materials thereon during a previous contacting with a hydrocarbon charge stock at an elevated temperature, is regenerated by the sequential steps of: (1) burning carbon therefrom at a relatively low temperature with a gas stream containing halogen or a halogen-containing compound, H<sub>2</sub>O, and a relatively small amount of O<sub>2</sub>, (2) treating the resulting partially regenerated catalyst at a relatively higher temperature with a gas stream containing a halogen or a halogen-containing compound, H<sub>2</sub>O, and a relatively higher amount of O<sub>2</sub>, (3) purging O<sub>2</sub> and H<sub>2</sub>O from contact with the resulting catalyst, and, (4) subjecting the resulting catalyst to contact with a dry hydrogen stream. Key features of the disclosed method are: (1) presence of water and halogen in the gas stream used in the carbon-burning step and in the oxygen-treating step, (2) careful control of the temperature during each step, (3) maintenance of the halogen content of the catalyst at a relatively high level during the entire regeneration procedure, and (4) careful control over the composition of the gas streams used in the various steps thereof.

### 3,753,927 DICYCLOPENTADIENYL IRON COMPOSITIONS AND METHODS FOR CURING POLYESTER RESINS

John J. Kracklauer, Boulder, Colo., assignor to Syntex Corporation, Apartado, Panama  
No Drawing. Filed Oct. 26, 1970, Ser. No. 84,243  
Int. Cl. C08g 17/10, 17/12

U.S. Cl. 252—428 7 Claims  
Novel compositions and methods employing same are discussed as useful in the peroxide induced cure of polyester resins. The compositions and methods employ a new promoter system having, as a principal component, a monosubstituted dicyclopentadienyl iron compound, wherein the substituent is a carbonyl containing substituent, e.g. acetyl, and, as second components, a member(s) selected from an exemplified group including various phosphorous compounds, an ascorbic acid compound, a stannous salt or soap, or an ammonium or alkali metal hydrogen sulfite.

### 3,753,928 CATALYST FOR THE PREPARATION OF TRANS-POLYPENTENAMERS

Nikolaus Schon, and Gottfried Pampus, Leverkusen, Josef Witte, Cologne, and Dieter Theisen, Remscheid, Germany, assignors to Bayer Aktiengesellschaft  
No Drawing. Filed Feb. 1, 1971, Ser. No. 111,763  
Claims priority, application Germany, Feb. 14, 1970, P 20 06 776.9  
Int. Cl. C08f 5/00

U.S. Cl. 252—429 B 6 Claims  
Process for the ring opening polymerisation of cyclomonoolefins by contacting the cyclomonoolefins with a catalyst consisting of  
(a) a reaction product of a tungsten or tantalum halide with an acetal and  
(b) an organo compound of a metal of groups Ia to IVa of the Periodic Table

the molar ratio of tungsten:metal of groups Ia to IVa being from 1:0.3 to 1:10 and the molar ratio of tantalum:metal of groups Ia to IVa being from 1:1 to 1:10.

### 3,753,929 STRIKE INCORPORATION OF MOLECULAR SIEVES FOR FLUID CRACKING CATALYSTS

John Francis Lindsley, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.  
No Drawing. Filed Sept. 16, 1970, Ser. No. 72,862

Int. Cl. B01j 11/36, 11/40  
U.S. Cl. 252—451 10 Claims

A process for preparing an improved aluminosilicate-containing silica-alumina hydrocarbon cracking catalyst comprising adding an alkali metal silicate to a mineral acid until the pH is above 3.5, dispersing a calcined crystalline aluminosilicate in the silica sol, continuing the addition of alkali metal silicate until gelation occurs, aging the gel, thereafter adjusting the pH of the gel to 3.0 with an aluminum salt, coating the aluminosilicate-silica substrate, washing at a pH of 4.0, then washing with ammonia at a pH of about 7.0, and drying the formed product.

### 3,753,930 PROCESS FOR PREPARING SPRAY-DRIED BLENDED DETERGENTS

Helmut H. Weldes, Havertown, Walter L. Schleyer, Swarthmore, and Eric W. Vessey, Springfield, Pa., assignors of Philadelphia Quartz Company, Philadelphia, Pa.  
No Drawing. Filed Mar. 12, 1971, Ser. No. 123,841

Int. Cl. C11d 1/22, 3/08, 3/30  
U.S. Cl. 252—527 1 Claim

Improved detergent compositions are prepared by addition of a portion of the total formulation to the remainder of the ingredients after these have been spray dried. Specifically it has been found that blending composites of hydrated alkali metal silicate glass and sequestering agents with the spray dried granules of the other detergent ingredients yield formulations with improved properties. Compared with conventional spray drying of complete detergent compositions, this process allows more uniform distribution of minor components throughout the formulation, higher alkali metal silicate levels, and decreases or even eliminates the formation of insolubles. An additional advantage of this process is that it permits increased production rates.

### 3,753,931 POLYETHER AMINES, THEIR PRODUCTION AND USE

Giuseppe Raspanti, Neuchâtel, Basel-Land, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland  
No Drawing. Filed May 28, 1971, Ser. No. 148,148  
Claims priority, application Switzerland, June 5, 1970, 8,456/70

Int. Cl. C08j 1/46  
U.S. Cl. 260—2 BP 19 Claims

This invention is directed to new, water soluble, high molecular polyetheramines and their salts, produced by the reaction, in excess, of aliphatic polyamines which contain at least one primary or two secondary amino groups, may contain hydroxyl groups and have molecular weights not greater than 200, with polyepihalogenohydrins which contain 3 to 25 halogenomethyl groups, followed by removal of the excess polyamine from the reaction mixture by distillation, reaction of the resulting polyetheramine aqueous solution with crosslinking agents to a degree of crosslinking at which a viscosity increase occurs and the reaction mixture remains water soluble, and if desired

partial or complete conversion of the free amino groups into their salts by the addition of acids. These new polyamines are useful as flocculating and flotation agents and as drainage and retention aids, especially in paper manufacture.

### 3,753,932 PROCESS FOR PREPARING MICROPOROUS OPEN-CELLED CELLULAR POLYMERIC STRUCTURES

Francis Edward Jenkins, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,181  
Int. Cl. C08f 47/10; C08j 1/26  
U.S. Cl. 260—2.5 R 37 Claims

A process for preparing microporous open-celled cellular polymeric structures which comprises (a) dissolving the starting polymer in a chlorofluorocarbon solvent; (b) cooling the resulting solution to at least the solidification temperature of the chlorofluorocarbon solvent; and (c) removing the chlorofluorocarbon solvent from the solidified solution at a temperature equal to or lower than the solidification temperature of said chlorofluorocarbon.

### 3,753,933 POLYURETHANE FOAMS FROM SOLID FOAMING AGENTS

Franciszek Olstowski, Freeport, and Donald B. Parrish, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 24, 1972, Ser. No. 247,030,  
Int. Cl. C08g 22/44

U.S. Cl. 260—2.5 AE 12 Claims  
Polyurethane foams are prepared from a polyol and an organic polyisocyanate employing as the foaming agent a solid particulate substance having a decomposition or dehydration temperature above about 250° C., a minimum dimension particle size of less than 2 millimeters, and a surface area of at least 0.2 square meters per gram. Such foaming agents include metal powders, organic polymer powders and inorganic compounds.

### 3,753,934 PROCESS FOR THE MANUFACTURE OF NEW PLASTICISED MELAMINE-FORMALDEHYDE CONDENSATES

Hermann Diethelm, Aesch, Basel-Land, and Roman Gattlen, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Sept. 1, 1971, Ser. No. 177,092  
Claims priority, application Switzerland, Sept. 7, 1970, 13,322/70

Int. Cl. C08g 9/30  
U.S. Cl. 260—17.3 14 Claims

A process for the manufacture of new plasticised melamine-formaldehyde condensates by condensing melamine with formaldehyde in an aqueous medium with simultaneous or subsequent addition of a lactam of the Formula I



(in which R stands for hydrogen or an alkyl group containing 1 to 4 carbon atoms and n is a digit from 3 to 11, both inclusive) and of a sugar, the proportion of the lactam and of the sugar together being 3 to 15% by weight and the proportion of sugar alone being at least 1.5 and at most 7.5% of the weight of the mixture of melamine and formaldehyde, and new plasticised melamine-formaldehyde condensates obtained by the said process.



It is preferable to condense melamine with formaldehyde in an aqueous medium in the presence of both a lactam of the Formula I and of a sugar.

3,753,935

# **NONYELLOWING ACRYLIC ENAMEL CONTAINING AN ACID PHOSPHATE CATALYST**

Lester I. Miller, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 157,664, June 28, 1971. This application June 30, 1972, Ser. No. 268,047

Int. Cl. C08f 21/04; C08g 17/16; C09d 3/66

U.S. Cl. 260—22 CA 11 Claims

An improved acrylic enamel that does not yellow on curing at elevated temperatures and has as the film-forming binder a blend of (1) an acrylic polymer that contains in the backbone a vinyl oxazoline ester and (2) an alkyd resin and contains in combination therewith an acid phosphate catalyst; the enamel is useful as an exterior finish for motor vehicles and is particularly useful for repairing damaged finishes of automobiles and trucks.

3,753,936

# **BRANCHED RUBBERY BLOCK COPOLYMER ADHESIVE**

Oren L. Marrs, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 12,452, Feb. 18, 1970. This application July 14, 1971, Ser. No. 162,684

Int. Cl. C09j 3/26

U.S. Cl. 260—27 R 12 Claims

A pressure-sensitive adhesive suitable for application in the form of a solution, dispersion, or emulsion is provided which comprises, as the sole rubbery polymer present in the formulation, a branched rubbery block copolymer of conjugated dienes and vinyl aromatic hydrocarbons, having terminal resinous blocks, and a conjugated diene/vinyl aromatic hydrocarbon ratio range of from 60/40 to 80/20.

3,753,937

# **PERFLUORO OLEFIN VINYLIDENE FLUORIDE ELASTOMER**

David A. Stivers, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed June 8, 1971, Ser. No. 151,128

Int. Cl. C08f 45/36

U.S. Cl. 260—28.5 D 2 Claims

Fluoro-olefinic elastomers of greatly improved processing characteristics are obtained by the inclusion of a minor amount of at least one high boiling high molecular weight ester containing one or more fatty acids and one or more alcohols, as a lubricity, softening and plasticizing aid.

3,753,938

# **THERMOPLASTIC SHEET MATERIAL**

Raymond Montague Edwards, 31 Mount Pleasant Road, Chigwell, and Patrick Joseph Tierney, 34 Gloucester Road, New Barnet, England

No Drawing. Continuation-in-part of application Ser. No. 191,832, Oct. 22, 1971, which is a continuation-in-part of abandoned application Ser. No. 6,597, Jan. 28, 1970. This application Apr. 18, 1972, Ser. No. 245,259

Int. Cl. C08f 45/52

U.S. Cl. 260—28.5 D 17 Claims

A flexible waterproof sheet material is made by forming a uniform mixture of calenderable consistency containing hard bitumen of softening point at least 70° C., a compatible synthetic elastomer which constitutes a maximum of 50% by weight of the mixture, and non-fibrous and fibrous reinforcing filler, and calendering the mixture to form a sheet of uniform composition.

3,753,939

# **STABILIZATION OF ACRYLAMIDE POLYMERS WITH THIOSULFATES**

Hans S. Von Euler-Chelpin, Sundsvall, Sweden, assignor to Kemanord AB, Stockholm, Sweden

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,893

Int. Cl. C08f 29/00

U.S. Cl. 260—29.6 Z 9 Claims

Compositions comprising water-soluble acrylamide polymer and water-soluble thiosulfate are provided. The thiosulfate improves the stability of the polymers against thermal and oxidative degradation.

3,753,940

# **METHOD FOR PREPARING VINYLIDENE CHLORIDE COPOLYMER LATEX COATING COMPOSITIONS**

Alex Trofimow, Brookline, and Norbert K. Mader, Wilmington, Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

No Drawing. Filed May 18, 1971, Ser. No. 144,641

Int. Cl. C08f 1/13

U.S. Cl. 260—29.6 RW 7 Claims

Vinylidene chloride copolymer latex coating compositions containing carboxylic acid comonomer and exhibiting improved adhesion qualities to difficultly-adherable substrates such as nylon, are prepared by regulating the addition of the acid comonomer to the polymerization zone.

3,753,941

# **LATEX COMPOSITION**

Fred N. Teumac, South Bend, Ind., and Charles D. Cline, Charlotte, N.C., assignors to Story Chemical Corporation, Athens, Ga.

No Drawing. Continuation-in-part of abandoned application Ser. No. 698,440, Jan. 17, 1968. This application July 28, 1971, Ser. No. 166,976

Int. Cl. C08d 7/02; C08f 37/00

U.S. Cl. 260—29.7 N 7 Claims

A latex composition including an aqueous dispersion of carboxylated polymer containing a small proportion of a carboxylic acid, and a small proportion of an aziridinyl compound which reacts with carboxyl groups of the polymer upon curing to effect polymer cross-linking and thereby provide enhanced tensile strength, loading capacity, and insolubility characteristics in the cured product. It is a suitable treatment for textile, non-wovens, papers and other related products. The aziridinyl compound may be an aziridinyl azine such as triethylene melamine, proportioned at 1 part per 2 parts of carboxylic acid, such as fumaric acid, up to a triethylene melamine content of 1 part per 100 parts of polymer. The composition may advantageously contain a substantial quantity of filter material, such as clay or Whiting in an amount equivalent to 100 to 300 or more parts per 100 parts polymer for enhanced dimensional stability, stiffness and coating thickness.

3,753,942

# **POLY(VINYLIDENE FLUORIDE) COMPOSITIONS**

Edward E. Moran, Worthington, Ohio, and Jeffrey J. Wine, Los Angeles, Calif., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Sept. 6, 1968, Ser. No. 758,130

Int. Cl. C08f 45/34, 45/36, 45/44

U.S. Cl. 260—30.2 13 Claims

Compositions comprising poly(vinylidene fluoride) in a solvent mixture containing 10 to 70 percent of 2-pyrrolidone have unique properties including the ability to form continuous films of excellent adhesion by baking at relatively low temperatures, even when the poly(vinylidene fluoride) is the only resinous component present in the composition. The solvent mixture preferably includes an ester and a ketone.

3,753,943

# **1,2-POLYBUTADIENE COMPOSITION STABILIZED WITH PHENOLIC ACRYLATES OR ACRYLAMIDES**

Haruo Ueno, Hideo Ishikawa, and Hisawaki Hamada, Ichihara, and Takashi Watanabe, and Kunio Imamura, Tokyo, Japan, assignors to UBE Industries, Ltd., and Ouchishinko Chemical Industrial Company, Tokyo, Japan

No Drawing. Filed Dec. 21, 1971, Ser. No. 210,596

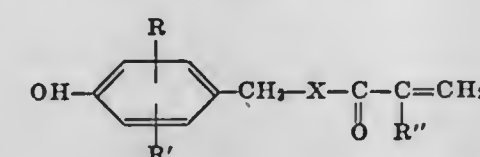
Claims priority, application Japan, Dec. 26, 1970,

45/118,731

Int. Cl. C07c 107/30

U.S. Cl. 260—32.6 A 9 Claims

It has been found that undesired deterioration of 1,2-polybutadiene under the influence of heat, oxygen, ozone and light can be advantageously prevented by the incorporation into 1,2-polybutadiene of a small amount of a compound represented by the formula:



wherein X is a —OCH<sub>2</sub>NH—, —NH— or —O— group, each of R and R' is an alkyl group having 1 to 4 carbon atoms and R'' is a hydrogen atom or a methyl group.

3,753,944

# **WATER-SOLUBLE HOT MELT ADHESIVE**

Julius Sirota, South Plainfield, and Gerald T. Gargiulo, Piscataway, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed June 16, 1971, Ser. No. 153,823

Int. Cl. C08g 51/34

U.S. Cl. 260—33.2 R 6 Claims

A water-soluble hot melt adhesive is disclosed suitable for use as a pick-up or tail tie adhesive for wound paper webs, said adhesive comprising a poly(ethylene oxide) of molecular weight 15,000 to 50,000, a water-soluble poly(alkylene oxide) or derivatives thereof of molecular weight 190 to 15,000 and optionally, inert fillers and dyes.

3,753,945

# **STABILIZED COMPOSITIONS**

Eduard K. Kleiner, Dobbs Ferry, N.Y., assignor to Ciba-Geigy Corporation

No Drawing. Original application Jan. 31, 1969, Ser. No. 795,696, now Patent No. 3,639,538, dated Feb. 1, 1972. Divided and this application Mar. 12, 1971, Ser. No. 123,819

Int. Cl. C08f 45/58; C08g 51/58

U.S. Cl. 260—45.85 H 8 Claims

Organic materials, particularly synthetic polymers such as polypropylene, are protected against oxidation in air, thermal degradation or deterioration by including, in such substances, a stabilizing amount of an antioxidant. The antioxidant is obtained by reacting (a) an  $\alpha,\beta$ -unsaturated ester of a hindered hydroquinone and (b) a phosphinodithioic acid or a O,O-diester of phosphorothiolothionic acid.

3,753,946

# **CURABLE POLYARYLENEOXIDE COMPOSITIONS**

Fred F. Holub, Schenectady, and Carl M. Emerick, Mechanicville, N.Y., assignors to General Electric Company

No Drawing. Original application July 1, 1969, Ser. No. 838,316. Divided and this application Apr. 30, 1971, Ser. No. 139,211

Int. Cl. C08f 7/02, 27/08

U.S. Cl. 260—47 CZ 10 Claims

Polyaryleneoxide having at least one chemically combined aliphatically unsaturated imido radical is provided

and a method for making such materials. Blends of the imido-substituted polyaryleneoxide and a variety of aliphatically unsaturated organic monomers, such as styrene, diallylphthalate, N-phenylmaleimide, or organic polymers such as polystyrene, polysulfone, polycarbonate, polyphenyleneoxides, etc., also are provided. The imido-substituted compositions of the present invention can be employed as coatings, varnishes, injection molding compounds, laminating compounds, etc.

3,753,947

# **METHOD OF CURING POLYEPOXIDE COMPOSITIONS USING BF<sub>3</sub>·2-ETHYL-2-OXAZOLINE AS A NORMALLY LIQUID CURING AGENT**

Robert J. Thomas, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 137,619, Apr. 26, 1971. This application Feb. 28, 1972, Ser. No. 230,095

Int. Cl. C08g 30/16

U.S. Cl. 260—47 EN 9 Claims

This invention relates to an improved process for curing polyepoxide compositions by utilization of BF<sub>3</sub>·2-ethyl-2-oxazoline as a normally liquid curing agent which is capable of forming substantially homogeneous solutions of said polyepoxide compositions at low temperatures and wherein such solutions are rapidly curable to high strength materials.

3,753,948

# **PREPARATION OF POLYAMIC ACIDS IN KETONE SOLVENTS**

George L. Brode, Somerville, and James H. Kawakami, Piscataway, N.J., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed June 9, 1971, Ser. No. 151,597

Int. Cl. C08g 20/32

U.S. Cl. 260—49 7 Claims

Polyamic acids have been prepared by the interfacial polymerization of trimellitoyl chloride with sulfone ether diamines by adding a ketone solution of the former to the diamine dispersed in water containing an HCl scavenger with shearing agitation. The polymerization proceeds rapidly and the product polyamic-acid can be recovered directly from the reaction mixture in which it is insoluble. The polyamic-acid can then be thermally or chemically dehydrated to the corresponding polyamide-imide.

3,753,949

# **POLYESTERS WITH IMPROVED DYEABILITY**

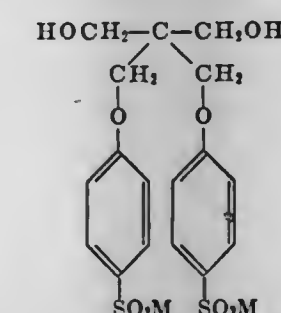
Gene Clyde Weedon, Richmond, Va., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Nov. 16, 1971, Ser. No. 199,353

Int. Cl. C08g 17/14

U.S. Cl. 260—49 5 Claims

Cationic dyeable linear polyesters useful for making films and filaments having incorporated therein, based on the total amount of the glycol used in preparing said polyesters, from about 0.01 to about 15 mole percent of a sulfonate compound of the formula:





wherein M is selected from the group consisting of alkali metals and ammonium.

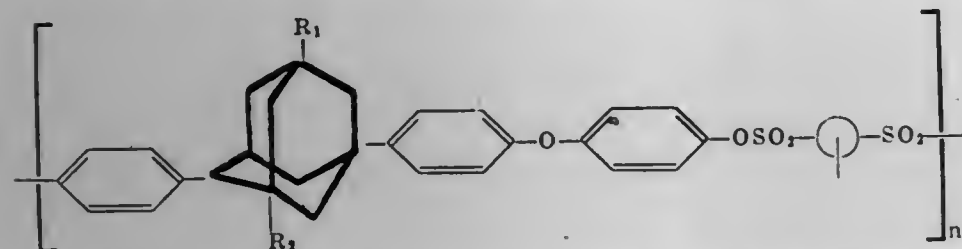
3,753,950

**POLYSULFONATE POLYMERS FROM ADAMANTANE BISPHENOLS AND DISULFONYL CHLORIDES OF AROMATIC SUBSTITUTED ETHERS**  
Robert M. Thompson, Wilmington, Del., and Irl N. Duling, West Chester, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.  
No Drawing. Filed Dec. 30, 1971, Ser. No. 214,408  
Int. Cl. C08g 17/08, 17/13

U.S. Cl. 260—49

6 Claims

Novel solid polysulfonates having the structure:



where R<sub>1</sub> and R<sub>2</sub> are hydrogen or hydrocarbyl radical having 1 to 20 carbon atoms, Q represents a divalent aromatic substituted ether radical having 6 to 20 carbon atoms, and n represents the number of such repeating units which are produced. These thermoplastic resins are valuable in the manufacture of molded and extruded articles.

3,753,951

**METHOD FOR PRODUCING ALTERNATIVE COPOLYMERS CONTAINING LITTLE GEL OF A CONJUGATED VINYL COMPOUND AND A CONJUGATED DIENE**

Mituiji Miyoshi, Kanagawa, and Kazuo Matsuura, Kawasaki, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

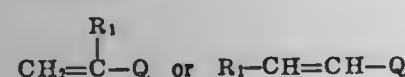
Filed Mar. 11, 1970, Ser. No. 18,591

Claims priority, application Japan, Mar. 12, 1969, 44/18,362; May 12, 1969, 44/35,706  
Int. Cl. C08f 15/00, 15/02

U.S. Cl. 260—63 BB

5 Claims

Method for producing copolymers of a conjugated diene substituted or unsubstituted with halogens and a conjugated vinyl compound which comprises contacting (A) a conjugated diene or a halogen-containing conjugated diene and (B) a conjugated vinyl compound having the general formula



wherein R<sub>1</sub> is hydrogen, nonpolymerizable hydrocarbon or halogenated hydrocarbon radical containing from 1 to 20 carbon atoms, and Q is nitrile radical or the group



in which Y is a radical selected from the group consisting of ZH, ZR, ZMe, NR'R'', halogens and hydrogen, Z being oxygen or sulfur atom, R being a hydrocarbon radical containing from 1 to 20 carbon atoms, R' and R'' being the same or different hydrocarbon radicals containing up to six carbon atoms or morpholino, pyrrolidino, or piperidino radicals and Me is an element belonging to Groups I-III of the Periodic Table of the elements indicated in terms of monovalency or ammonium radical in the presence of a catalytic quantity of an organic aluminum halogenide having the general formula AlR<sub>3-n</sub>X<sub>n</sub> wherein n is an arbitrary number of the value 1 ≤ n < 3, X is a halogen and R is an aliphatic hydrocarbon radical containing from 3 to 6 carbon atoms, a part of all of said radicals having a branch.

3,753,952

**PHOTODEGRADABLE COMPOSITION**

James Edwin Guillet, Don Mills, Ontario, Canada, assignor to The Governors of the University of Toronto, Toronto, Ontario, Canada

No Drawing. Continuation-in-part of abandoned application Ser. No. 763,980, Sept. 30, 1968. This application Apr. 19, 1971, Ser. No. 135,424

Claims priority, application Great Britain, Apr. 27, 1970, 20,101/70; May 14, 1970, 23,387/70  
Int. Cl. C08f 15/12

U.S. Cl. 260—63 R

14 Claims

Plastics materials suitable for use in packaging are provided, which photodegrade upon exposure to direct sunlight, but which have indefinite storage life otherwise. The

materials are polymers of common vinylidene monomers such as ethylene, styrene and methyl methacrylate, containing 0.1–5 mole percent of keto carbonyl groups located in side chains but adjacent the main chain of the polymer. These keto groups absorb U.V. radiation and cause photodegradation of the polymer.

3,753,953

**HYDROLYSIS-RESISTANT POLYESTERURETHANE THREADS AND PREPARATION THEREOF**

Cornelis Jan Leeuwerik, Velp, Franciscus Johannes Huntjens, Arnhem, and Cornelis Martinus Franciscus Vrouwenraets, Dieren, Netherlands, assignors to AKZO N.V. Arnhem, Netherlands

No Drawing. Filed June 11, 1971, Ser. No. 152,389

Claims priority, application Netherlands, June 13, 1970, 7008680

Int. Cl. C08g 22/10

U.S. Cl. 260—75 NK

8 Claims

A method for producing polyester-urethane elastomer threads is disclosed wherein the polyester portion is formed by reacting adipic acid with 2,2,4-trimethylhexanediol-1,6 and/or 2,4,4-trimethylhexanediol-1,6. The resulting products have excellent mechanical properties and a very high hydrolytic stability.

3,753,954

**NOVEL COPOLYMERS AND PROCESS FOR THEIR PRODUCTION**

Masahiko Ohmori, Iwakuni, Tosiharu Tomatu, Otake, and Tadao Iwata, and Juntaro Sasaki, Iwakuni, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,485

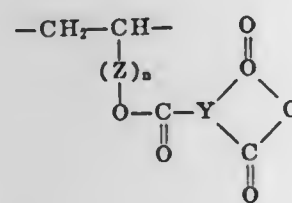
Claims priority, application Japan, Aug. 3, 1970, 45/67,918, 45/67,919

Int. Cl. C08f 27/00

U.S. Cl. 260—78.4 D

16 Claims

An olefin or vinylalcohol copolymer having a repeating unit of the formula



wherein Z is an alkylene group, arylene group or cycloalkylene group or a divalent hydrocarbon group of 1 to

20 carbon atoms consisting of a combination of these groups; n is 0 or 1; and Y is an aromatic hydrocarbon group, the two carbonyl groups being bonded to two adjacent carbon atoms of the aromatic hydrocarbon group or to two carbon atoms in peri-position to each other, and a process for the production thereof.

3,753,955

**CONTROL OF VISCOSITY AND POLYCAPROAMIDE DEGRADATION DURING VACUUM POLYCONDENSATION**

John Christopher Haylock, Richmond, and John Walter Wagner, Petersburg, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 18, 1971, Ser. No. 200,027

Int. Cl. C08g 20/04, 20/14

U.S. Cl. 260—78 L

3 Claims

Control of polycaproyamide degradation during vacuum polycondensation in a polymer finisher is achieved by maintaining a partial pressure of water above the polymer melt above about 10 mm. Hg, preferably above about 30 mm. Hg, absolute pressure. Degradation is minimized to within 3, preferably 2 units of the theoretical difference between carboxyl and amine ends. The water extractables content of the polymer is also controlled to below about 3.5% by weight, preferably 2.5%; viscosity increase of the polymer melt levels out after less than 4 hours to less than 10 FAV units per hour, by means of the invention.

3,753,956

**POLYACRYLIC ANHYDRIDE CONTAINING PENDANT TETRAZOLE MOIETY**

Richard S. Tuites, Thomas E. Whiteley, and Louis M. Minsk, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Oct. 9, 1967, Ser. No. 673,914. Divided and this application Nov. 20, 1970, Ser. No. 91,575

Int. Cl. C08f 3/44, 3/64

U.S. Cl. 260—78.4 R

1 Claim

Novel polymers comprising tetrazole moieties incorporated into the polymer chain or appended from the polymer backbone are disclosed. A photographic silver halide emulsion and a photographic element containing an antifogant and fog stabilizing amount of polymer is disclosed.

3,753,957

**PROCESS FOR PREPARING AROMATIC POLYAMIDES BY CONDENSATION OF AN AROMATIC ESTER OF AN AROMATIC AMINO ACID**

Rufus Sidney Jones, Dover, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Dec. 9, 1971, Ser. No. 206,491

Int. Cl. C08g 20/00

U.S. Cl. 260—78 A

13 Claims

High molecular weight aromatic linear polyamides of fiber-forming grade are prepared by condensation of monomeric aromatic esters of aromatic amino acid to form a solid oligomer, followed by subsequent solid state polymerization of the oligomer to produce high viscosity linear aromatic polyamide. The described process is particularly advantageous economically because of the high yield of fiber film and coating grade polymer coupled with the

ability to recover the by-product for recycle to form the monomeric aromatic ester starting material.

3,753,958

**PULVERISABLE ACRYLATE RESINS**

Frank Wiegler, Leverkusen, Josef Pedain, Cologne-Buchheim, Hansgunter Appel, Bergisch-Gladbach-Paffrath, and Herbert Bartl, Odenthal-Habnenberg, Germany, assignors to Bayer Aktiengesellschaft

No Drawing. Continuation-in-part of abandoned application Ser. No. 69,129, Sept. 2, 1970. This application Dec. 13, 1971, Ser. No. 207,615

Claims priority, application Germany, Dec. 31, 1969, P 19 65 740.0

Int. Cl. C08f 1/04, 15/40

U.S. Cl. 260—78.5 R

6 Claims

Copolymer of from 10 to 70 by weight of at least one ester of acrylic and/or methacrylic acid, 25 to 75% by weight of an optionally substituted styrene, vinyl ester or (meth) acrylonitrile, 5 to 50% by weight of at least one monomer from the group of α,β-mono-olefinically unsaturated carboxylic acid with 3 to 5 carbon atoms, hydroxyalkyl esters of the foregoing acids and amides and amides derivatives of acrylic and methacrylic acid which is pulverisable, has a softening range of from 75 to 110° C. and an average molecular weight of from about 500 to 10,000 and process of producing the same by mixing said components, bulk polymerizing in a first stage to a conversion of 70 to 90% with an initiator decomposing into radicals below 70° C. and finishing bulk polymerization in a second stage to a conversion of at least 95% with an initiator decomposing at from 120 to 170° C.

3,753,959

**ALTERNATING COPOLYMERS**

Mitsuo Ichikawa, Yasumasa Takeuchi, Yoshiyuki Harita, and Masayuki Endo, Yokkaichi-shi, Mie-ken, Nobuo Yamaguchi, Mie-gun, Miki-ken, Mitsuru Tashiro, and Akira Kogure, Yokkaichi-shi, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

No Drawing. Filed Sept. 17, 1969, Ser. No. 858,860

Int. Cl. C08f 1/56, 19/10

U.S. Cl. 260—78.5 BB

32 Claims

The disclosure covers a novel process for making copolymers through the use of a novel combination of two catalyst components in particular an organo-aluminum compound and an organic compound having a labile halogen atom. The disclosure also covers novel alternate copolymers of conjugated dienes and conjugated heterodienes alone or together with monoolefines.

3,753,960

**PREPARATION OF GEL-FREE EPDM BASED ON ETHYLIDENE NORBORNENE**

Eliot K. Easterbrook, Naugatuck, and Ajah S. Malik, New Haven, Conn., assignors to Uniroyal, Inc.

No Drawing. Filed Aug. 31, 1967, Ser. No. 664,643

Int. Cl. C08f 15/40

U.S. Cl. 260—80.78

7 Claims

Build-up of gel, branching, cross-linking, and undesirable increases in Mooney viscosity, by post-polymerization side reactions in EPDM rubber based on ethylidene norbornene, is prevented by adding to the polymerization reaction mixture, at the conclusion of the polymerization, a Lewis base such as polypropylene glycol or monoethanolamine.



3,753,961

## RESINOUS COMPOSITION

David R. St. Cyr, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of application Ser. No. 855,759, Sept. 5, 1969. This application Dec. 3, 1971, Ser. No. 204,714

Int. Cl. C08f 15/40

U.S. Cl. 260—80.78

2 Claims

A resinous material, and method for its preparation, having a softening point of from about 70° C. to about 130° C. comprising from about 10 to about 80 percent units derived from vinyl toluene, from about 10 to about 80 percent units derived from  $\alpha$ -methyl styrene, and from about 10 to about 50 percent units derived from styrene in which the mole ratio of vinyl toluene to styrene is from about 3/1 to about 1/1. The resinous material is prepared by polymerizing the monomers in the presence of an anhydrous catalyst selected from boron trifluoride, boron trifluoride etherate, aluminum chloride, ethyl aluminum dichloride and stannic chloride. The preferred catalyst is boron trifluoride. The resinous material of this invention has particular utility as resins for hot melt coatings and adhesives.

3,753,962

## RECOVERY OF A WATER SOLUBLE POLYMER POWDER FROM AN AQUEOUS GEL OF SAID POLYMER

Alfred Joseph Restaino, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Continuation-in-part of applications Ser. Nos. 781,975, and 782,000, both dated Dec. 6, 1968, both now abandoned. This application Mar. 16, 1970, Ser. No. 20,154

Int. Cl. C08f 1/88

U.S. Cl. 260—80 M

14 Claims

A process is described for the recovery of a high molecular weight polymer as a water-soluble powder from a stiff, rubber like aqueous gel of the polymer. The processing steps include: cutting the rubbery polymer gel, which is formed during the polymerization of the polymer, contacting the cut gel with a water miscible and polymer immiscible solvent causing a precipitate of the polymer to form, and then recovering the polymer precipitate by separation.

3,753,963

## PROCESS FOR PRODUCING HIGH SOFTENING POINT HYDROCARBON RESIN HAVING GOOD SOLUBILITY

Hideo Hayashi, Kawasaki, Hisatake Sato, Yokohama, Japan, assignors to Nippon Petrochemical Co., Ltd., Tokyo, Japan

No Drawing. Filed Mar. 22, 1971, Ser. No. 126,898

Claims priority, application Japan, Mar. 23, 1970, 45/23,904

Int. Cl. C08f 15/01, 15/42

U.S. Cl. 260—82

6 Claims

A process for producing light colored aromatic hydrocarbon resins having high softening points of above 140° C., good solubility in hydrocarbon solvents and low bromine value, which comprises using a thermal cracked petroleum fraction having a boiling range of 140–220° C., below 7 wt. percent of styrene content, and above 5 wt. percent of total content of indene and its alkyl derivatives; polymerizing said fraction in the presence of a boron trifluoride type catalyst at a temperature between –30 to

+40° C. within a period of 10 minutes to 15 hours under addition of phenol and/or alkylphenol; removing said catalyst after polymerization; and recovering said resin after separation of unpolymerized fraction and low molecular weight polymers from the resin-containing solution by evaporation or distillation.

3,753,964

## POLYMERIZATION OF OLEFINS WITH TETRAKIS (BICYCLOHEPTYL)VANADIUM COMPOUNDS AS CATALYSTS

Wendell P. Long, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 112,020, Feb. 2, 1971. This application Dec. 8, 1971, Ser. No. 206,147

Int. Cl. C08f 15/04, 1/42

U.S. Cl. 260—88.2 R

9 Claims

Tetrakis(1 - bicyclo - [2.2.1] - heptyl)vanadium compounds are catalysts for the polymerization of 1-olefins when activated by a halogen-containing aluminum compound such as  $AlCl_3$  or an alkylaluminum halide.

3,753,965

## METHOD FOR PRODUCING NON-BLOCKING ETHYLENE-ACRYLIC ACID COPOLYMER ARTICLES AND ARTICLES PRODUCED THEREBY

Glenwell Ray Looney and Mark Chung-Kong Hwu, St. Albans, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Oct. 21, 1971, Ser. No. 191,356

Int. Cl. C08f 15/04, 15/14

U.S. Cl. 260—88.1 R

7 Claims

Ethylene-acrylic acid copolymers in particulate form, such as, chips, rods, etc., are surface treated with a base such as sodium hydroxide, ammonia or diethylamine to render the shaped articles less prone to blocking or sticking. The treatment converts the carboxyl groups on the surface to the salt form; up to about 2.5 weight percent of the total carboxyl groups in the copolymer are converted and the properties of the original polymer are not altered to any appreciable extent as indicated by melt index and stiffness measurements.

3,753,966

## PROCESS FOR PREPARING POLYVINYL CHLORIDE BY SUSPENSION POLYMERIZATION

Shunichi Koyanagi, Hajime Kitamura, Kinya Ogawa, and Kenichi Taguchi, Naoetsu, Japan, assignors to Shinetsu Chemical Company

Filed Dec. 16, 1970, Ser. No. 98,667

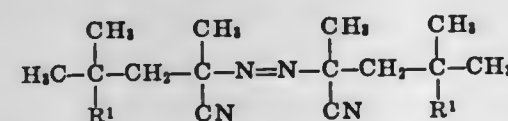
Claims priority, application Japan, Dec. 23, 1969, 44/103,005; Dec. 29, 1969, 45/1,310

Int. Cl. C08f 3/22

U.S. Cl. 260—92.8 W

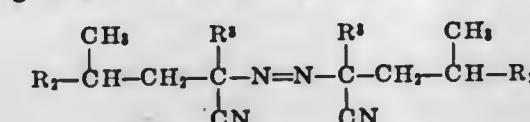
6 Claims

The polymerization is conducted in the presence of a first catalyst having the formula:



wherein  $R^1$  is a radical selected from the group consisting of alkyl, alkoxy and aryl radicals having from 1 to 6 car-

bon atoms, and a second catalyst selected from the group consisting of azonitriles having the formula:



wherein  $R^2$  and  $R^3$  are each an alkyl radical having from 1 to 4 carbon atoms, and oil-soluble organic peroxides which are soluble in vinyl chloride monomers. A polyvinyl chloride having superior thermal stability and a desirable particle size distribution is obtained quickly and at a high conversion rate. Additionally, polymer scale deposition on the inside wall of the polymerization vessel is reduced.

3,753,967

## PROCESS OF PREPARING POLYMERS OF CONJUGATED DIENES

Renier J. L. Graff, Beek, and Adrianus G. Marchal, Stein, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

No Drawing. Filed Feb. 24, 1971, Ser. No. 118,564

Claims priority, application Netherlands, Feb. 27, 1970, 7002794

Int. Cl. C08d 3/04, 3/06

U.S. Cl. 260—94.3

7 Claims

An improved process for polymerizing conjugated dienes in the presence of a catalyst comprising adding a metal containing Lewis acid to the reaction mixture to control the molecular weight of the polymer being produced.

3,753,968

## SELECTIVE REACTION OF FATTY ACIDS AND THEIR SEPARATION

Benjamin F. Ward, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

No Drawing. Filed July 1, 1971, Ser. No. 159,070

Int. Cl. C09F 1/04

U.S. Cl. 260—97.6

4 Claims

A process for making a dicarboxylic acid having 21 carbon atoms from fatty acids is accomplished by reacting the linoleic acid portion in a fatty acid mixture with up to 26% by weight of fatty acids of acrylic acid and with from 0.01% to 0.5% by weight of fatty acids of iodine catalyst at a temperature between 200° C. and 270° C. The fatty acid-dicarboxylic acid mixture is then separated by distilling into an oleic-type fatty acid and a  $C_{21}$  dicarboxylic acid. This process is especially applicable to separating tall oil fatty acids.

3,753,969

## METHOD FOR SYNTHESIZING PYROGLUTAMYL-HISTIDYL-PROLINAMIDE

Karl Folkers, 6406 Mesa Drive, Austin, Tex., and Jan B. Boler, Oslo, Norway, and Jaw-Kang Chang, Austin, Tex., said Boler and Chang assignors to said Folkers

No Drawing. Filed Dec. 22, 1969, Ser. No. 887,432

Int. Cl. C07c 103/52; C07g 7/00

U.S. Cl. 260—112.5

7 Claims

A method for synthesizing a tripeptide, pyroglutamyl-histidyl-prolinamide, which has the same potent activity of the thyrotropin releasing hormone of the hypothalamus gland of mammals is provided by utilizing, as the starting materials, the amino acids, pyroglutamic acid, histidine and proline. Synthesis of the desired product is accomplished by coupling histidine with either pyroglutamic acid or proline and then coupling the resultant product with the remaining, uncoupled amino acid to obtain pyroglutamyl-histidyl-prolinamide.

3,753,970

## CYCLOPEPTIDES DERIVED FROM POLYMYXINS AND THEIR PREPARATION

Jean Bouchaudon, Morsang-sur-Orge, Essonne, and Georges Jolles, Sceaux, Hauts-de-Seine, France, assignors to Rhone-Poulenc S.A., Paris, France

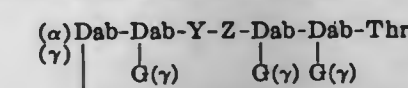
No Drawing. Filed Aug. 4, 1970, Ser. No. 60,944

Int. Cl. C07c 103/52; C07g 7/00; C08h 1/00

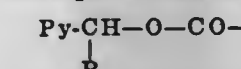
U.S. Cl. 260—112.5

5 Claims

The new cyclopeptides of the formula:



in which Y—Z represents an amino acid chain selected from D-Leu-Thr, D-Phe-Leu, D-Leu-Leu and D-Leu-Ileu, G represents an amino-protecting radical of the formula:



in which Py represents pyridyl, pyridyl-N-oxide, or pyridyl or pyridyl-N-oxide carrying a methyl substituent, R represents hydrogen, alkyl of 1 to through 5 carbon atoms, or phenyl, and Dab represents  $\alpha,\gamma$ -diaminobutyric acid, the amino acids having the L-configuration unless otherwise indicated, said cyclopeptides containing only a single free amino group, are useful intermediates for the synthesis of semi-synthetic products derived from polymyxins.

3,753,971

## COMPOSITION AND PROCESS FOR CROSS-LINKING MACROMOLECULAR POLYSACCHARIDE SOLUTIONS

William C. Browning and Billy G. Chester, Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.

Original application June 18, 1970, Ser. No. 47,325.

Divided and this application Aug. 21, 1972, Ser. No. 282,375

Int. Cl. C07c 1/00

U.S. Cl. 260—124 R

4 Claims

A cross-linking agent for macromolecular polysaccharide materials consisting essentially of a chelating composition formed from (1) an organic polyelectrolyte ligand component, and (2) a component of a metal of the first series of the transition elements of the Periodic Table. This cross-linking agent has been found to provide enhanced rheological properties without obtaining metal ion overtreatment characteristics. In a preferred form, said cross-linking agent also includes a compound containing a metal from Group II of the Periodic Table. The cross-linked materials may be utilized in textile sizing agents, paints, drilling fluids, and the like.

3,753,972

## FRACTIONATION OF AGAR

Wilfred Yaphe, and Michael Duckworth, Montreal, Quebec, Canada, assignors to Research Corporation, New York, N.Y.

No Drawing. Filed Apr. 28, 1970, Ser. No. 32,777

Int. Cl. C07c 47/18

U.S. Cl. 260—209 R

14 Claims

It has been determined that agar is a complex mixture of polysaccharides all with the same backbone of linkages but masked to a variable degree with charged groups. There are three extremes of structure in this spectrum of polysaccharides (1) completely neutral agarose, which is defined as a neutral, linear polymer with agarobiose as the repeating unit (2) pyruvated agarose in which masking of agarobiose units with charged groups gradually increases, the D-galactose being substituted by a 4,6-carboxyethylidene-D-galactose and the 3,6-anhydro-L-galactose residues with galactose sulfate (3) sulfated galactan in which the substitution



on the D-galactose units with pyruvate decreases and the concentration of L-galactose sulfate increases, yielding a non-gelling, sulfated polymer with no 3,6-anhydro-L-galactose.

Practically agarose is defined as that fraction of the complex of molecules in agar, with the lowest charge content and therefore greatest gelling ability. A highly purified agarose evidencing no detectable pyruvate and not more than 0.05% sulfate is prepared at yields of about 10-20% by fractionating purified agar. In the fractionation operations the agar is washed at room temperature to remove a non-gelling sulfated galactan. The agar is again washed at 50° C. to remove a charged component having very low gel strength. The washed agar may then be further purified by treatment with polyethylene glycol. The gelling components in the washed agar or the polyethylene precipitated agar are chromatographically fractionated, such as by DEAE Sephadex A-50, at a temperature of about 60° C. to recover a substantially pure agarose fraction and charged gelling components similar in structure to agarose.

3,753,973

### THE PREPARATION OF 3'-4'-DIDEOXYKANAMYCIN B ACTIVE AGAINST RESISTANT BACTERIA

Sumio Umezawa, and Hamao Umezawa, Tokyo, and Tsutomu Tsuchiya, Yokohama, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

No Drawing. Filed June 2, 1971, Ser. No. 149,351  
Claims priority, application Japan, July 29, 1970, 45/65,760

Int. Cl. C07c 47/18

U.S. Cl. 260—210 K

2 Claims

Synthesis of 3'-4'-dideoxykanamycin B which comprises protecting the amino and all or a part of the hydroxyl groups other than 3' and 4'-hydroxyl groups of kanamycin B, sulfonylating 3'- and 4'-hydroxyl groups to give a derivative having disulfonic ester groups, removing said ester groups to give 3'-4'-unsaturated compound, reducing said compound and finally removing the residual protecting groups.

3,753,974

### NERIIFOLIN DERIVATIVES

Fritz Kaiser, Lampertheim, Hessen, Wolfgang Schumann, Heidelberg, Kurt Stach, Mannheim-Waldhof, and Wolfgang Voigtlander, Viernheim, Hessen, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

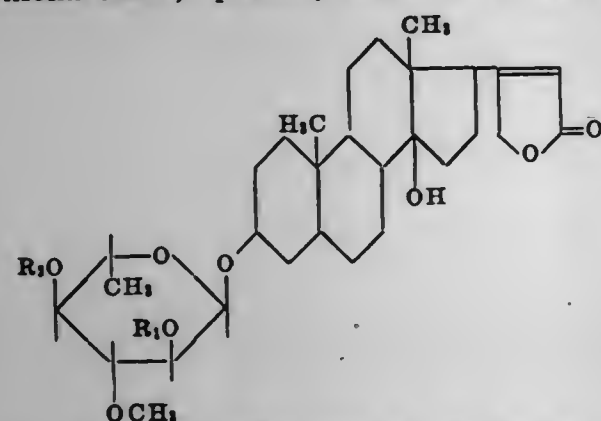
No Drawing. Filed Dec. 1, 1970, Ser. No. 94,210  
Claims priority, application Germany, Dec. 19, 1969, P 19 63 597.3

Int. Cl. C07c 173/00

U.S. Cl. 260—210.5

4 Claims

Neriifolin ethers, optionally acylated, of the formula



wherein one of the substituents  $R_1$  and  $R_2$  is a lower alkyl or alkoxyalkyl radical and the other is a hydrogen atom or a lower acyl radical.

These neriifolin derivatives are highly effective therapeutic agents and are suitable for oral administration in the treatment of cardiac insufficiency.

3,753,975

### EVOMONOSIDE DERIVATIVE

Fritz Kaiser, Lampertheim, Hessen, Wolfgang Schumann, Heidelberg, Kurt Stach, Mannheim-Waldhof, and Wolfgang Voigtlander, Viernheim, Hessen, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

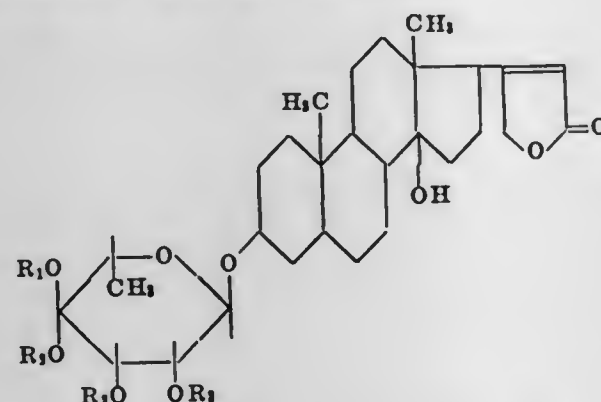
No Drawing. Filed Dec. 1, 1970, Ser. No. 94,212  
Claims priority, application Germany, Dec. 15, 1969, P 19 62 757.7

Int. Cl. C07c 173/00

U.S. Cl. 260—210.5

8 Claims

Evomonoside ethers and/or esters of the formula



wherein one or two of the substituents  $R_1$ ,  $R_2$  and  $R_3$  is lower alkyl or alkoxyalkyl or wherein the substituents  $R_2$  and  $R_3$  together represent a lower alkylidene radical, and the remaining substituents are hydrogen or acyl.

These evomonoside derivatives are highly effective therapeutic agents and are suitable for oral administration in the treatment of cardiac insufficiency.

3,753,976

### PROCESS FOR PREPARING POLYHALOHEMIACETAL DERIVATIVES OF POLYSACCHARIDES

George M. Grass, Jr., Phoenixville, and Raymond R. Unangst, Havertown, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

No Drawing. Filed July 17, 1972, Ser. No. 272,261

Int. Cl. C08f 19/06

U.S. Cl. 260—233.3 A

8 Claims

Polyhalohemiacetal derivatives of polysaccharides are prepared by dissolving the reactant, a polyhaloacetaldehyde, its hydrate or alkanoate with a polysaccharide in the desired weight ratio in a minimum amount of water; after a brief reaction period the reaction mixture is diluted with water to give an easily handled viscosity then spray dried. The process is most useful to prepare amicaloral using chloral or chloral hydrate and a commercial grade of starch such as U.S.P. or pearl grade.

3,753,977

### PROCESS FOR THE CLEAVAGE OF ESTERS OF 7-AMINO-CEPHEM-4-CARBOXYLIC ACID COMPOUNDS

Bruno Fechtig, Reinach, Basel-Land, Ernst Vischer, Basel, Hans Bickel, Binningen, Rolf Bosshardt, Arlesheim, and Jakob Urech, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Summit, N.J.

No Drawing. Continuation-in-part of application Ser. No. 842,359, filed July 16, 1969. This application July 14, 1970, Ser. No. 54,848

Claims priority, application Switzerland, Nov. 27, 1969, 17,668/69; Jan. 15, 1970, 517/70  
Int. Cl. C07d 99/16, 99/24

U.S. Cl. 260—239.1

6 Claims

The invention concerns the cleavage of 2-iodoethyl esters of 6-amino-penam-3-carboxylic acid and 7-amino-cephem-4-carboxylic acid compounds by means of chemical reducing agents. The 2-iodoethyl esters and the corresponding 2-chloro- and 2-bromoethyl esters of 6-amino-penam-3-carboxylic acid and 7-amino-cephem-4-carboxylic acid compounds are useful for the temporary protection of the carboxyl group in such compounds.

3,753,978

### PYRAZOLINE DERIVATIVES

Klaus Adelsberger, Ludwigshafen, Erwin Hahn, Viernheim, and Horst Scheuermann, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 2, 1970, Ser. No. 419  
Claims priority, application Germany, Jan. 4, 1969, P 19 00 349.7

Int. Cl. C07d 49/10

U.S. Cl. 260—239.9

4 Claims

Diphenylpyrazoline derivatives having a 5-carboxylic ester or amide group which are useful as optical brighteners for textile material of natural or synthetic fibers.

3,753,979

### SUBSTITUTED 1,2-α-METHYLENE-6,7-α-HALO-METHYLENE-20-SPIROX-4-EN-3-ONES OR 3-OLS AND ACYL ESTERS THEREOF

Glen E. Arth, Cranford, and Gary H. Rasmussen, Watchung, N.J., assignors to Merck Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 21,183, Mar. 19, 1970, which is a continuation-in-part of application Ser. No. 824,672, May 14, 1969, both now abandoned. This application Dec. 6, 1971, Ser. No. 205,304

Int. Cl. C07c 173/06

U.S. Cl. 260—239.55 R

5 Claims

1,2-α-methylene-2-spirox-4-en-3-ones (or 3,21-diones) and the corresponding 3-ols and their acyl ester derivatives are provided having 6,7-α-halomethylene substituent; the compounds exhibit antiandrogenic activity.

3,753,980

### PROCESS FOR THE PREPARATION OF 14-ANHYDROBUFALENE

Werner Haede, Hofheim, Taunus, Werner Fritsch, Neuenhain, Taunus, Kurt Radschelt, Kelkheim, Taunus, and Ulrich Stache, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Oct. 29, 1971, Ser. No. 194,003

Claims priority, application Germany, Oct. 30, 1970, P 20 53 310.2

U.S. Cl. 260—239.57

1 Claim

A process for the preparation of 14-anhydrobufaline by hydrogenating catalytically 3-keto-21-hydroxy-Δ<sup>4,14,20</sup>-cholatrienic acid-21-lactone treating 3-keto-21-hydroxy-5β-chola-14,20-dienic acid-21-lactone obtained with elementary sulfur in an inert high-boiling solvent and reducing the anhydrobufalone by means of trimethyl phosphite in isopropanol in the presence of iridium-IV-hydrochloric acid.

3,753,981

### 4-AMINO-2-STYRYLQUINAZOLINE COMPOUNDS

Hermann Breuer, Burgweinting, and Ernst Schulze, Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

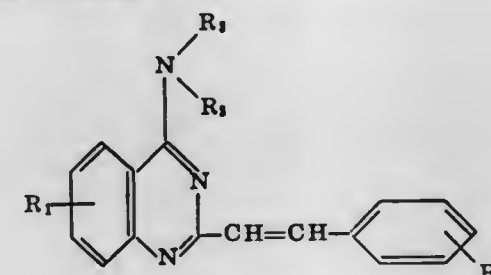
No Drawing. Filed July 15, 1970, Ser. No. 55,252

Int. Cl. C09b 23/14

U.S. Cl. 260—240 D

10 Claims

New 4-amino-2-styrylquinazoline derivatives which have the general formula



and acid addition salts thereof, are useful as anti-inflammatory agents.

3,753,982

### ANTI-BACTERIAL FURYL AND THIENYL THIAZOLE DERIVATIVES

Patrick Roffey, Camberley, and John Pomfret Verge, Henley-on-Thames, England, assignors to Lilly Industries, Limited, London, England

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,018  
Claims priority, application Brazil, Dec. 19, 1969, 215,440, application Great Britain, Apr. 20, 1970, 18,801

Int. Cl. C07d 91/32

U.S. Cl. 260—240 A

10 Claims

2-(5-nitro-2-furyl and 2-thienyl)- and 2-[2-(5-nitro-2-furyl and 2-thienyl)vinyl]-4-thiazolyl alcohols and 4-alkanoylthiazole acyl hydrazones possess antibacterial activity and may be prepared by hydrolysis of a corresponding thiazolyl alkyl ester to give the alcohols followed by oxidation and reaction with an acyl hydrazide to yield the hydrazones.

3,753,983

### PIPERAZINE DERIVATIVES AND PROCESSES FOR THEIR MANUFACTURE

Thomas Raabe, Heusenstamm, Klaus Resag and Rolf-Eberhard Nitz, Frankfurt am Main-Fechenheim, Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt, Germany

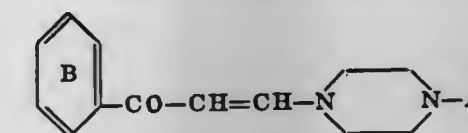
No Drawing. Filed Apr. 27, 1971, Ser. No. 137,966  
Claims priority, application Germany, May 2, 1970, P 20 21 470.4

Int. Cl. C07d 51/70

U.S. Cl. 260—240 J

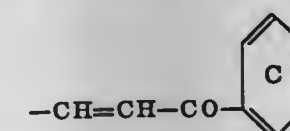
3 Claims

The present invention relates to new, pharmacologically valuable piperazine derivatives of the general formula



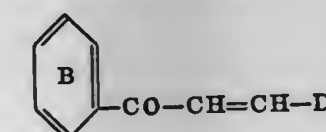
wherein

A means an alkyl or hydroxyalkyl radical having from 1 to 4 carbon atoms in the alkyl moieties, a benzhydryl or phenyl radical or one of the groups —COOR or



whereby R represents an alkyl group having from 1 to 4 carbon atoms and the benzene rings B and/or C may be substituted by halogen, an alkyl and/or alkoxy group having each from 1 to 4 carbon atoms, and/or by a nitro group

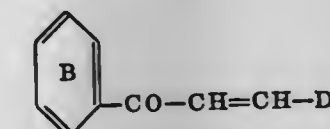
and to the production of such derivatives by reacting a compound of the general formula



wherein D means ONa, OK, O-alkyl, OH, Cl or Br and wherein the benzene ring may be substituted as indicated above with a piperazine compound of the general formula

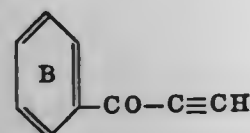


wherein A has the meaning given above, or by reacting, at a molar ratio of 2:1, a compound of the general formula





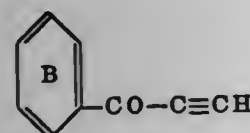
wherein D means ONa, OK, O-alkyl, OH, Cl or Br and wherein the benzene ring may be substituted as indicated above with piperazine, or by reacting a compound of the general formula



wherein the benzene ring may be substituted as indicated above with a compound of the general formula



wherein A has the meaning given above, or by reacting, at a molar ratio of 2:1, a compound of the general formula



wherein the benzene ring may be substituted as indicated above with piperazine.

3,753,984

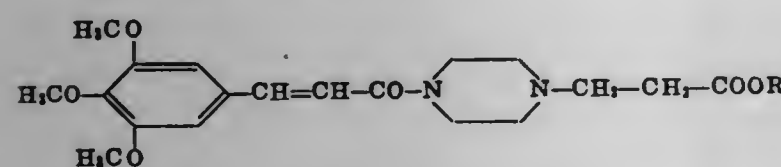
# AMIDES DERIVED FROM THE ESTERS OF 1-PIPERAZINE PROPIONIC ACID, THEIR METHOD OF PREPARATION AND THEIR APPLICATION TO THERAPEUTICS

Claude P. Fauran, Michel J. Turin, and Guy M. Raynaud, Paris, and Bernard M. Pourrias, Meudon La Foret, France, assignors to Delalande S.A.  
No Drawing. Filed May 26, 1971, Ser. No. 147,274  
Int. Cl. C07d 51/70

U.S. Cl. 260—240 J

2 Claims

Compounds of the formula



in which R is alkyl having 1 to 4 carbon atoms.

The compounds are made by reacting 3,4,5-trimethoxy cinnamoyl halide with an ester of 1-piperazine propionic acid in the presence of an alkaline agent.

The compounds possess properties of coronary dilation with a diminution of the cardiac consumption of oxygen as well as hypotensive, vasodilator and  $\beta$ -inhibitor properties.

3,753,985

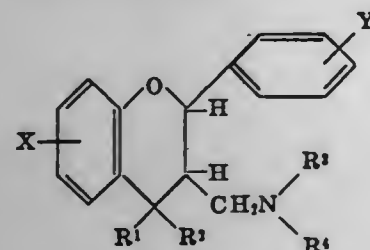
# 3-AMINO-FLAVANONES

John Joseph Gavin, Hamden, and Herman Henry Walchli, Jr., West Haven, Conn., and Dale Adrian Stauffer, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.  
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,181  
Int. Cl. C07d 7/20

U.S. Cl. 260—247.7 G

3 Claims

A group of flavanone derivatives of the structural formula



in which R<sup>1</sup> is hydrogen, R<sup>2</sup> is OH or O (lower)acyl, or R<sup>1</sup>R<sup>2</sup> taken together are O, R<sup>3</sup> is H or (lower)alkyl, R<sup>4</sup> is H or (lower)alkyl or NR<sup>3</sup>R<sup>4</sup> is a heterocyclic moiety of six members, X is a halogen, (lower)alkyl or (lower)alkoxy, and Y is a halogen, (lower)alkyl, or (lower)alkoxy; a process for preparing such compounds; and a process for inhibiting the growth of microorganisms.

3,753,986

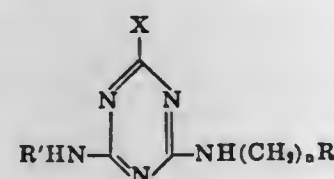
# TRIAZINE HERBICIDES

Gopal H. Singhal, Westfield, and Heide Roebke, Avenel, N.J., assignors to Esso Research and Engineering Company  
No Drawing. Filed Apr. 2, 1970, Ser. No. 25,237  
Int. Cl. C07d 55/20, 55/22

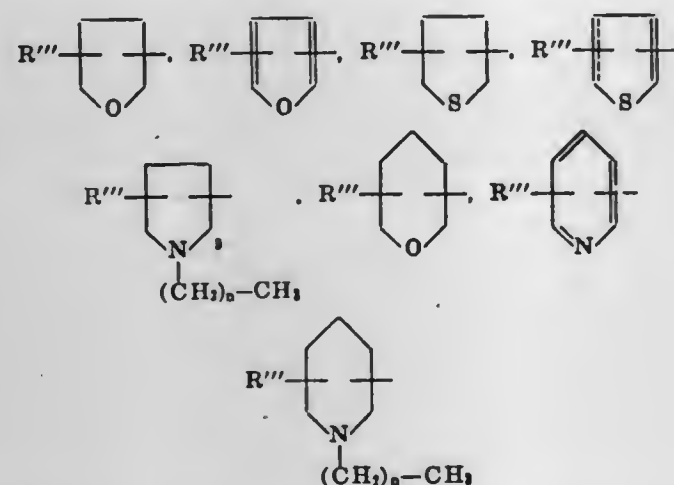
U.S. Cl. 260—249.6

21 Claims

Triazine compounds represented by the structural formula:



wherein X is one selected from the group consisting of Cl, Br, N<sub>3</sub>, C<sub>1</sub>-C<sub>6</sub> thioalkyl, C<sub>2</sub>-C<sub>6</sub> alkylthioalkylthio, C<sub>2</sub>-C<sub>6</sub> alkylsulfonylalkylthio, C<sub>2</sub>-C<sub>6</sub> alkylsulfoxyalkylthio, C<sub>2</sub>-C<sub>6</sub> alkoxyalkylthio, C<sub>1</sub>-C<sub>6</sub> chloroalkylthio, C<sub>1</sub>-C<sub>6</sub> bromoalkylthio, C<sub>1</sub>-C<sub>6</sub> alkoxy, C<sub>2</sub>-C<sub>6</sub> alkylthioalkyloxy, C<sub>2</sub>-C<sub>6</sub> alkylsulfonylalkyloxy, C<sub>2</sub>-C<sub>6</sub> alkoxyalkyloxy, C<sub>1</sub>-C<sub>6</sub> chloroalkyloxy, C<sub>1</sub>-C<sub>6</sub> bromoalkyloxy; R' is hydrogen, C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>2</sub>-C<sub>6</sub> cycloalkyl or C<sub>4</sub>-C<sub>6</sub> alkylcycloalkyl with the proviso that the ring may contain at least one hetero atom such as nitrogen, oxygen or sulfur; n is an integer ranging from 1 to 6; R is a 5 or 6 member ring containing 1 or more hetero atoms, said ring being one selected from the group consisting of the following:



wherein R''' is one selected from the group consisting of H, C<sub>1</sub>-C<sub>6</sub> alkyl, C<sub>3</sub>-C<sub>6</sub> alkenyl, C<sub>1</sub>-C<sub>6</sub> haloalkyl, Cl, Br, and NO<sub>2</sub>; wherein n is an integer ranging from 0 to 3. Such compounds have shown outstanding pre- and post-emergence herbicidal activity.

3,753,987

# 3-HALOMETHYL-2-QUINOXALINECARBOXYLIC ACID-1,4-DIOXIDE ESTERS AND THEIR CYCLIZATION PRODUCTS WITH AMINES

Timothy Henry Cronin, Niantic, Philip Dietrich Hammen, Mystic, Elle Abushanab, East Lyme, Marwan Jawdat Abu El-Haj, Groton, Conn., assignors to Chas. Pfizer & Co., Inc., New York, N.Y.  
No Drawing. Filed Apr. 3, 1970, Ser. No. 25,543  
Int. Cl. C07d 51/78

U.S. Cl. 260—250 R

7 Claims

3-halomethyl-2-quinoxalinecarboxylic acid, alkyl ester, 1,4-dioxides useful as antibacterial agents are converted,

on treatment with ammonia and amines to 2,3-dihydro-1-oxo-1H-pyrrolo[3,4-b]quinoxaline-4,9-dioxides also useful as chemotherapeutic agents and in promoting growth and improving feed efficiency of animals, in general.

3,753,988

# SUBSTITUTED PHTHALAZINES

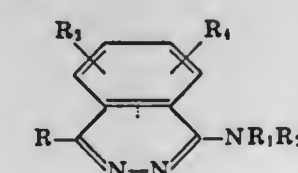
Ronald Ernest Rodway, Bourne End, Buckinghamshire, and Robin George Simmonds, Wokingham, Berkshire, England, assignors to Aspro-Nicholas Limited, London, England  
No Drawing. Filed Apr. 30, 1970, Ser. No. 33,506  
Claims priority, application Great Britain, May 3, 1969, 22,679/69

U.S. Cl. 260—250 A

12 Claims

Pharmacologically active phthalazines are provided having the formula:

Int. Cl. C07d 51/04



as well as pharmaceutical compositions containing these, and a method of anti-inflammatory treatment, comprising the administration of such compounds to an animal.

3,753,989

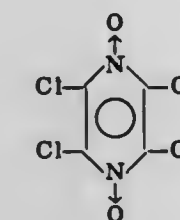
# TETRACHLOROPYRAZINE BIS-N-OXIDE AND ITS PREPARATION

Demetrios Kyriacou, Oakley, Calif., assignor to The Dow Chemical Company, Midland, Mich.  
No Drawing. Filed Jan. 7, 1971, Ser. No. 104,800  
Int. Cl. C07d 51/76

U.S. Cl. 260—250 R

7 Claims

Tetrachloropyrazine bis-N-oxide corresponding to the formula



is prepared by the oxidation of tetrachloropyrazine or tetrachloropyrazine mono-N-oxide with hydrogen peroxide and sulfuric acid. This compound has activity as a selective herbicide.

3,753,990

# PHENYLBISMUTH BIS(2-PYRIDINETHIOL 1-OXIDE)

John Downing Curry, Oxford, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio  
No Drawing. Continuation-in-part of abandoned application Ser. No. 98,086, Dec. 14, 1970. This application Jan. 17, 1972, Ser. No. 218,584  
Int. Cl. C07d 31/50

U.S. Cl. 260—270 R

1 Claim

Phenylbismuth bis(2-pyridinethiol 1-oxide), a new antibacterial and antifungal compound, and compositions containing same.

3,753,991

# PRODUCTION OF 2,3-DIHYDROXYQUINOLINE

Hans-Juergen Sturm, Gruenstadt, and Helmut Goerth, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany  
No Drawing. Original application May 19, 1969, Ser. No. 825,956, now Patent No. 3,682,928. Divided and this application Jan. 14, 1972, Ser. No. 217,947  
Claims priority, application Germany, May 22, 1968, P 17 70 480.2  
Int. Cl. C07d 33/38

U.S. Cl. 260—283 SY

3 Claims

Production of 2,4-dihydroxyquinoline starting from N-acetoacetyl anthranilic acid esters.

3,753,992

# PROCESS AND INTERMEDIATES FOR QUININE, QUINIDINE AND DERIVATIVES THEREOF

Juerg Albert Walter Gutzwiller, Bettingen, Switzerland, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.  
No Drawing. Continuation-in-part of application Ser. No. 104,785, Jan. 7, 1971, which is a continuation-in-part of application Ser. No. 837,304, June 27, 1969, which is a continuation-in-part of application Ser. No. 741,913, July 2, 1968, all now abandoned. This application Dec. 27, 1971, Ser. No. 212,648  
Int. Cl. C07d 43/24

U.S. Cl. 260—284

55 Claims

Quinine, quinidine, their antipodes or racemates and derivatives thereof, are prepared by (a) cyclizing the correspondingly substituted 4 - [3-(1-chloro-3(R)-alkyl(or alkenyl) - 4(R)-piperidyl)-1-oxopropyl]quinolines, antipodes or racemates thereof, to the corresponding 4-[5(R)-alkyl(or alkenyl)-4(S)-quinuclidin-2(S) or 2 (R)-ylcarboxyl]quinolines, antipodes or racemates thereof; and (b) stereoselectively reducing the products of step (a) to  $\alpha$ (S)-[5(R)-alkyl(or alkenyl)-4(S)-quinuclidin-2(R)-yl]-4-quinolinemethanols, antipodes or racemates thereof using di-alkylaluminum hydride, and  $\alpha$ (R)-[5(R)-alkyl(or alkenyl)-4(S)-quinuclidin-2(S)-yl] - 4 - quinolinemethanols, antipodes or racemates thereof. Various intermediates and the end products are useful antimalarial and antiarrhythmic agents.

3,753,993

# 1,4-DIHYDRO-4-OXO-7-PYRIDYL-3-QUINOLINE-CARBOXYLIC ACID DERIVATIVES

George Y. Leshner, and Philip M. Carabateas, Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.  
No Drawing. Filed May 17, 1971, Ser. No. 144,307  
Int. Cl. C07d 33/48

U.S. Cl. 260—286 R

25 Claims

1,4-dihydro-1-(lower-alkyl)-4-oxo - 7 - pyridyl-3-quinolinecarboxylic acids and lower-alkyl esters having antibacterial activity, are prepared by reacting the corresponding 1,4-dihydro-4-oxo-7-pyridyl-3-quinolinecarboxylic acid or lower-alkyl ester with an alkylating agent, e.g., lower-alkyl halide, sulfate or sulfonate, and by other methods.

3,753,994

# 1,1'-AZINOBIS(1,2,3,4-TETRAHYDROISOQUINOLINES)

Guy D. Diana, Stephentown, N.Y., assignor to Sterling Drug Inc., New York, N.Y.  
No Drawing. Filed Aug. 10, 1970, Ser. No. 62,700  
Int. Cl. C07d 35/34

U.S. Cl. 260—288 R

2 Claims

1-(2-substituted-hydrazino) - 3,4 - dihydroisoquinolines, prepared in one process by alkylating the corresponding



3,4-dihydroisocarbostyrils, hydrazinolizing the resulting 1-alkoxy-3,4-dihydroisoquinolines and condensing the resulting 1-hydrazino-3,4-dihydroisoquinolines with aldehydes or ketones, and 1,1'-azinobis(1,2,3,4-tetrahydroisoquinolines), prepared by condensing corresponding 1-alkoxy-3,4-dihydroisoquinolines and 1-hydrazino-3,4-dihydroisoquinolines, are useful as antihypertensive agents.

3,753,995

# PROCESS AND INTERMEDIATES IN THE PREPARATION OF EBURNAMONINE

Jacques Martel, Bondy, and Germain Costerousse, Mont-rouge, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed Dec. 28, 1971, Ser. No. 213,215

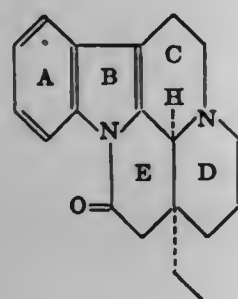
Claims priority, application France, Jan. 6, 1971, 7100204

Int. Cl. C07d 57/08

U.S. Cl. 260—293.53

6 Claims

The object of this invention is a new process of preparation of (±) eburnamonine of the formula:



It is known that eburnamonine has been isolated from several plant species such as Vinca minor and Hunteria Eburnea.

Eburnamonine possesses interesting pharmacological properties; it provokes a hypertension accompanied by a respiratory and cardiac stimulation and an increase of tonicity.

In addition, eburnamonine can serve as starting material in the synthesis of known analogous compounds displaying an interesting physiological activity.

3,753,996

# DERIVATIVES OF 4-(AMINOETHANESULFONYLAMINO)-PHENETIDINE

Shun-ichi Naito, 35 Murasakino Kamitorida-cho, Kita-ku, Kyoto, Japan

No Drawing. Application Feb. 10, 1969, Ser. No. 798,184, which is a continuation-in-part of application Ser. No. 778,792, Nov. 25, 1968, now abandoned. Divided and this application Dec. 2, 1970, Ser. No. 94,615

Int. Cl. C07d 31/48

U.S. Cl. 260—294.8 F

6 Claims

Analgesic-antipyretic compounds are provided which are derivatives of 4-(aminoethansulfonfylamino)-antipyrine and aminoethansulfonfyl-p-phenetidine of the formula:



wherein Z is 4-antipyril or p-ethoxyphenyl and R<sup>1</sup> and R<sup>2</sup> are each hydrogen, alkyl or acyl. Intermediates and administrable compositions are disclosed. The compounds form stable aqueous solutions retaining practically full activity.

3,753,997

# TRIFLUOROMETHYL SUBSTITUTED-2,6-DIPHENYL-4-PYRIDYL CARBINOLAMINE ANTIMALARIALS

Arthur B. Ash, 1519 Chateaufont, Detroit, Mich. 48207; Peter Blumbergs, 22021 Sunset, Oak Park, Mich. 48237; Anica Markovac, 18271 Meadowood Ave., Sterling Heights, Mich. 48077; and Maurice P. La Montagne, 3539 Cero Drive, Lathrup Village, Mich. 48075

No Drawing. Filed June 7, 1971, Ser. No. 150,746

Int. Cl. C07d 31/42

U.S. Cl. 260—296 R

6 Claims

A series of trifluoromethyl substituted-2,6-diphenyl-4-pyridylcarbinolamines is herein disclosed which has value in treatment of plasmodial infections. The compounds have substituted phenyl groups at positions 2- and 6- on the pyridine moiety, with the electronegative substituents (the same, or different) present on the phenyl nuclei at least one of which is trifluoromethyl. The syntheses of such series is described, together with a method for separation of racemates of a representative 4-pyridylcarbinolamine type.

3,753,998

# COMPOSITION AND PROCESS FOR PRODUCING POLYAMIDE-IMIDE AND POLYAMIDE POLYMERS

Edwin F. Morello, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 147,238, May 26, 1971. This application Apr. 24, 1972, Ser. No. 246,576

Int. Cl. C08g 20/08, 20/32, 51/44

U.S. Cl. 260—30.2 R

33 Claims

A polyamide-imide or polyamide prepared by heating in a solvent the following three reactants: (1) trimellitic anhydride, or isophthalic acid, or mixtures thereof, (2) aromatic diamines and (3) lactams or amino acids wherein the molar ratio of the trimellitic anhydride or isophthalic acid to the aromatic diamine to the lactams is about 1:1:0.3 to about 1:1:2.5. A process for preparing these polyamide-imides is also disclosed. These polyamide-imides are useful as insulating coatings for electrical wire and in molded articles.

3,753,999

# 2-THIOCYANOMETHYLSULFONYL BENZOTHAZOLE

Albert Tempel and Hendrik Dolman, Van Houtenlaan, Weesp, Netherlands, assignors to North American Phillips Co., Inc., New York, N.Y.

No Drawing. Filed Oct. 7, 1968, Ser. No. 765,672

Claims priority, application Netherlands, Oct. 10, 1967, 6713712

Int. Cl. C07d 91/44

U.S. Cl. 260—306.6 R

1 Claim

Fungicidal compositions containing sulfoxyl or sulphonyl methylene rhodanide and substitution products thereof.

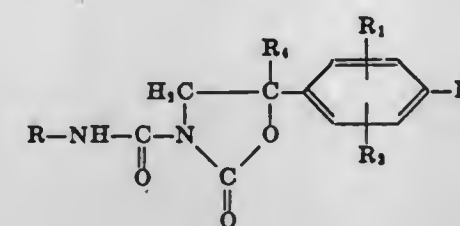
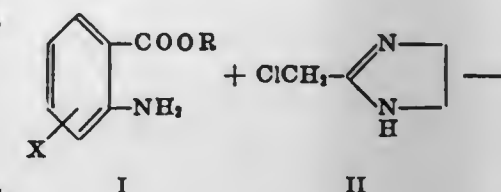
# 3,754,000 DERIVATIVES OF 3-AMINOCARBONYL-2-OXAZOLIDINONE AND THEIR PROCESS OF PREPARATION

Claude P. Fauran and Colette A. Douzon, Paris, Gerard J. Huguet, Malesherbes, Guy M. Raynaud, Paris, and Claude J. Gouret, Meudon, France, assignors to Delalande S.A., Courbevoie, France  
No Drawing. Filed Mar. 22, 1971, Ser. No. 127,049  
Claims priority, application France, Mar. 24, 1970, 7010453; Feb. 17, 1971, 7105295  
Int. Cl. C07d 85/28

U.S. Cl. 260—307 C

A compound of the formula

3 Claims



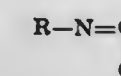
in which

R<sub>4</sub> is H or phenyl

R is phenyl, alkyl or alkenyl having 1-4 C or a cycloaliphatic having 5 or 6 C

R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> is hydrogen methyl or halogen,

The compound is formed by reacting an isocyanate



with an oxazolidinone.

The compounds possess anticonvulsive, myorelaxant, antidepressive, antiinflammatory, anxiolytic and analgesic properties.

# 3,754,001 9-IMIDAZOLYL-FLUORENE-9-CARBOXYLIC ACID COMPOUNDS

Helmut Timmler and Karl-Heinz Buchel, Wuppertal-Vohwinkel, and Robert R. Schmidt, Leverkusen-Rheindorf, and Ludwig Eue, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Filed Nov. 20, 1970, Ser. No. 91,542  
Claims priority, application Germany, Dec. 24, 1969, P 19 64 996.8  
Int. Cl. C07d 49/36, 47/18, 55/106

U.S. Cl. 260—309

11 Claims

9-Azoly-fluorene-9-carboxylic acid compounds e.g., 9-imidazolyl or 9-triazolyl fluorene-9-carboxylic acid compounds which may be additionally substituted, e.g., halogenated, and agriculturally acceptable salts thereof, exhibit outstanding plant growth regulant activity including growth inhibiting, growth promoting and growth altering activity.

3,754,002

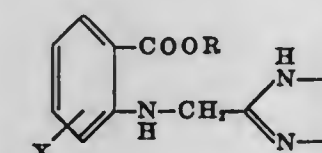
# SUBSTITUTED IMIDAZOLINYMETHYL ANTHRANILATES

Richard E. Brown, Hanover, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.  
No Drawing. Filed Nov. 26, 1971, Ser. No. 202,569  
Int. Cl. C07d 49/34

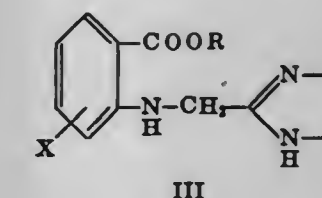
U.S. Cl. 260—309.6

6 Claims

Compounds of the formula are disclosed:



wherein R is hydrogen or alkyl and X is hydrogen, lower alkyl, nitro, halogen or trifluoromethyl. These compounds are prepared as follows:



Compounds in which R is hydrogen are prepared by hydrolysis of the ester with dilute aqueous alkali followed by neutralization with mineral acid. They are useful as presor agents.

3,754,003

# TETRAMETHYL PYRROLIDINE DERIVATIVES

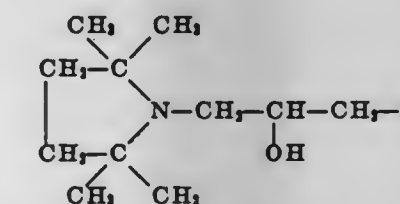
Andrea Pedrazzoli and Leone Dall'Asta, both of Via Piranesi 38, Milan, Italy  
No Drawing. Continuation-in-part of abandoned application Ser. No. 777,470, Nov. 20, 1968. This application July 8, 1971, Ser. No. 112,599

Int. Cl. C07d 27/04

U.S. Cl. 260—326.5 R

9 Claims

New tetramethylpyrrolidino-derivatives of the general formula



wherein R is a phenoxy or phenyl-alkyloxy radical, optionally substituted in the benzene ring; and their therapeutically acceptable acid addition salts, are useful as local anaesthetic agents having a very low acute toxicity.

3,754,004

# PROCESS FOR PREPARING 3-INDOLYL ALIPHATIC ACID DERIVATIVES

Hisao Yamamoto, Nishinomiya, and Masaru Nakao, Osaka, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

No Drawing. Original application Mar. 10, 1970, Ser. No. 622,076, now Patent No. 3,544,563. Divided and this application June 16, 1970, Ser. No. 46,827

Claims priority, application Japan, Mar. 15, 1966, 41/16,236; Mar. 18, 1966, 41/17,085; Jan. 24, 1967, 42/4,951

The portion of the term of the patent subsequent to Feb. 16, 1988, has been disclaimed

Int. Cl. C07d 27/56

U.S. Cl. 260—326.13A

3 Claims

N-acylated 3-indolyl acetic acid derivatives having anti-inflammatory, analgesic, antipyretic and anticholesterol-emic activities and being useful as an intermediate for anti-inflammatory drugs which are prepared by reacting an N<sup>1</sup>-acylated phenylhydrazine derivative with a keto-glutaric acid or its derivative at an elevated temperature.



3,754,005

## THIAOXANTHENE DERIVATIVES

Stuart Sanders Adams, Bernard John Armitage, Norman William Bristow, and Bernard Vincent Heathcote, Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

No Drawing. Filed Oct. 20, 1971, Ser. No. 191,111  
Claims priority, application Great Britain, Sept. 2, 1966, 39,384/66; Apr. 5, 1967, 15,692/67  
Int. Cl. A61k 27/00; C07d 65/16

U.S. Cl. 260—328 3 Claims  
N-hydroxy-N-9-thioxanthenyurea and its esters and substituted derivatives thereof useful in the treatment of peptic ulcer.

3,754,006

## ESTERS AND AMIDES OF SUBSTITUTED GLYOXYLIC ACIDS

James E. Siggins, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.  
No Drawing. Application Dec. 3, 1969, Ser. No. 881,892, which is a continuation-in-part of application Ser. No. 613,457, Feb. 2, 1967, now Patent No. 3,532,737. Divided and this application Oct. 7, 1971, Ser. No. 187,532

Int. Cl. A61k 27/00; C07d 63/10  
U.S. Cl. 260—332.2 A 13 Claims  
The compounds are esters and amides of alkylglyoxylic and arylglyoxylic acids, prepared from the free acids and the appropriate substituted alcohol, amine or alkyl halide. The compounds are useful as plasticizers, and the members of a sub-group are useful as hypoglycemic agents.

3,754,007

## PROCESS FOR THE PRODUCTION OF CYCLO-HEXANEDIONE-(1,2)-HEMIHYDRATE

Wilhelm Sutter, Leverkusen, Karl-Friedrich Wedemeyer, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Filed Feb. 6, 1970, Ser. No. 9,437  
Claims priority, application Germany, Feb. 21, 1969, P 19 08 679.4

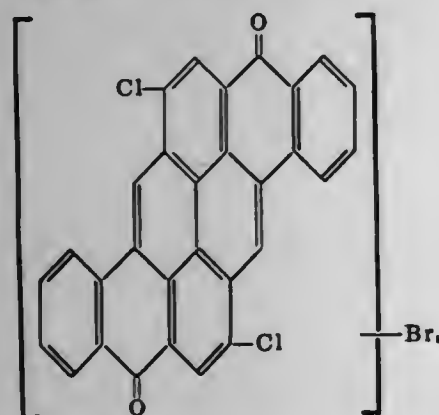
Int. Cl. C07d 1/02, 13/00  
U.S. Cl. 260—340.5 8 Claims  
Cyclohexanedione-(1,2)-hemihydrate is obtained by introducing cyclohexanol, optionally containing water, and nitric acid simultaneously into aqueous sulphuric acid containing a catalytic amount of nitrous acid with thorough mixing at a temperature of 0° to 18° C.

3,754,008

## DYES OF THE PYRANTHRONE SERIES

Fritz Graser, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany  
No Drawing. Filed Apr. 5, 1971, Ser. No. 131,402  
Claims priority, application Germany, Apr. 11, 1970, P 20 17 450.9

Int. Cl. C09b 3/42 2 Claims  
U.S. Cl. 260—360  
New dyes having the formula:



where  $n$  denotes a value from 0.1 to 2.5. The dyes have excellent fastness properties including light fastness and fastness to weather.

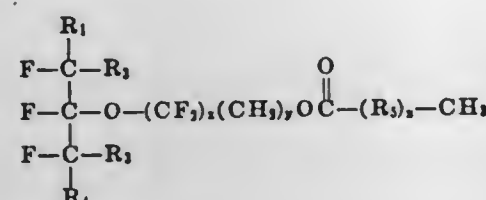
3,754,009

## NOVEL ESTERS OF POLYFLUOROISOALKOXY ALKANOLS

Louis G. Anello, Orchard Park, Richard F. Sweeney, Elma, N.Y., and Morton H. Litt, Cuyahoga, Ohio, assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 633,359, Apr. 25, 1967. This application May 25, 1970, Ser. No. 40,341

Int. Cl. C11c 3/00; C07c 69/02  
U.S. Cl. 260—408 20 Claims  
Compounds of the formula:



wherein (a)  $R_1$ – $R_4$  are each independently selected from the group consisting of F, Cl and perfluoroalkyl, and together can form a perfluorocycloalkylene group, with the proviso that  $R_1$ – $R_4$  may not contain more than two chlorine atoms, (b)  $x$  is an integer from 1–81, (c)  $y$  is an integer from 1–81, (d)  $R_5$  is a divalent alkylene group having from 1–22 carbon atoms, and (e)  $z$  is 0 or 1, are useful as insulator and condenser fluids, hydraulic fluids, lubricants and heat transfer media. These compounds are also surface active and are useful as anti-wetting agents.

3,754,010

## CO-OXIDATION PROCESS FOR THE PRODUCTION OF SYNTHETIC FATTY ACIDS

Karl P. Kammann, Jr., Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio  
No Drawing. Filed May 3, 1971, Ser. No. 139,898

Int. Cl. C08h, 17/36 7 Claims  
U.S. Cl. 260—413  
A co-oxidation process is provided whereby aliphatic monocarboxylic acids are obtained by the autoxidation of paraffin/olefin mixtures in the presence of a catalyst at atmospheric pressure. The process provides efficient oxidation of both the paraffin and the olefin at low temperatures while maintaining acceptable reaction rates and gives an improved distribution to a narrow range of preferred synthetic fatty acids.

3,754,011

## METHOD FOR THE PREPARATION OF ZIRCONIUM, HAFNIUM AND THORIUM ALKOXIDES

Michael Hoch, 2920 Scioto St., Cincinnati, Ohio 45219  
No Drawing. Filed Oct. 28, 1970, Ser. No. 84,937

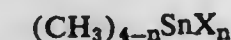
Int. Cl. C07f 7/00 16 Claims  
U.S. Cl. 260—429.1  
A method for preparing metal alkoxides of hafnium, zirconium and thorium in high yields and particularly adapted for large scale operations. The method involves a preparation of metal isopropoxides of the selected metal by the reaction of a metal tetrahalide with isopropyl alcohol under controlled alkaline conditions to form the desired metal tetraisopropoxide in high yields. The metal tetraisopropoxides are then reacted with secondary or tertiary alkanols heavier than isopropanol by alcoholysis exchange to produce the metal tetra secondary or tertiary alkoxides. The metal tetraalkoxides produced are useful as precursor materials in the preparation of fine powders, films and coatings of zirconium, hafnium and thorium oxides in high purity by thermal decomposition. The metal oxides are useful in forming high temperature ceramic bodies, oxidation resistant coatings, absorbants, catalysts and the like.

3,754,012

## PREPARATION OF METHYLTIN COMPOUNDS

Eric Jan Bulten, Biltoven, the Netherlands, assignor to Cosan Chemical Corporation, Clifton, N.J.  
No Drawing. Filed Jan. 6, 1972, Ser. No. 215,916  
Claims priority, application Netherlands, Jan. 7, 1971, 7100202

Int. Cl. C07f 7/22 12 Claims  
U.S. Cl. 260—429.7  
Methyltin compounds having a structure represented by the formula



in which X is a halogen and  $n$  is an integer from 0 to 3 are produced in high yield by a process in which a stannic halide is transmethyated with tetramethyllead at a temperature below about 90° C., following which the reaction product is heated to a temperature above about 100° C. for a period of time sufficient to produce the desired methyltin compound by exhaustive transmethylation. These methyltin compounds and their derivatives (such as methyltin oxides) are important for the preparation of many biocides, polymer stabilizers, glass strengthening agents and catalysts.

3,754,013

## ARSENIC CONTAINING ENAMINES AND AMIDINIUM SALTS

Harold I. Weingarten, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.  
No Drawing. Filed Dec. 20, 1971, Ser. No. 210,236

Int. Cl. C07f 9/66 3 Claims  
U.S. Cl. 260—440  
The invention relates to arsenic containing enamines and amidinium salts prepared by reacting enamines with metal halides. The products are useful as a source of functionalized organic arsenic compounds suitable for incorporation into nylon spinning mixtures to impart resistance to fungi and bacteria.

3,754,014

## VAPOR PHASE REACTION OF AROMATIC NITRO COMPOUNDS TO FORM AROMATIC ISOCYANATES

Ehrenfried H. Kober, Aschau, near Kralburg, Upper Bavaria, Germany, and Richard H. Martin, Brevard, N.C., assignors to Olin Corporation  
No Drawing. Original application June 26, 1968, Ser. No. 740,059. Divided and this application June 10, 1971, Ser. No. 151,909

Int. Cl. C07c 119/04 12 Claims  
U.S. Cl. 260—453 PC  
In a continuous process for preparing aromatic isocyanates from the corresponding aromatic nitro compounds in the presence of a catalyst in a reaction zone at an elevated temperature, the improvement which comprises vaporizing said aromatic nitro compound, mixing said vapor with gaseous carbon monoxide, contacting said mixture with said catalyst in said reaction zone, and withdrawing the reaction product containing aromatic isocyanate from said reaction zone. Catalysts include halides and oxides of noble metals, preferably when supported on silicon carbide. Utilizing a halide of copper as a catalyst component also improves isocyanate yields.

3,754,015

## NOVEL PARACYCLOPHANES AND PROCESS FOR PREPARATION

Eddie Hedaya, White Plains, N.Y., assignor to Union Carbide Corporation  
No Drawing. Continuation of application Ser. No. 555,267, June 6, 1966. This application July 22, 1969, Ser. No. 849,557

Int. Cl. C07c 143/68 1 Claim  
U.S. Cl. 260—456 P  
Novel mono- and di-substituted paracyclophanes having utility in the coatings field are conveniently prepared

by the reaction of an oxalylhalide with [2.2]-paracyclophane to give a haloformyl-substituted [2.2]-paracyclophane which thereafter can serve as a starting material for various paracyclophane derivatives.

3,754,016

## NOVEL CYCLOALKENONE ESTERS

Peter Oberhänsli, Kusnacht, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.  
No Drawing. Filed Mar. 4, 1970, Ser. No. 16,608  
Claims priority, application Switzerland, Mar. 10, 1969, 3,607/69

Int. Cl. C07c 49/58, 69/74 10 Claims  
U.S. Cl. 260—468 K  
There are provided novel cycloalkenone esters and enol ethers having 5–6 carbon atoms in the ring, and methods of producing said compounds which are useful as synthetic intermediates in the preparation of valuable odorants of the jasmine group. The novel esters are prepared by reacting the corresponding enol ether with a malonic ester in an anhydrous alkaline reaction medium.

3,754,017

## PRODUCTION OF CYANOACETALDEHYDE

Hans Juergen Strum, and Herbert Armbrust, Gruenstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany  
No Drawing. Continuation-in-part of application Ser. No. 30,287, Apr. 20, 1970. This application Oct. 14, 1971, Ser. No. 189,389  
Claims priority, application Germany, Apr. 22, 1969, P 19 20 246.1

Int. Cl. C07c 121/02 6 Claims  
U.S. Cl. 260—465.1  
Production of cyanoacetaldehyde by preparing an isoxazoline and splitting it in the presence of an inorganic base. The product is a valuable intermediate in the manufacture of dyes and pesticides.

3,754,018

## NOVEL REACTIONS OF HCN, HF AND OLEFINS

Louise DeVries, Greenbrae, Calif., assignor to Chevron Research Company, San Francisco, Calif.  
No Drawing. Filed May 8, 1970, Ser. No. 35,896  
Int. Cl. C07c 121/04, 121/02, 121/42

U.S. Cl. 260—465.3 12 Claims  
1-cyano-1,2-diimino compounds and derivatives thereof are prepared by the reaction of hydrofluoric acid and hydrocyanic acid with an olefin. The resulting product, which is a ketenimine or its tautomer, can be treated with a variety of nucleophilic reagents to form such compounds as triaminoacrylonitrile, derivatives of oxalimide acid, etc. The compounds can be used as a controlled source of hydrocyanic acid or amines, as monomers for polymerization, with dienes in Diels-Alder reactions, as chelating agents and acylating agents.

3,754,019

## 5-ARYLPHENYLPHOSPHONIC AND PHOSPHONOUS ACIDS

Lewis H. Sarett, Skillman, and John Hannah, Matawan, N.J., assignors to Merck & Co. Inc., Rahway, N.J.  
No Drawing. Continuation-in-part of application Ser. No. 836,665, June 25, 1969. This application Apr. 20, 1970, Ser. No. 30,324

Int. Cl. 07f 9/30, 9/40, 9/48 10 Claims  
U.S. Cl. 260—479 R  
5-arylphenylphosphonic and phosphonous acids and their derivatives are described and the processes for pre-



paring the same are disclosed. These compounds exhibit anti-inflammatory properties and also possess an effective degree of anti-pyretic and analgesic activity.

3,754,020

# PRODUCTION OF GLYCEROL ACETATES

Wilhelm Vogt, Hurth-Efferen, Kurt Sennwald, Hurth-Hermulheim, and Hermann Glaser, Erfstadt Lechenich, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

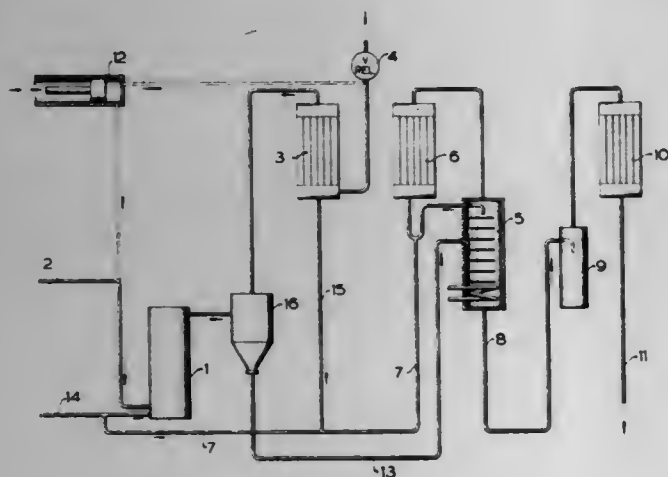
Filed Nov. 12, 1971, Ser. No. 198,128

Claims priority, application Germany, Nov. 14, 1970, P 20 56 132.4

Int. Cl. C07c 67/00

U.S. Cl. 260—491

4 Claims



Production of glycerol triacetate and glycerol diacetate by the reaction of allyl acetate, acetic acid and molecular oxygen at elevated temperature, under a pressure of between 1 and 200 atmospheres absolute in liquid phase, in the absence of catalysts. More particularly, a solution of allyl acetate in acetic acid containing between 1.5 and 15 weight percent of acetaldehyde is reacted with a mixture of oxygen and inert gas, at a temperature of between 30 and 250° C.

3,754,021

# 4-KETO-4-(3'-CHLORO-4'-CYCLOHEXYL)PHENYL-BUTYRIC ACID AND RELATED COMPOUNDS

Tsung-Ying Shen, Westfield, and Conrad P. Dorn, Jr., Plainfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 29, 1968, Ser. No. 732,892

Int. Cl. C07c 65/20

U.S. Cl. 260—515 A

5 Claims

The preparation of various cyclohexylphenyl keto and hydroxy butyric acids and derivatives, the processes for preparing them, and their method of treatment as anti-inflammatory agents, are disclosed.

3,754,022

# PROCESS FOR OXIDATION WITH CHROMIC ACID

Edward A. Kling, and James L. Cousino, Muskegon, Mich., and James A. Frens, Houma, La., assignors to Lakeway Chemicals, Inc., Muskegon, Mich.

Filed June 12, 1970, Ser. No. 45,789

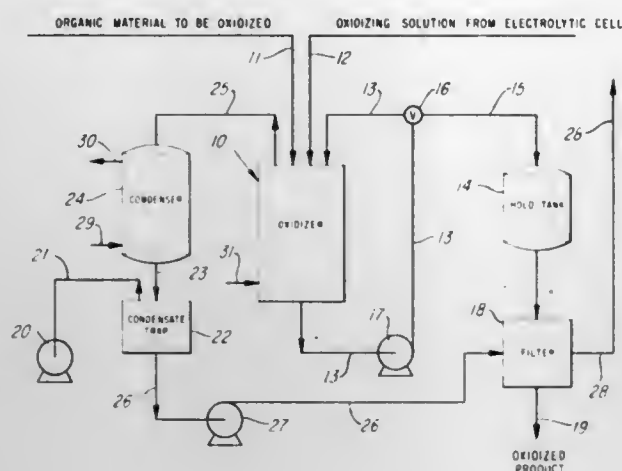
Int. Cl. C07c 63/02, 101/42

U.S. Cl. 260—518 R

7 Claims

Organic materials are oxidized with an aqueous oxidizing solution of chromic acid and sulfuric acid by admix-

ing the organic material with the oxidizing solution in a relatively dilute form and then concentrating the oxidiz-



ing solution in situ by evaporation. The spent oxidizing solution is regenerated electrolytically.

3,754,023

# β-4-n-PENTYLOXYBENZOYL-β-BROMOACRYLIC ACID

Miroslav Semonsky, Viktor Zikan, and Vaclav Jelinek, Prague, Czechoslovakia, assignors to Spofa United Pharmaceutical Works, Prague, Czechoslovakia

No Drawing. Original application Feb. 16, 1968, Ser. No. 705,927. Divided and this application Aug. 5, 1970, Ser. No. 61,485

Claims priority, application Czechoslovakia, June 17, 1967, 1,173/67

Int. Cl. C07c 65/20

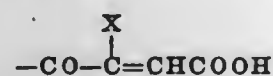
U.S. Cl. 260—521 A

1 Claim

A compound of the formula



wherein R<sub>1</sub> is hydrogen, or alkoxy having from 1 to 6 carbon atoms, R<sub>2</sub> is hydrogen, or hydroxy or alkoxy having from 1 to 6 carbon atoms, and R<sub>3</sub> is alkoxy having from 1 to 6 carbon atoms, with the proviso that when R<sub>1</sub> and R<sub>2</sub> are both hydrogen, R<sub>3</sub> is alkoxy having from 2 to 6 carbon atoms, and wherein A is



and X in the last residue being chlorine or bromine having cytostatic activity.

An example of the product is β-4-n-pentyloxybenzoyl-β-bromoacrylic acid.

3,754,024

# OXIDATION PROCESS

Frank Leach Foster and Peter Hay, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Feb. 4, 1971, Ser. No. 112,760

Int. Cl. C07c 55/14, 55/04

U.S. Cl. 260—531 R

9 Claims

Manufacture of an alkane dicarboxylic acid, particularly adipic acid by feeding an alkanol, alkanone or mix-

ture into nitric acid of 40–70% (preferably 50–65%) strength and fractionally distilling volatile matter from the oxidation zone to keep up the strength of the nitric acid and thereby improve the yield of dicarboxylic acid.

3,754,025

# PRODUCTION OF ORGANIC ACIDS

Bertram Yeomans, Hesse, England, assignor to BP Chemicals Limited, London, England

No Drawing. Filed Dec. 15, 1970, Ser. No. 98,473

Claims priority, application Great Britain, Dec. 19, 1969, 61,918/69

Int. Cl. C07c 51/14, 51/00

U.S. Cl. 260—533 R

17 Claims

In the production of di-neo acids from an olefin having two diisoalkyl groups separated by not less than 3 carbon atoms and formic acid, or CO and a mineral or Lewis acid, the yield based on diisoalkyl olefin may be increased by feeding other olefins of defined structure.

3,754,026

# FLUOROCARBON AMIDES

Wilhelmus M. Beyleveld, Whippany, Bryce C. Oxenrider, Florham Park, and Cyril Woolf, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

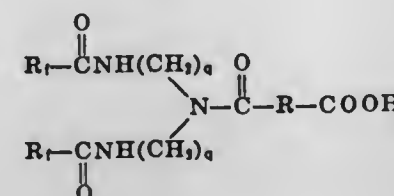
No Drawing. Filed Oct. 17, 1969, Ser. No. 867,371

Int. Cl. C07c 103/44

U.S. Cl. 260—534 M

5 Claims

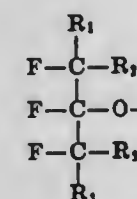
Novel fluorocarbon amides useful as oil- and water-repellent agents have the formula



wherein R is an alkylene group of 1 to 12 carbon atoms, an alkenylene group of 2 to 12 carbon atoms, or a phenylene group; q is an integer from 1 to 6; and R<sub>1</sub> is a radical having the formula



wherein s is an integer from 1 to 16, t is an integer not greater than s from 0 to 8, with the sum of s plus t being from 1 to 20; and Y is selected from the group consisting of F<sub>3</sub>C— and radicals having the formula



wherein R<sub>1</sub> and R<sub>2</sub> are fluorine or perfluoroalkyl groups having from 1 to 9 carbon atoms, with not more than three of the R<sub>1</sub> and R<sub>2</sub> groups being perfluoroalkyl groups.

3,754,027

# α-HYDRAZINO-ORNITHINE AND PRECURSORS THEREOF

John Johansson, Palo Alto, and Wilfred A. Skinner, Portola Valley, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,761

Int. Cl. C07c 101/24

U.S. Cl. 260—534 R

4 Claims

Disclosed as novel compounds are N<sup>6</sup>-benzyloxycarbonyl-ornithine, 2-bromo-N-benzyloxycarbonyl-5-aminopentanoic acid, N<sup>6</sup>-benzyloxycarbonyl-α-hydrazino-ornithine, and α-hydrazino-ornithine, together with its salts. The first three of these compounds have utility as intermediates in the preparation of the α-hydrazino-ornithine compounds. The latter compounds have utility as microbicides and as inhibitors of ornithine decarboxylase.

3,754,028

# GLYCOLIC ACID PRODUCTION

Seymour J. Lapporte, Orinda, and William G. Toland, San Rafael, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Aug. 21, 1972, Ser. No. 282,617

Int. Cl. C07c 59/06

U.S. Cl. 260—535 R

9 Claims

Glycolic acid, formic acid and acetic acid are produced by the reaction of formaldehyde, carbon monoxide and water in the presence of catalytic amounts of a Group VIII noble transition metal compound and an iodide promoter.

3,754,029

# CONTINUOUS PROCESS FOR THE PURIFICATION OF MONOCHLOROACETIC ACID

Walter Freyer, Augsburg, and Manfred Gscheidmeier, Gersthofen, and Rolf Holtermann, Augsburg, and Rudolf Wirtz, Goggingen, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 757,751, Sept. 5, 1968. This application Sept. 13, 1971, Ser. No. 180,202

Claims priority, application Germany, Sept. 19, 1967, F 53,529

Int. Cl. C07c 51/42

U.S. Cl. 260—539 A

7 Claims

Di- and trichloroacetic acid contained as impurities in crude monochloroacetic acid are partially dehalogenated and transformed in monochloroacetic acid at a temperature of from 110 to 145° C. in a continuous process in the presence of hydrogen while trickling through a catalyst layer the active constituent of which is a noble metal of subgroup VIII of the Periodic Table.

3,754,030

# N-[4-(β-2-METHOXY-5-CHLORO-BENZAMIDO)-ETHYL]-BENZENESULFONYL-N'-CYCLOPENTYL-UREA AND PROCESS FOR ITS MANUFACTURE

Helmut Weber, Frankfurt am Main, Walter Aumuller, and Karl Muth, Kelkheim, Taunus, and Rudi Weyer, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Feb. 11, 1970, Ser. No. 10,659

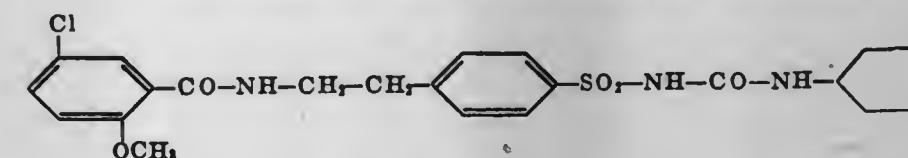
Claims priority, application Germany, Feb. 25, 1969, P 19 09 272.9

Int. Cl. C07c 127/00

U.S. Cl. 260—553 DA

1 Claim

N-[4-(β-2-methoxy-5-chloro-benzamido)-ethyl]-benzenesulfonyl-N'-cyclopentyl-urea of the formula





having a long-lasting and strong hypoglycemic action in the treatment of diabetes mellitus and a process for its manufacture.

3,754,031

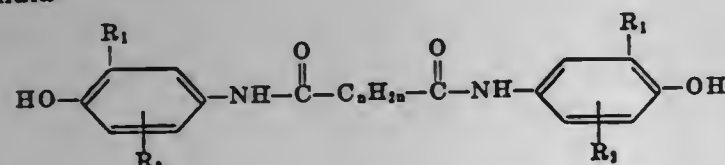
# **N,N'-BIS(3,5-DI-t-BUTYL-4-HYDROXYPHENYL) ADIPAMIDE**

Martin Dexter, Briarcliff Manor and Martin Knell, Ossining, N.Y., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 795,697, Jan. 31, 1969. This application Mar. 18, 1971, Ser. No. 125,828

Int. Cl. C07c 103/38

U.S. Cl. 260—559 A 1 Claim  
Hydroxyphenyl acylamide compounds having the formula



are prepared by reacting an alkyl aminophenol with an acyl chloride. These compounds are useful as stabilizers of organic materials which are subject to oxidative deterioration.

3,754,032

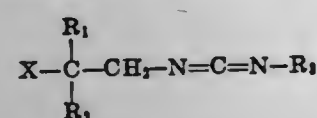
# **2-CHLOROALKYL CARBODIIMIDES AND A METHOD OF PREPARATION**

Donald A. Tomalia and Thomas J. Giacobbe, Jr., Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

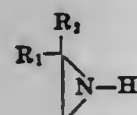
No Drawing. Filed Sept. 29, 1970, Ser. No. 76,649

Int. Cl. C07c 119/00

U.S. Cl. 260—566 R 9 Claims  
Novel carbodiimides of the formula



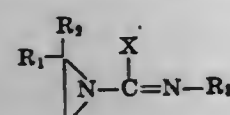
wherein X is chloro or bromo; R<sub>1</sub> and R<sub>2</sub> are hydrogen or lower alkyl; and R<sub>3</sub> is a hydrocarbyl or a halo- or nitro-substituted hydrocarbyl radical, are disclosed. The carbodiimides are prepared by reacting (a) an aziridine of the formula



with (b) an isocyanide dihalide of the formula



Novel 1-aziridinecarboximidoyl halides of the formula



are prepared as intermediates in the process when the process is conducted in the presence of an acid acceptor, e.g. triethylamine. Such intermediates rearrange upon warming, or in the presence of an acid, to form the corresponding carbodiimide.

The subject carbodiimides can be homopolymerized to give polymers bearing reactive chloroalkyl groups which are themselves useful as chelating agents or can be further reacted with ammonia or other amines to give quaternary ammonium-bearing polymers which are useful as ion exchange resins or can be copolymerized with other known carbodiimides to form similarly useful polymers.

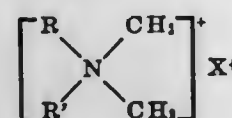
# **3,754,033 BIOCIDAL UNSYMMETRICAL DI-HIGHER ALKYL DIMETHYL AMMONIUM COMPOUNDS**

Edward Griffin Shay, Belle Mead, N.J., Reginald L. Wakeman, Philadelphia, Pa., and Alfonso N. Petrocci, Glen Rock, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

No Drawing. Original application Dec. 9, 1968, Ser. No. 782,439. Divided and this application May 11, 1970, Ser. No. 36,485

Int. Cl. C07c 87/02

U.S. Cl. 260—567,6 M 2 Claims  
Water-soluble unsymmetrical di-higher alkyl dimethyl ammonium salts having the structure:



wherein R and R' are either straight chain or predominantly straight chain but dissimilar alkyls, each ranging from 7 to 15 carbons, and at least one of which has an odd number of carbons, the sum of the carbon atoms in R and R' being in the range of from 20 to 22 carbons; and wherein X is a biocidally acceptable anion preferably derived from a halogen such as bromine or chlorine, or which may be methosulfate. These compounds have effective biocidal activity even in hard water, unlike other quaternary ammonium compounds which are inhibited in their biocidal activity by hard water. They are highly effective for the sanitization of all types of surfaces as well as eggs, fruits, vegetables and similar products.

3,754,034

# **PROCESS FOR THE NUCLEAR CHLORINATION OF AROMATIC AMINES IN THE PARA POSITION**

Henry Peter Crocker, Hornsea, England, assignor to Reckitt & Colman Products Limited, Hull, England  
No Drawing. Filed Mar. 31, 1970, Ser. No. 24,356  
Claims priority, application England, Mar. 31, 1969, 16,771/69

Int. Cl. C07b 9/00; C07c 87/52

U.S. Cl. 260—578 7 Claims  
A process for the nuclear chlorination of aromatic amines of the formula:



wherein Ar, R<sup>1</sup> and R<sup>2</sup> represent certain specified substituents comprising contacting at least one of the said amines with cupric chloride in an aqueous medium containing hydrochloric acid in excess of that required for neutralization of the said amine or amines, at a reaction temperature in the range of from 50 to 150° C. A continuous process for the said chlorination comprises contacting the said reactants under the above conditions, continuously passing an oxygen containing gas into the reactor, separating the chlorinated amine so formed, and recycling any unchanged material into the reactor.

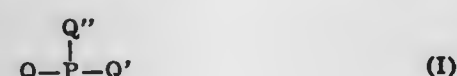
3,754,035

# **TERTIARY ORGANOPHOSPHINES**

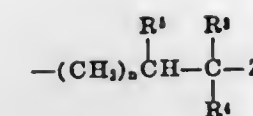
Martin Grayson, Stamford, Conn., assignor to American Cyanamid Company  
No Drawing. Continuation-in-part of application Ser. No. 865,952, Oct. 13, 1969, which is a continuation of application Ser. No. 546,598, May 2, 1968, both now abandoned. This application Jan. 29, 1970, Ser. No. 6,952

Int. Cl. C07f 91/00, 91/02

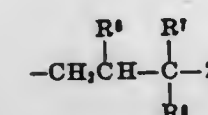
U.S. Cl. 260—584 R 4 Claims  
Unsymmetrical tertiary organophosphines selected from (A) compounds of the Formula I:



wherein Q is



and Q' is



and Q'' is Q, Q', alkyl, cycloalkyl, alkenyl, cycloalkenyl, cyanoalkyl, carboxyalkyl or carbamidoalkyl; and where Z is —OH or —NR<sup>1</sup>R<sup>2</sup> where R<sup>1</sup> and R<sup>2</sup> independently are hydrogen or alkyl (C<sub>1</sub>—C<sub>4</sub>); R<sup>2</sup> may be acetyl, carbamyl or guanlyl when R<sup>1</sup> is hydrogen; or R<sup>1</sup> together with R<sup>2</sup> and the nitrogen atom of —NR<sup>1</sup>R<sup>2</sup> form a morpholinyl or piperidinyl ring; provided Z in Q and Q' are different; R<sup>3</sup> through R<sup>6</sup> independently are hydrogen or alkyl (C<sub>1</sub>—C<sub>4</sub>); and n is 0—3; and (B) acid salts of said compounds such as the hydrochlorides. The compounds and salts are depilatory agents.

3,754,036

**ACYL-CYCLODODECENES, ACYL-CYCLODODECANES AND A PROCESS FOR PRODUCING THEM**  
Jack H. Blumenthal, Oakhurst, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.  
Continuation-in-part of application Ser. No. 667,398, Sept. 13, 1967. This application Aug. 13, 1968, Ser. No. 752,145

Int. Cl. C07c 49/43, 49/45

U.S. Cl. 260—586 A 16 Claims  
Fragrance materials prepared by acylation of trimethyl cyclododecatriene, dihydro and tetrahydro derivatives thereof, processes for producing same, and perfume compositions containing such materials.

3,754,037

# **PROCESS FOR THE ACETYLATION OF CHAMIGRENES**

Garry C. Kitchens, Wayne, Alan R. Hochstetler, Bloomfield, and Kent Kaiser, Pequannock, N.J., assignors to Givaudan Corporation, Clifton, N.J.  
No Drawing. Filed Jan. 18, 1971, Ser. No. 107,472  
Int. Cl. C07c 49/44

U.S. Cl. 260—587 2 Claims  
α- and β- chamigrenes when treated with acetic anhydride in the presence of polyphosphoric acid yield the novel 4 - aceto - 6,8a-ethano-1,1,6-trimethyl-1,2,3,5,6,7,8,8a-octahydronaphthalene. The novel acetyl compound thus produced is extremely useful as an odorant and fixative in perfume compounding.

3,754,038

# **2-PHENYL-2-ALKENALS**

Michel Van Praag, Hilversum, Netherlands, and Herbert S. Stein, Rosedale, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.  
No Drawing. Original application Apr. 26, 1968, Ser. No. 724,611. Divided and this application Nov. 23, 1970, Ser. No. 92,244

Int. Cl. C07c 47/48

U.S. Cl. 260—599 6 Claims  
Novel unsaturated aldehydes, particularly 2-phenyl-2-alkenals, useful for preparing flavoring compositions and food compositions, particularly those having chocolate or cocoa flavor and/or aroma qualities; flavoring and food compositions containing such aldehydes; and methods for preparing such aldehydes and compositions.

# **3,754,039 BICYCLIC ETHERS OF THE CYCLODODECANE SERIES**

Peter Nageli, Unter-Ehrendingen, Switzerland, assignor to Givaudan Corporation, Clifton, N.J.  
No Drawing. Filed Dec. 30, 1970, Ser. No. 102,978  
Int. Cl. C07c 43/18

U.S. Cl. 260—611 F 5 Claims

There are provided novel bicyclo [10.1.0] tridec-1-yl alkyl ethers which possess woody amber like odors and are useful in the perfume arts on the basis of their odors and fixative properties.

3,754,040

**STERILIZED GLYCERYL GUAIACOLATE POWDER AND PROCESS FOR MANUFACTURING SAME**  
Raymond L. Moore, Plainfield, N.J., assignor to Summit Hill Laboratories, Summit, N.J.

No Drawing. Filed Jan. 9, 1970, Ser. No. 1,866

Int. Cl. A61l 1/00; C07c 43/20

U.S. Cl. 260—613 D 8 Claims

Glyceryl guaiacolate in powdered form is rendered sterile by treatment with ethylene oxide with the aid of heat but at a temperature below its melting point, and thereby made safe for administration to lower animals and to human beings.

3,754,041

# **LONG CHAIN UNSATURATED NITRO COMPOUNDS**

Tetsuo Mitsuyasu, Fujisawa-shi, and Kiyotaka Ohno and Jiro Tsuji, Kamakura-shi, Japan, assignors to Toyo Rayon Company, Ltd., Tokyo, Japan  
No Drawing. Filed Dec. 4, 1969, Ser. No. 882,284  
Claims priority, application Japan, Dec. 5, 1968, 43/88,648; Mar. 10, 1969, 44/17,543

Int. Cl. C07c 79/06, 79/10

U.S. Cl. 260—644 2 Claims

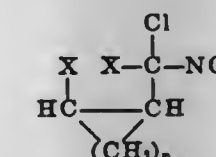
Long chain unsaturated nitro and amino compounds are disclosed. The long chain nitro compounds are produced by reacting an organic nitro compound having at least one hydrogen attached to the carbon atom alpha to the nitro group with a conjugated diene preferably in the presence of a palladium or platinum catalyst. The corresponding amino compound is thereafter formed by reducing of the nitro group. The nitro and amino compounds of this invention are valuable intermediates for the manufacture of organic compounds especially surface active materials and polymers.

3,754,042

# **HALONITROMETHYL CYCLOALKANES**

Wilson F. Gum, Jr., and David A. Nelson, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.  
No Drawing. Filed Sept. 15, 1972, Ser. No. 289,322  
Int. Cl. C07c 79/08

U.S. Cl. 260—644 8 Claims  
Compounds corresponding to the formula



wherein each X independently represents chloro or bromo and n represents an integer of 3 or 4 are prepared. The compounds have been found to be active insecticides, herbicides, bactericides, fungicides and nematocides.



3,754,043

**CONVERSION OF PERHALOALKANES**  
Geir Bjornson, and Homer M. Fox, Bartlesville, Okla., assignors to Phillips Petroleum Company  
No Drawing. Filed July 29, 1970, Ser. No. 58,994  
Int. Cl. C07c 17/20

U.S. Cl. 260—653 7 Claims  
Perhaloalkanes having from 2 to 6 carbon atoms per molecule are converted to different halocarbons and mono-hydrogen-substituted halocarbons by contacting a selected perhaloalkane feedstock with hydrogen chloride at temperatures in the range of 1200 to 1800° F.

3,754,044

**DEHYDROHALOGENATION OF HALOGENATED COMPOUNDS**

Chester Arthur Hargreaves II, and Stanley James Piaseczynski, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Filed Feb. 28, 1968, Ser. No. 712,899  
Int. Cl. C07c 21/04, 21/20

U.S. Cl. 260—654 D 1 Claim  
Halogen-containing organic compounds are treated with aqueous inorganic alkaline material in the presence of a catalytic amount of primary catalyst and promoter to split off hydrogen halide.

3,754,045

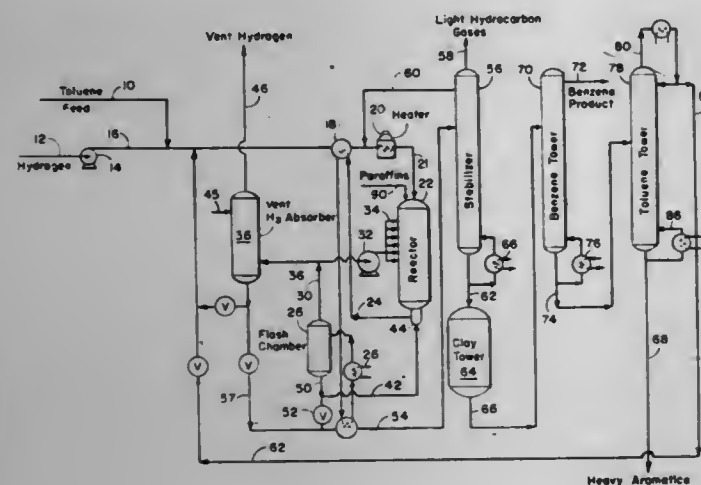
**HYDRODEALKYLATION**

Stanley W. Ehrlich, Far Rockaway, and Syd S. Chazanow, Floral Park, N.Y., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed July 26, 1971, Ser. No. 165,964

Int. Cl. C07c 3/58

U.S. Cl. 260—672 NC 4 Claims



The reaction rates and temperatures for the thermal hydrodealkylation of a paraffin-free toluene feed with a paraffin-free hydrogen are controlled by the addition of light paraffin hydrocarbons boiling in the C<sub>3</sub> to C<sub>6</sub> range.

3,754,046

**CONTROL OF MOLECULAR WEIGHT AND MOLECULAR WEIGHT DISTRIBUTIONS OF UNSATURATED POLYMERS**

Nissim Calderon, Akron, and Kenneth W. Scott, Cuyahoga Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio  
No Drawing. Filed Dec. 4, 1969, Ser. No. 882,269  
Int. Cl. C07c 11/12, 3/00

U.S. Cl. 260—677 R 16 Claims  
A method of controlling the molecular weight and the molecular weight distribution of unsaturated polymers by

subjecting the polymers to a catalytic olefin metathesis reaction while said polymers are in contact with an acyclic unsaturated compound, such as an olefin.

3,754,047

**LOW VOLATILE COMPLEXING SOLUTIONS FOR OLEFIN RECOVERY**

Robert B. Long, Atlantic Highlands, Hugh H. Horowitz, Elizabeth, and David W. Savage, Summit, N.J., assignors to Esso Research and Engineering Company  
No Drawing. Filed June 2, 1972, Ser. No. 259,077  
Int. Cl. C07c 7/00

U.S. Cl. 260—677 R 7 Claims  
A process for separating complexible ligands is disclosed wherein a feedstream containing complexible ligands is contacted with a cuprous salt-sorbent material dissolved in a complexing solvent; the complexing solvent contains a major amount of a multi-ringed, high boiling, low melting aromatic and a minor amount of a strongly complexing, high boiling, single ringed aromatic. Separation of the ligands is effected by their complexation with the cuprous salt-sorbent material which removes said ligands from the feedstream to be subsequently recovered by decomplexing or ligand exchange techniques.

3,754,048

**DIENE POLYMERIZATION**

Ching Yong Wu, Pittsburgh, and Harold E. Swift, Gibsonia, Pa., assignors to The B. F. Goodrich Company  
No Drawing. Filed Dec. 27, 1971, Ser. No. 212,733  
Int. Cl. C07c 3/10

U.S. Cl. 260—680 B 7 Claims  
Conjugated dienes are reacted to polymers (oligomers) of low molecular weight by contacting with a catalyst system consisting of chromium(III) acetylacetonate, tri-alkyl aluminum and a Schiff-base ligand.

3,754,049

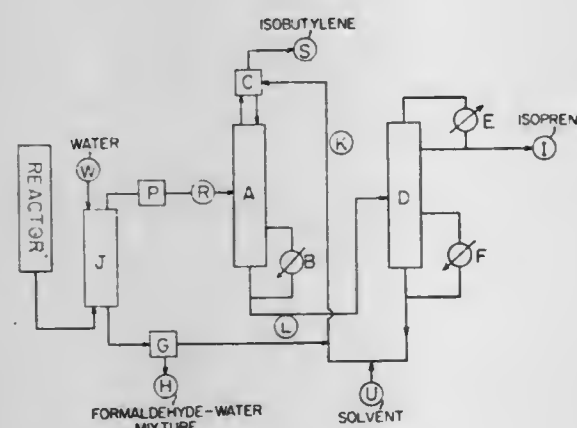
**METHOD FOR PURIFICATION OF ISOPRENE**  
Katsuhiko Ogino, and Masahiro Inoue, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Feb. 4, 1971, Ser. No. 112,736

Claims priority, application Japan, Feb. 4, 1970, 45/9,817

Int. Cl. C07c 7/08

U.S. Cl. 260—681.5 R 9 Claims



Isoprene reaction mixture obtained by reacting isobutylene and formaldehyde in presence of acid catalyst is purified to recover isoprene by contacting reaction mixture with water to remove unreacted formaldehyde, contacting resultant reaction mixture with an oily sub-

stance, obtained by eliminating water, isobutylene, formaldehyde and isoprene from the reaction mixture, in a first distillation column to remove unreacted isobutylene and subjecting the resultant reaction mixture containing isoprene and an oily substance to distillation in a second column, whereby isoprene is recovered as distillate. The oily substance thus separated from the isoprene can be recycled to the first distillation column.

3,754,050

**PROCESS OF PURIFYING CONJUGATED DIOLEFINS**

Coenraad J. Duyverman, Sittard, and Jacques M. M. Miessen, Eysden, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands  
No Drawing. Filed Feb. 24, 1971, Ser. No. 118,563  
Claims priority, application Netherlands, Feb. 25, 1970, 7002631

Int. Cl. C07c 7/12

U.S. Cl. 260—681.5 R 5 Claims  
Allenenes, acetylenes and vinyl cyclohexenes are removed from conjugated diolefins by adsorption with a mixture of copper oxide and zinc oxide at a temperature between 25° C. and 175° C.

3,754,051

**PRODUCTION OF OLEFIN FROM SATURATED HYDROCARBON**

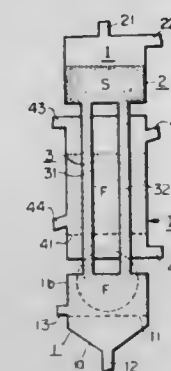
Yuichi Suzukawa, Hisashi Kono, Shigeyuki Nakai, Kohel Ninomiya, Atsushi Kuribayashi, and Masahiko Kitajima, Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken, Japan

Filed July 27, 1971, Ser. No. 166,538

Claims priority, application Japan, Aug. 11, 1970, 45/69,741

Int. Cl. C07c 5/18; B01j 9/20

U.S. Cl. 260—683.3 12 Claims



This invention relates to an improved method for the continuous production of olefin from saturated hydrocarbon in a fluidized bed reactor comprising a reacting vessel and a heating vessel having a lower chamber provided with a perforated plate therein, an upper chamber and an intermediate portion consisting of a plurality of conduits fluidly connected to both chambers in such an arrangement that the reacting vessel encloses at least the conduits of the heating vessel. To effect dehydrogenation of the material gas in the reacting vessel, a circulating stream containing solid particles fluidized and heated by a heating gas feed is created in the heating vessel, between both chambers through the conduits, whereby sufficient heat for the dehydrogenation is continuously transferred from the circulating stream in the heating vessel to a fluidized catalyst bed in the reacting vessel through the conduits.

3,754,052

**ETHYLENE ALKYLATION RESULTING IN ALKYLATE WITH HIGH PROPORTION OF 2,3-DIMETHYLBUTANE**

David M. Hoffman, Wilmington, Del., and Abraham Schneider, Lower Merion, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.  
No Drawing. Filed Jan. 14, 1972, Ser. No. 217,954  
Int. Cl. C07c 3/54

U.S. Cl. 260—683.61 16 Claims  
An improved method for the preparation of 2,3-dimethylbutane admixed with a branched C<sub>8</sub> alkylate mixture by sulfuric acid alkylation is provided in a two-stage process wherein isobutylene and ethylene are co-dimerized in the presence of isobutane and sulfuric acid under reaction conditions which favor the formation of 3,3-dimethyl-1-butyl sulfate, and thereafter the said 3,3-dimethyl-1-butyl sulfate is reacted with the isobutane under conditions which favor the formation of 2,3-dimethylbutane. This process is advantageous in that it permits the incorporation of ethylene into a sulfuric acid alkylation reaction without the formation of large amounts of unwanted ethyl sulfate.

3,754,053

**POLYOXYMETHYLENE-OXYALKYLENE BLOCK POLYMERS**

Raymond J. Kray, Berkeley Heights, and Robert W. Stevenson, Edison, N.J., assignors to Celanese Corporation of America, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 860,717, Dec. 21, 1959. This application May 15, 1964, Ser. No. 367,872

Int. Cl. C08g 1/14, 1/16, 1/100

U.S. Cl. 260—823 30 Claims  
This application relates to block copolymers and more particularly to block copolymers having polyoxymethylene segments and segments having recurring oxyalkylene groups with more than one carbon atom.

3,754,054

**RADIATION CURABLE COATING COMPOSITIONS AND PROCESS FOR THE PREPARATION THEREOF**

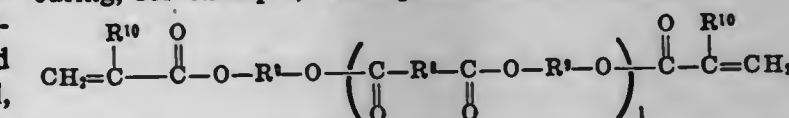
Tadasu Kimura, Otake-shi, Hiroyuki Harada, Tokyo, and Juichi Kobayashi and Hideo Nakamoto, Otake-shi, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

No Drawing. Filed Dec. 15, 1969, Ser. No. 885,272

Claims priority, application Japan, Dec. 23, 1968, 43/93,725

Int. Cl. B01j 1/10; C08f 27/12; C08g 39/10

U.S. Cl. 260—860 16 Claims  
A coating composition useful for radiation curing is prepared through copolymerization of a mixture comprising a vinyl monomer having a hydroxyl group and α,β-ethylenically unsaturated carboxylic ester of a monohydric alcohol, primary esterification of the hydroxyl group of the resultant copolymer with a polyhydric carboxylic acid anhydride in an organic solvent, and secondary esterification and/or etherification of carboxylic group and/or hydroxyl group of the primarily esterified copolymer with an epoxy vinyl monomer. The coating composition may further contain polymerizable and/or cross-linkage formable compounds active for radiation curing, for example, a compound of the formula:



wherein R<sup>4</sup> is a divalent hydrocarbon group having 2 to 10C, R<sup>5</sup> is a saturated divalent hydrocarbon group of 2 to 10C, R<sup>6</sup> is hydrogen atom or methyl group and l is 0 or 1 to 10.



3,754,055

**CATIONIC VINYL-PYRIDINE COPOLYMERS AND PRODUCTS THEREOF**

Alan Rembaum, Altadena, Calif., assignor to California Institute of Technology, Pasadena, Calif.  
No Drawing. Continuation-in-part of application Ser. No. 763,938, Sept. 30, 1968. This application Dec. 28, 1970, Ser. No. 102,239

Int. Cl. C08f 1/16, 7/12

U.S. Cl. 260—879

17 Claims

Quaternized, cross-linked, insoluble copolymers of unsubstituted and substituted vinyl pyridines and a dihalo organic compound are spontaneously formed at ambient temperature on mixing the two monomers in bulk, in solution or in suspension. The amount of cross-linking may be varied according to the composition and reaction conditions. The polymer product exhibits ion exchange capacity and undergoes a reversible color change from black at a pH above 7 to yellow at a pH below 7. The polymer may be formed in the presence of preformed polymers, substrates such as porous or impervious particles or films to deposit an ion exchange film in situ on the surface of the substrate. The coated or resin impregnated substrate may be utilized for separation of anionic species from aqueous solution.

3,754,056

**ANTIOXIDANT COMPOSITIONS AND POLYMERS STABILIZED THEREBY**

Gary A. Harpell, Brecksville, Ohio, assignor to Goodrich-Gulf Chemicals, Inc., Cleveland, Ohio  
Original application Apr. 10, 1969, Ser. No. 815,147. Divided and this application Feb. 17, 1971, Ser. No. 116,266

Int. Cl. C08d 9/16

U.S. Cl. 260—892

8 Claims

The reaction product of an organometallic compound and an organic nitro compound provides a stabilizing composition for elastomers. The stabilizing composition can be of low molecular weight, or can be polymeric in nature.

3,754,057

**POLYMERS OF 5-(3-PERFLUOROALKYL-1,2,4-OXADIAZOLYL)OLEFINS**

Pier Luigi Pacini, Brussels, Belgium, and Eduard Karl Kleiner, New York, N.Y., assignors to Ciba-Gelby Corporation

No Drawing. Original application June 16, 1969, Ser. No. 833,706. Divided and this application Nov. 17, 1971, Ser. No. 199,790

Int. Cl. C08f 29/50; C08j 37/18

U.S. Cl. 260—901

10 Claims

Monomeric 5-(3-perfluoroalkyl-1,2,4-oxadiazolyl)olefins form homopolymers and copolymers with other ethylenically unsaturated comonomers. The polymers obtained have valuable soil repellent and dyestuff properties which are especially useful in textile finishes. Preferred compounds exemplified are 1,2-bis[5-(3-n-perfluoroheptyl-1,2,4-oxadiazolyl)]ethylene and 5-isopropenyl-3-n-perfluoroheptyl-1,2,4-oxadiazole.

3,754,058

**O-PHENYL-S-ALKYL-N-ALKYL-PHOSPHOROAMIDE-THIOLATES**

Shigeo Kishino and Yasuo Yamada, Tokyo, and Akio Kudamatsu, Kawasaki, Shozo Sumi, Tokyo, and Kozo Shiohara, Kawasaki, Japan, assignors to Nihon Tokushu Noyaku Seizo Kabushiki Kaisha, Tokyo, Japan  
No Drawing. Filed Oct. 26, 1970, Ser. No. 84,198  
Claims priority, application Japan, Oct. 27, 1969, 44/85,283

Int. Cl. A01n 9/36; C07f 9/16

U.S. Cl. 260—949

14 Claims

O-phenyl-S-alkyl-N-alkyl-phosphoroamido-thiolates, i.e. O-[optionally mono nitro, phenyl and alkylmercapto or

optionally mono nitro, phenyl or alkylmercapto and mono to tri halogen or alkyl-substituted)-phenyl]-S-(alkyl, alkenyl, haloalkyl and phenylalkyl)-N-(alkyl and cycloalkyl)-phosphoroamido-thiolates or -amido-thiophosphoric acid esters, which possess insecticidal, acaricidal and nematocidal properties and which may be produced by conventional methods.

3,754,059

**METHOD FOR THE MANUFACTURE OF A QUASI-HOMOGENEOUS FORMATION**

Gustav Prantl, Brugg, and Istvan Horvath, Wetztingen, Switzerland, assignors to Gesellschaft zur Förderung der Forschung an der Eidg. Techn. Hochschule, Zurich, Switzerland

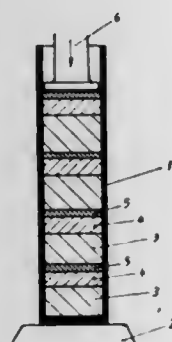
Filed June 12, 1970, Ser. No. 45,628

Claims priority, application Switzerland, June 20, 1969, 9,408/69

Int. Cl. G21c 21/04

U.S. Cl. 264—5

2 Claims



A method of manufacturing a quasi-homogeneous formation from a plurality of separate particles of different size. The particles are separated into fractions according to size, which fractions together are required for filling a certain container volume. The amount of each fraction is determined so that when the particles are within the container, the smaller particles will fill out the hollow space between the larger particles. The determined amounts of all fractions are divided into several partial amounts. The container is then filled with the partial amounts in regularly distributed arrangement. Thereafter the uppermost particle layer, to avoid decomposition, is loaded by a pressure force, and the container is exposed to a vibration to reduce the spaces between the particles, thereby creating a quasi-homogeneous formation.

3,754,060

**PROCESS FOR PRODUCTION OF PROPELLANT CHARGES COMPRISING COMPRESSING GEOMETRICALLY SHAPED POWDERS TOGETHER**

Heinz Gawlick, Furth, Bavaria, and Günther Marondel, Erlangen, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Germany

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,370  
Claims priority, application Germany, Aug. 1, 1970, P 20 38 288.1

Int. Cl. C06b 21/02

U.S. Cl. 264—3 C

11 Claims

A process for producing shaped powder articles for propellant charges by pressing porous powder grains having external geometric shapes exhibiting edges, spikes or the like which permit the grains to interlock with each other. Preferably the grains have T, X, Y, or V-shapes. Also disclosed are shaped powder articles produced by this process.

3,754,061

**METHOD OF MAKING SPHEROIDAL HIGH EXPLOSIVE PARTICLES HAVING MICROHOLES DISPERSED THROUGHOUT**

Charles D. Forrest, Martinsburg, W. Va., and Cecil G. Miller, Jr., Hagerstown, Md., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Filed Aug. 13, 1971, Ser. No. 171,429

Int. Cl. C06b 21/02

U.S. Cl. 264—3 D

16 Claims

Crystalline high explosives are formed into finely-divided spheroidal particles by mixing separate streams of a solution of the explosive dissolved in solvent with an inert nonsolvent so as to obtain nonlaminar flow of the streams by applying pressure against the flow of the non-solvent stream so as to diverge said stream as it contacts the solution of explosive in solvent and violently agitating the combined stream to rapidly precipitate the explosive from solution in the form of spheroidal particles permeated with microholes. The resulting high explosive consists essentially of spheroidal particles, the particles consist of agglomerated crystallites that are substantially spherical. The spheroidal particles have microholes that have an average diameter of about from 0.1–0.2 micron dispersed throughout the particles in large number.

3,754,062

**METHOD FOR ENCAPSULATION OF HYDROPHOBIC MATERIALS UTILIZING URETHANE ELASTOMERS**

Takehiko Kobayashi, 1-4-15-415 Yamanone-cho, Zushi-shi, Kanagawa-ken, Japan

No Drawing. Filed Mar. 19, 1971, Ser. No. 126,353  
Claims priority, application Japan, Aug. 21, 1970, 45/72,750

Int. Cl. A61j 5/00; B29c 13/00

U.S. Cl. 264—4

7 Claims

A method is disclosed for encapsulating hydrophobic materials by applying an admixture of urethane elastomer and epichlorohydrin in droplets to a polyamine solution so that polymerization proceeds at the interface between the hydrophobic liquid phase and the aqueous phase to deposit a capsular film on hydrophobic liquid droplets.

3,754,063

**METHOD FOR CASTING AN INFLATED TUBULAR POLYETHYLENE FILM WITH MIXED POLYMER OF POLYPROPYLENE-POLYBUTENE-1**

Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace & Co., Duncan, S.C.

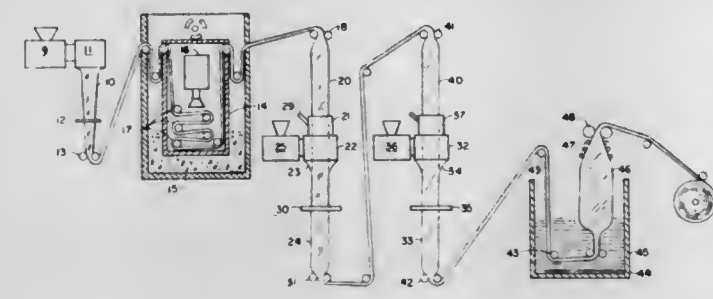
Continuation-in-part of application Ser. No. 659,940, Aug. 11, 1967, which is a continuation-in-part of application Ser. No. 768,955, Sept. 23, 1968. This application Mar. 23, 1970, Ser. No. 21,793

The portion of the term of the patent subsequent to Sept. 21, 1988, has been disclaimed

Int. Cl. B29d 9/08

U.S. Cl. 264—22

4 Claims



A laminated, tubular, thermoplastic film having excellent packaging and shipping abuse characteristics produced by continuously extruding a layer of an ethylene

vinyl acetate copolymer onto a tubular substrate of a predominantly ethylene polymer material and continuously extruding an admixed isotactic polypropylene, polybutene-1 and atactic polypropylene polymer layer as the outer layer thereon and then orienting the resulting laminate. Prior to orienting, the laminate is heated in hot water.

3,754,064

**METHOD FOR MAKING HOLLOW TUBING HAVING AN ANNULAR WALL OF FOAMED MATERIAL**

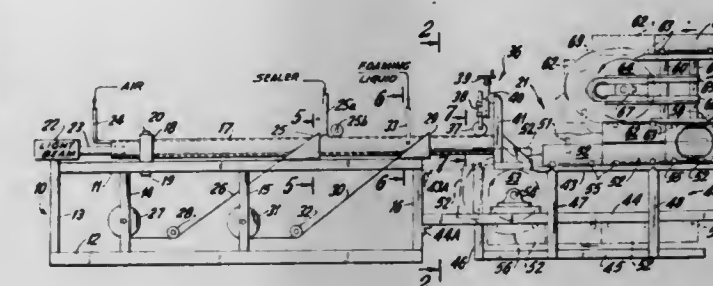
Charles D. Snelling, Allentown, Theodore E. Andrews, Kutztown, and John J. Weller, Emmaus, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Sept. 4, 1970, Ser. No. 69,661

Int. Cl. B29d 23/08, 27/04

U.S. Cl. 264—40

8 Claims



A method for continuously forming hollow tubing of foam material comprising a mandrel fixed at one end about which said tubing is formed from a web of material by confining the foam material within an annular space of an envelope of flexible laminar material which is allowed to foam and expand and the envelope of confined foamed material then moved longitudinally of said mandrel and thereafter cured while moving along said mandrel. In order to assure cross-sectional symmetry or concentricity of the hollow tubing, means are provided for aligning the mandrel by controlling its flexure to a position which will provide a product having the desired concentricity, and means associated with a region of the mandrel away from the fixed end for detecting variations in alignment from the desired alignment, whereby when a variation in alignment is detected, the means for aligning the mandrel is actuated to compensate for the detected variation.

3,754,065

**METHOD OF MAKING A FLOOR COVERING INCLUDING PLACING CHIPS IN A GRID PATTERN**

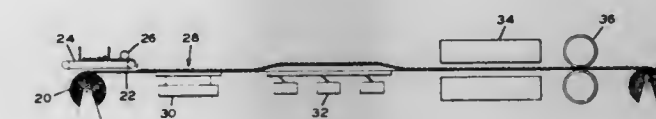
John F. Hofmann, and David H. Reed, Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Mar. 9, 1970, Ser. No. 17,669

Int. Cl. B29c 17/00, 21/00, 23/00

U.S. Cl. 264—70

1 Claim



The sheet material is provided with a plurality of pockets in a grid-like pattern. A plurality of chips sized to fit



in the pockets are dumped upon the sheet material. The sheet material passes across a horizontal vibrating table which positions the chips in the pockets of the grid. The sheet material then passes across a slanted vibrating table which removes excessive chips from the sheet material. The chips are now consolidated to the sheet material by appropriate heat and pressure.

### 3,754,066 METHOD OF COATING OR LINING A STRUCTURAL SURFACE

William Brown Black, Penwold, Kilbarchan Road,  
Bridge of Weir, Scotland

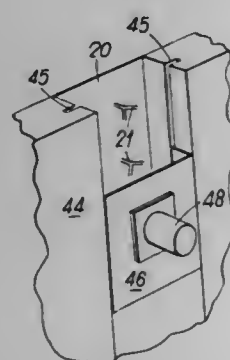
Filed Aug. 27, 1971, Ser. No. 175,512

Claims priority, application Great Britain, Sept. 1, 1970,  
41,776; Jan. 28, 1971, 3,427; Apr. 3, 1971, 8,600

Int. Cl. B28b 1/08; F27d 1/16

U.S. Cl. 264—71

9 Claims



the crystalline formation temperature, followed by an annealing step and a solidification step. The apparatus for the process includes first cooling means, in annealing and a further cooling chamber or means.

In the cladding, that is coating or lining, a structural surface with a cementitious compound, for example a refractory concrete, there is disposed adjacent said surface a mould open onto said surface and the cementitious compound is filled into said mould while the mould is vibrated to compact said compound. The surface to be clad preferably has secured thereto to project forwardly therefrom nonlinear ties adapted to key into the cladding and the mould is made up of vertical guide members releasably secured to said surface and guiding for upwards displacement parallel to said surface a shutter plate making up with said guide members said mould open onto said surface, the shutter plate being raised, if necessary with mechanical assistance, while the cementitious compound is being filled into said mould and said shutter plate is being vibrated to compact said compound. The apparatus is dismounted from said structural surface, and remounted at another portion of said surface and utilized to form blocks of cementitious material bonded to said surface at small intervals apart in the horizontal direction. A second shutter plate bridges between said block and is utilized to fill the space between said blocks with a cementitious compound.

### 3,754,067 BLOWN TUBE PRODUCTION

Daniel R. St. Eve, Thornhills, Ontario, and Ajit Kumar Bose, Don Mills, Ontario, Canada, assignors to Leco Industries Limited, St. Laurent, Quebec, Canada

Filed Oct. 12, 1970, Ser. No. 79,754

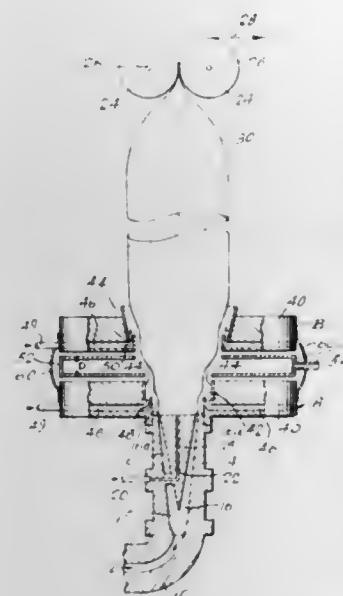
Int. Cl. B29c 25/00; B29d 23/04; B29f 3/08

U.S. Cl. 264—89

10 Claims

The invention provides a novel process for producing, by the blown tube process, film having improved and balanced characteristics. The improved film is characterized by crystallites dispersed throughout the film in amorphous

areas and which is substantially free of crystalline formations, as well as having improved other properties. The process disclosed employs, the steps of acting on a molten tube following extrusion to cool it to a temperature above



### 3,754,068 MANUFACTURE OF PLASTIC BOTTLES BY INJECTION AND BLOW MOLDING

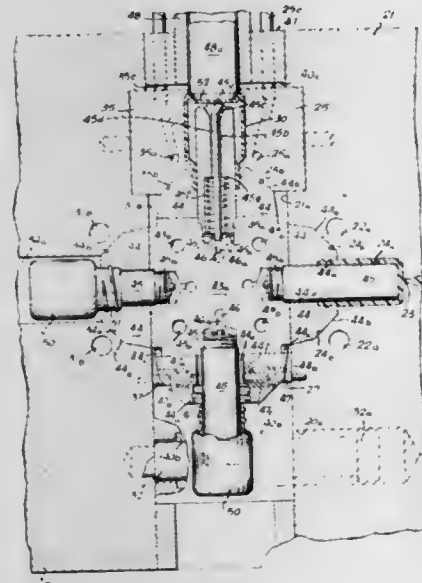
Lazzaro A. Fattori, 84 Rose Ave.,  
Woodcliff Lake, N.J. 07675

Original application Apr. 8, 1968, Ser. No. 719,384, now  
Patent No. 3,609,803, dated Oct. 5, 1971. Divided and  
this application Dec. 15, 1969, Ser. No. 889,792

Int. Cl. B29c 17/07

U.S. Cl. 264—97

6 Claims



A continuous method of injection blow molding thermoplastic material into hollow articles preferably performed in four simultaneous steps at stations in predetermined relation to each other during time periods of equal

time duration. The method includes injection molding a parison on a core, blowing the parison into the article, cooling the blown article while on the core, and ejecting the blown and cooled article from the core, the length of said equal time periods being determined by and limited to the time requirements for the injection molding step.

### 3,754,069 METHOD OF FABRICATING PLIABLE POLY- FILAMENTOUS PLASTIC STRANDS

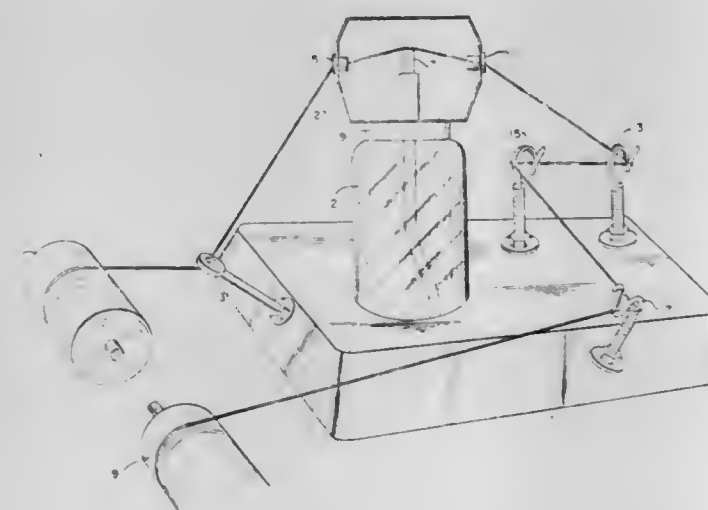
Joseph H. Adams, Vernon, Conn., and Leonard D. Kurtz, Woodmere, N.Y., assignors to Sutures, Inc., Coventry, Conn.

Continuation of abandoned application Ser. No. 843,987,  
July 23, 1969. This application Aug. 23, 1971, Ser.  
No. 174,142

Int. Cl. B29c 17/02; A61l 17/00

U.S. Cl. 264—131

8 Claims



Fabrication of pliable polyfilamentous strands by impregnating the strand with an oil of lubricating viscosity, hot-stretching the impregnated strand, removing the oil of lubricating viscosity, water-washing the strand and impregnating the strand while wet with inert, polymeric particles to provide a polyfilamentous strand of improved softness and pliability.

### 3,754,070 FLASH FREE MOLDING

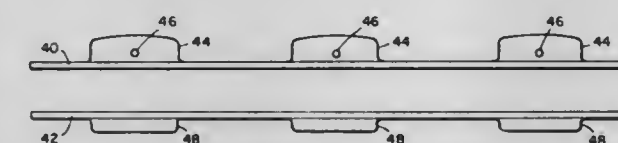
Thomas A. Dunn, Mesa, and Arthur V. Fant, Phoenix, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Aug. 3, 1970, Ser. No. 60,339

Int. Cl. B29b 6/00; H01b 13/00

U.S. Cl. 264—272

3 Claims



When plastic encapsulating a device such as an integrated circuit having leads, the leads must extend out of the mold that is used in the encapsulating. The plastic material has a tendency to run out of the mold cavities and around the leads, impeding the use of the encap-

sulated device. To prevent this running out, tape is applied to both sides of the leads before the device is put into the mold. The tapes may be sticky on their contacting sides or they may be stuck together by heat staking or spot welding. When the mold is closed on the taped leads, any plastic material that runs out of the mold and along the leads will be outside of the plastic material that encompasses the leads and this plastic material will be peeled off when the sticky tape is peeled off. Since the plastic material has a tendency to stick to the inside of the mold cavities, plastic sheets having bubbles therein somewhat smaller than the mold cavities are applied to both sides of device to be encapsulated, the tape holding the leads, and the bubbles enclosing the device and a portion of the leads and connections between the device and the leads, and then the device so covered is put into the mold cavities. Holes are provided in the bubbles to permit access of molding material and the plastic material does not touch the inside of the mold cavities whereby the plastic material does not stick to the inside of the mold cavities.

### 3,754,071 PROCESS FOR IMPREGNATING BODIES WITH A CASTING RESIN COMPOSITION

Otto Ernst, Pfeffingen, Eugen Kusenberg, Basel, Ernst Hubler, Aesch, and Hans-Rudolf Aus der Au, Reinach, Basel-Land, Switzerland, assignors to Ciba-Geigy A.G.

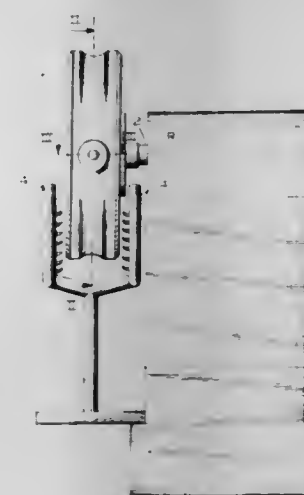
Filed Aug. 20, 1970, Ser. No. 65,486

Claims priority, application Switzerland, Aug. 21, 1969,  
12,704/69

Int. Cl. B44d 1/09, 1/42

U.S. Cl. 264—272

7 Claims



A body to be impregnated, such as an electrical winding, is placed in a cavity where it is preferably held by a mould insert and the two members are clamped together and rotated about an axis lying outside the space enclosed by any cavity. The cavity and body are preheated by heating means and a highly reactive casting resin composition, which includes a filler, which is capable of hardening and solidifying within a period of from 1 to 60 minutes, and of which the resin is preferably an epoxy resin is introduced into the chamber from whence it flows under centrifugal action in the cavity to impregnate the body. The resin composition is allowed to harden and solidify under pressure caused either by the centrifugal action or by a pressure medium, and the impregnated body is then removed. The cavity is preheated to a temperature sufficient to initiate the hardening reaction of the casting resin composition and the temperature at which the casting resin composition is introduced is at least 10% below the temperature of the cavity, both such temperatures being measured in degrees centigrade.



3,754,072

**PROCESS FOR RECOVERING VANADIUM OXIDE**

Mitsuhiko Sato, Nisshin, Takeshi Yano, Shippo, Katsunosuke Hara, Kariya, Yuzo Nawa and Katsuhiko Maruyama, Nagoya, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

No Drawing. Filed Dec. 10, 1971, Ser. No. 206,899

Claims priority, application Japan, Dec. 24, 1970, 45/117,203

Int. Cl. C01g 31/00

U.S. Cl. 423—66

6 Claims

The recovery of vanadium oxide comprises a stabilizing step wherein the distilled residue fractionated from crude titanium tetrachloride is contacted with superheated steam uniformly in the presence of air, carbonic acid gas and carbon monoxide or is mixed with water uniformly and then the mixture is heated and a recovering step wherein the stabilized residue is dissolved in an aqueous alkali solution or roasted together with an alkali salt.

3,754,073

**PROCESS FOR MANUFACTURE OF ZIRCONIUM TETRACHLORIDE IN REACTOR OF SPECIFIC LINING**

Ferdinand Langenhoff, Mondorfer-Str. 9, 5211 Ranzel-Deutz, Erich Termin, Kraftwerke 4, 7887 Laufenburg, Arnold Lenz, Gerstenkamp 7, 5 Cologne-Stammheim, and Georg Schinke, Feldmuhlestr. 2, 5211 Ranzel, Germany.

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,333

Claims priority, application Germany, Oct. 2, 1969, P 19 49 758.6

Int. Cl. C01g 25/02, 25/04

U.S. Cl. 423—79

4 Claims

Use of a novel lining material, which is a shakable or tampable mixture of fine-grained corundum and as binder, the partial water hydrolysis product of silicon and aluminum alcoholates diluted with a suitable solvent.

3,754,074

**REMOVAL OF NITROGEN OXIDES AND OTHER IMPURITIES FROM GASEOUS MIXTURES**

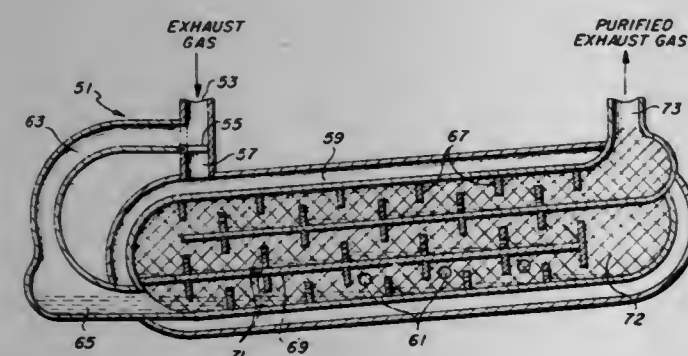
Le Roy F. Grantham, Calabasas, Calif., assignor to North American Rockwell Corporation

Continuation-in-part of application Ser. No. 684,239, Nov. 20, 1967. This application Feb. 20, 1970, Ser. No. 13,248

Int. Cl. B01d 53/34

U.S. Cl. 423—210.5

19 Claims



A method for removing nitrogen oxides, lead compounds, and other gaseous and particulate impurities from waste gases by contacting the waste gases with a molten alkali metal carbonate mixture. Dependent upon

the particular impurity removed, such as nitrogen oxides, the absorbent carbonate mixture is regenerated by treatment with a reducing agent.

3,754,075

**TEMPERATURE REGULATING PROCESS FOR VIBRATORY GRATE REACTORS**

Heinz-Rüdiger Vollbrecht, Rheinfelden, Baden, Germany, assignor to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

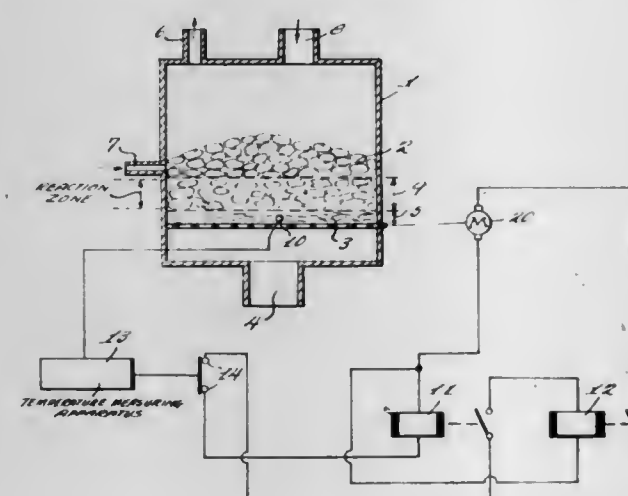
Filed Jan. 18, 1971, Ser. No. 106,978

Claims priority, application Germany, Jan. 23, 1970, P 20 02 904.3

Int. Cl. C01b 33/08

U.S. Cl. 423—343

9 Claims



There is provided a process for the regulation of a vibratory grate in reacting silicon or silicon containing materials with hydrogen halides by controlling the periods of vibration and pause so that a preselected maximum temperature is not exceeded.

3,754,076

**PRODUCTION OF SILICON CARBIDE FROM RICE HULLS**

Ivan B. Cutler, Salt Lake City, Utah, assignor to University of Utah

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,698

Int. Cl. C01b 31/36, 53/02, 47/00

U.S. Cl. 423—345

8 Claims

This invention discloses the production of silicon carbide from the silica and carbon present in rice hulls.

3,754,077

**PROCESS OF OBTAINING SILICON TETRAHALIDES**

Manfred Kruger, Grossauheim, and Eugen Meyer-Simon, Frankfurt am Main, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 810,929, May 25, 1969. This application Mar. 2, 1972, Ser. No. 231,373

Claims priority, application Germany, Mar. 28, 1968, P 17 67 078.9

Int. Cl. C01b 33/08

U.S. Cl. 423—341

7 Claims

Silicon tetrahalides are made or the contents thereof in silane mixtures is increased by passing a halogenosilane or a mixture of halogenosilanes of the formula



3,754,080

**AUTOTHERMIC PROCESS FOR THE PRODUCTION OF ALUMINUM TRIFLUORIDE**

Claudio Sperandio, Carlo Boscolo, and Vittorio Jaderosa, Mestre, and Antonio Savino, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Jan. 25, 1971, Ser. No. 109,362

Claims priority, application Italy, Jan. 27, 1970, 19,826/70

Int. Cl. C01f 7/50, 7/02

U.S. Cl. 423—489

3 Claims

wherein X is halogen and if several X are present all of them may be the same or different, and n is 1-3, together with a hydrogen halide through a bed of inert solid particulate large-surface catalyst selected from the group of activated carbon, finely divided aluminum oxide and finely divided silicon dioxide, the reaction being carried out at a temperature between 200 and 800° C.

3,754,078

**METHOD FOR OBTAINING UNIFORM DISTRIBUTION OF GAS FLOW THROUGH CATALYST BEDS**

Helmut Hinrichs, Leonding, near Linz (Danube), Heinz Lehner, Anton Wagner, Josef Pesl, Johann Niedetzky, and Franz Faschinger, Linz (Danube), Austria, assignors to Österreichische Stickstoffwerke Aktiengesellschaft, Linz (Danube), Austria

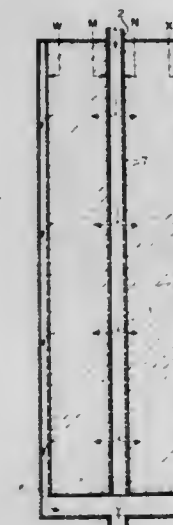
Filed Apr. 20, 1971, Ser. No. 135,639

Claims priority, application Austria, Apr. 21, 1970, A 3,596/70

Int. Cl. C01c 1/04; B01j 9/00

U.S. Cl. 423—359

6 Claims



Uniform distribution of gas is achieved in catalyst beds in which the flow is radial in reactors for catalytic exothermic high pressures syntheses by gradation of the free surface exposed to flow and serving for the passage of gas into or out of the catalyst layer so that it is 10 to 25 times greater at the first quarter of the catalyst layer than is the free area exposed to flow at the remaining part of the catalyst layer.

3,754,081

**PROCESS FOR THE PRODUCTION OF CHLORINE DIOXIDE, CHLORINE AND A MIXTURE OF AN ALKALI METAL SULFATE AND BISULFATE**

Harold deVere Partridge, Wilson, Blaine O. Schoepfle, Snyder, Arthur C. Schulz, North Tonawanda, and Herbert J. Rosen, Yonkers, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of application Ser. No. 710,648, Mar. 5, 1968. This application Sept. 17, 1970, Ser. No. 72,925

The portion of the term of the patent subsequent to Feb. 16, 1988, has been disclaimed

Int. Cl. C01d 5/02; C01b 11/02, 7/02

U.S. Cl. 423—520

10 Claims

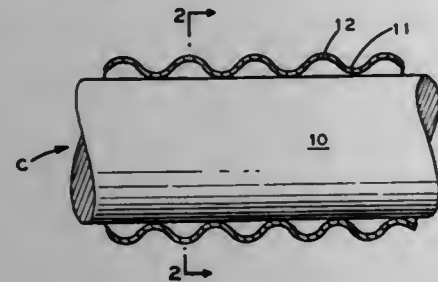
Chlorine dioxide, chlorine and a mixture of an alkali metal sulfate and a bisulfate for use in supplying sodium and sulfur values to a cooking liquor employed in the kraft process for delignifying wood to produce a pulp suitable





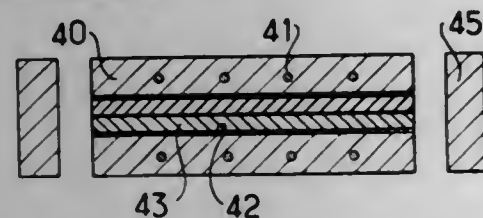


**3,754,094**  
**CABLE WITH WELDED CORRUGATED METAL SHEATH**  
**Gerhard Zlemek, and Gert Nordmann, both of Hannover, Germany, assignors to Kabel- und Metallwerke Gutehoffnungshütte Aktiengesellschaft, Hannover, Germany**  
**Division of Ser. No. 109,099, Jan. 25, 1971, Pat. No. 3,710,828. This application Oct. 3, 1972, Ser. No. 294,626**  
**Int. Cl. H01b 7/22**  
**U.S. Cl. 174—102 A** **7 Claims**



A tubular metal cable sheath formed from a steel tape converted to tubular shape with the side edges thereof in abutting relation to provide a longitudinal seam which is welded. The tubing may be transversely corrugated to increase the flexibility thereof; the tubing in plain or corrugated form being useful as conduit means or as sheathing for electrical cable. The steel from which the tape is formed has a specified carbon, manganese and silicon content to improve diverse properties of the fabricated tubing, including the welded seam thereof and the welding procedure.

**3,754,095**  
**SUPERCONDUCTIVE CABLE FOR CARRYING EITHER**  
**ALTERNATING OR DIRECT CURRENT**  
**Marcel Aupoix, Paris; Francois Moisson Frackhauser,**  
**Bretigny-sur-Orge, and Jean Royet, Orsay, all of France,**  
**assignors to Compagnie Generale D'Electricite, Paris,**  
**France**  
**Division of Ser. No. 887,848, Dec. 24, 1969, Pat. No.**  
**3,600,498. This application Nov. 17, 1970, Ser. No. 90,437**  
**Claims priority, application France, Dec. 26, 1968, 180 800**  
**Int. Cl. H01b 5/00, 7/34**  
**U.S. Cl. 174—126 CR** **8 Claims**



A cable for cryogenic connection having one or more pairs of conductive layers insulated electrically from each other and consisting of several super-conductors arranged in spiral formation over the opposing surfaces of the conductive layers.

3,754,096

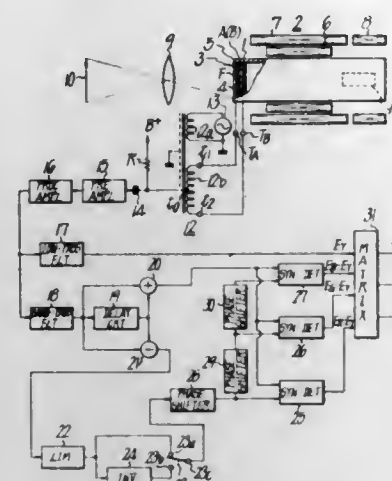
**COLOR TELEVISION SIGNAL REPRODUCING SYSTEM**  
**Hiroimichi Kurokawa, Atsugi-shi, Kanagawa, and Yasuharu**  
**Kubota, Fujisawa-shi, Kanagawa, both of Japan, assignors**  
**to Sony Corporation, Tokyo, Japan**  
Filed Nov. 26, 1971, Ser. No. 202,469  
• Claims priority, application Japan, Nov. 27, 1970,  
45/105215

Int. Cl. H04n 9/06

U.S. Cl. 178—5.4 ST 4 Claims

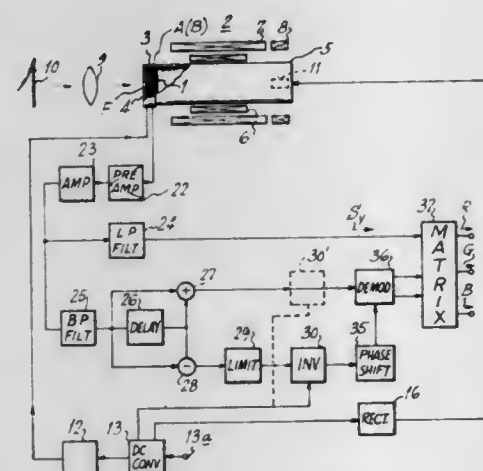
A phase modulated color video signal, for example, from a color television camera, is directly converted into an NTSC

signal, without demodulation of the color signal components, by amplitude modulating the phase modulated color video signal with a signal of a frequency twice as high as the carrier



frequency of the phase modulated color video signal, and then deriving a vector converted color video signal from the result of such amplitude modulation.

3,754,097  
**COLOR TELEVISION CAMERA**  
 Susumu Tagawa, Kamakura-shi, Kanagawa-ken, and Yasu-  
 haru Kubota, Fujisawa-shi, Kanagawa-ken, both of Japan,  
 assignors to Sony Corporation, Tokyo, Japan  
 Filed June 23, 1972, Ser. No. 265,517  
 Claims priority, application Japan, Nov. 17, 1971, 46/92279  
 Int. Cl. H04r 9/06  
 U.S. Cl. 178—5.4 ST 9 Claims



A color television camera utilizing a vidicon tube that has a filter in the form of alternate stripes for the primary colors red, green and blue, a pair of electrodes for each set of three stripes and a photoconductive layer. An alternating voltage produced by a DC-DC converter is applied to the electrodes to provide a predetermined pattern on the surface of the photoconductive layer with the image to be reproduced. The composite signal on the photoconductive layer of an index signal and a color video signal is fed back through the same terminals that applied the alternating voltage to the electrodes to a circuit which separates the color video signal from the index signal. The index signal is then applied to three demodulators to obtain the color video signals. The circuit which separates the index and chrominance signals operates under the control of an output signal from the DC-DC converter which also supplies the alternating voltage to the electrodes.

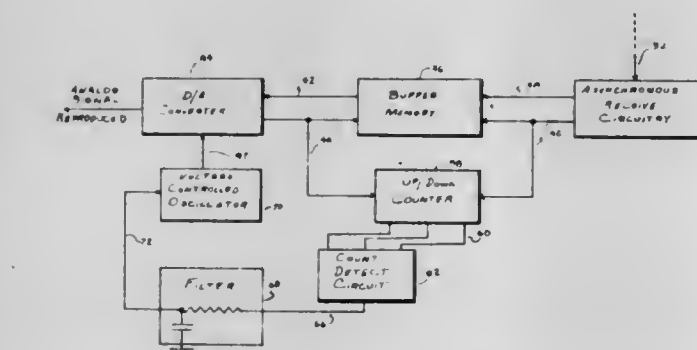
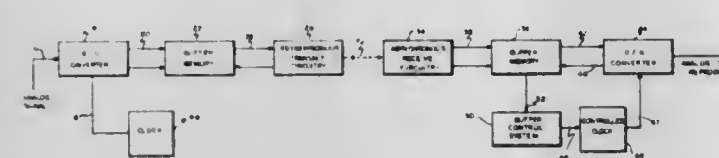
AUGUST 21, 1973

## ELECTRICAL

983

**3,754,098**  
**ASYNCHRONOUS SAMPLING AND RECONSTRUCTION  
FOR ASYNCHRONOUS SAMPLE DATA  
COMMUNICATION SYSTEM**  
**Carl N. Abramson, and Douglas G. Jones, both of Somerville,  
N.J., assignors to Adaptive Technology, Inc., Piscataway,  
N.J.**

Filed Oct. 8, 1971, Ser. No. 187,697  
Int. Cl. H04j 3/06  
U.S. Cl. 178—69.5 R



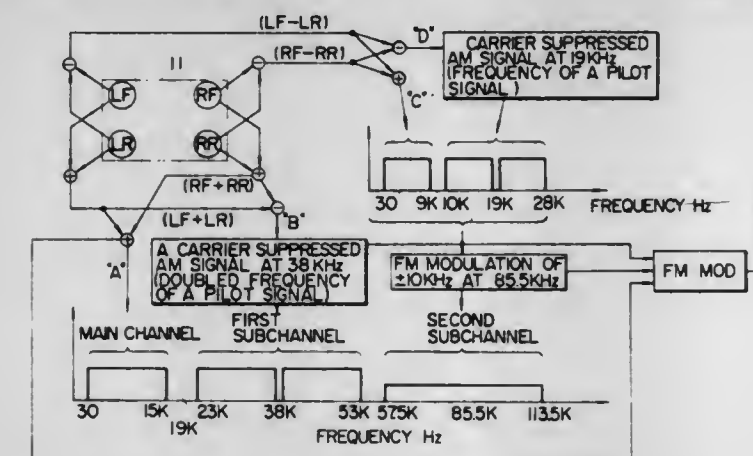
A system and method for deriving a decoding rate to be used by a periodic decoder in reconstructing an analog or voice waveform from asynchronously received sample data that was generated at an unknown and possibly changing periodic encoding rate. Sample data representing a particular defining characteristic of a waveform at unknown but substantially uniformly spaced times is received asynchronously at a generally non-uniform rate. The sample data is stored in a buffer memory until used by a periodic decoder to reconstruct the waveform. The rate at which the periodic decoder uses samples to reconstruct the waveform is adjusted in accordance with the number of samples stored in the buffer such that the number of stored samples tends toward a median number.

**3,754,099**  
**FOUR CHANNEL STEREOPHONIC BROADCASTING**  
**SYSTEM**

**Saburo Takaoka, Kohoku-ku, Yokohama-shi, Kanagawa,  
Japan, assignor to Pioneer Electronic Corporation, Tokyo,  
Japan**

Filed Nov. 9, 1971, Ser. No. 196,932  
Claims priority, application Japan, Nov. 9, 1970, 45/98513  
Int. Cl. H04h 5/00

U.S. Cl. 179—15 BT 7 Claims



A broadcasting system wherein a left front, a right front, a left rear, and a right rear signal are transmitted on a single

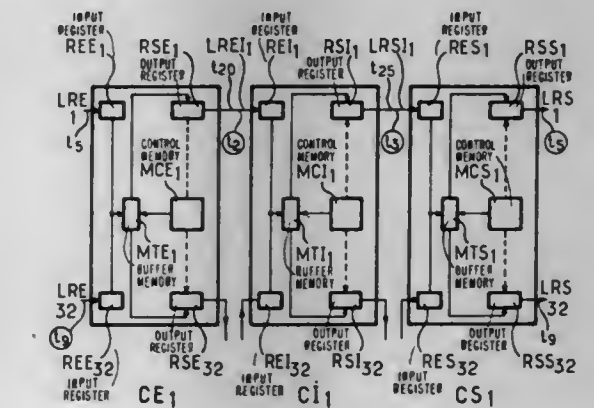
radio frequency channel with no significant increase in bandwidth. It should be compatible, that is, it should give satisfactory monophonic and two channel stereophonic reception on receivers presently in use by the public.

**3,754,100**

**MULTI-STAGE TIME CONNECTION NETWORK  
ARRANGEMENT ADAPTED TO BE USED MORE  
PARTICULARLY IN TELEPHONE SWITCHING**

**Jean-Baptiste Jacob, Saint-Quay Perros, France, assignor to  
C.I.T.-Compagnie Industrielle Des Telecommunications,  
Paris and Societe Lannionnalse D'Electronique, Route de  
Perros-Quirec, Lannion, France**

Filed \_\_\_\_\_, Ser. No. 39,786  
Claims priority, application France, May 22, 1969, 6916790  
Int. Cl. H04J 3/04  
U.S. Cl. 179—15 AQ  
6 Claims



A time connection network comprises a structure consisting of several stages comprising at least an input stage, an intermediate stage and an output stage, connections existing between the input stage and the intermediate stage, and between the intermediate stage and the output stage, each stage being formed by a certain number of time switches each comprising a certain number of incoming lines and a certain number of outgoing lines, each incoming or outgoing line comprising several time channels and each time channel comprising several binary elements.

3,754,101

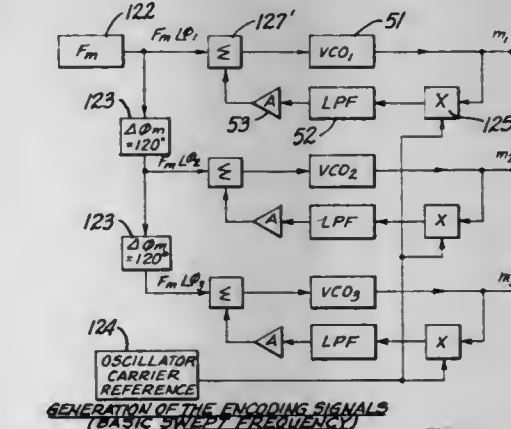
**FREQUENCY RATE COMMUNICATION SYSTEM**

**John I. Dasplit, West Los Angeles; Robert W. Jackman, San Diego, and Charles L. Weber, Los Angeles, both of Calif., assignors to Universal Signal Corporation, Cucamonga, Calif.**

**Filed July 2, 1971, Ser. No. 159,193**

**Int. Cl. H04J 1/06**

U.S. Cl. 179—15 FS 29 Claims



A communication system for transmitting a plurality of analog or digital information signals to a receiver with an improvement in band width utilization over conventional

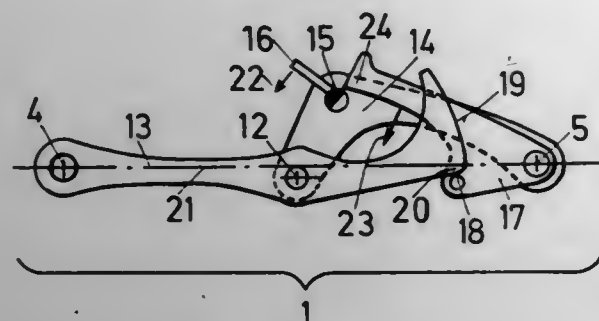






which by virtue of a lever advantage reduces the energy requirements to disengage the latch and so permits a more

The lower side of the susceptor comprises a profile which consists of longitudinal grooves present near the side surfaces.



sensitive operating mechanism. The components are shaped to minimize space taken by the mechanism in its collapsed state.

3,754,109

# **BRAZING PRESS PARTICULARLY FOR BRAZING A PRESSING INCLUDING CURVED PORTIONS TO A MATCHING PLATE**

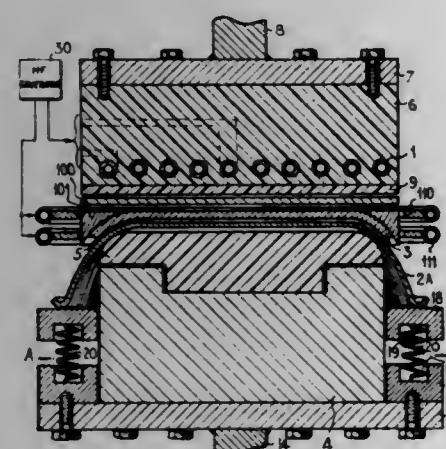
Jean Moulin, and Bernard Dallet, Massy, France, assignors to Societe De Traitements Electrolytiques Et Electrothermiques (Stel)

Filed Aug. 16, 1972, Ser. No. 281,763

Int. Cl. H05b 5/00

U.S. Cl. 219—9.5

14 Claims



Brazing press for joining pressings having a bottom and a sidewall and curved portions connecting the former two, such as bottoms of shaped cooking utensils, pots or pans, to a matching heat diffuser plate of a heat conducting metal covering at least part of the curved portions. Such a press includes: a main inductor; a ferromagnetic susceptor device interposed between the inductor and the diffuser plate for heating said latter and including a flat central portion and an annular peripheral portion matching the outer edge of the diffuser plate; a supplementary inductor for heating the annular susceptor portion and means for exerting pressure on the edge of the sidewall to make the curved portions bulge so as to flatten them against the matching portions of the diffuser plate during the brazing operation.

3,754,110

# **SUSCEPTOR HAVING GROOVES**

Cornelius Johannes Adrianus van Dongen; Jacobus Michael Wilhelmus Hofsteede, and Johannes Adrianus Terburg, all of Nijmegen, Netherlands, assignors to U. S. Philips Corporation, New York, N.Y.

Filed Feb. 16, 1972, Ser. No. 226,888

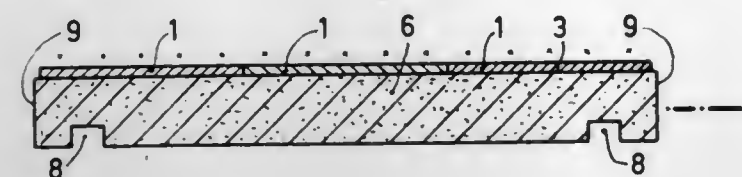
Claims priority, application Netherlands, Mar. 6, 1971, 7,103,019

Int. Cl. H05b 5/04

U.S. Cl. 219—10.49

6 Claims

The invention relates to a susceptor for heating bodies by means of high frequency energy.



By means of said grooves on the lower side, a homogeneous temperature distribution is obtained on the upper side transversely over the susceptor.

3,754,111

# **ACCESS TUNNEL AND ATTENUATOR FOR MICROWAVE OVENS**

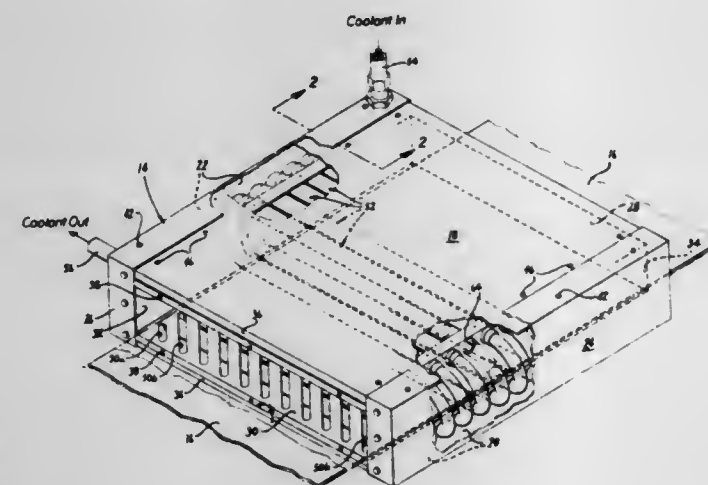
Peter D. Jurgensen, San Carlos, Calif., assignor to Gerling Moore, Inc., Palo Alto, Calif.

Filed Apr. 5, 1972, Ser. No. 241,238

Int. Cl. H05b 9/06

U.S. Cl. 219—10.55

9 Claims



This invention relates to the treatment of materials by the application of microwave electromagnetic fields, and more particularly, to the development of a microwave absorbent tunnel which permits continuous free access into a microwave oven while limiting the escape of microwave energy therefrom.

3,754,112

# **LOCALIZED HEATING FILAMENTS BY INDUCED CURRENTS**

Harold E. DeBolt, Andover, Mass., assignor to Avco Corporation, Cincinnati, Ohio

Filed June 14, 1972, Ser. No. 262,749

Int. Cl. H05b 9/02

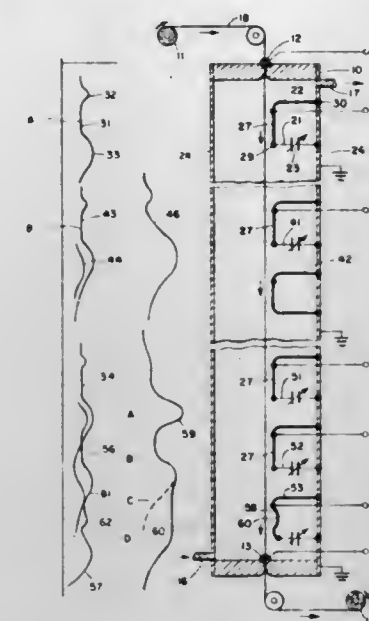
U.S. Cl. 219—10.61

12 Claims

A method and apparatus is disclosed for using a plurality of spaced sequential induction circuits for inducing a predetermined current distribution pattern in a localized segment of a filament. The induced current pattern is controlled by com-

binning the effects of electro-magnetic induction, and standing wave patterns on the filamentary conductor together with the

for wire of welding metal rigidly fixed to the torch and the mandrel, permitting the weld in front of the torch to be sup-



transmission attenuation along the filamentary conductor. Additionally, the effect of the configuration of an induction circuit on induced current is covered.

3,754,113

# **METHOD OF ELECTRICALLY WELDING A CAPACITOR ELECTRODE TO THE CAPACITOR HOUSING**

Roelof Dirk Bugel, Hattem, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

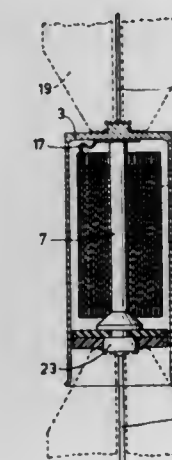
Filed Apr. 25, 1972, Ser. No. 247,374

Claims priority, application Netherlands, May 8, 1971, 7106347

Int. Cl. B23k 11/02

U.S. Cl. 219—107

4 Claims



A method of electrically connecting an electrode of a capacitor roll which is supported by a metal pin to the bottom of a capacitor housing. To this end, a metal strip which is connected to the electrode is clamped between the metal pin and the bottom, after which an electric current is fed through the pin, the strip and the bottom.

3,754,114

# **ROTATABLE WELDING GUN**

Jean-Pierre Peyrot, 1, avenue de la Division du General Leclerc, Villejuif, France

Filed Jan. 28, 1972, Ser. No. 221,497

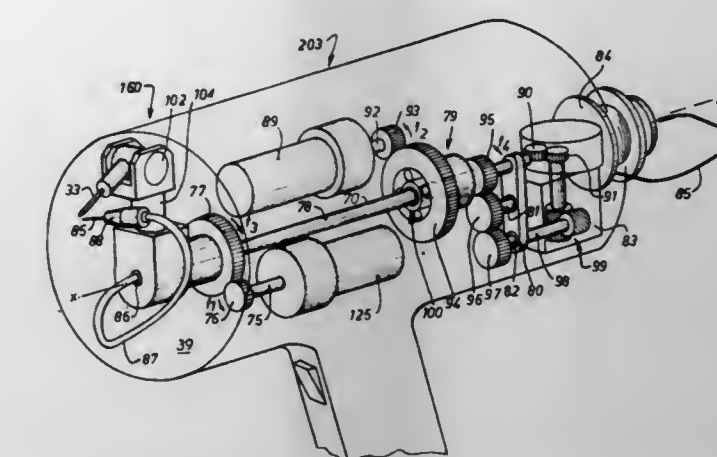
Claims priority, application France, Apr. 14, 1971, 7113182

Int. Cl. B23k 9/12

U.S. Cl. 219—125 R

12 Claims

A rotatable welding gun with an axial expansion means for centering radially a mandrel inside a tube to be welded, a reel



plied with welding metal during the rotation of the rotatable members.

3,754,115

# **TUBE SHEET WELDING WITH INERT GAS PRESSURE AT THE JOINT**

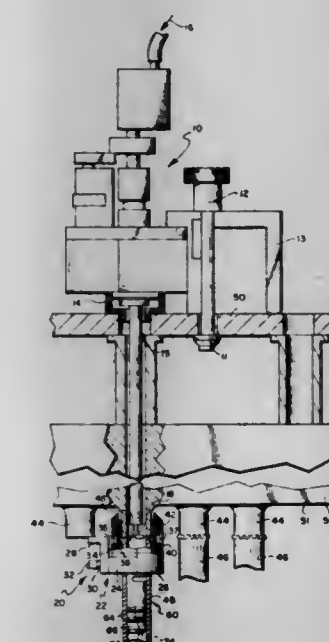
John G. Roberts, Thousand Oaks; Jack Weber, San Jose, and Secondino P. Margherio, Van Nuys, all of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Mar. 20, 1972, Ser. No. 236,300

Int. Cl. B23k 9/12

U.S. Cl. 219—125 R

7 Claims



A method and apparatus is disclosed to horizontally butt fusion weld a tube to a tube sheet. A chill bar surrounds the butted joint forming a chamber around the joint to contain an inert gas under pressure. An orbital type welder is inserted inside the tube adjacent the butted joint and the interior atmosphere surrounding the electrode is pressurized with a second inert gas at a pressure higher than the inert gas in the chamber surrounding the exterior of the butted joint to prevent the weld puddle from falling by gravity into the inside of the horizontally disposed tube and tube sheet during the welding operation.



3,754,116

## HAIR ROLLER APPLIANCE

Seigfried Godel, Norwalk, Conn., assignor to Sperry Rand Corporation, Bridgeport, Conn.

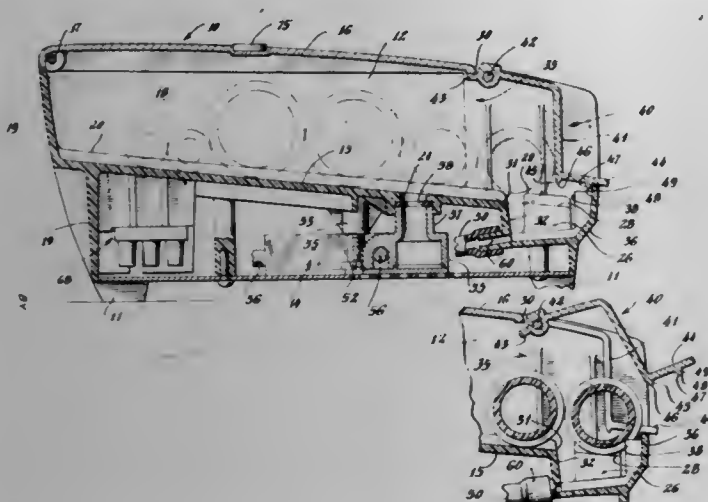
Continuation of Ser. No. 174,954, May 28, 1971, abandoned.

This application Mar. 15, 1972, Ser. No. 235,034

Int. Cl. H05b 3/02; A45d 4/10

U.S. Cl. 219-222

10 Claims



A portable appliance which includes a compartment for storing a plurality of hair rollers and an electrically energizable vapor generator cooperatively associated with the compartment to supply the compartment with hot vapor for heating and moistening the hair rollers. The floor of the compartment is inclined to cause the rollers to move, under the influence of gravity, through the compartment's access opening to a platform from which the rollers may be successively removed. A well is located in the floor of the compartment beneath the level of the opening in the floor through which vapor from the vapor generator passes into the compartment. The condensate thus tends to flow to the well rather than enter the inlet opening. In addition, the structure which is provided for opening and closing the access opening includes apparatus for causing condensate to flow to the well, rather than exit the appliance.

3,754,117

## DEVICE FOR CORONA TREATMENT OF A LAYER OF PLASTIC MATERIAL

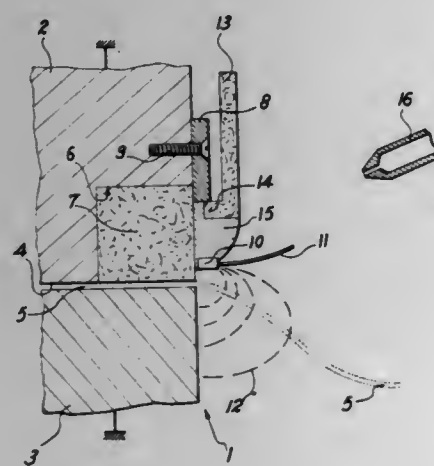
Jacques Walter, Geneva, Switzerland, assignor to Agence Nationale De Valorisation De La Recherche Anvar, Neuilly-sur-Seine, France

Filed Dec. 8, 1971, Ser. No. 205,903

Int. Cl. H05b 7/18

U.S. Cl. 219-383

5 Claims



A corona effect is produced across the layer of material to be treated by means of an intense electric field set up between

two electrically insulated electrodes separated by a very narrow air-gap consisting of a slit which is formed at the extremity of an extruder head and through which the material is delivered continuously at its maximum temperature.

3,754,118

## FLEXIBLE IMMERSION HEATER

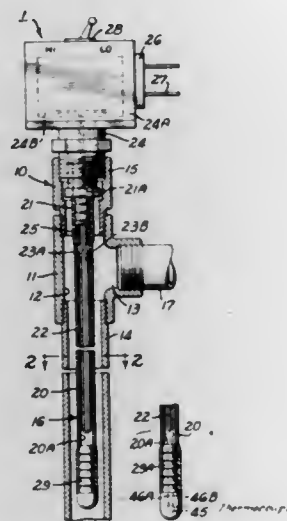
Aylwin Reed Booker, 4887 Palo Dr., Tarzana, Calif.

Filed Feb. 12, 1971, Ser. No. 114,776

Int. Cl. H05b 3/54, 1/02

U.S. Cl. 219-523

2 Claims



A flexible immersion heater assembly which permits fabrication of any desired length heater in the field includes a fluid impermeable flexible tube of non-metallic resilient material containing a section of flexible insulated electrical resistance wire. One end of the tube is telescoped over a frustoconically ribbed nipple on a hose fitting. The other end of the tube is suitably closed by a ribbed plug or a bonded pinch seal. Electrical leads to the resistance wire extend through the hose fitting and sealant means are provided for sealing the leads relative to the fitting. A thermostatic switch or a thermocouple are provided for controlling the heater in response to temperature changes. The heater assembly is adapted to be inserted in pipes, conduits and tanks.

3,754,119

## LUNCH TICKET TABULATING MECHANISM

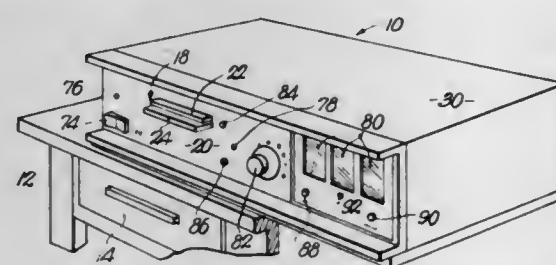
Edward E. Scott, Emporia, and Maurice David Sullivan, Cheney, both of Kans., assignors to Edward E. Scott, Emporia, Kans.

Filed Jan. 7, 1972, Ser. No. 216,072

Int. Cl. G06k 15/00, 19/00

U.S. Cl. 235-61.6 R

20 Claims



A tabulating and cancelling machine reads information from a data card inserted into the machine, stores the information for periodic display, and severs one credit portion from the card to cancel such portion each time the card is inserted into the machine, until all of the credit portions of the card have been severed therefrom. Data stripes on the card present a code representation of a specific factual situation, and each stripe is printed on all of the credit portions of the card such that, by placing an identification number of the card holder on each credit portion, the severed credit portions may be retained and used for audit purposes.

3,754,120

## APERTURED CARD READER AND DIGITAL DATA COLLECTION SYSTEM

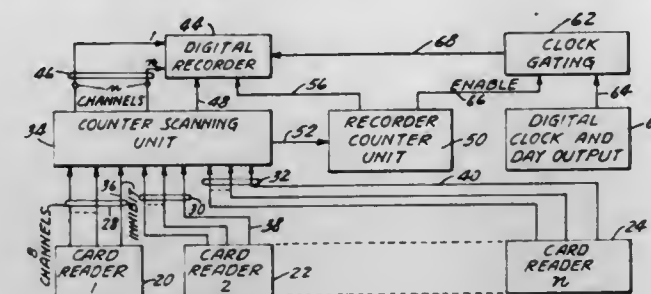
James R. Fitzgerald, New Hope, and Ronald G. Beachem, Mound, both of Minn., assignors to Incremental Systems, Inc., Minneapolis, Minn.

Filed Nov. 3, 1970, Ser. No. 86,473

Int. Cl. G06k 7/10

U.S. Cl. 235-61.11 E

9 Claims



An apertured card reader adapted for converting information stored in an information bearing portion of an apertured card into digital signals as the apertured card is manually transported within the reader is shown. In one embodiment, the apertured card reading apparatus includes an input sensing means which is responsive to the apertured card being selectively inserted along a path a predetermined distance within the reader for starting the reading means which converts the stored information into a digital signal having characteristics determined by the rate at which the information bearing portion of the card is manually transported past the reading means and for disabling the reading means when the apertured card has been manually transported therepast.

A digital data collection system capable of converting information stored on apertured cards into digital signals representing the stored information wherein the system includes a counter scanning unit, a digital recorder, a recorder counter, a digital clock and clock gating means for recording on the strip member digital data representing information stored on at least one of said apertured cards read by a card reader and information representing the time and data said stored information was recorded on said strip member also shown.

3,754,121

## SOLID STATE INSTRUMENT SYSTEM FOR DIGITAL COUNTING AND CONTINUOUSLY INDICATING COUNT RESULTS

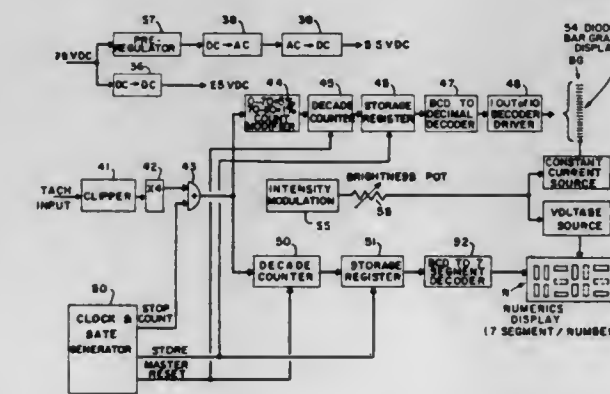
Dennis G. Delay, Oxnard, Calif.; Sherman R. Parsons, Newark Valley, and Robert A. Sterlacci, Endicott, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 28, 1972, Ser. No. 276,016

Int. Cl. G01p 3/12

U.S. Cl. 235-92 EA

9 Claims



A digital solid state engine RPM sensing and indicating system for multi-engine aircraft, the RPM indications made

simultaneously in the form of side-by-side bar graphs and side-by-side numeric displays for each engine showing RPM as a percentage of rated RPM, the displays being formed by light-emitting diodes and the system arranged such that the bar graphs indicate changes at each 5 percent of noted RPM below 70 percent and at 1 percent above 70 percent. Special current limiting and cooling features are provided to handle the current requirements of the diodes and power supply.

3,754,122

## MILEAGE RECORDING

Nicholas Dinapoli; Donald Friedman; Robin P. Nicholls; Howard A. Wilcox, all of Santa Barbara, and Charles E. Wood, Porterville, all of Calif., assignors to Minicars, Inc., Goleta, Calif.

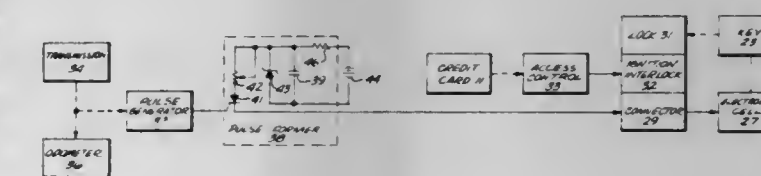
Division of Ser. No. 44,055, June 8, 1970, Pat. No. 3,665,397.

This application Jan. 24, 1972, Ser. No. 220,384

Int. Cl. G01c 22/02

U.S. Cl. 235-92 DN

3 Claims



An automatic automobile rental system having a plurality of remote rental stations and a central data processing station for system control and customer billing is described. A system user employs a credit card that is automatically read at a rental station to identify the user, and this information is checked at the central station to verify that the card holder is entitled to receive an automobile. The same card identifies the holder when the automobile is returned to the same or a different rental station. An ignition key and machine-readable car identification and mileage module are interconnected for reading and dispensing at a rental station and for use in operating an automobile. Mileage or other measure of usage of the rented automobile is recorded in an electrolytic cell as a state of charge proportional to mileage. The cell is transferred to the automobile for mileage recording and to the rental station for discharge and mileage reading. Standard pulses of charge in a number proportional to mileage are used to charge the electrolytic cell. Data read from the electrolytic cell, from the user card, and from the automobile identification are transmitted to the central data processing unit over conventional telephone lines.

3,754,123

## APPARATUS FOR ELECTRONICALLY SQUARING AND SUMMING PROJECTIONS OF A VECTOR FOR INSPECTING ARTICLES ON A CONVEYOR

Rene Keller, Dietikon, Switzerland, assignor to Emhart Corporation S.A., Zurich, Switzerland

Filed Feb. 28, 1972, Ser. No. 229,868

Int. Cl. G06g 7/22; G06m 7/00

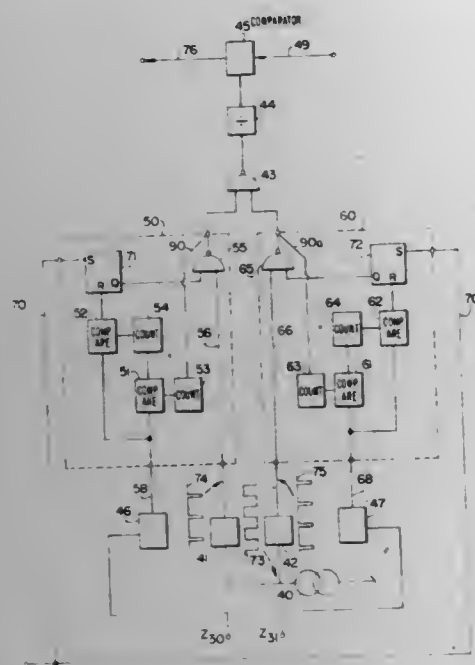
U.S. Cl. 235-151.3

3 Claims

Two mutually perpendicular light beam patterns are directed across a continuously moving conveyor toward an array of light sensitive devices arranged in pairs for inspecting the silhouette of articles on the conveyor. The leaner inspection circuitry includes a pulse generating and counting means



capable of providing two signals indicative of the degree of lean of an article in two mutually perpendicular directions.



These signals, or series of pulses, are squared, respectively, and then summed to be compared to some predetermined acceptable range.

3,754,124

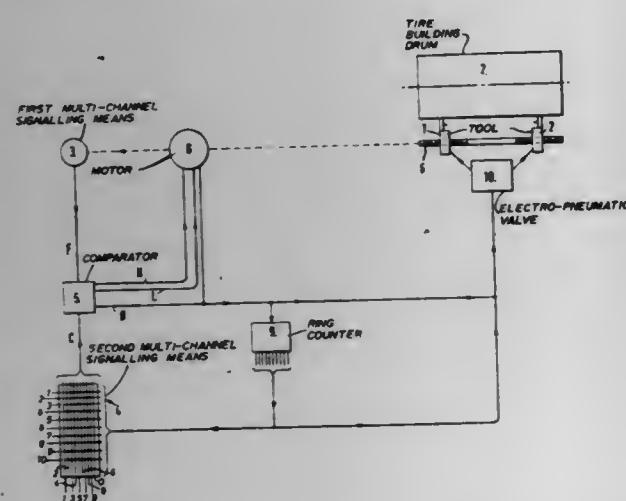
## APPARATUS FOR POSITIONAL CONTROL

Robert L. Drescher, Birmingham, England, assignor to The Dunlop Company Limited, London, England  
Continuation of Ser. No. 804,821, March 6, 1969, abandoned.  
This application Dec. 29, 1971, Ser. No. 213,754  
Claims priority, application Great Britain, Mar. 9, 1968, 11,607/68

Int. Cl. G05b 19/34; B29h 17/18

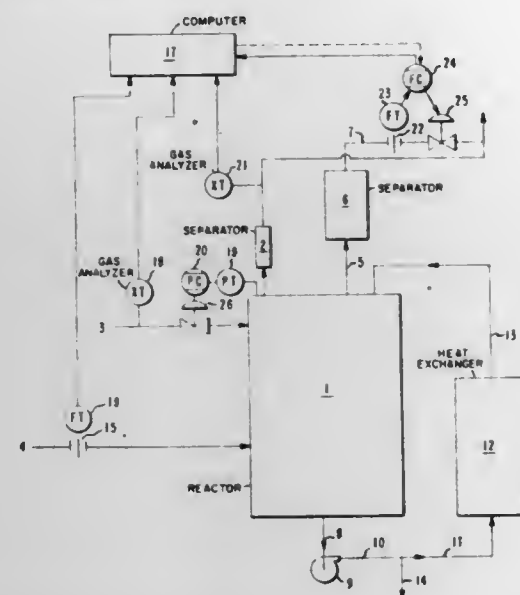
U.S. Cl. 235-151.11

11 Claims



Positional control apparatus for controlling a tool, especially a spinning tool for consolidating tyre building components on a drum, comprising a multichannel digitizer for indicating tool position, a multichannel device adapted to be preset to provide a signal on any one of its output channels, the number of channels of the digitizer equally the number of channels of the device, and a comparator device for comparing the signals from the digitizer and multichannel device to control the tool appropriately, of which the following is a specification.

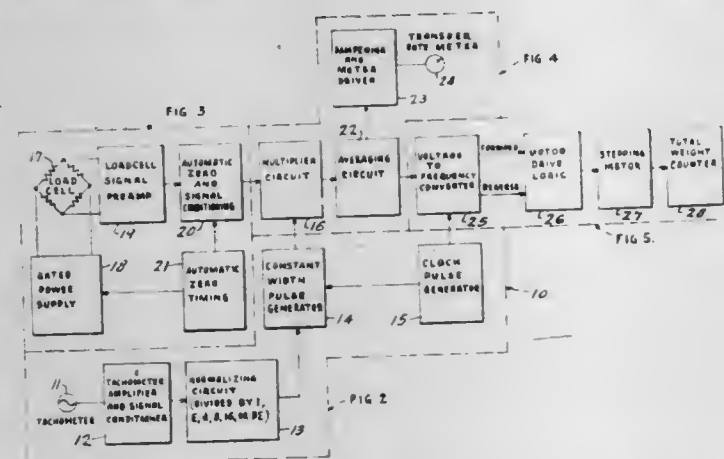
3,754,125  
VENT GAS CONTROL SYSTEM  
Mark B. Rothstein, Pennsville, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
Filed Jan. 6, 1971, Ser. No. 104,218  
Int. Cl. C07c 85/10  
U.S. Cl. 235-151.12  
6 Claims



A process and apparatus for reacting a gas and a liquid by selectively adjusting the vent gas rate in relation to the liquid feed rate, impurities in the gas feed and impurities in the vent gas.

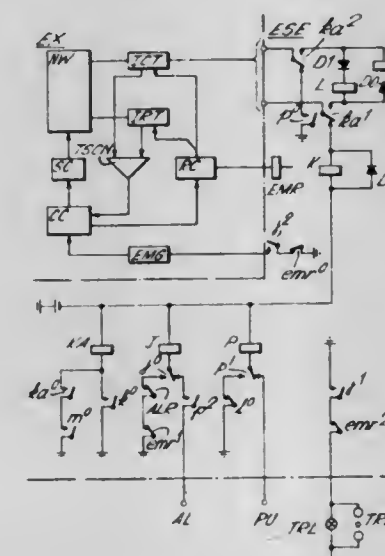
3,754,126  
INTEGRATING CONVEYOR SCALE

Roger B. Williams, Jr., Sylvania, Ohio, assignor to Reliance Electric Company, Toledo, Ohio  
Filed Jan. 6, 1972, Ser. No. 215,870  
Int. Cl. G01g 11/14; G06g 7/18  
U.S. Cl. 235-151.33  
17 Claims



An improved method and apparatus for measuring the rate at which material is transferred through a region and for measuring the total quantity of material transferred through the region over a period of time. A pulse train is generated having constant width pulses which are repeated at a rate proportional to the speed at which the material is transferred through the region. The pulse train is amplitude modulated with an analog signal which is proportional to the instantaneous weight of material in the region. The modulated pulse train is then filtered or averaged to obtain a continuous analog signal which is proportional to the transfer rate for driving a rate indicating meter. The rate signal is also converted to a frequency modulated pulse signal for stepping a counter which indicates the total quantity of material transferred over a period of time. Circuitry is provided for automatically zeroing the analog weight signal and for inhibiting measurements of less than a predetermined percentage of the maximum capacity of the apparatus.

3,754,127  
EMERGENCY SUPERVISING EQUIPMENT  
Tadakazu Uno, Tokyo; Tokichi Kataoka, Urawa; Noboru Suzuki; Hisatomo Munetaka, both of Yokohama; Sholchi Kutsukake, Kawasaki, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation; Oki Electric Industry Co. Ltd.; Nippon Electric Co., Ltd.; Hitachi Limited and Fujitsu Limited  
Filed Nov. 4, 1971, Ser. No. 195,719  
Claims priority, application Japan, Nov. 6, 1970, 45/97,141  
Int. Cl. H04m 3/28  
U.S. Cl. 235-153 AC  
9 Claims

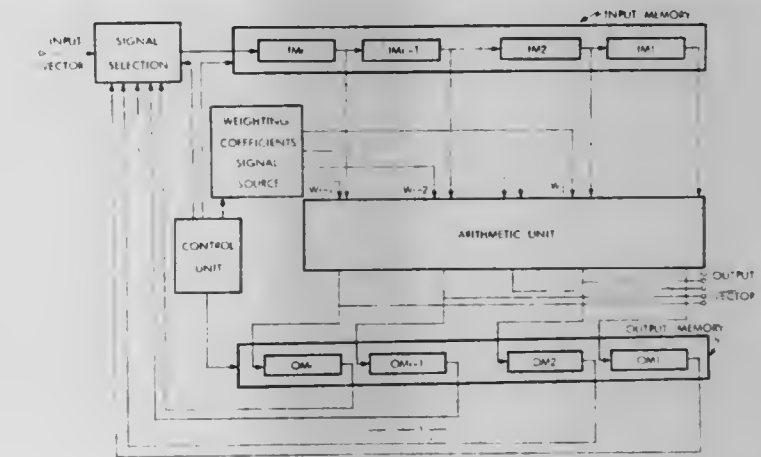


Emergency supervising equipment for supervising the overall operation of the processing program operation of a stored program controlled switching system. The equipment periodically applies a simulated starting signal to an incoming trunk circuit of the switching system. The emergency supervising equipment comprises means for detecting a responsive reversal signal sent back from the incoming trunk circuit when the trunk circuit is connected to an incoming register trunk circuit. The equipment determines that a normal condition prevails when the reversal signal is received within a certain period and it determines that an emergency condition exists when the reversal signal is not received within a certain predetermined period. The equipment may be so constructed as to determine the emergency condition only after detecting a certain predetermined number of successive faulty conditions or it may be so constructed to determine the emergency condition only when a predetermined number of simultaneous faulty conditions are detected using a plurality of the supervising equipments.

3,754,128  
HIGH SPEED SIGNAL PROCESSOR FOR VECTOR TRANSFORMATION  
Michael J. G. Corinthios, 35 Charles St. W., Toronto, Ontario, Canada  
Filed Aug. 31, 1971, Ser. No. 176,644  
Int. Cl. G06f 7/38, 15/34  
U.S. Cl. 235-156  
14 Claims

A signal processor for real-time signal analysis with three different implementations. The processor accepts as an input a vector which is to be multiplied by a transformation matrix. The first implementation is in the form of an asymmetric processor comprising an input memory, an output memory, an arithmetic unit, a weighting coefficients signal source, signal selection means, and a control unit. Each of the input and output memories is divided into  $r$  queues where  $r$  is the value of the radix of factorization of the transformation matrix. The

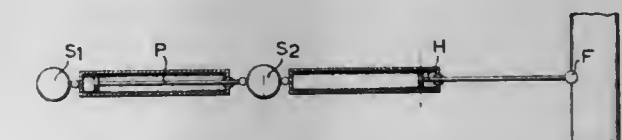
weighting coefficients signal source feeds  $(r-1)$  predetermined coefficients to the arithmetic unit. The values of the weighting coefficients, obtained through the factorization of the said transformation matrix, are of uniformly ascending order. The processor is suited for implementing either post permutation or ordered input ordered output algorithms. The second implementation is in the form of a symmetric processor having  $r$  parallel channels in which arithmetic is simultaneously performed. This processor is faster than a corresponding asymmetric processor due to the fact that the weighting coefficients are simultaneously fed to the arithmetic unit in the form of  $r$  inputs, or channels, rather than  $(r-1)$ . Arithmetic is thus performed with a level of parallelism that is equal to  $r$ , as com-



pared to  $(r-1)$  in the case of the asymmetric processor. The third implementation is in the form of a processor comprising a first memory, a second memory, an arithmetic unit, a weighting coefficients signal source, first and second signal selection means, and a control unit. The first and second memories are each divided into  $r^2$  queues. In this processor the arithmetic unit is not fully wired-in but is utilized in 100 percent of the time of processing.

In any of the said three implementations real time processing is achieved by accumulating new data in an input buffer memory while the older record is being processed.

3,754,129  
AUTOMATIC CONTROL FOR MINING PIT PROPS  
Helmut Schmidt, Essen-Haarzopf, Germany, assignor to Bergwerksverband GmbH, Essen-Kray, Germany  
Filed Aug. 5, 1970, Ser. No. 61,345  
Claims priority, application Germany, Aug. 6, 1969, P 19 39 990.7  
Int. Cl. G06m 1/12  
U.S. Cl. 235-201  
3 Claims



A control for the alignment and if need be, pivoting of a prop or post in mining, whose theoretical course in the plane of the work is indicated by a straight line or a curve and whose ideal or actual course results from positive or negative deviations, which are analyzed at several measuring points located along the prop or post by means of digital forward and backward (or positive and negative) logic pulses. Each measuring point corresponds to an evaluation unit having a storage member. Each unit converts the stored signals into control signals for spatially differentiated treatment of a mine face, whereby the storage members of the evaluation units are connected with one another by a storage interrogation and return conduit. To each measuring point are assigned two



measuring devices, of which at least one comprises a thrust-piston drive serving for the advance of the recovery device. The piston path or stroke of the thrust piston drive is divided into partial lengths, whose through-passage through the piston in each case releases one of the binary rearward or forward pulses.

3,754,130

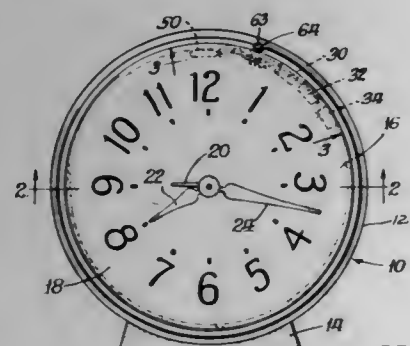
## ILLUMINATABLE CRYSTAL ASSEMBLY

Wilfred S. Stone, Wayne, and Robert L. Walker, Saint Charles, both of Ill., assignors to Wilfred S. Stone, Wayne, Ill.

Filed Mar. 18, 1971, Ser. No. 125,543  
Int. Cl. G04b 19/30

U.S. Cl. 240-6.43

6 Claims



A crystal assembly carrying a lamp, a battery and a switch; the crystal assembly being placeable over a dial and by actuating the switch the lamp is lighted to illuminate the dial.

3,754,131

## LAMP FOR ILLUMINATING REAR LICENSE PLATES OF MOTOR VEHICLES

Salvatore DiSalvo, and Francesco Guglielmino, both of Turin, Italy, assignors to FIAT Societa per Azioni, Turin, Italy

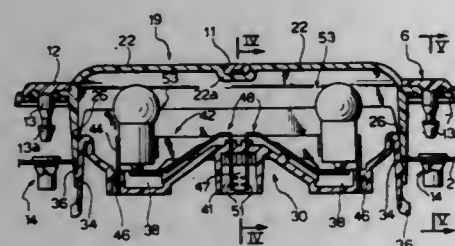
Filed Jan. 6, 1972, Ser. No. 215,718

Claims priority, application Italy, Jan. 14, 1971, 52826 A/71

Int. Cl. B60g 1/26

U.S. Cl. 240-7.1 G

4 Claims



A lamp for illuminating the rear license plate of a vehicle has a transparent plastics casing over which a plastics cover fits, two protuberances of the casing fitting into two apertures in the cover to provide the desired illumination. The cover has fixing pins which snap-engage in slidable blocks trapped behind the rear bumper of the vehicle to locate the lamp in a seat in the bumper. Respective metal contacts have integral blade connectors which project through the bottom of a plastics lampholder with which the casing is snap-engaged, to make contact with two lamp bulbs in the casing.

3,754,132  
REFLECTOR FOR DECORATIVE ILLUMINATION AND LUMINOUS ADVERTISEMENT

Abram Mamrud, Kurfurstendamm 50, and Gerhard Priebe, Waltzstrasse 11, both of 1 Berlin 15, Germany

Filed Oct. 29, 1971, Ser. No. 193,930

Claims priority, application Germany, Nov. 2, 1970, G 70 41 565.5

Int. Cl. F21v 7/05

U.S. Cl. 240-10 R

4 Claims



Reflector for decorative illumination and luminous advertisement comprised of a hollow pyramidal body with a central axis and having regularly, polygonal base area contour, further having configuration of at least two axially superimposed truncated pyramids, the body made of plastic or metal as deep-drawing body, the respective apex angles of the pyramids increasing with decreasing respective base area. A mounting flange with pockets for receiving connector elements, extends transverse to the base area, and from the outer periphery of the body at the largest base area of the pyramids.

3,754,133

## LAMP FOR USE IN A HIGH PRESSURE ENVIRONMENT

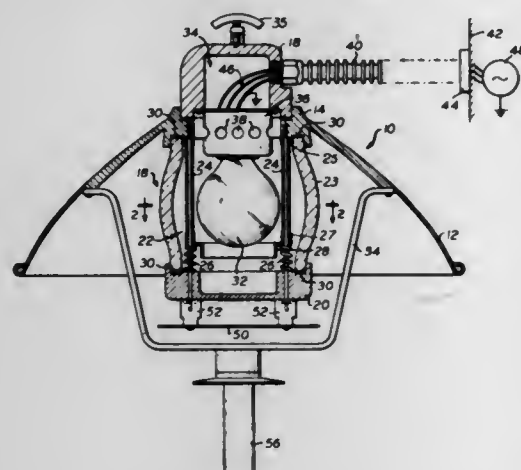
Myron Youdin, Flushing, and Theobald Reich, New York, both of N.Y., assignors to New York University, New York, N.Y.

Filed Aug. 19, 1971, Ser. No. 173,122

Int. Cl. A61g 13/00; F21v 29/00

U.S. Cl. 240-11.2 E

5 Claims



In a lamp for use in a chamber containing a high pressure environment preferably greater than one atmosphere wherein the lamp includes a light source and a substantially pressure tight explosion-proof housing, the light source being located within the housing interior and the housing exterior being capable of withstanding pressures greater than atmospheric pressure, means are provided which are cooperatively associated with the housing for maintaining the interior of the housing substantially at atmospheric pressure while the interior of the chamber exterior to the housing is at a higher pressure, the housing being substantially non-porous with respect to the chamber interior.

3,754,134

## ASYMMETRIC BEAM SPOTLIGHT

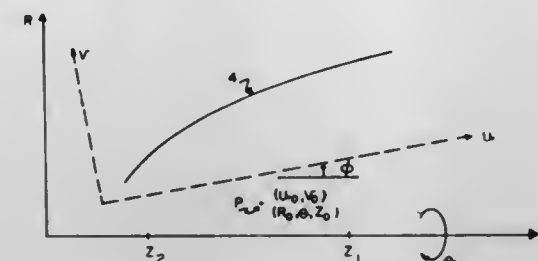
Robert E. Levin, Hamilton, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed May 30, 1972, Ser. No. 257,938

Int. Cl. F21v 7/09

U.S. Cl. 240-41.37

7 Claims



An optical system comprising a light source and an asymmetric reflector for producing a noncircular beam of light having a generally oval cross section and wherein the intensity and angular extent of the beam are variable by moving the source axially with respect to the reflector. The reflector is defined by a continuous, asymmetric surface generated by a curve  $v = f(u)$  in a meridian plane thereof, which curve varies angularly in successive meridian planes through an angle  $\phi$  about a moving point  $(R, \theta, Z_0)$  fixed with respect to the curve in each meridian plane and falling on a circle concentric with and in a plane normal to the optical axis  $Z$  of the reflector. The angular variation  $\phi$  is described by the relation  $\phi = g(\theta)$  and conforms to the restriction that  $\phi$  is continuous and periodic on  $\theta = 2\pi$ , where angle  $\theta$  describes the angular position of the meridian plane about the optical axis of the reflector.

3,754,135

## LIGHT TREATING MEANS

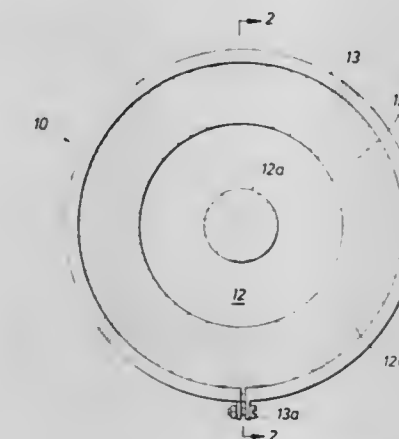
Clarence E. Hulbert, Jr., P.O. Box 265, West Columbia, Tex.

Filed Apr. 21, 1971, Ser. No. 136,799

Int. Cl. F21v 9/08

U.S. Cl. 240-46.59

15 Claims



A central circle of blue, translucent light filtering material is surrounded by an annular circle of clear transparent material which in turn is surrounded by an annular area of blue translucent light filtering material to form a filtered zone plate through which artificially produced light is filtered and mixed to provide a more natural white light having reduced glare and improved color resolution and illumination. In a preferred form, the clear area functions as a light aperture and the central and annular translucent areas cooperate to provide a filtered light which mixes with the light passing through the aperture. The clear and translucent areas are provided by a flat, transparent plate which is removably secured to the light emitting face of a sealed beam lamp. The lamp includes a resistive incandescent filament for providing a light source, a

parabolic reflector for collimating light directed through the plate and an opaque, reflective curved light shield positioned between the light source and the plate for preventing light produced by said light source from traveling through the plate without first being reflected from the reflector. The translucent areas are formed of a thin coating of an acrylic ester lacquer dyed with iron blue pigment. The filtered and unfiltered light combine to produce a white light surrounded by a blue field.

3,754,136

## FLOODLIGHT HAVING T-SHAPED HINGE CONNECTION

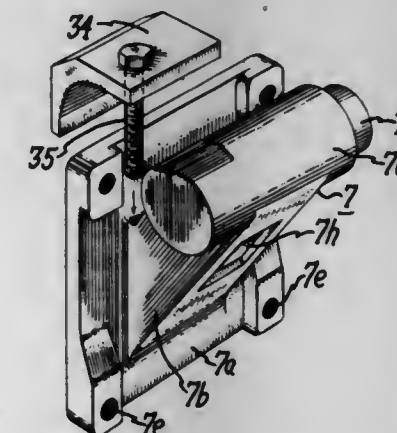
Mitchell M. Osteen, Zirconia, N.C., assignor to General Electric Company

Filed Apr. 27, 1972, Ser. No. 247,957

Int. Cl. F21s 5/00

U.S. Cl. 240-73 R

8 Claims



Floodlight has an optical housing hingedly attached to a separate ballast housing having a built-in slipfitter for mounting on a post top. The hinge connection includes a T-shaped support arm having a transverse tubular portion rotatable in a corresponding recess on the ballast housing. An adjustable clamp holds the tubular hinge portion in selected adjusted position for maintaining the optical housing at the desired angle relative to the supporting post.

3,754,137

## CORONA DISCHARGE DEVICE

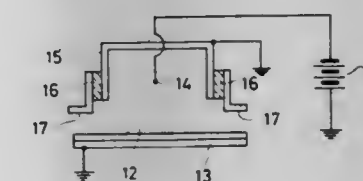
Nin-Ichi Kamogawa, and Minoru Okumura, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 16, 1971, Ser. No. 124,696

Int. Cl. G03g 15/00

U.S. Cl. 250-326

6 Claims



A corona discharge device for use in electrophotography and electrostatic printing apparatuses is provided having a corona discharge electrode, a shielding back plate with a corona discharge aperture and one or more conductive plates. Each of the conductive plates is insulated from the remainder of the apparatus and positioned adjacent to the aperture. A potential is impressed on each of these plates during corona discharge to prevent dust and other foreign particles from entering through the aperture and adhering to the electrode.



3,754,138

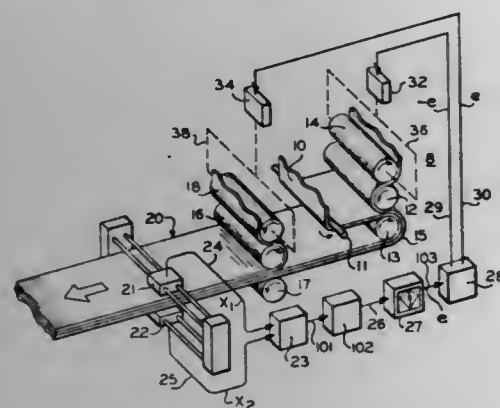
## INNER LAYER POSITION MEASUREMENT

Harold A. Kursedt, Jr., and Mason L. Thompson, Jr., both of Columbus, Ohio, assignors to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Oct. 7, 1971, Ser. No. 187,413

Int. Cl. G01t 1/16

U.S. Cl. 250-302



Apparatus and method for measuring the position of a layer disposed within a tire ply, which material contains metallic particles. The inner layer is metal or is coded by providing metallic particles as a tracer material which have a different fluorescence energy from that of the metallic particles present in the tire ply. A source of radiation is directed at the tire ply to cause fluorescence of the layer. Radiation detectors on opposite sides of the tire ply which are sensitive only to the fluorescence energy of the layer, produce signal outputs that are compared to produce a signal which is indicative of the position of the layer within the tire ply.

3,754,139

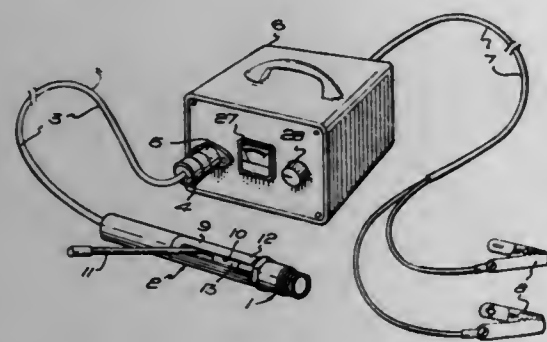
## INTERNAL COMBUSTION ENGINES WITH INFRA-RED DETECTION

Joshua Swithenbank, Hathersage, near Sheffield; David Shaw Taylor, and Michael Stuart Bolton, both of Sheffield, all of England, assignors to Gunson's Colorplugs Limited

Filed May 22, 1972, Ser. No. 255,651

Int. Cl. G01t 1/16

U.S. Cl. 250-83.3 H



A method of checking and/or varying the fuel to air mixture ratio of an internal combustion engine comprises measuring the intensity of the infra-red emission from the flame during combustion in the combustion chamber by an infra-red photosensitive device and feeding the signal to an indicator, such as a meter, an audible device, or a "magic eye" device, and/or to automatic control means for effecting any adjustment that may be necessary of the fuel/air mixture ratio. Apparatus comprises a "Colourtune" spark plug provided with a tubular adaptor comprising an insulating sleeve with a longitudinal slot for the lead of the plug from one end fitting over the transparent core of the plug, and the other end of the sleeve being joined to one end of a tubular metal shield the other end of

which houses a detector cell for infra-red emission mounted on an insulated plug eccentrically with respect to the insulating sleeve on the opposite side of the axis to the slot for the plug lead.

3,754,140

## TRANSPORT CASK FOR RADIOACTIVE MATERIAL

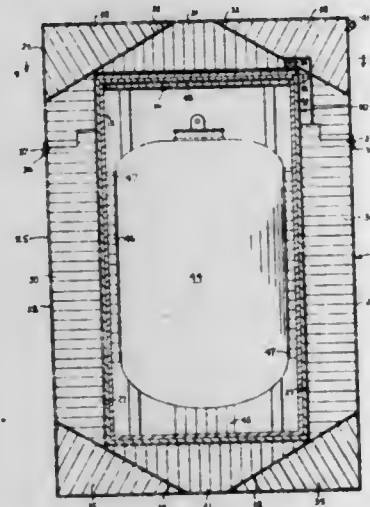
Frederick P. Belerle, Prosser, Wash., assignor to Chem.-Nuclear Systems, Inc., Bellevue, Wash.

Filed Dec. 2, 1970, Ser. No. 94,444

Int. Cl. G21f 5/00

U.S. Cl. 250-507

5 Claims



A cask assembly for the transport of radioactive material comprising a shielded cylindrical cask slidably received within a cask overpack. The assembly is supported on the bed of a truck within an encircling cradle. The overpack comprises inner and outer cylindrical shells filled by directionally oriented honeycomb material designed to withstand external forces without rupture of the protective cask or containment vessel.

3,754,141

## SHIPPING AND STORAGE CONTAINER FOR HIGH POWER DENSITY RADIOACTIVE MATERIALS

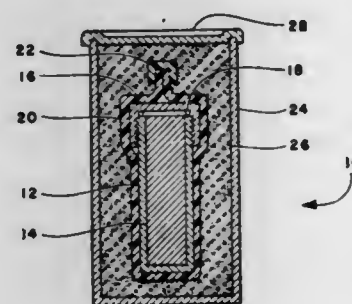
Robert G. Leebl, Arvada, Colo.; Robert L. Sandvig, Rapid City, S. Dak., and Edward Vejvoda, Boulder, Colo., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed July 12, 1972, Ser. No. 270,885

Int. Cl. G21f 3/00

U.S. Cl. 250-507

3 Claims



A shipping and storage container for radioactive material, particularly high thermal producing fissile material, which includes a cylindrical inner metal container for retaining the radioactive material, an alpha contamination barrier of polyvinyl chloride surrounding said inner container, a cylindrical outer metal container enclosing said inner container and barrier with inner surfaces spaced from the inner container walls and from said barrier, and finely divided heat absorbing and transferring or conducting magnesium oxide filling the space intermediate said barrier and the inner surfaces of the outer metal container.

3,754,142

## HIGH FREQUENCY LAD LINE USING LOW FREQUENCY DETECTORS

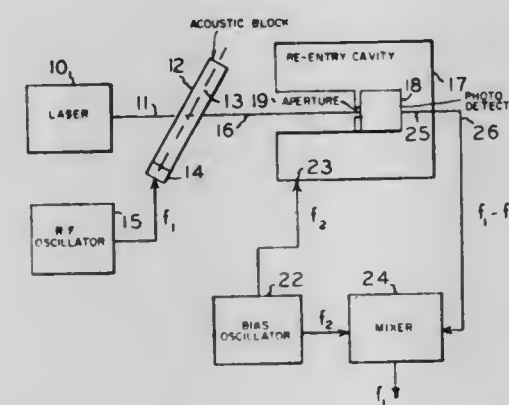
Albert W. Angelbeck, Manchester, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 1, 1971, Ser. No. 119,696

Int. Cl. H04b 9/00

U.S. Cl. 250-199

5 Claims



The invention disclosed herein provides an improved laser acoustic delay line having a low frequency detector in the line operating at a first frequency. This is accomplished by combining an acoustic block actuated at a first frequency and a photo detector receiver in the path of a laser beam with a second frequency to produce the first frequency by mixing.

3,754,143

## MAGNETIC-OPTICAL GENERATOR

Gilbert Lesueur, Aix-les-Bains, France, assignor to Alsthom-Savoisienne, Saint-Ouen, France

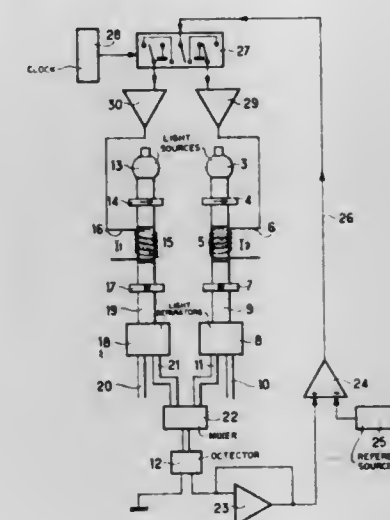
Filed Sept. 23, 1971, Ser. No. 182,969

Claims priority, application France, Sept. 23, 1970, 7034465

Int. Cl. G01j 1/36

U.S. Cl. 250-204

1 Claim



Magnetic-optical generator, transmitting light impulses along several channels, characterized by the fact that a portion of the flow transmitted in each channel is sent on to a photo-electric detector whose electric output signal is compared to a reference in order to give a signal which is in sequence switched by a control logic to the control of a magnetic field producing coil in each one of the channels taken in succession.

3,754,144

## IMAGE CONVERTER CHANGING INFORMATION OF ONE FREQUENCY TO ANOTHER FREQUENCY

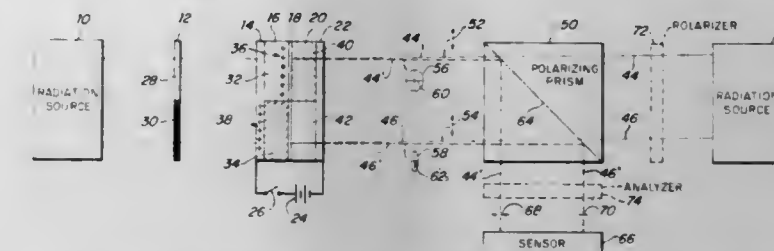
Paul J. Caruso, Bedford, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed July 16, 1971, Ser. No. 163,549

Int. Cl. H01l 17/00

U.S. Cl. 250-213 R

10 Claims



Apparatus is disclosed for reading out information present in the form of variations in intensity of an electric field, including an electro-optic birefringent medium, whose birefringence varies as a function of an applied electric field, associated with the electric field, means for directing polarized radiation through the electro-optic birefringent medium, means for reflecting the polarized radiation back through the electro-optic birefringent medium, and means for detecting the modulation representative of the information present in the electric field imposed upon the radiation by the birefringence of the electro-optic medium.

3,754,145

## IN SITU FLUOROMETER

William Benjamin Leaf, Silver Spring, Md., assignor to Prototypes, Incorporated, Kensington, Md. and Zone Research Incorporated, Washington, D.C.

Division of Ser. No. 134,781, April 16, 1971, Pat. No.

3,649,833. This application Feb. 9, 1972, Ser. No. 224,713

Int. Cl. G01n 21/16, 21/26, 21/38

U.S. Cl. 250-218

1 Claim



Disclosed herein is a self-contained submersible fluorometer designed for the continuous in situ recording of concentrations of materials in an aqueous environment, said materials being stimulated to fluoresce when excited by light of proper wavelengths.

3,754,146

## APPARATUS AND METHOD FOR DETECTING STREAKS IN COATED LAYERS ON A WEB

Allan Tilt-Shing Chow, Piscataway, N.J., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 27, 1972, Ser. No. 238,199

Int. Cl. G01n 21/32

U.S. Cl. 250-219 DF

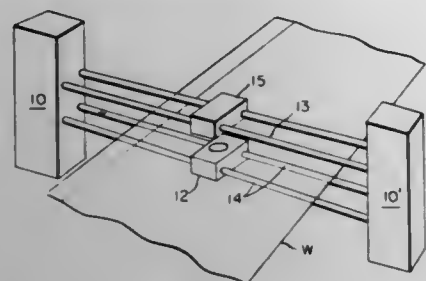
10 Claims

A detecting head and light source are synchronously traversed on opposite sides of a continuous moving web. Photoelectric detector elements are recessed in rectangular channels disposed symmetrically about rectangular coordinate axes, the principal axis of the rectangular channels is in the direction of web travel, and centered on the detecting head opposite the center of the synchronous traversing light source.

A streak defect in a coated layer on the web interferes with the transmitted light to the detecting elements resulting in an electrical characteristic signal across the detecting elements.



The characteristic signal is amplified, digitized and electronically processed for verification of the presence of a streak defect. The verified signal can be used to activate an alarm, halt the coating of the web or can be recorded and used for the design of subsequent slitting operations on the web.



fect. The verified signal can be used to activate an alarm, halt the coating of the web or can be recorded and used for the design of subsequent slitting operations on the web.

### ERRATUM

For Class 290—1 see:  
Patent No. 3,754,151

3,754,147

### METHOD AND SYSTEM FOR CONVERSION OF WATER AND DEVELOPMENT OF POWER

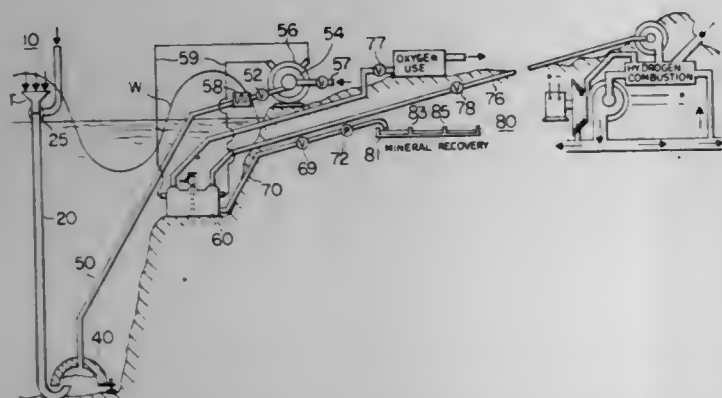
Bruce Jay Hancock, Mesa, Ariz.; Don E. Johnson, Irvine, Calif., and Zane W. Merkley, Mesa, Ariz., assignors to Aqualectra of Arizona, Mesa, Ariz.

Continuation of Ser. No. 803,384, Feb. 28, 1969, abandoned.  
This application Oct. 18, 1971, Ser. No. 190,195

Int. Cl. F03b 13/10

U.S. Cl. 290—53

10 Claims



Using the power from ocean waves, air is entrained by the Bernoulli principle and placed under compression. This compressed air is used to drive prime movers and to generate electricity. The generated electricity can be employed to desalt and separate sea water electrolytically into oxygen and hydrogen and the gases used to produce power and other useful products. The hydrogen which is highly fluid and of low weight can be transported inexpensively to a distance from the sea and then reconverted to water, combining it with atmospheric oxygen, producing substantial energy as well as water.

3,754,148

### SECURITY SYSTEM FOR PREVENTING UNAUTHORIZED USE OF ELECTRIC CIRCUITS

Glenn R. Nye, Denver, Colo., assignor to Space Electronics, Inc., Englewood, Colo.

Filed July 24, 1972, Ser. No. 274,227

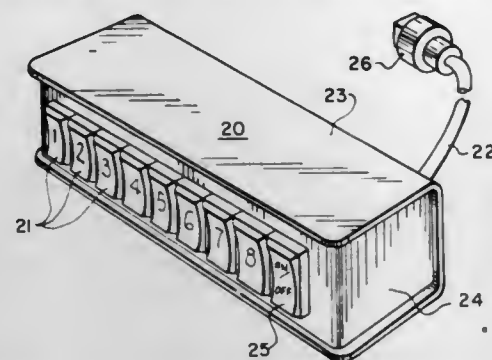
Int. Cl. H02g 3/00

U.S. Cl. 307—10 AT

12 Claims

A coded security system for an electric circuit includes a bank of touch type switches and requires selection of a plurality of the switches in predetermined order to render the circuit effective together with an arrangement for bypassing the

security system during servicing or adjustment or other authorized use of the circuits. The bypassing arrangement is coded to require the simultaneous operation of a plurality of the touch switches after the first coded switches have been ac-



tuated to render the circuit effective. The circuitry for the system is enclosed in an armored and locked box to prevent tampering or unauthorized alteration of the codes. The system is described as applied to an automobile ignition circuit to prevent unauthorized use of the automobile.

3,754,149

### OPTICAL DETECTOR FOR DETECTING RECTIFIER TUBE FAILURES AND RF ELECTRICAL DISCHARGES

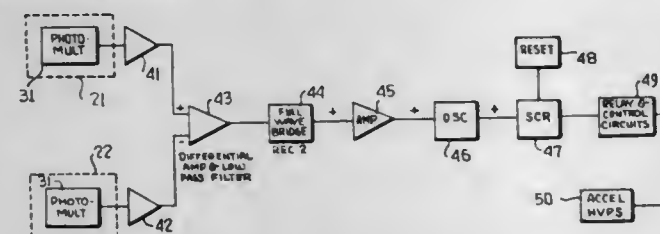
Chester C. Thompson, Jr., Roslyn Heights, N.Y., assignor to Radiation Dynamics, Inc., Westbury, L.I., N.Y.

Filed June 19, 1972, Ser. No. 263,773

Int. Cl. H01h 35/00

U.S. Cl. 307—117

14 Claims



An optical detector in a high voltage system senses the blue glow discharge characteristic of insipient failure in rectifier tubes and removes system power. In a preferred embodiment the rectifier tubes are part of a voltage multiplier in a charged particle accelerator and an RF transformer is part of the high voltage supply. Another optical detector is employed to remove power from the accelerator upon sensing blue light in an arc discharge at the RF transformer coil.

3,754,150

### REGENERATIVE SUSTAINER VOLTAGE GENERATOR

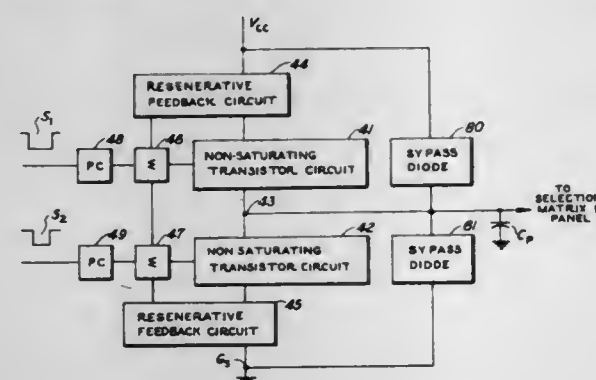
Donald D. Leuck, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 23, 1971, Ser. No. 211,250

Int. Cl. G06k 15/18

U.S. Cl. 307—149

6 Claims



There is disclosed an improved sustaining voltage supply system for driving a gas discharge display panel having row-

column conductor arrays, the matrix cross points of which are non-conductively coupled to a gaseous discharge medium in the panel. A pair of non-saturating transistor amplifier circuits are series connected and have the intermediate point thereof connected to supply the sustainer voltage to the panel. Each non-saturating amplifier circuit is provided with a regenerative feedback circuit. The feedback voltage is proportional to the load current during the "on" portion of its cycle. When the "off" portion of its cycle is reached, the feedback circuit is disabled.

3,754,151

### THERMAL MOTOR AND GENERATOR

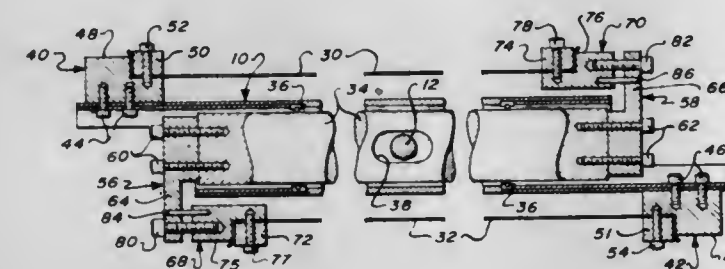
Robert O. Clark, 11916 El Solindo N.E., Albuquerque, N. Mex.

Filed Sept. 20, 1972, Ser. No. 290,722

Int. Cl. H02p 9/04

U.S. Cl. 290—1

13 Claims



A thermal motor with an elongated housing, rotatably mounted on a transverse axis, defining a channel for reciprocating longitudinal motion within the housing of a coaxially supported bar and having a pair of parallel linearly heat-expandable bands stretched under continual tension along two opposite sides. One end of each band is fixed to the housing at each of its opposite ends and the other ends of the bands are linked respectively to the extremities of the bar, thereby interconnecting the two bands through the bar. Radiant heat is directed along the plane of rotation of the housing so that while one band is exposed to the heat the other is shielded. As the exposed band heats and expands linearly, its tension tends to decrease, while the tension in the shielded band, which is simultaneously cooling and contracting, tends to increase. The bar will shift within the housing to equalize the tension, in the two bands, and the resultant unbalance in weight with respect to the transverse axis will cause the housing to rotate. The bar reverses direction every half-cycle so that the housing rotates continuously.

3,754,152

### INCREMENTALLY ADJUSTABLE CAPACITOR UNIT FOR TUNING A CRYSTAL-CONTROLLED OSCILLATOR

Dale R. Koehler, Westwood, and William W. Mutter, Paramus, both of N.J., assignors to Bulova Watch Company, Inc., New York, N.Y.

Filed Nov. 3, 1971, Ser. No. 195,348

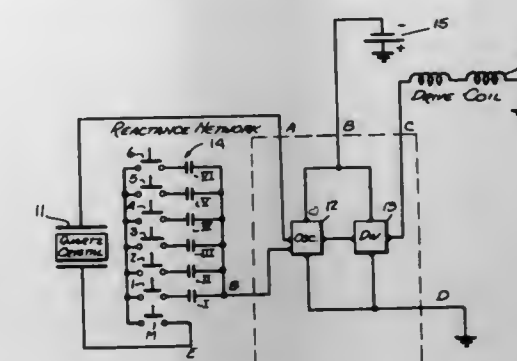
Int. Cl. H01v 7/00

U.S. Cl. 310—8.1

6 Claims

A capacitor unit adapted to adjust the frequency of a crystal-controlled oscillator in incremental steps, the oscillator serving as a frequency standard for an electronic timepiece. The unit is constituted by a bank of capacitors whose respective values fall into a binary series, each capacitor being associated with a switch arranged to connect the capacitor in parallel relation to the other capacitors in the bank, whereby the reactance presented by the unit may be varied incrementally by selective operation of the switches to create a reactance range whose lowest value is determined by

the smallest capacitor alone, whose highest value is determined by the sum of all the capacitors in the bank, and whose



intermediate values are determined by the capacitors singly or in shunt combinations thereof.

3,754,153

### CRYSTAL MOUNTING ASSEMBLY

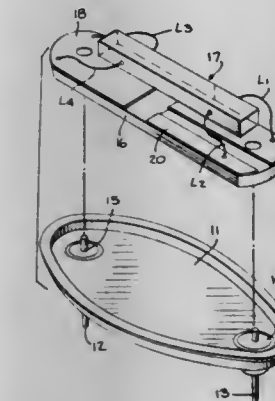
John J. Carpenter, Lynbrook, and Charles C. Spreckels, Huntington, both of N.Y., assignors to Bulova Watch Company, Inc., New York, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,177

Int. Cl. H01v 7/00

U.S. Cl. 310—9.1

6 Claims



A crystal mounting assembly provided with a hermetically sealed and evacuated envelope in which a crystal unit is supported on a rigid ceramic substrate by means of strain-free leads connecting the crystal electrodes to contacts plated on the substrate. The substrate contacts are connected to terminal pins projecting from the envelope, whereby the lead-supported crystal is mechanically isolated from and unaffected by stresses imposed on the pins.

3,754,154

### SEALED PUMP AND DRIVE THEREFOR

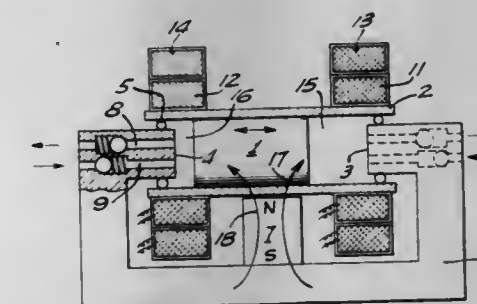
Phillip E. Massie, 4220 Irving Pl., Culver City, Calif.

Filed Feb. 8, 1971, Ser. No. 113,321

Int. Cl. H02k 333/00

U.S. Cl. 310—30

5 Claims



A completely sealed magnetically driven pump having a piston-armature driven by electrical windings. Unique electri-



cal driving circuits are provided for the pump embodying feed-back windings magnetically coupled with the driving windings of the pump for controlling the reciprocation. Mechanical variations are provided for variable displacement, high pressure and valve shearing action characteristics. The device is also reversible in that the piston-armature can be reciprocated mechanically whereby to generate pulsating electromotive force in the electrical windings.

3,754,155

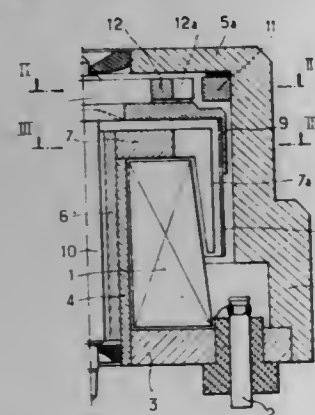
**MOTOR DEVICE WHOSE CIRCUIT, COMPRISES A THIN LAYER OF HARD MAGNETIC MATERIAL**  
Claude Michel Oudet, Besancon, France, assignor to Societe Civile de Recherches en Matiere de micro-moteurs electriques S.O.C.R.E.M., Paris, France

Filed May 10, 1972, Ser. No. 252,116

Int. Cl. H02k 21/12

U.S. Cl. 310-156

4 Claims



Micro-motor with a homopolar structure, comprising a coil on the base on which a tubular core is fitted, a second tube fitted on a pole piece carrying a pinion, these two tubes being fitted one in the other, and a rotor comprising a bell with a thin cylindrical wall made of hard magnetic material.

3,754,156

**SEALING DEVICE FOR ELECTRIFIED PARTICLE ACCELERATOR**

Paul Dedieu, Bourg-la-Reine, France, assignor to Compagnie Industrielle Des Telecommunications Cit-Alcatel, Paris, France

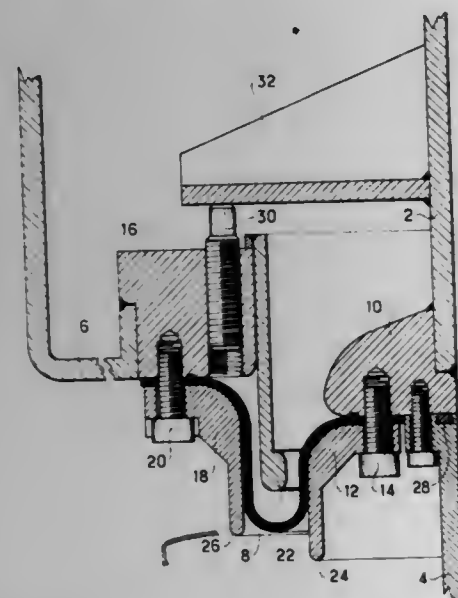
Filed Mar. 12, 1971, Ser. No. 123,521

Claims priority, application France, Mar. 13, 1970, 7009179

Int. Cl. H05b

U.S. Cl. 313-63

5 Claims



A sealing device for an electrified particle accelerator consisting of a flexible ring-shaped membrane surrounding the

output of the tube and joining this output to the wall of the pressurized chamber in which the tube is arranged vertically. The membrane having a U-shaped meridian cross section with vertical branches. One figure.

3,754,157

**STEPPED BIMETALLIC SHADOW MASK MOUNTING ELEMENT**

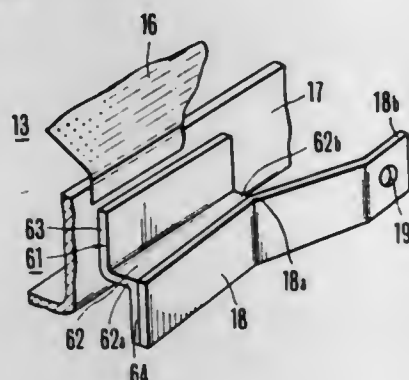
Eliechi Yamazaki, Ichihara-shi Chiba-Ken, and Takao Kawamura, Mobara-shi, Chiba-ken, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 30, 1971, Ser. No. 185,278

Int. Cl. H01J 29/02, 29/06

U.S. Cl. 313-85 S

6 Claims



In a shadow mask assembly for use in a color picture tube of the type including a frame, a shadow mask supported by the frame, a bimetal element secured to the frame and a leaf spring secured to the bimetal element, the bimetal element comprises an upper side portion secured to the frame, a lower side portion secured to the leaf spring and a flat step intermediate the upper and lower sides, the width of the intermediate flat step gradually varying from one end to the other end of the step.

3,754,158

**CHARACTER GENERATING DEVICE**

Yoshitaka Kaji, Takatsuki; Hiroshi Suzuki; Yoshio Nakagawa, and Osamu Konosu, all of Kyoto, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

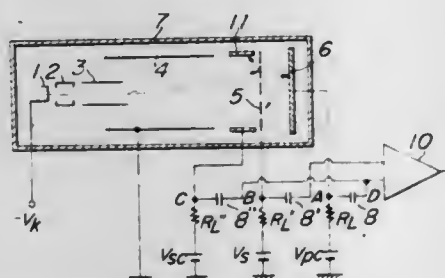
Filed Dec. 28, 1971, Ser. No. 213,126

Claims priority, application Japan, Dec. 29, 1970, 45/124856

Int. Cl. H01J 31/48

U.S. Cl. 315-11

4 Claims



In a character generating device in which character signals are generated by scanning a character plate having character slits therein, with an electron beam, a signal developed across a load connected with an electrode provided in front of the character plate with respect to the travel of the beam by collecting with said electrode the secondary electrons emitted from a portion of the surface of said character plate other than said character slits when said beam hits against that portion and a signal developed across a load connected with a collector electrode provided in rear of the character plate with respect to the travel of the electron beam by collecting with the character plate the secondary electrons emitted from the

collector electrode when the beam passes through the character slits of the character plate and impinges on the collector electrode, have the same polarity and both the signals are added through respective coupling capacitors to produce a composite signal. The composite signal is opposite in polarity to the signal developed across the load connected with the character plate. Accordingly, if the composite signal and the signal across the load connected with the character plate are differentially combined and thereafter applied to an external circuit, then an output representing any character signal can be increased in magnitude. Consequently, since a high level output signal is obtained without increasing the electron beam current according to the proposed device, the resolution or character generating capacity is improved. If the resolution need not be so high, the accelerating voltage can be accordingly reduced.

3,754,159

**AUTOMATIC FOCUS CONTROL CIRCUIT FOR A CATHODE RAY OSCILLOSCOPE**

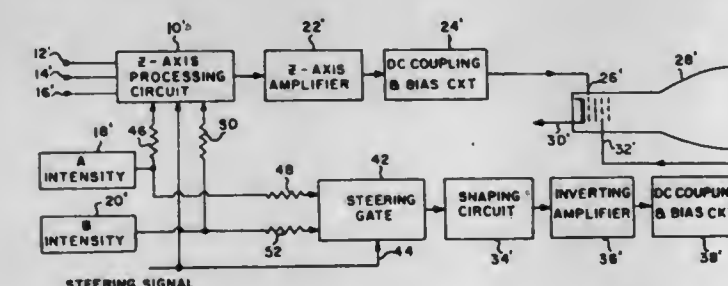
R. Eugene Andrews, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 10, 1971, Ser. No. 206,617

Int. Cl. H01J 29/56

U.S. Cl. 315-31 R

9 Claims



An improved automatic focus control circuit for a multi-trace cathode ray oscilloscope whose intensity levels can be controlled independently is disclosed. The automatic focus control circuit adjusts the voltage to be applied to the focus electrode of the cathode ray tube to the optimum level for a selected trace according to the intensity control setting thereof immediately after the previous sweep waveform reaches the retrace level.

3,754,160

**FOUR-LAMP DRIVER CIRCUIT FOR FLUORESCENT LAMPS**

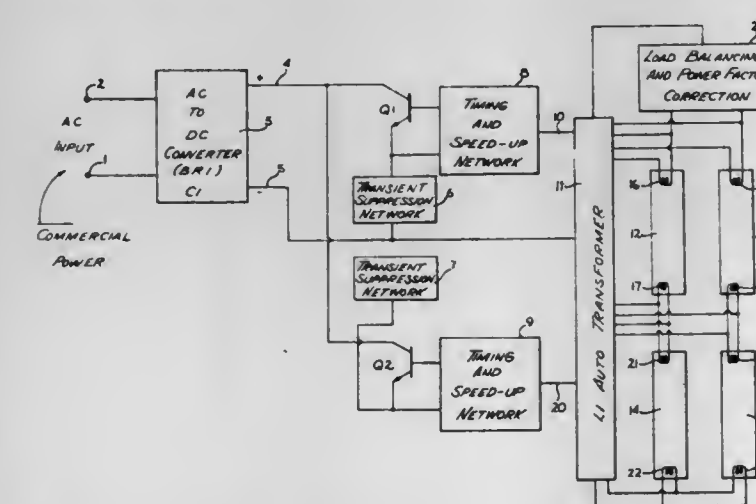
Stephen A. Jensen, North Hollywood, Calif., assignor to Radiant Industries, Inc., North Hollywood, Calif.

Filed Oct. 28, 1971, Ser. No. 193,449

Int. Cl. H03k 3/30; H05b 41/29

U.S. Cl. 315-97

6 Claims



A two-transistor, high-frequency, non-saturating inverter for operating four fluorescent lamps connected in a series-

parallel arrangement. The inverter is supplied either directly from a DC source, or from an AC source via a full-wave bridge rectifier. Transient suppression, power-factor correction, and load-balancing networks are provided. Failure or removal of any one lamp will leave two lamps operating in a fail-safe mode.

3,754,161

**INTEGRATED CIRCUIT SYSTEM**

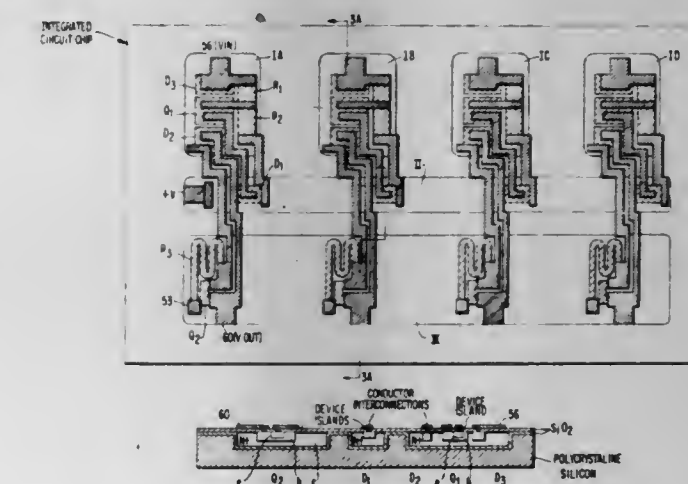
William E. Johnson, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 821,306, May 2, 1969, Pat. No. 3,614,739. This application July 14, 1971, Ser. No. 162,642

Int. Cl. H05b 37/00; H02b 1/04

U.S. Cl. 315-169 TV

3 Claims



Solid state low level to high level interfacing circuits for multiple discharge gas discharge devices capable of feeding through a high level periodic sustaining voltage to the discharge device with minimum degradation. The output is the algebraic sum of the periodic sustaining voltage and a level converted logic signal. NPN circuits are used to drive one set of conductors in an array and PNP circuits are used for driving transversely related conductor arrays in the gas discharge device. Dielectric isolation in the fabrication of the integrated circuits is utilized and the circuits are such as to not require any inductance or capacitance elements, thus reducing cost and size of the circuits. The circuit appears as a low impedance to the load. There is no mixing of active elements (NPN vs PNP) in a circuit wafer or chip. Consult the specification for features and details.

3,754,162

**PHOTOFLASH NETWORK**

Masayoshi Katayama, Fuchu-shi, Tokyo, Japan, assignor to Kabushiki Kaisha Sunpack, Tokyo-to, Japan

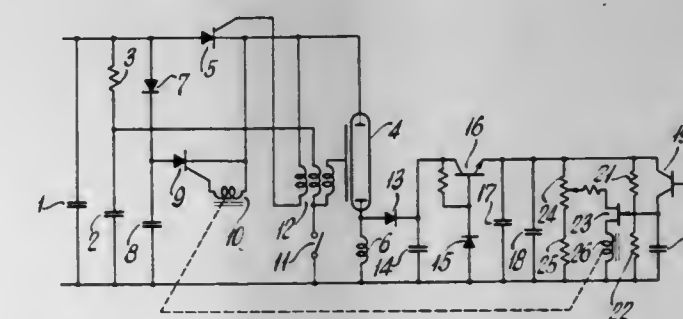
Filed Mar. 3, 1971, Ser. No. 120,539

Claims priority, application Japan, Sept. 30, 1970, 45/96315

Int. Cl. H01J 39/12; H05b 41/36

U.S. Cl. 315-241 P

10 Claims



A variable duration photoflash network includes a gas discharge flash tube connected through an SCR to a charge



capacitor and a transformer simultaneously applies a triggering signal to the SCR gate and the flash tube trigger electrode. A timing network includes an RC circuit whose resistor is a photoconductor and is initiated and energized with the ignition of the flash tube by the voltage developed across an inductor in series with the flashtube, which voltage charges a capacitor through a rectifier. The RC timing capacitor after the timed interval effects the triggering of an SCR which connects a voltage source across the first SCR in series opposition with the charge capacitor to open the first SCR and extinguish the flash tube.

3,754,163

## PROTECTION OF TRANSFORMERS

James Albert Sykes, 419 Skipton St., Ballarat, Australia  
Filed Sept. 21, 1972, Ser. No. 290,887

Claims priority, application Australia, Sept. 24, 1971, PA6404/71

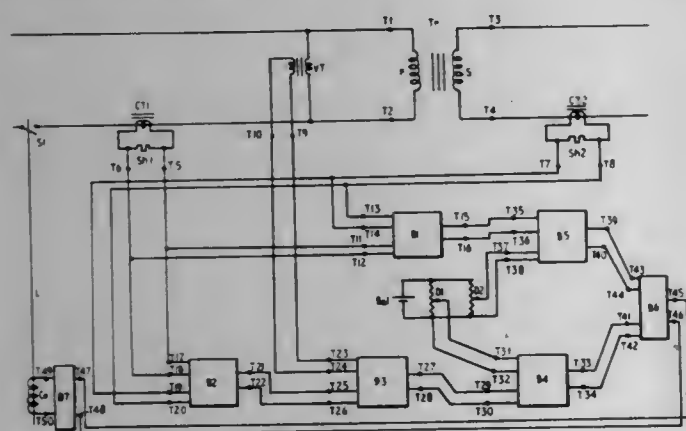
Int. Cl. H02h 7/04, 3/26

U.S. Cl. 317-14 D

4 Claims

U.S. Cl. 317-141 S

1 Claim



A system for the protection of electrical power transformers in the event of a fault occurring in which measurements of both the differential current and the voltage at the terminals of one of the windings of the transformer are utilized to provide a tripping signal to disconnect the transformer in the event of a fault occurring. The system distinguishes between a fault and a magnetising inrush situation by detecting saturation of the transformer core and operates faster than protective devices utilising a measurement of differential current only.

3,754,164

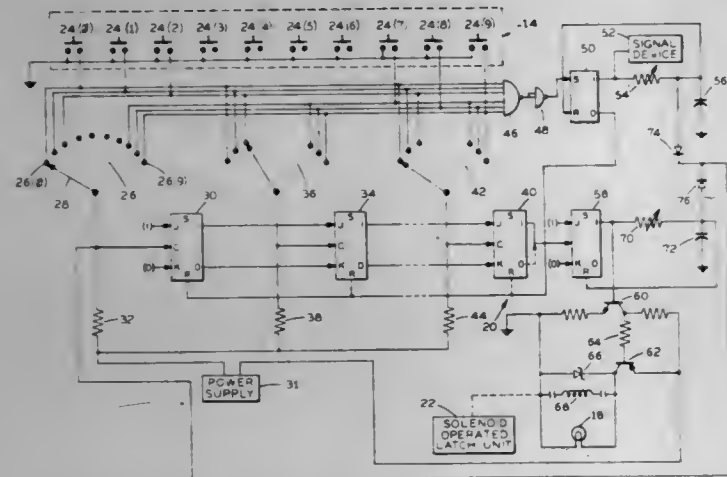
## ELECTRONIC COMBINATION LOCK

Plato Zorzy, 189 W. Shore Dr., Marblehead, Mass.  
Filed Apr. 1, 1971, Ser. No. 130,201

Int. Cl. E05b 49/00

U.S. Cl. 317-134

9 Claims



An electrically operated combination lock mechanism. A person desiring to operate the lock, actuates switches at an entrance encoder in sequence. If he enters the correct code

within a predetermined time, each switch sets a bistable stage in a control unit. When all stages are set, other circuits in the control unit open a latch unit and unlock the door. If an incorrect code is entered or a code is not entered within a predetermined time, the control unit resets all the control unit stages and inhibits operation of the latch unit.

Time penalty means reduces the time remaining to enter the correct code, when an initial incorrect switch is entered.

3,754,165

## ELECTROMAGNETICALLY ACTUATED SWITCHING DEVICE HAVING DELAYED DROPOUT

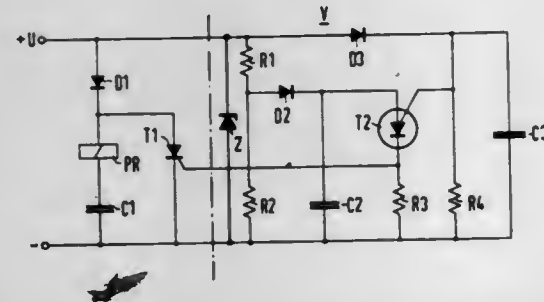
Dieter Flachsbart, Ruckersdorf, and Hermann Schwarz, Hensfeld, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany  
Filed Aug. 13, 1971, Ser. No. 171,614

Claims priority, application Germany, Aug. 29, 1970, P 20 43 010.8

Int. Cl. H01h 47/18

U.S. Cl. 317-141 S

1 Claim



A series circuit arrangement of a polarized bistable relay and a capacitor is coupled to a voltage source via a diode. A switch is connected in parallel with the series circuit arrangement. A delay circuit connected to the voltage source and to the switch controls the switch and is energized upon failure of the voltage of the voltage source.

3,754,166

## DRIVER CIRCUIT FOR ACTUATING PRINT WIRE SOLENOIDS

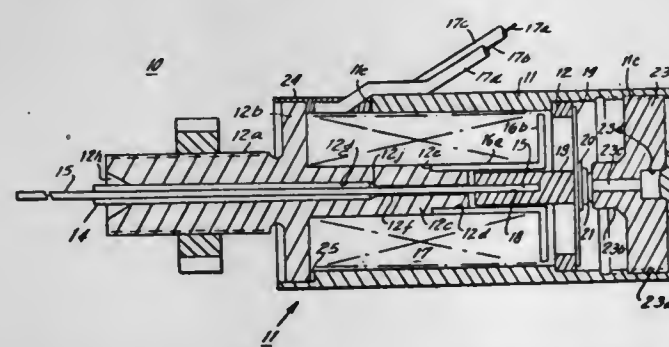
Robert Howard, Roslyn, N.Y., assignor to Centronics Data Computer Corporation, Hudson, N.H.

Division of Ser. No. 152,598, June 16, 1971, Pat. No. 3,670,431, which is a continuation-in-part of Ser. No. 37,815, May 15, 1970. This application May 12, 1972, Ser. No. 252,616

Int. Cl. H01h 47/32

U.S. Cl. 317-148.5 B

3 Claims



A driver circuit for energizing solenoids to actuate print wires wherein the solenoid operation is such as to rapidly move the print wire into impact direction and permit rapid return thereof. The drive circuit provides for an external determination of the solenoid drive time. A transistor having a current limiting resistor coupled thereto drives the solenoid. Current amplification means is coupled to the input of the transistor and its input, in turn is controlled by a voltage regulating semiconductor device for maintaining constant current

through the solenoid. Capacitance means coupled to the inductor through diode means provides a discharge circuit for the solenoid. A capacitor cooperates with the solenoid inductance to form a resonant circuit enabling the current through the solenoid to decrease in a short time period and prevent generation of high voltages during reverse conduction of the inductance. Control circuit means preventing energization of the solenoids during cutoff of the solenoid power source.

3,754,167  
SOLENOID

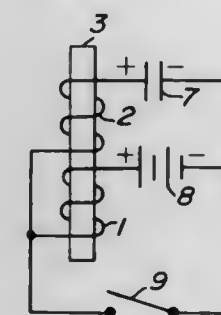
Masaru Noguchi, Tokyo, Japan, assignor to Alps Motorola, Inc., Tokyo, Japan

Filed Nov. 26, 1971, Ser. No. 202,319

Int. Cl. H01h 47/00

U.S. Cl. 317-151

2 Claims



An energizing circuit for a solenoid includes a source of DC power connected normally to a capacitor for charging the latter. Upon closing a normally open switch coupled electrically to the coil of the solenoid, both the DC power supply and charged capacitor are connected electrically to the solenoid coil to provide initially a relatively large magnetic field for operating the solenoid.

3,754,168

## METAL CONTACT AND INTERCONNECTION SYSTEM FOR NONHERMETIC ENCLOSED SEMICONDUCTOR DEVICES

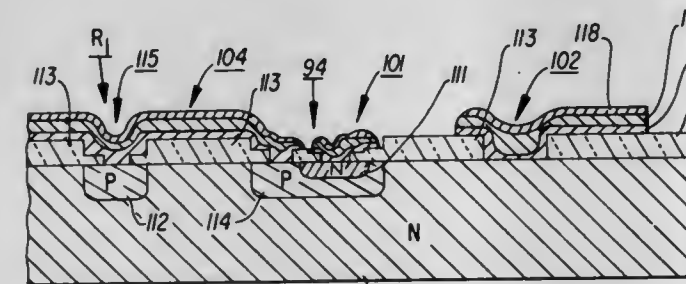
James A. Cunningham, Dallas, and Clyde R. Fuller, Plano, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 729,985, May 17, 1968, abandoned. This application Mar. 9, 1970, Ser. No. 17,039

Int. Cl. H01l 3/00, 5/00

U.S. Cl. 317-234 R

14 Claims



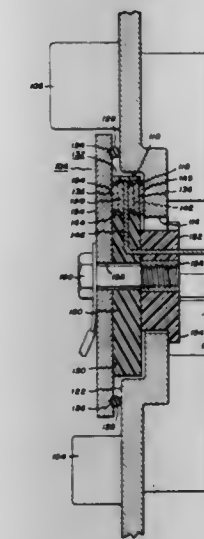
Disclosed is a molybdenum-modifying metal ohmic contact and electrical interconnection system for semiconductor devices that are subjected to corrosive environments. A contact and interconnection system is formed using a layer composed of a mixture of molybdenum and a modifier metal, such as titanium, the system having the desired characteristics of the molybdenum system but with greatly increased corrosion resistance which allows devices using such a system to be mounted in nonhermetic packages.

3,754,169  
RECTIFIER BRIDGE

Russell P. Lyon, Auburn, and Paul W. Koenig, Clyde, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.  
Division of Ser. No. 818,681, April 28, 1969, Pat. No. 3,573,516. This application Feb. 2, 1970, Ser. No. 7,454  
Int. Cl. H01l 17/00

U.S. Cl. 317-234 R

4 Claims



A rectifier bridge assembly is mounted against a heat receiving surface which may be a housing of an alternator. The bridge assembly includes a plurality of stacks each including an input lead located between junction containing semiconductor elements. A plate overlies the stacks in electrically conductive relation thereto to form a conduction path for rectified current. A dielectric surrounds the semiconductor elements to protect them against contamination.

3,754,170

## INTEGRATED CIRCUIT DEVICE HAVING MONOLITHIC RF SHIELDS

Yukio Tsuda, Atsugi-shi, Kanagawa-ken; Shigeo Matsumoto, Sagami-hara-shi, Kanagawa-ken, and Tadaharu Tsuyuki, Isehara-shi, Kanagawa-ken, all of Japan, assignors to Sony Corporation, Tokyo, Japan

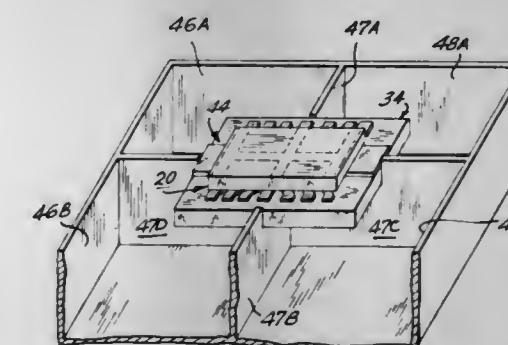
Filed Aug. 22, 1972, Ser. No. 282,859

Claims priority, application Japan, Aug. 26, 1971, 46/65272

Int. Cl. H01l 11/00, 15/00

U.S. Cl. 317-235 R

9 Claims



A monolithic, multiple integrated circuit device for use in the radio frequency (RF) stages in a television receiver in which monolithic RF shields are provided to isolate the multiple circuits on the same integrated circuit chip.



3,754,171

# INSULATED GATE TYPE FIELD EFFECT SEMICONDUCTOR DEVICE HAVING A BREAKDOWN PREVENTING ELEMENT

Norio Anzai, Kodaira-shi; Takeshi Takagi, Musashino-shi; Yasunobu Kosa, Kodaira-shi; Masaharu Kubo, Kokubunji-shi, and Hiroto Kawagoe, Kodaira-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

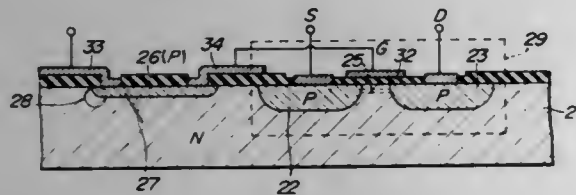
Filed Feb. 23, 1968, Ser. No. 707,857

Claims priority, application Japan, Feb. 27, 1967, 42/12086

Int. Cl. H011 19/00

U.S. Cl. 317-235 R

7 Claims



An MOS field effect transistor comprising an N-type semiconductor substrate having a P type diffused region formed therein which is more shallow than a P type source and a P type drain diffused regions, the shallow diffused region being connected to a gate electrode by a conductive means, and utilizing the breakdown phenomenon of a PN junction formed between the shallow diffused region and the substrate thereby to prevent the breakdown of an insulating layer under the gate electrode.

3,754,172

# MEASURING CAPACITOR

Dieter Hoffmann, Uster, Switzerland, assignor to Zellweger Ltd., Uster, Switzerland

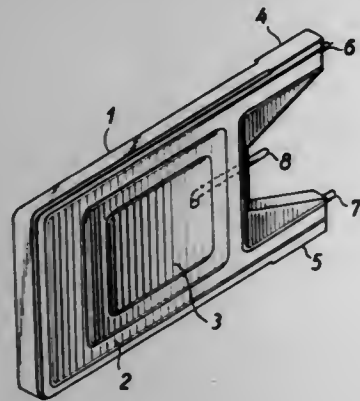
Filed Aug. 2, 1971, Ser. No. 168,150

Claims priority, application Switzerland, Aug. 4, 1970, 11710

Int. Cl. H01g 1/06

U.S. Cl. 317-246

6 Claims



A device for measuring the physical characteristics of textile materials, such as slivers, rovings and yarns, is provided in the form of a capacitor having electrodes comprising a pair of substantially parallel bodies of high frequency ceramic material having plane parallel surfaces and being separated by an air space to permit passage of the textile material therethrough. Each ceramic body is provided with one conductive coating forming the capacitor electrode and a surrounding coating serving as a shield. A terminal extends through said ceramic body from one end thereof into contact with the capacitor electrode.

3,754,173

# STABILIZED ESTER IMPREGNATED CAPACITOR

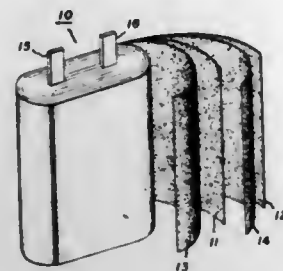
John W. Eustance, 7838 Merritt Rd., South Glens Falls, N.Y.

Filed Aug. 16, 1972, Ser. No. 281,204

Int. Cl. H01g 3/195

U.S. Cl. 317-259

17 Claims



A capacitor impregnant comprises an aromatic ester such as dioctyl phthalate which has been stabilized with between about 0.1 and 10 percent by weight of an epoxide such as diglycidyl ether of bisphenol A dissolved therein.

3,754,174

# EXCITING METHOD OF ELECTRIC MACHINE COMBINING ELECTROMAGNETIC COUPLING WITH ELECTRIC ROTATING MACHINE

Fukuo Shibata, Nishinomiyashi, Hyogo, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

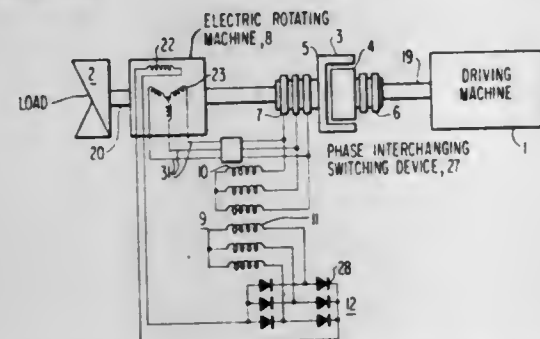
Filed Aug. 4, 1972, Ser. No. 278,150

Claims priority, application Japan, Aug. 6, 1971, 46/59779; Nov. 15, 1971, 46/91394

Int. Cl. H02p 7/36

U.S. Cl. 318-9

15 Claims



An electromagnetic coupling is connected mechanically with an electric machine whose armature winding is connected electrically with that of the electromagnetic coupling, and one of the two rotors of the electromagnetic coupling drives a load and the other rotor is driven by a driving machine. There is provided a transformer whose primary winding is supplied with electric power from the armature winding of the electromagnetic coupling and from which an exciting current is supplied to the field winding of the electric machine. By this arrangement, the whole installation will be compact and the stability will be high.

3,754,175

# SPEED CONTROL SYSTEM FOR HALL EFFECT MOTORS

Jean Girault, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 3, 1970, Ser. No. 8,317

Claims priority, application France, Feb. 11, 1969, 6903146

Int. Cl. H02p 5/16

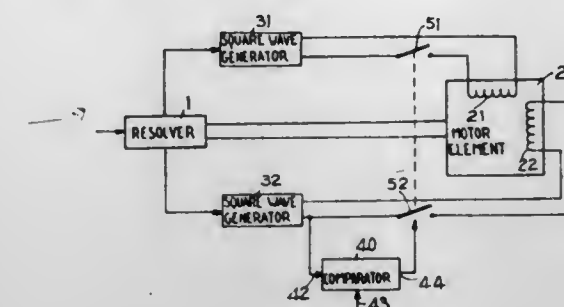
U.S. Cl. 318-138

7 Claims

In a Hall effect motor whose windings are supplied with squarewave signals whose phases are determined by the Hall generators of a resolver element, a comparator circuit receives a first signal in phase with one of those squarewave signals, the frequency of this first signal being representative of the speed of the motor. The power supply circuit supplying

the windings is adjusted to supply the necessary power for the maximum speed which can or may be required from the motor. When the aforesaid frequency exceeds a threshold

source in turn energized by a proportional control circuit having a time delay for build-up and decay of illumination. A two-



frequency, which is a function of a reference signal also supplied to the comparator circuit, the latter causes the temporary interruption of the supply to the windings.

3,754,176

# ELECTRIC CIRCUIT FOR A SAFETY DOOR EDGE

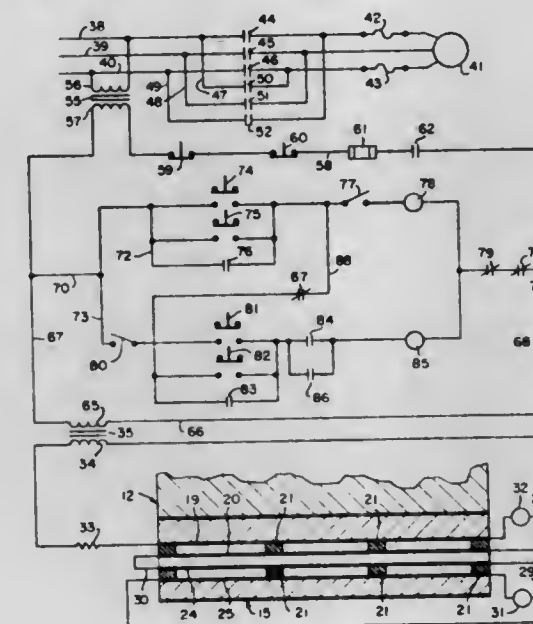
Norman K. Miller, Concordville, Pa., assignor to Miller Brothers, Concordville, Pa.

Continuation-in-part of Ser. No. 166,782, July 28, 1971, abandoned. This application May 26, 1972, Ser. No. 257,311

Int. Cl. H02p 1/22

U.S. Cl. 318-266

7 Claims



For an electrically powered door having a safety edge, an electric circuit including at least a pair of normally spaced conductor strips resiliently deflectable into engagement with each other by an obstruction in the path of door movement, the contact strips being connected in series, and relay means connected in series with the contact strips having normally closed contacts connected in circuit with the door powering means, so that engagement of the strips operates the relay to prevent further powering of the door in its closing direction.

3,754,177

# SOLID STATE CONTROLLER

Royal V. O'Reilly, Long Beach, Calif., assignor to Lectron Corporation, Carson, Calif.

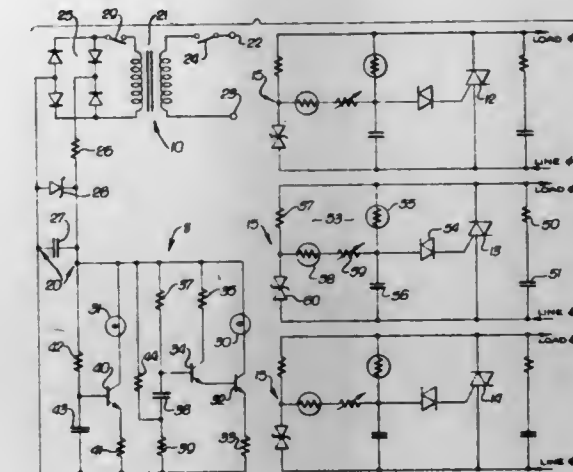
Filed Sept. 5, 1972, Ser. No. 286,412

Int. Cl. H02p 9/00

U.S. Cl. 318-480

12 Claims

A solid state circuit for slow turn on and turn off of power to a load to limit surges and transients normally associated with the switching of large loads. A thyristor and a switching unit for turning the thyristor on and off, with a phase shift network in the switching unit for turn on time control. A radiation sensitive resistor in the phase shift network illuminated by a



step delay circuit, and a circuit suitable for single phase and three phase systems.

3,754,178

# APPARATUS FOR ADJUSTING THE TOOLS OF A MULTI-SPINDLE TOOL MACHINE

Erich Dormehl, and Hans Maas, both of Glessen, Germany, assignors to Heyligenstaedt & Company Werkzeugmaschinenfabrik GmbH, Glessen, Germany

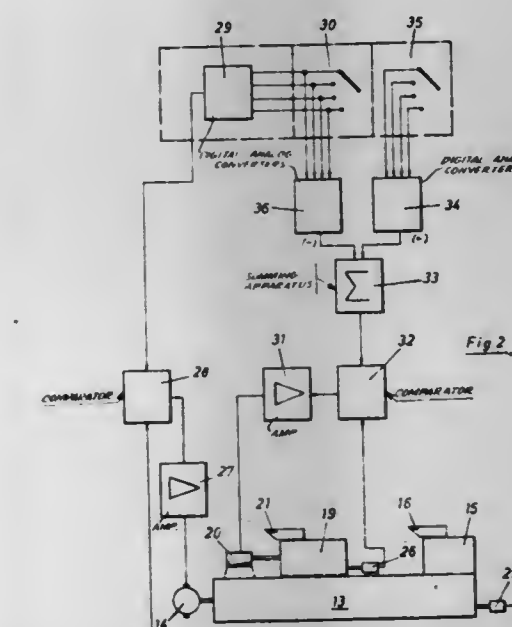
Filed July 2, 1971, Ser. No. 159,118

Claims priority, application Germany, July 4, 1970, P 20 33 250.7

Int. Cl. G05d 23/75

U.S. Cl. 318-572

1 Claim



Means compensating for tool wear in a multi-spindle machine tool. A cross slide, as for a lathe, is provided carrying one tool, such as a single point tool. A carrier is moveably supported on the cross slide for carrying a second tool, such as a single point tool. A first feeler responds to the position of the cross slide and suitable switching and driving means adjust the cross slide to a proper displacement from a given zero position of the numerical control apparatus to compensate as desired in such position for tool wear. A second feeler responds to the location of said carrier on said cross slide and through further switching, summing and comparing apparatus automatically moves said second tool on the cross slide to compensate as required for tool wear and automatically maintains a constant spacing between the working edges of said tools.

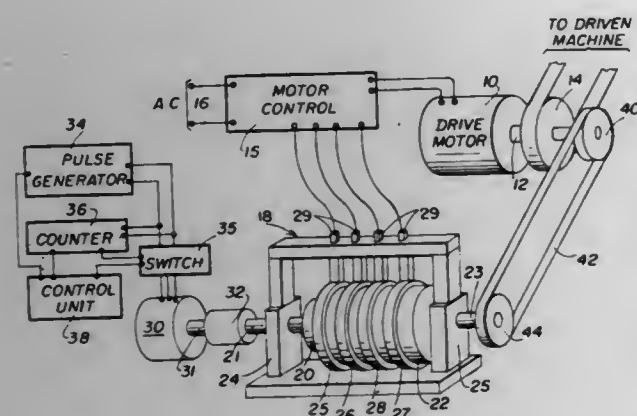


# 3,754,179 REMOTE POSITION CONTROL SYSTEM INCLUDING ELECTRIC MOTOR AND CONTROL CIRCUIT THEREFOR

Alex J. Waitkoss, Oswego, and Robert A. Suding, Aurora, both  
of Ill., assignors to Waitkoss Company, Inc., Aurora, Ill.  
Filed June 5, 1972, Ser. No. 259,904  
Int. Cl. G05b 1/06

U.S. Cl. 318-665

15 Claims



An electric motor is connected to a device to be positioned and is controlled by a control circuit including a potentiometer device which provides a variable resistance in the control circuit. The potentiometer device may include a pair of potentiometers which are simultaneously controlled to control the direction and speed of the motor. The potentiometer device has a rotor and a stator, both of which are mounted for movement, with one part, such as the rotor, positioned by a stepping motor. The stepping motor may be operated by pulses from a pulse generator, and the pulses may also be applied to a counter. When a particular number of pulses are received, the counter can act to terminate the supply of pulses to the stepping motor so that it stops. The shaft of the drive motor is coupled to the other movable part of the potentiometer device, such as the stator, to return the parts to the initial relative position. The control circuit supplies current to the drive motor to energize the same when the parts are displaced from the initial relative position, and supplies no current when the parts are at such initial position to stop the motor.

# 3,754,180 CIRCUIT FOR CONVERTING AN INPUT VOLTAGE OF VARIABLE FREQUENCY INTO AN OUTPUT VOLTAGE OF A PREDETERMINED, LOWER FREQUENCY

Franz Rauschenbach; Wolfgang Timpe, both of Erlangen, and  
Hermann Waldmann, Weiher, all of Germany, assignors to  
Siemens Aktiengesellschaft, Munich, Germany  
Filed June 23, 1972, Ser. No. 265,688

Claims priority, application Germany, June 25, 1971, P 21  
31 757.7

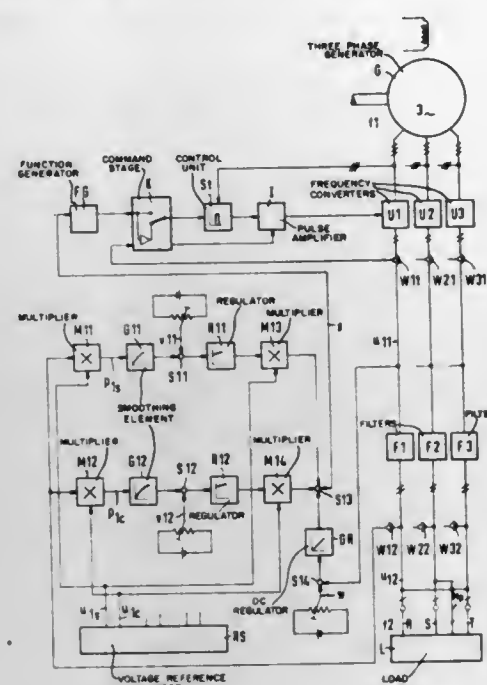
Int. Cl. H02m 5/22

U.S. Cl. 321-61

13 Claims

A circuit for converting an input voltage of variable frequency into an output voltage having a predetermined, lower frequency by means of a controlled static frequency converter which is operated as a direct link inverter. The output voltage of the frequency converter is multiplied in a first multiplier circuit by a sine voltage and in a parallel connected second multiplier circuit by a cosine voltage. The respective a-c components in each parallel circuit are filtered out in succeeding smoothing members. The remaining d-c voltage components are then each added in a summing point to preset reference values. The sum voltages are each fed to a voltage regulator, which is followed by a third and fourth multiplier, respectively. In the third and fourth multiplier the output of

the voltage regulator is multiplied by the identical sine and cosine voltages. The last-mentioned multipliers are then con-



nected to a common summing point which feeds a control voltage to the control unit of the frequency converter.

# 3,754,181 MONOLITHIC INTEGRABLE CONSTANT CURRENT SOURCE FOR TRANSISTORS CONNECTED AS CURRENT STABILIZING ELEMENTS

Walter Kreitz, Mundingen; Lothar Blossfeld, and Otmir Siegfried Dietrich, both of Friburg, all of Germany, assignors to  
ITT Industries, Inc., New York, N.Y.

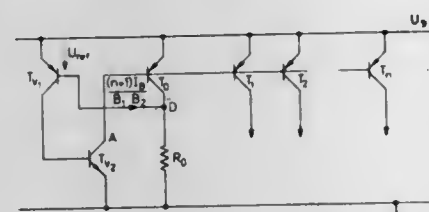
Filed Nov. 26, 1971, Ser. No. 202,426

Claims priority, application Germany, Dec. 9, 1970, P 20  
60 504.3

Int. Cl. G05f 1/56

U.S. Cl. 323-1

1 Claim



To reduce sensitivity to battery voltage variation in a multiple transistor monolithically integrated constant current source, the control transistor is replaced by an amplifier. Only a fraction of the sum of base currents of the source transistors is applied to the input of the amplifier. Also, the number of source transistors is not as limited by current gain factor as it is when a control transistor is used.

# 3,754,182 SWITCHING VOLTAGE REGULATOR WITH INPUT LOW VOLTAGE AND OUTPUT VOLTAGE DETECTORS

David Morris, Brooklyn, N.Y., and Donald Conti, Ridgefield,  
N.J., assignors to Litton Business Systems Inc., Orange, N.J.

Filed Oct. 2, 1972, Ser. No. 294,277

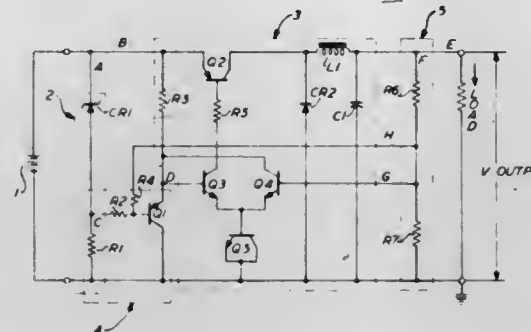
Int. Cl. G05f 1/56, 5/00

U.S. Cl. 323-17

10 Claims

A constant potential power supply having a Schmitt trigger regulator and switching amplifier to maintain the output load voltage within a predetermined range, and an undervoltage protection circuit which disables the regulator when the input potential goes below a predetermined level. An integrating capacitor which is part of the Schmitt trigger regulator, discharges through the load. The Schmitt trigger regulator is actuated when the output potential decreases below a certain

maximum value and is disabled as the output potential goes below a certain minimum value; it is also actuated when the output potential increases to this minimum value and is disabled as the output potential goes below this maximum value. After actuation and until disabled, charging current is applied to the capacitor. The switching amplifier circuitry, which is coupled to the output load and the regulator, enables and disables the line switch of the regulator when the output voltage



increases to this minimum value and when it decreases below this same minimum value. The output triggering section of the regulator disables the line switch when the output voltage increases above this maximum value and when it decreases below this same maximum value. The particular arrangement between the switching amplifier and the regulator provides significant control of the hysteresis as well as decreasing it and improving the overall regulation of the circuit.

# 3,754,183 SYSTEM FOR CONTROLLING AN ELECTRIC OUTPUT WITH REDUCED RECOVERY TIME

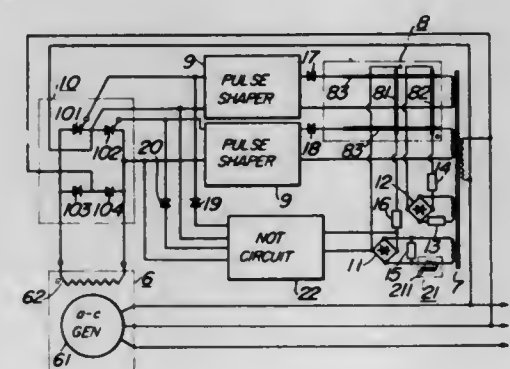
Masahiko Ibamoto, and Hiakatsu Kiwaki, both of Katsuta-shi,  
Japan, assignors to Hitachi Ltd., Tokyo, Japan

Filed Mar. 28, 1972, Ser. No. 238,785

Int. Cl. G05f 1/40

U.S. Cl. 323-22 SC

3 Claims



In the control of an electric output with respect to a reference value, the gain of a control means is controlled or changed to a higher value when the difference between the prevailing value of the electric output and a reference value exceeds a predetermined value.

# 3,754,184 REACTIVE POWER COMPENSATION CONTROL SYSTEM

David W. Stone, Franklin, Wis., assignor to Harnischfeger  
Corporation, W. Milwaukee, Wis.

Filed June 21, 1972, Ser. No. 264,780

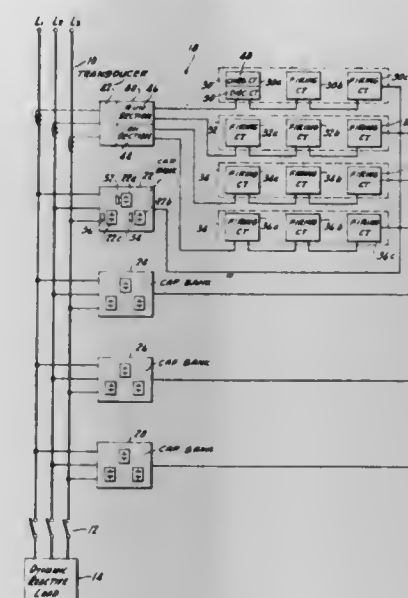
Int. Cl. G05f 1/68

U.S. Cl. 323-102

9 Claims

A reactive power compensation control system is provided for a three phase ac electric power supply system which exhibits power factor changes when subjected to large reactive draws by dynamic reactive loads. The control system comprises four capacitor banks switchable in or out of the power

system by solid state switches. Each capacitor bank comprises three delta connectable capacitors, one capacitor for each pair of phase lines, and each capacitor is switched by one solid state switch. Each solid state switch comprises a pair of inverse parallel connected SCR's. Each solid state switch is controlled by an individual firing circuit which comprises a charg-



ing circuit (for operating the charging SCR) and a discharging circuit (for operating the discharging SCR). All 12 firing circuits are controlled by a control circuit which comprises a KVAR transducer coupled to the power supply system for sensing reactive power conditions therein and ON and RUN circuits which operate the firing circuits.

# 3,754,185 AUDIO FREQUENCY SWEEP GENERATOR

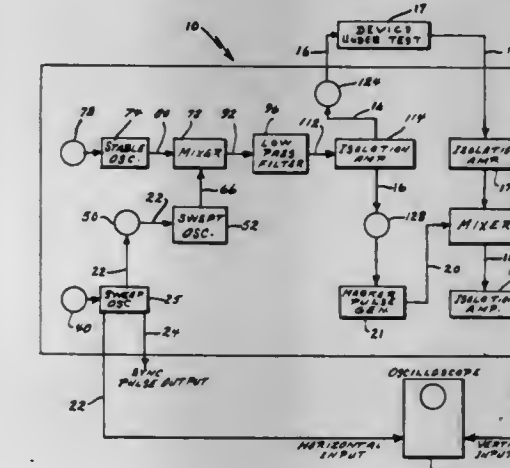
Stephen R. Troy, 104-20 89th Ave., Richmond Hill, N.Y.

Filed May 17, 1972, Ser. No. 254,138

Int. Cl. G01r 27/00

U.S. Cl. 324-57 R

10 Claims



An audio frequency sweep generator which generates a pulse waveform of essentially constant energy per pulse, at a swept pulse repetition rate. Unijunction transistors are utilized in the oscillators which vastly improves these circuits and further simplify the attainment of a linear change of frequency with time in the swept oscillator. Furthermore, by the use of post-marker injection employing stable LC wave traps, marker pulses at various frequencies are provided to permit accurate, dependable calibration of a trace directly on an oscilloscope screen.



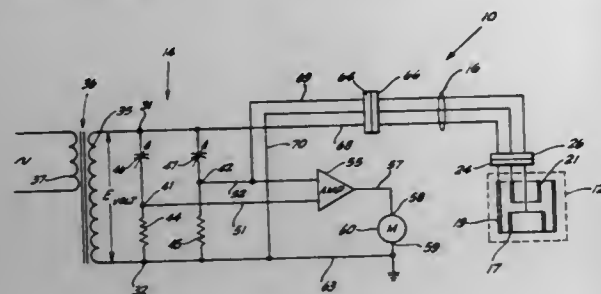
3,754,186

**POWER FACTOR MEASURING CELL ARRANGEMENT**  
 Mahesh K. Sambhu, Wayne, N.J., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed May 8, 1972, Ser. No. 251,429  
 Int. Cl. G01r 27/02

U.S. Cl. 324-65 R

5 Claims



A cell for measuring the power factor of oil including a guard electrode, a center electrode and an outer electrode, all of which are adapted to be immersed in a test sample of the oil. The center electrode and the outer electrode of the cell are adapted to be selectively connected in parallel with a variable impedance arm of a bridge that is energized by a suitable a.c. source. The output of the bridge is taken on two conductors which are connected to the dual inputs of a differential amplifier that is used to drive an output meter. The bridge is initially balanced with the cell disconnected. When the cell and sample are connected to the bridge the meter reading reflects the total current  $I = I_c + I_x$  flowing between the cell electrodes. The bridge is then readjusted so that a null indication is provided at the meter. The ratio of the meter reading with the meter nulled to the reading  $I$  above is proportional to the power factor of the cell oil. In one embodiment the guard electrode of the cell is grounded, and in an alternative embodiment the guard electrode is driven at the same potential as the center electrode by an operational amplifier arranged in a voltage follower configuration. The connections between the cell and the bridge can be made by a triaxial cable so that power factor readings on samples can be made in a remote chamber at other than ambient temperature.

3,754,187

**TRANSMITTER-RECEIVER SYSTEM**

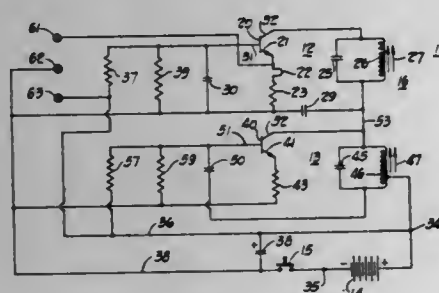
Andrew F. Deming, Alliance, Ohio, assignor to The Alliance Manufacturing Company, Inc., Alliance, Ohio

Filed Dec. 2, 1971, Ser. No. 204,150

Int. Cl. H04b 7/00

U.S. Cl. 325-37

18 Claims



A transmitter-receiver system is disclosed which may be used for remote control purposes. The transmitter has a radiated signal with a first frequency carrier modulated with a second frequency. A subcoder may be selectively plugged into the transmitter and has a third frequency which influences or modulates the radiated signal at a third frequency rate. The receiver of the system has means responsive to the first and second frequencies and also has a decoder selectively plugged into the receiver which has a disabling bias means and a third frequency responsive means. The disabling means normally prevents any signal from reaching the load of the receiver and the third frequency responsive means has an output when the

third frequency is present which terminates the disabling means so that the receiver is enabled and a signal is passed to the receiver load. Without the decoder plugged into the receiver, the receiver is completely operable on the first and second frequencies to supply a signal to the load.

3,754,188

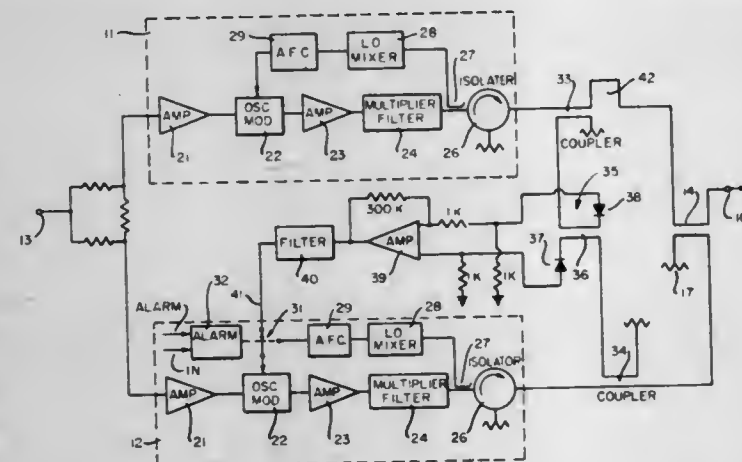
**REDUNDANT FM TRANSMITTING SYSTEM**  
 Mark W. Wilkens, Palo Alto, Calif., assignor to Farinon Electric, San Carlos, Calif.

Filed Apr. 16, 1971, Ser. No. 134,814

Int. Cl. H04b 7/00

U.S. Cl. 325-56

6 Claims



A redundant FM or PM transmitting system in which two transmitters operating at the same carrier frequency are modulated by a common baseband input and the RF outputs are combined and applied to the antenna. A sample of the RF output from each of the transmitters is applied to a phase detector which develops a signal having a component representative of the phase differences in the carrier. The signal is used to phase lock the second transmitter to the first whereby the output of the transmitters can be combined without objectionable intermodulation distortion.

3,754,189

**RECEIVER DECODER**

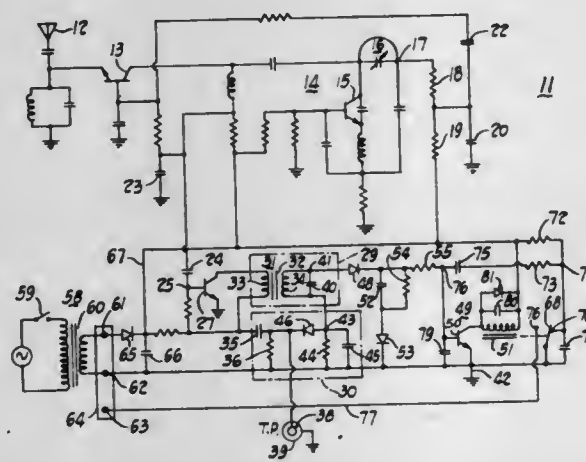
Andrew F. Deming, Alliance, Ohio, assignor to The Alliance Manufacturing Company, Inc., Alliance, Ohio

Filed Dec. 2, 1971, Ser. No. 204,141

Int. Cl. H03d 1/32

U.S. Cl. 325-392

34 Claims



A receiver decoder is disclosed with the receiver having a first carrier frequency modulated by a second frequency and also having present a third frequency lower than the carrier frequency. The receiver is operable as a normal receiver on just the carrier and modulation frequencies, or with the decoder plugged into the receiver the combination also is operable with a third frequency. With the decoder connected

in the receiver, a received signal containing the proper first, second and third frequencies must be received before a signal is provided to the output of the receiver. The decoder supplies a bias disabling the receiver until a signal is received containing the proper first and third frequencies, whereupon the disabling bias is terminated for a time period. If during this time period a signal is received containing the proper first and second frequencies, then an output is provided to the main load.

3,754,190

**SATURABLE FILTER**

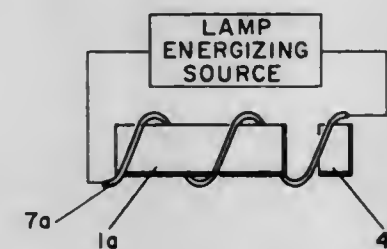
Lloyd G. Cross, Ann Arbor, Mich., assignor to Lear Siegler, Inc., Grand Rapids, Mich.

Filed Mar. 2, 1964, Ser. No. 348,532

Int. Cl. H01s 3/00

U.S. Cl. 330-4.3

4 Claims



A multi stage amplifier achieves interstage isolation by utilizing a saturable filter. The filter provides the isolation through its own inherent structure and does not require any external electrical or mechanical signal.

3,754,191

**SEMICONDUCTOR DEVICE FOR AMPLIFYING MICRO-WAVE**

Gerard Adriaan Acket, and Marinus Teunis Vlaardingerbroek, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

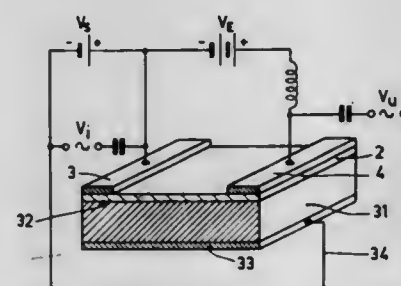
Division of Ser. No. 856,132, Sept. 8, 1969. This application Aug. 21, 1972, Ser. No. 282,165

Claims priority, application Netherlands, Sept. 10, 1968, 6812862

Int. Cl. H03f 3/04

U.S. Cl. 330-5

4 Claims



A semiconductor microwave amplifier is described with a construction to suppress the formation of travelling domains producing unwanted oscillations. In one embodiment, the device construction includes an active epitaxial layer of one conductivity type on a substrate of the opposite conductivity type, resulting in a p-n junction which is reversed biased during use. Contacts are provided on the active layer. Means are also provided to introduce and extract signals from the device.

3,754,192

**ELECTROMECHANICAL FREQUENCY SELECTIVE DEVICES**

John Siegfried Palfreeman, Betchworth, Surrey, England, assignor to U.S. Philips Corporation, New York, N.Y.

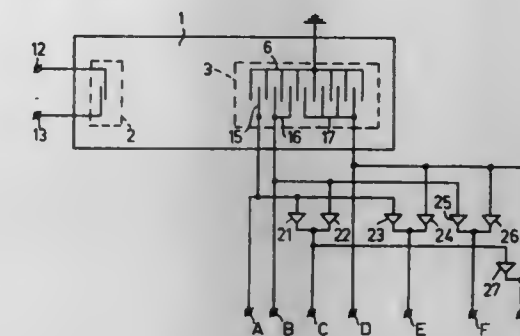
Filed Jan. 5, 1972, Ser. No. 215,499

Claims priority, application Great Britain, Jan. 5, 1971, 439/71

Int. Cl. H03f 3/04

U.S. Cl. 330-5.5

4 Claims



Electromechanical frequency selective filters are disclosed wherein a wafer of piezoelectric material converts an electric input signal into a surface wave by means of an input transducer comprising electrodes of conductive material on the surface of the wafer. The surface wave is converted into an electric output signal by means of an output transducer comprising two comb-shaped interdigital electrodes made of conductive material and arranged on the same surface of the wafer of piezoelectric material. Either or both of the transducers are split into a plurality of sub-electrodes which are electrically insulated from one another. Signals produced at output transducer sub-electrodes are separately applied to associated unidirectional amplifiers whose outputs are combined to obtain a desired overall output signal.

3,754,193

**INPUT BIAS AND SIGNAL CONDITIONING CIRCUIT FOR DIFFERENTIAL AMPLIFIERS**

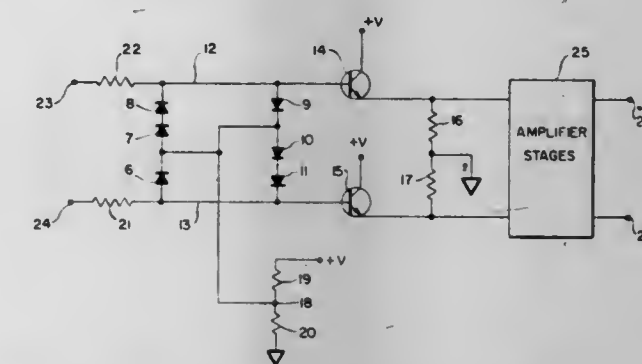
Clyde J. Reinhard, 220 1/2 Reposo, La Habra Heights, Calif.

Filed Apr. 19, 1971, Ser. No. 135,148

Int. Cl. H03f 3/68

U.S. Cl. 330-30 R

10 Claims



The input terminals of the first stage of a multistage amplifier are connected to a network comprising four strings of unidirectional devices. The first and second strings are connected in series and poled in a first direction between the input terminals of the first stage. The second and third strings are connected in series between the input terminals and poled opposite to the first direction. The junctions between the first and second strings and the third and fourth strings are joined and a voltage potential applied thereto. In response to the voltage potential a bias current is conducted to the first stage through the second and fourth strings, the first and third strings being reverse biased. The first and third strings become forward biased to clamp the input terminals to the voltage potential when the magnitude of signal voltage at the input



terminals with respect to circuit ground exceeds the magnitude of the voltage potential. The first stage is coupled to a second stage, circuit ground of the first stage being isolated from circuit ground of the second stage and is coupled to a pair of zener diodes which are in turn connected in series and similarly poled and across which is generated an alternating voltage limited in amplitude by the zener voltage of the diodes. The junction of the diodes is connected to the circuit ground of the first stage. A pair of impedances couple current from the diode pair to the input terminals of the first stage. The alternating current applied to the input terminals produces a voltage proportional to any impedance which may be connected between the input terminals whereby such impedance is measured.

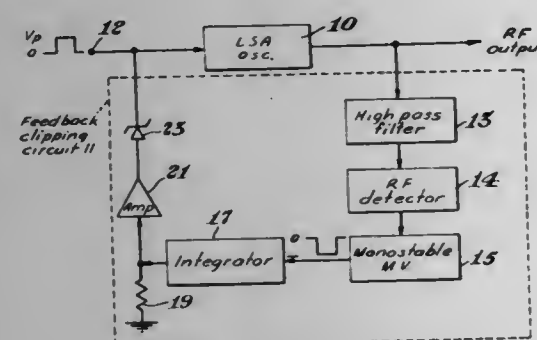
3,754,194

**FREQUENCY STABILIZATION FOR LSA OSCILLATOR**  
William O. Camp, Jr., Dryden, N.Y., assignor to Cayuga Associates, Inc., Ithaca, N.Y.

Filed Apr. 3, 1972, Ser. No. 240,567  
Int. Cl. H03b 3/04

U.S. Cl. 331-1 R

21 Claims



To compensate for changes in the output frequency of an LSA mode oscillator, the bias voltage pulse applied to the oscillator is varied by means of a feedback circuit. The output of a high or low pass filter receiving the oscillator RF output is rectified to trigger a monostable multivibrator. In an advantageous technique, the pulse output of the multivibrator is integrated, amplified and applied to a Zener diode which is connected to the bias voltage input of the oscillator to provide a clipping voltage to the oscillator responsive to changes in the RF output. A constant voltage is applied to the integrator along with the monostable output to prevent low repetition rates of the multivibrator from introducing a significant AC component in the integrator output. Different rates of convergence are provided in the feedback loop by employing a monostable multivibrator whose output pulse width is controlled by an RF discriminator circuit. To determine more precisely the frequency at which the multivibrator is triggered, a differential amplifier system is added to compare the power in the filter output with the power in the unfiltered RF output.

3,754,195

**DOUBLE-FOLDED ASTIGMATICALLY COMPENSATED OPTICAL CAVITIES**

Wilbur Dexter Johnston, Jr., Holmdel, and Peter Klaus Runge, Fair Haven, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

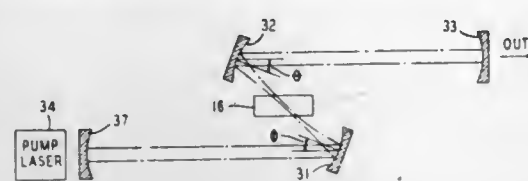
Filed Mar. 16, 1972, Ser. No. 235,198  
Int. Cl. H01s 3/08

U.S. Cl. 331-94.5

5 Claims

There is disclosed an improvement of a folded astigmatically compensated optical resonator of the type heretofore used for dye lasers to provide more efficient operation by providing a beam waist at a unique axial position in the highly focusing section of the resonator. To obtain the unique beam

waist, another section is added to the folded resonator so that the highly focusing section is the middle section. In addition,



resonator loss due to coma can be reduced by orienting the two end sections so that they intersect each other.

3,754,196

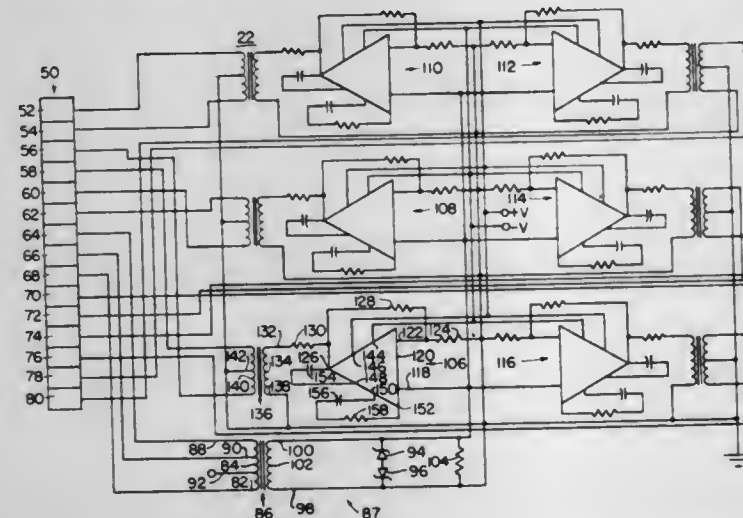
**COMMUNICATIONS BRIDGE FOR IMPEDANCE MATCHING OF A PLURALITY OF LINES**

James T. Collins, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Feb. 17, 1972, Ser. No. 227,141  
Int. Cl. H01p 5/12

U.S. Cl. 333-8

8 Claims



This invention describes a communications coupling circuit for bidirectionally coupling a plurality of remote units through a single four wire transmission line to a central computer in a polling type data communications system. The circuit may be used with transmission lines having either a 600 ohm or a 900 ohm characteristic impedance and includes means for proper transmission line termination through the use of transformers. The circuit also utilizes resistive and inductive coupled integrated circuit operational amplifiers which provide the signal gain, filtering, feedback and impedance isolation to compensate for signal losses.

3,754,197

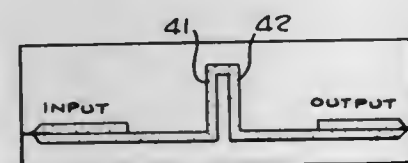
**MEANDER-LINE IMPEDANCE TRANSFORMER**

Edward G. Cristal, Dundas, Ontario, Canada, assignor to Sanford Research Institute, Menlo Park, Calif.

Filed May 18, 1972, Ser. No. 254,390  
Int. Cl. H01p 3/08; H03h 7/38

U.S. Cl. 333-33

6 Claims



A microwave or UHF impedance transformer is provided which is comprised of a meander-line structure, or a hybrid meander-line structure, in which coupling between some con-

jugate (adjacent) turns in the line is negligible, whereas for other conjugate turns it is significant.

3,754,198

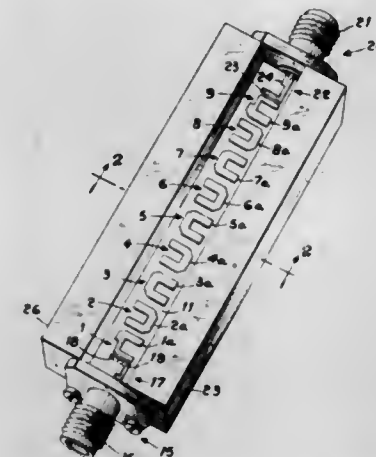
**MICROSTRIP FILTER**

Sever Anghel, Milltown, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Mar. 20, 1972, Ser. No. 236,283  
Int. Cl. H03h 7/10; H01p 3/08

U.S. Cl. 333-73 S

10 Claims



There is disclosed herein a microstrip filter having low loss and high rejection at X-band. The filter includes N microstrip open circuited, half-wavelength hairpin resonators disposed in a series coupled relationship with respect to each other, where N is an integer equal to or greater than one. A metallic housing encloses the hairpin resonators for shielding thereof to increase the unloaded Q of the resonators. An improved signal input and output coupling arrangement is also provided for the filter. The signal coupling arrangements include a microstrip conductor having a first width less than the width of the microstrip conductor forming part of each of the hairpin resonators between the input and output hairpin resonators. In the coupling arrangement, the adjacent limb and a portion of the cross-arm connected to the adjacent limb of the conductor of the input and output hairpin resonators also have said first width and the spacing of the limbs of the conductors of the input and output hairpin resonators are greater than the spacing of the limbs of the conductors of the hairpin resonators between the input and output hairpin resonators.

3,754,199

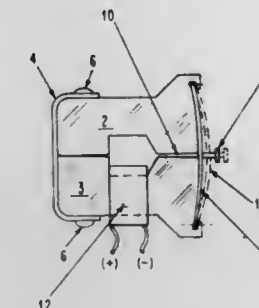
**MAGNETIC MECHANICAL AMPLIFIER**

Joseph Edmund Lisinski, Boca Raton, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,716  
Int. Cl. H01f 7/08

U.S. Cl. 335-275

7 Claims



An apparatus for converting electrical pulses into amplified mechanical motion. Two magnetic core pieces retain a resilient spring so that an air gap exists between the cores. By energizing a magnetic coil on at least one of the core pieces, the core pieces are attracted together thereby forcing the deformable spring to arc outwardly and produce an amplified

linear motion. The actuator is particularly useful for operating print hammers, wires or punches.

3,754,200

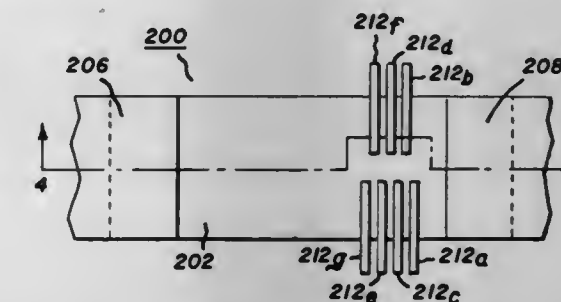
**METAL OXIDE VARISTOR WITH SELECTIVELY POSITIONABLE INTERMEDIATE ELECTRODE**

John D. Harnden, Schenectady, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Oct. 13, 1971, Ser. No. 188,984  
Int. Cl. H01c 7/10

U.S. Cl. 338-20

4 Claims



A metal oxide varistor is disclosed formed of a varistor body having an alpha in excess of 10 in the current density range of from  $10^{-3}$  to  $10^2$  amperes per square centimeter. First and second electrodes are laterally spaced along the varistor body, and a third electrode is located between and spaced from the first and second electrodes. The third electrode may be slidably mounted on the varistor body or may be in the form of discrete, spaced elements fixedly attached to the surface of the varistor body.

3,754,201

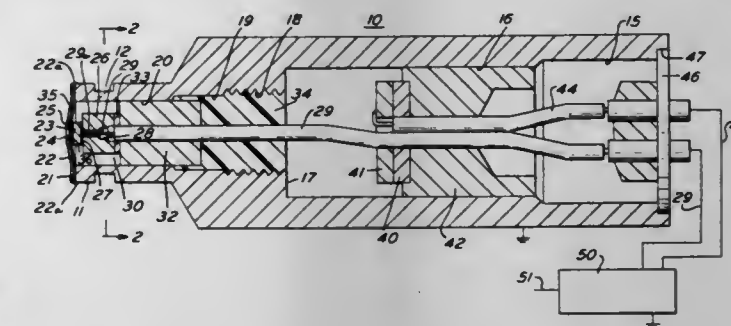
**HEAT SENSITIVE DETECTOR**

Robert B. Adams, Tredyffrin Township, Chester County, Pa., assignor to Moore Products Co., Spring House, Pa.

Continuation-in-part of Ser. No. 618,472, Feb. 24, 1967, abandoned, and a continuation-in-part of Ser. No. 790,408, Jan. 10, 1969, Pat. No. 3,640,133. This application Feb. 3, 1972, Ser. No. 223,601  
Int. Cl. H01c 7/00

U.S. Cl. 338-28

3 Claims



A heat sensitive detector is disclosed which includes an electrically conductive body providing a probe with a thin wall metallic end closure having a thermistor held thereagainst at the center of the closure, the body if desired having a compensating thermistor therein for temperature variation compensation.

3,754,202

**GROUNDING PLUG**

Richard B. Nelson, 3160 Hollycrest Dr., Hollywood, Calif.

Filed Sept. 30, 1971, Ser. No. 185,123  
Int. Cl. H01r 3/06

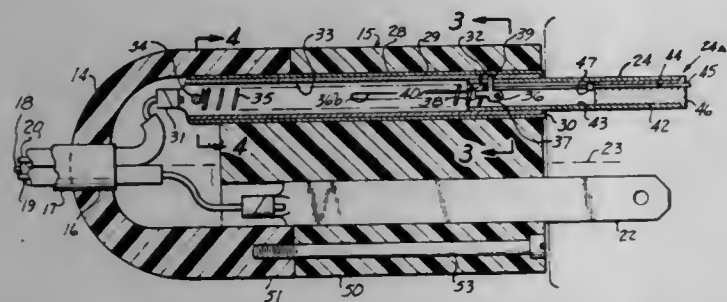
U.S. Cl. 339-14 P

28 Claims

An electrical connector plug for providing connection to two or more sides of a circuit with conventional prong means and having a grounding prong which can be inserted into a



grounding socket in a receptacle. The grounding prong is provided with a protruding sensing finger that is in an inactive position when the receptacle has a grounding socket, but if there is no grounding socket present, then the protruding sensing finger strikes a solid surface of the receptacle and moves backward to trigger a latch means that unlatches the grounding prong and allows it to be pushed back into the body of the plug, allowing the circuit contact prongs to enter the receptacle's live sockets to complete the electrical circuit. In order to prevent accidental triggering of this sensing finger by finger pressure on the end of the sensing finger or by force exerted on the axially-shiftable portion of the grounding prong, which might overcome the safety feature of the grounding prong, by finger pressure on the end of the grounding prong,



the mechanism may be safetied by an arrangement for the latch means, such that pressure applied to the protruding prong by a yieldable means such as a finger, or other yieldable portion of the body, will push the entire grounding prong back toward the plug but will prevent the protruding sensor finger from triggering the lever, therefore preventing the retraction of the grounding prong into the plug. As an additional feature, the grounding prong can be designed so that it will never be completely retracted into the plug and a grounding plate is provided for attachment to a receptacle so that when the grounding prong is used in conjunction with a receptacle not having a matching grounding socket, the retracted grounding prong will still contact the grounding plate and provide for the safe grounding of the circuit.

3,754,203

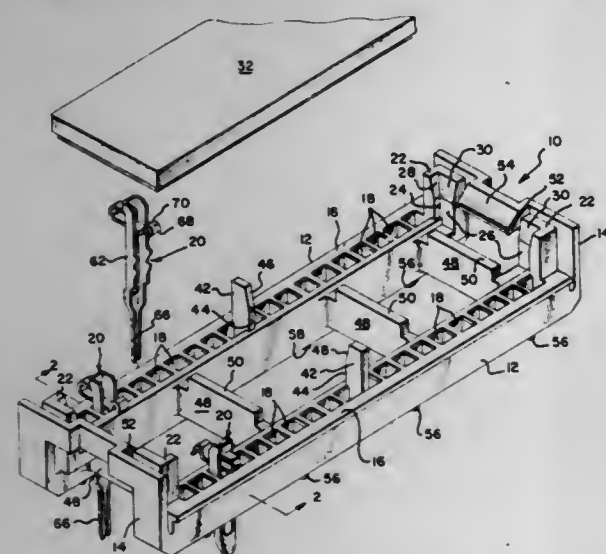
## SUBSTRATE CONNECTOR AND TERMINAL THEREFORE

William Vito Pauza, and Edward Michael Poltonavage, both of Palmyra, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed July 1, 1971, Ser. No. 158,778  
Int. Cl. H01r 11/00, 13/50; H05k 1/04

U.S. Cl. 339-17 CF

6 Claims



An interconnection system is disclosed for connecting ceramic substrate and the like to printed circuit boards, panels, or the like. The connector has a plurality of terminals

therein each including a spring contact near one end for making contact with circuitry on a ceramic substrate, the substrate being snapped or otherwise secured in position on the connector. The other end of each terminal is a solder post and is designed to be plugged into a printed circuit board and soldered to circuitry thereon. In another form the other end of the terminal is in the form of a post to receive a wrapped electrical conductor therearound.

3,754,204

## TERMINALS FOR ELECTRIC CIRCUIT AND APPARATUS

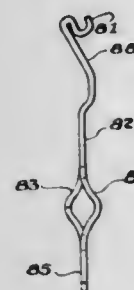
Eli Raltport, 1807 Mower St., Philadelphia, Pa., and George D. Greenly, 121 Quigley Ave., Willow Grove, Pa.

Filed Oct. 8, 1970, Ser. No. 79,027

Int. Cl. H01r 11/22, 27/00

U.S. Cl. 339-32 R

6 Claims



Universal terminals suitable for connecting conductors through either crimping, soldering or slip on connector, or a combination of any of these.

3,754,205

## PROTECTED CONNECTOR PLUG

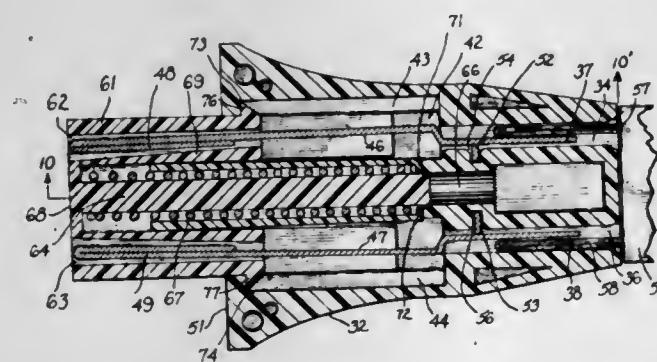
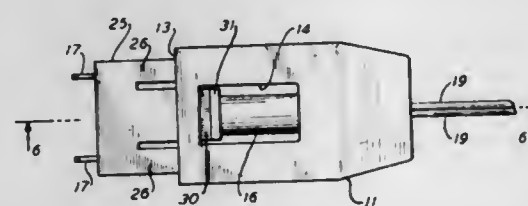
Attila A. Lenkey, Millburn, N.J., assignor to Lenmark Enterprises, Inc., East Orange, N.J.

Continuation-in-part of Ser. No. 23,217, March 27, 1970. This application May 19, 1971, Ser. No. 144,814

Int. Cl. H01r 13/44

U.S. Cl. 339-42

10 Claims



A protected connector plug provided with a hollow, open-end housing; the open end is closed by a single, spring-loaded, slidable sheath surrounding both contact blades and having detents on it to engage a stop in the housing to retain the sheath in the housing. In one embodiment the detents are deflectable to allow the sheath to be inserted after the housing is otherwise complete. In another embodiment the sheath is properly placed within one half of the housing before the other half is joined thereto.

3,754,206

## ELECTRICAL CONNECTORS

Albert Obelssart, Boulogne-Billancourt, France, assignor to Souriau & Cie, Boulogne-Billancourt, France

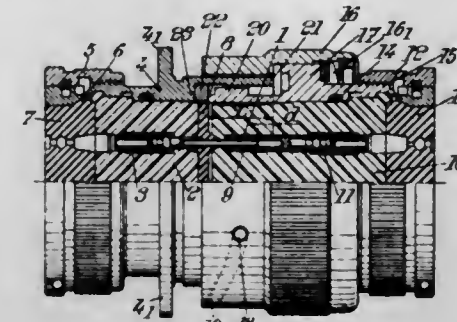
Filed June 10, 1971, Ser. No. 151,783

Claims priority, application France, June 15, 1970, 7021908

Int. Cl. H01r 13/54

U.S. Cl. 339-90 R

2 Claims



The connector consists of a male plug and a female plug, one of the plugs having a pin for penetrating into the socket of the outer plug. The pin and socket are borne by insulating blocks mounted in metallic supports adapted for mutual penetration. The insulating blocks and their supports have mechanical fastening means to fasten them together. An outer ring can lock the two plugs together. Two types of mechanical supports are provided for a same connector, distinguished from each other by different lengths of mutual penetration without other changes in the structure and assembly of the other parts.

3,754,207

## METHOD FOR DIRECTLY MEASURING THE DISTANCE TRAVELLED OVER BY A VEHICLE MOVING IN A WATER BODY, WITH RESPECT TO THE SUBMERGED GROUND SURFACE AND DEVICE THEREFOR

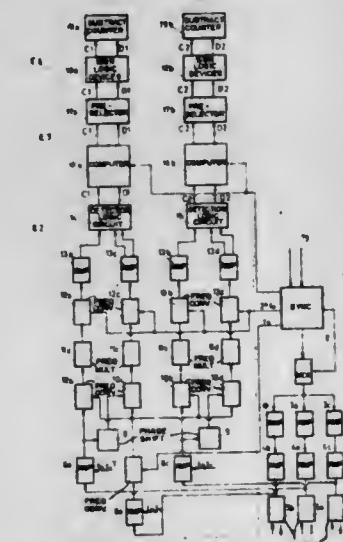
Robert Delignieres, Colombes, France, assignor to Institut Français Du Pétrole Des Carburants et Lubrifiants, Ruell-Malmalson, France

Filed June 22, 1970, Ser. No. 48,002

Int. Cl. G01s 9/66

U.S. Cl. 340-3 D

15 Claims



Navigation method making use of the DOPPLER effect, for measuring the distance travelled over by a vehicle in a water body with respect to the bottom thereof comprising transmitting intermittent acoustic signals towards said water bottom, receiving the signals diffused back therefrom, measuring during a time interval smaller than the duration of the received signals, the difference between the numbers of accrued cycles, respectively at the transmission frequency and at

the receiving frequency and determining from said difference, in a binary digital form, the distance travelled over by the vehicle during a time interval equal to the recurrence period of the intermittent transmitted signals.

3,754,208

## COMPOUND LENS FOR CONVERTING THE EFFECT OF LARGE-AREA SONIC TRANSDUCER TO ONE OF SMALL AREA

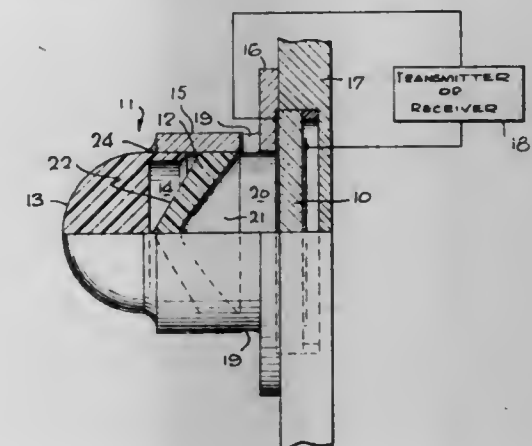
George J. Ellers, Redwood City, Calif., assignor to Stanford Research Institute, Menlo Park, Calif.

Filed Feb. 3, 1972, Ser. No. 223,108

Int. Cl. G01f 3/16

U.S. Cl. 340-8 L

5 Claims



A compound lens structure for converting the response of a transducer of large lateral extent to one of significantly smaller dimensions employs a converting lens having a conical front surface in contact with the rear surface of an auxiliary hemispherical lens to allow spherical sonic waves emanating from or converging toward the point of contact to enter or leave the converting lens only through the area of contact. The rear surface of the converting lens is chosen to be a hyperbola of revolution in order that diverging waves entering through the area of contact be refracted into plane waves transmitted to the transducer. Space between the two lens is sealed and filled with a gas to enhance the masking effect of the conical surface by total reflection of waves entering that sealed space from the auxiliary lens.

3,754,209

## TRAFFIC SIGNAL CONTROL SYSTEM

Kenneth H. Molloy, Bedford; John P. Ward, and Victor Mark Benson, both of Acton, all of Mass., assignors to Computer Systems Engineering, Inc., Billerica, Mass.

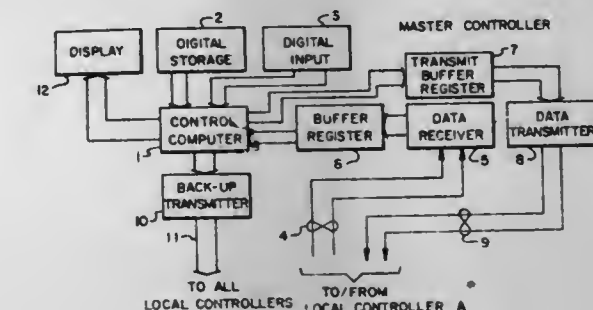
Division of Ser. No. 109,533, Jan. 25, 1971, Pat. No.

3,675,196. This application July 3, 1972, Ser. No. 268,613

Int. Cl. G08g 1/07

U.S. Cl. 340-40

3 Claims



An automobile traffic signal control system controls traffic signals (lights) at a plurality of traffic intersections by way of a master controller which communicates with a local controller at each intersection and transmits pulse trains in sequence to the receivers at all the intersections, whereupon the intersec-



tion to which a specific pulse train is addressed stores the pulse train and uses each specific pulse in the train to control a specific light or signal at that intersection. In this manner, all lights and signals at all intersections are specifically each controlled by a specific pulse in a specific pulse train transmitted by the master controller to the local controllers at the intersections.

3,754,210

## TRAFFIC LIGHT CONTROL SYSTEMS

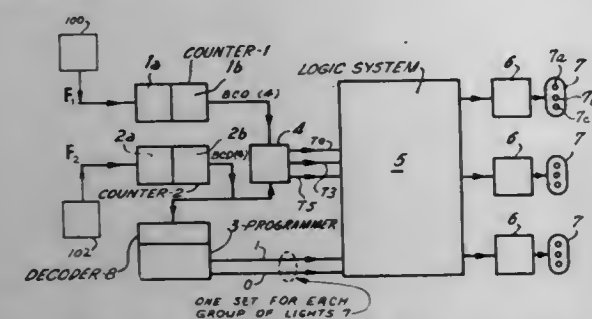
Jean Claude Preti, Clamart, France, assignor to Societe de Fabrication d'Instruments de Mesure S.f.I.M., Garnier, France

Filed Mar. 30, 1971, Ser. No. 129,482

Int. Cl. G08g 1/07

U.S. Cl. 340-40

12 Claims



A traffic light control system comprises two timers, one of which operates at a normal frequency and the other at a much higher frequency, the second timer controlling a programmer which acts on a logic circuit which controls a power circuit for the lights. A comparator compares the output signals of the timers, and indicates when the output signals of the two timers are identical or have a given shift, whereby any spurious signals do not affect the lights. The system can be designed to take into account an external command, the state of the traffic lights, and the traffic density. A plurality of such systems can be coordinated with a minimum of interconnections.

3,754,211

## FAST ERROR RECOVERY COMMUNICATION CONTROLLER

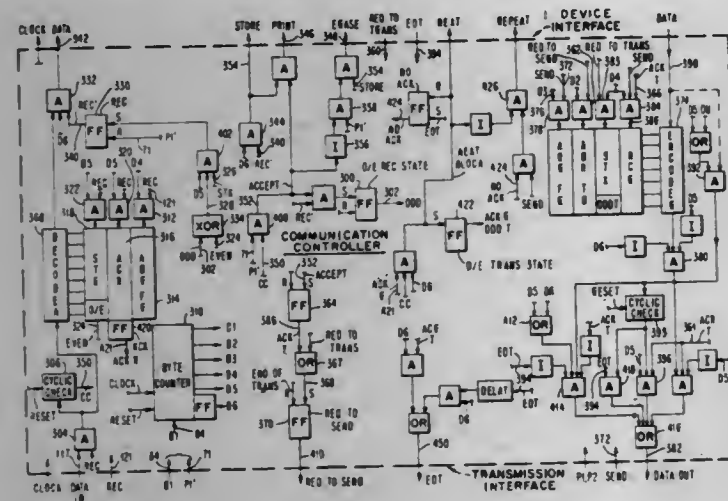
Edouard Y. Rocher, Ossining, and Stanley E. Schuster, Granite Springs, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,197

Int. Cl. G08c 25/00; G06f 11/00

U.S. Cl. 340-146.1 BA

6 Claims



This is a communication controller that is utilized in a network consisting of a plurality of terminal stations, each station capable of transmitting and receiving digital messages. All stations within the system contain a communication controller which detects address or data errors. Properly decoded address and data message information initiates an acknowledgment response from receiving terminal stations. The presence

of an address or data error initiates no response from the receiving station. The transmitting station contains automatic means for retransmitting a message if an acknowledgement is not received from the addressed receiver station within a minimum cycle-out period. The communication controller contains automatic means for discarding received messages which are a duplicate of a prior received and properly decoded message.

3,754,212

## DETECTION OF LABEL FOULING IN AUTOMATIC RAILROAD CAR IDENTIFICATION SYSTEM

Albertus C. H. Borsboom, London S.E. 1, England; Jan Van Harten, and Gerrit Van Der Most, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

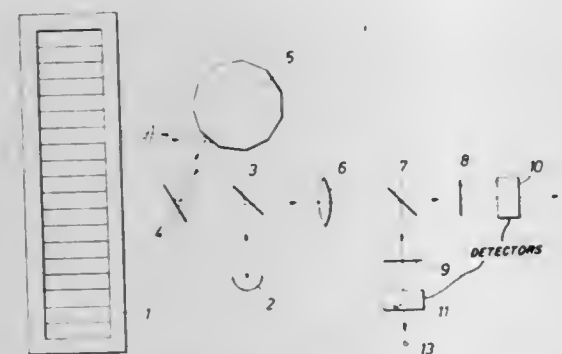
Filed July 22, 1971, Ser. No. 165,299

Claims priority, application Netherlands, July 27, 1970, 7011110

Int. Cl. G06k 7/12, 9/00, 5/04; G01n 21/30

U.S. Cl. 340-146.3 K

4 Claims



Label fouling in an automatic railroad car identification system is detected in response to the intensities of signals from coded visible panels. The identifying panels are color coded, and failing of the panels can produce errors in reading the code. The ratio of intensity of a pair of primary colors in light reflected from a white strip in the panel is used as the measure of degree of fouling.

3,754,213

## ELECTRONIC COMBINATION LOCK SYSTEM

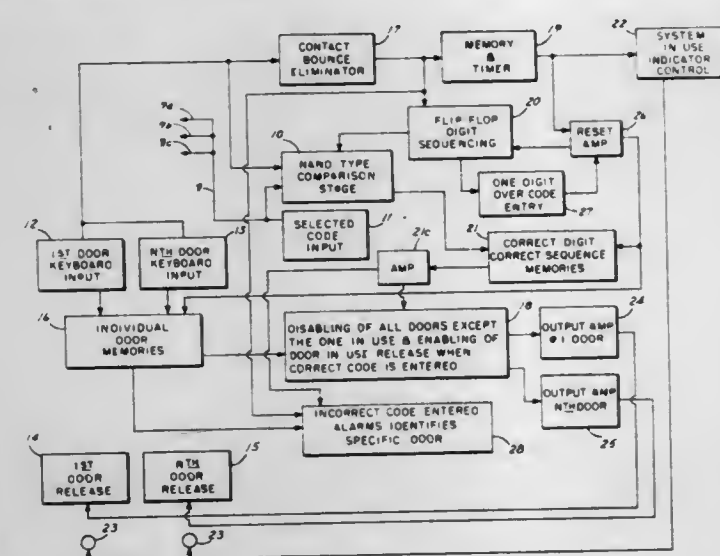
Thomas J. Morroni, 3860 S. Willow Way, Denver, Colo., and Richard J. Morroni, 105 Krameria, Denver, Colo.

Filed Sept. 3, 1971, Ser. No. 177,710

Int. Cl. H04g 9/00; G05b 1/00; E05b 49/00

U.S. Cl. 340-147 MD

18 Claims



A combination lock system of the electronic type for doors and other applications includes digit selector switches at each door location or station and a central comparator utilizing

NAND gates, separate comparator units being provided for each digit. A multiple digit code is selected by simple switch means such as multiple contact thumb wheel switches and the code may be changed quickly at any time with no modification or rewiring of the circuits. The system includes a timer for resetting the entire system if the code is not entered within a preselected time and a control for resetting the system in the event that more than the number of digits in the code are entered. An alarm system is provided to indicate the selector station at which more than a predetermined excess number of digits are entered, thus indicating a possible attempt to break the code at that station. In addition the selection of a digit at any station disables all other stations and actuates indicators at all stations showing that the system is in use. A plurality of such combination systems each having its respective central comparator may be controlled by a single digit code selector or determinator so that the same code must be entered for all stations but so that the signal entry, indicator, resetting and alarm functions of each system are independent of those of the other systems.

3,754,214

## ELECTRONIC SECURITY SYSTEM

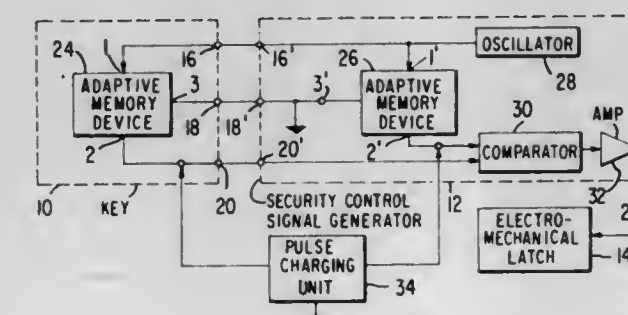
Yasushi Matsumoto, Narashino, and Yoshiaki Kuwahara, Tokyo, both of Japan, assignors to RCA Corporation, New York, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,272

Int. Cl. G11b 9/02

U.S. Cl. 340-149 R

21 Claims



An electronic security system provides for the remote encoding of a lock utilizing at least two adaptive memory devices, one of which corresponds to the lock and the other to the key, the devices being each placed in a predetermined state to provide an output signal therefrom having a given level corresponding to the state of that device in response to an applied input signal. Only when the devices are in matched states will the security system provide a desired security control signal.

3,754,215

## FREQUENCY-BURST-DURATION MODULATION AND FREQUENCY MULTIPLEXED DATA TRANSMISSION SYSTEM

Robert W. Blomenkamp, Palo Alto, Calif., assignor to Physics International Company, San Leandro, Calif.

Filed Aug. 9, 1971, Ser. No. 169,988

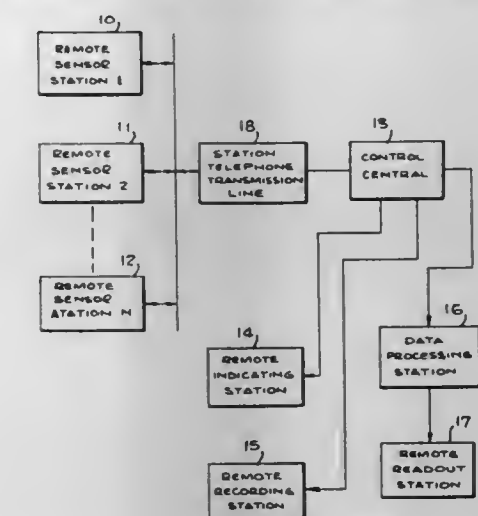
Int. Cl. H04q 9/00

U.S. Cl. 340-151

17 Claims

A system is disclosed for transmitting data to a control central from remote sensor stations, each station having a number of analog sensors. Once a given remote sensor station is addressed by control central emitting a unique tone, a plurality of unique tones are transmitted by the addressed station through a single channel, one tone for each sensor, each tone being transmitted for a period proportional to the amplitude of an output signal from an unique sensor. All tone generators of the addressed station are turned on simultaneously with the trailing edge of the address tone. This trailing edge also activates a pulse generator the period of which determines the time period of the full scale output of each unique sensor tone.

The time period of the pulse generator may be controlled by control central issuing a synchronizing tone or independently controlled at each remote station. The output of the pulse



3,754,216

## POSITION INDICATING AND CONTROL SYSTEM

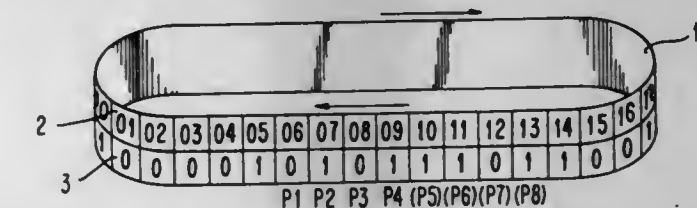
Dennis H. Kekas, and Lubos R. Palounek, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1971, Ser. No. 210,449

Int. Cl. G11b 5/78, 11/00

U.S. Cl. 340-172.5

10 Claims



Method and apparatus for indicating the present position of any location on a movable medium with respect to a fixed location is disclosed in which each location is arbitrarily assigned a data content of at least one bit and an address comprised of a plurality of bits made up of the data content from the location and from at least one adjacent location. Serially generated data bits are compared against desired location addresses for which position information is desired.

3,754,217

## SYNCHRONOUS LINE CONTROL DISCRIMINATOR

Noel J. Bell, Durham; Ronald J. Cooper, Raleigh; Frederick P. Nagle; Frank A. Newlin, III, both of Cary, and William M. Stadler, Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,913

Int. Cl. G06f 3/00; H03k 13/00

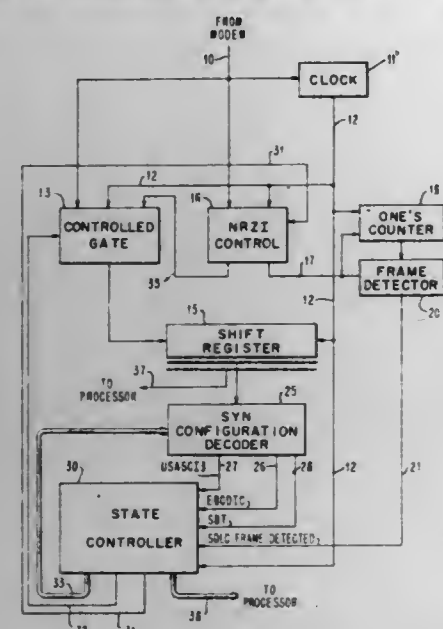
U.S. Cl. 340-172.5

4 Claims

The described apparatus is interposed between the modem or line adapter of a synchronous transmission line and the data processor and will identify for the processor, the code in which data is being received. The discriminator is particularly useful in a system where any one of a number of data terminals using different transmission codes can be connected to one of the ports of the processor. In use, the discriminator examines, at each bit time, the last grouping of bits it has received to detect the presence of a code identifying character. When it detects one such character, the system waits until another



character is received to determine if the second character is consistent with the tentatively identified code. If not, the system resets to continue looking for a new identification



character. The system continues hunting until a transmission code is fully identified. The discriminator then notifies the processor of the code in which the data is being received.

3,754,218

#### DATA HANDLING SYSTEM WITH RELOCATION CAPABILITY COMPRISING OPERAND REGISTERS ADAPTED THEREFOR

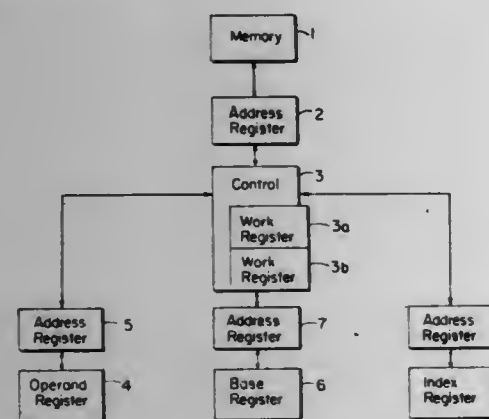
Hiroshi Hatta, and Yoshiteru Ishii, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan  
Filed May 27, 1971, Ser. No. 147,318

Claims priority, application Japan, May 29, 1970, 45/45589

Int. Cl. G06F 9/20

U.S. Cl. 340-172.5

7 Claims



Each operand register for a data handling system is provided with a first area, a second area, and a third area. The first area is loaded with information for identifying whether datum with which the register is loaded is an address datum or an operand quantity other than address data. The second area may be loaded with a base register number. The third area may be loaded with an effective address, i.e., the sum of the base address and the index-modified relative address.

3,754,219

#### HIGH IMPEDANCE GASEOUS ION SENSING AND DETECTION SYSTEM

Carl F. Klein, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 3, 1972, Ser. No. 214,884

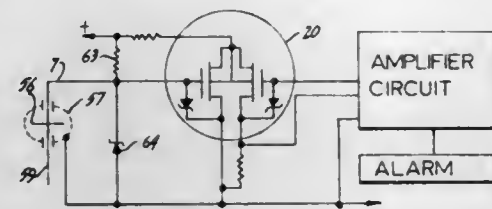
Int. Cl. G08b 21/00

U.S. Cl. 340-237 R

14 Claims

An air pollutant or fire combustion sensing capacitor includes a sensing electrode mounted in insulated relationship

within a perforated outer grounded shield which permits the free entrance of air borne ions. The sensing electrode is connected to an amplifying and alarm circuit to respond to the accumulation of either negative or positive charge on the sensing electrode. The circuit includes a thermally stabilized field effect transistor buffer amplifier having the input terminal connected to the sensing electrode and the output connected to a



high gain dual DC operational amplifier having a feedback compensation network to compensate for thermal and low frequency drift charge. A pair of transistors are connected in a differential configuration with a common input connected to the output of the operational amplifier. The alarm is connected through steering diodes to the two transistors. Either an increase or a decrease in charge thereby actuates the alarm.

3,754,220

#### APPARATUS FOR DETECTING URINARY BLADDER OUTFLOW

Bernard Sztamler, Naharia; Mordechai Haim Diskin, and Alexander Vilensky, both of Haifa, all of Israel, assignors to Technion Research and Development Foundation Limited and Elmedix Limited, Haifa, Israel

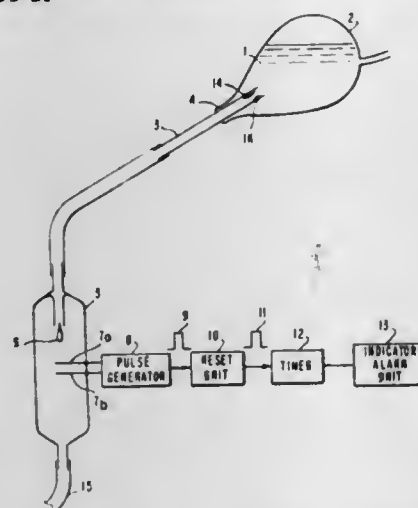
Continuation of Ser. No. 849,040, Aug. 11, 1969, abandoned.

This application Aug. 16, 1971, Ser. No. 172,273

Int. Cl. G08b 21/00

U.S. Cl. 340-239 R

4 Claims



Apparatus for monitoring liquid outflow, particularly from bladders, comprising a fluid drop detector giving an output signal for each drop, reset unit with an input connected to the output of the drop detector, a presettable timer which is reset to zero when a pulse is received from the reset unit, and an indicator connected to the timer which is activated when the time between successive pulses is greater than a predetermined value.

3,754,221

#### GROUND FAULT DETECTOR AND METHOD OF GROUND FAULT DETECTION

Manfred Karl Georg Stelter, 3 Howard Dr., Willowdale, Ontario, Canada

Filed Apr. 19, 1971, Ser. No. 135,334

Claims priority, application Canada, Dec. 22, 1970, 101231

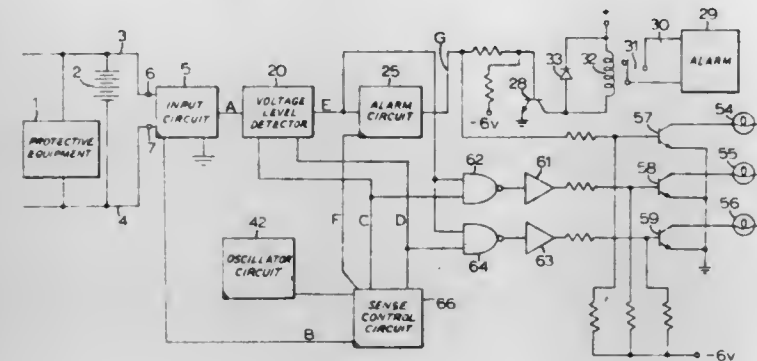
Int. Cl. G08b 21/00

U.S. Cl. 340-255

12 Claims

A ground fault detector for detecting both balanced and unbalanced faults, eg. leakages to ground or other faults in a

floating direct current system, comprises, first and second resistances connectable respectively to the positive and negative buses of the system, a two-way switching device operable to connect to the first and to the second resistances alternately, a fault condition being detected by voltage level detecting



means connected between the switching device and ground, and a method of detecting ground faults in such a system by continuously alternately checking positive and negative sides of such system against predetermined known reference resistances.

3,754,222

#### INTRUSION DETECTION DEVICE UTILIZING LOW FREQUENCY SOUND WAVES AND PHASE DETECTION TECHNIQUES

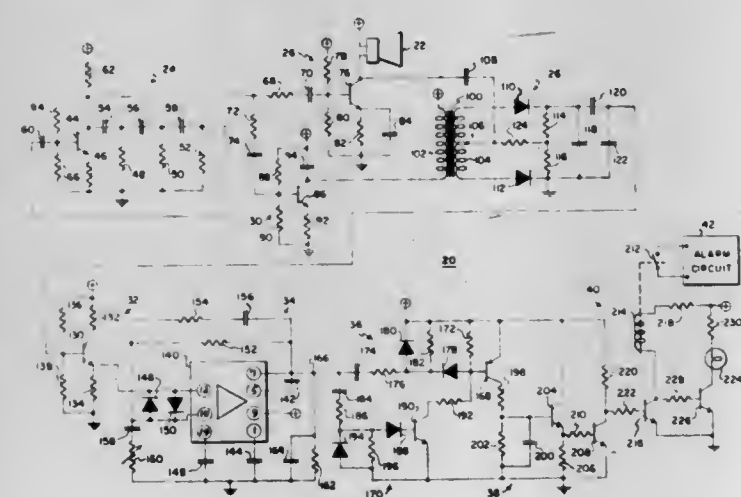
Harold Eisenberg, Chicago, Ill., assignor to Webster Electric Company, Inc., Racine, Wis.

Continuation-in-part of Ser. No. 147,985, May 28, 1971. This application Dec. 13, 1971, Ser. No. 207,466

Int. Cl. G08b 13/16

U.S. Cl. 340-258 A

13 Claims



A signal in the low audio frequency range and preferably of about 400 to 600 hertz is radiated into one or more protected areas by one or more speakers, and each speaker also acts as a transducer of reflected audio energy. A substantially amplitude independent phase sensitive detector designed to operate at the audio frequency is coupled to the source of audio signals and to each speaker to produce an output signal when a reflected signal exhibits phase shift due to even relatively slight movements of an intruder in any direction in the protected area. A low band pass circuit couples a narrow low frequency band of signals from the detector to gating and integrating circuits to provide an alarm indication in response to phase changes characteristic of the intruder movement to be detected.

3,754,223

#### INTRUDER DETECTION SYSTEM

Shmuel Shtrikman, Rehovoth, Israel, assignor to Yeda Research and Development Co., Ltd., Rehovoth, Israel

Filed Jan. 21, 1970, Ser. No. 8,755

Int. Cl. G08b 13/24

U.S. Cl. 340-258 C

5 Claims



An intruder detection system comprising a line adapted to be located substantially at ground level and consisting of an elongated high permeability magnetic core on which is wound a coil in the form of successive sections of respectively opposite winding handednesses, a high gain low noise amplifier coupled to the line and a detector coupled to the amplifier and adapted to be coupled to an alarm system.

3,754,224

#### SECURITY ALARM ACTUATING DEVICE

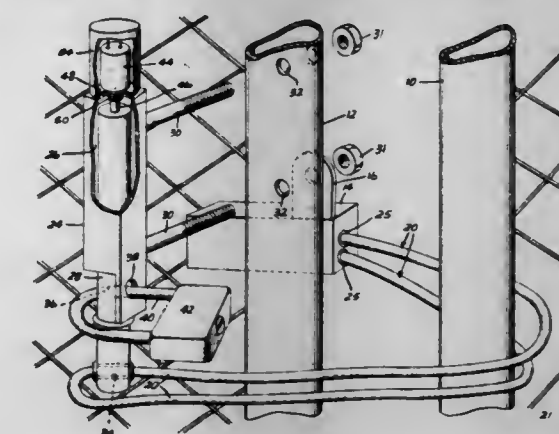
Wilho R. Roy, 7031 Cross Ln., Fort Wayne, Ind., and Stanley P. Pasavage, 806 Three Rivers E., Fort Wayne, Ind.

Filed July 14, 1972, Ser. No. 271,899

Int. Cl. G08b 13/08

U.S. Cl. 340-274

7 Claims



The invention is a security device for sensing the unauthorized opening of a gate or the like, the device including an electrical series loop incorporated into a mechanical structure mounted directly on relatively movable members of the gate. Fixedly mounted on one of the gate members is a frame which carries a normally open electrical switch. A rod for operating the switch is removably mounted in the frame in such a position as to engage and hold the switch closed. A lock removably secures the rod to the frame in this switch-closing position. An electrical terminal block is secured to the same gate member and has mechanically and electrically connected thereto the opposite ends of a flexible electrical cable. The cable is mechanically secured between its ends to the rod and is passed around the other gate member so as to prevent more than a predetermined degree of relative movement of said members. The switch and the cable are electrically connected in series such that severing of the cable or opening of the switch by removal of the lock and rod from the frame will result in an open circuit which may be utilized for setting off an alarm.

3,754,225

#### PORTABLE EQUIPMENT SECURITY SYSTEM

Donald Hastings Gleason, Arlington, Va., assignor to Reaction Instruments Incorporated, Vienna, Va.

Filed June 3, 1971, Ser. No. 149,562

Int. Cl. G08b 13/22

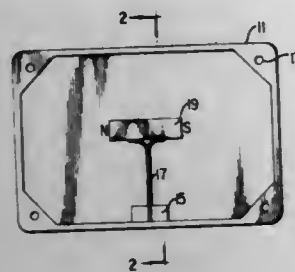
U.S. Cl. 340-280

7 Claims

A portable security equipment system having a magnet means mounted on the equipment to be monitored. The mag-



netic means is supported by means such as a spring so as to vibrate or oscillate at a substantially fixed frequency in response to acceleration caused by movement of the equipment. A magnetometer is located so as to detect the modulation of the magnetic field caused by the vibration of the magnet.



ment. A magnetometer is located so as to detect the modulation of the magnetic field caused by the vibration of the magnet.

3,754,226

### CONDUCTIVE-RING FERROMAGNETIC MARKER AND METHOD AND SYSTEM FOR USING SAME

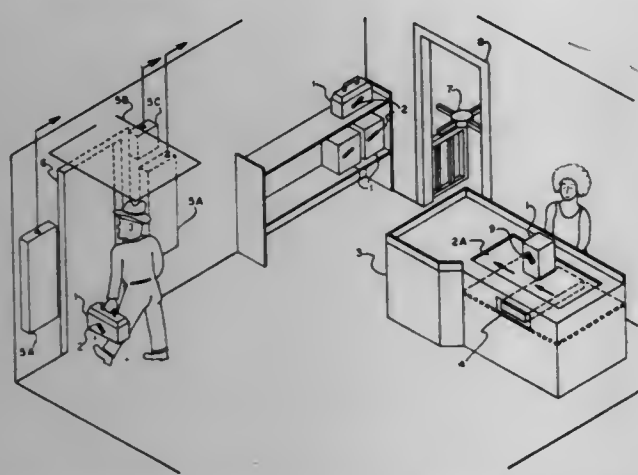
Edward R. Fearon, Tulsa, Okla., assignor to Stoplifter International Inc., Dallas, Tex.

Division of Ser. No. 747,050, March 22, 1968, Pat. No. 3,631,442, which is a continuation-in-part of Ser. No. 680,666, Nov. 6, 1967, abandoned. This application Nov. 24, 1971, Ser. No. 201,858

Int. Cl. G08b 13/24

U.S. Cl. 340—280

13 Claims



A ferromagnetic marker is used in tagging objects to allow selective detection of the tagged objects within an interrogation zone having a magnetic field varying at a fundamental frequency. The marker comprises a ring-shaped electrical conductor for carrying a current induced by the varying magnetic field. An element which is non-linearly polarized in response to an electromagnetic field is disposed proximate the conductor to modulate the current flowing therethrough. A modulated electromagnetic signal is then generated and sensed to allow detection of a tagged object.

3,754,227

### HOTEL SIGNALLING SYSTEM

Sven Gote Andersson, Syrsastigen 14, 61100 Nyköping, Sweden

Filed Dec. 27, 1971; Ser. No. 211,881

Claims priority, application Switzerland, Jan. 11, 1971, 344/71

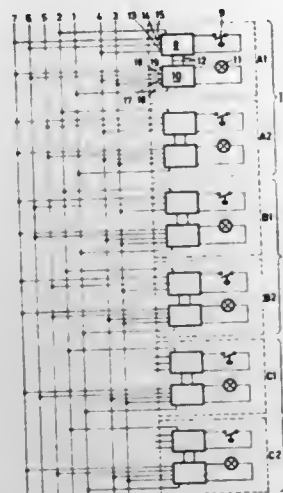
Int. Cl. G08b 5/00

U.S. Cl. 340—286 R

10 Claims

A system of multiple apparatuses for a signalling- and indicating function of a hotel, each apparatus embodying a transmitter possessing an indicator key, a receiver possessing a signal lamp and connection terminals for the infeed of power. According to important aspects of this invention, the transmitter possesses a coding mechanism controllable by the in-

dicator key for simultaneously producing a control signal and at least two address signals, and wherein the receiver possesses



a decoding mechanism for actuating a storage. At the output of the receiver there is connected the signal lamp.

3,754,228

### COMPUTER OUTPUT DISPLAY SYSTEM

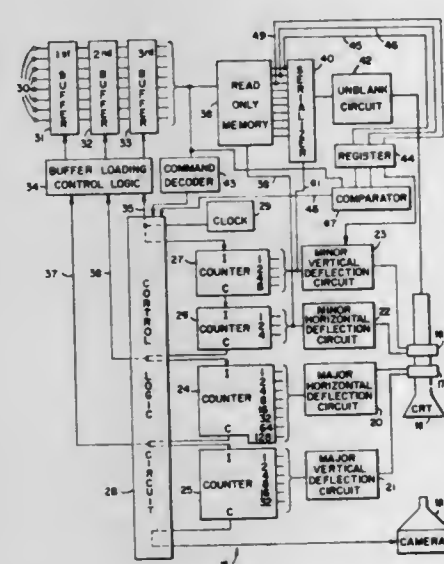
Richard A. Hwang, San Carlos; Rolf D. Kahle, Saratoga; Arthur H. Roshon, San Jose, and Paul N. Seltz, Milpitas, all of Calif., assignors to Quantor Corporation, Cupertino, Calif.

Filed Aug. 27, 1970, Ser. No. 67,446

Int. Cl. G06f 3/14

U.S. Cl. 340—324 AD

8 Claims



A computer output display system in which alphanumeric characters are sequentially displayed on the face of a cathode ray tube at discrete locations thereon, so as to produce a printed page-type composition which may be photographed to produce a permanent record of the computer output data. Such a computer output display system comprises a cathode ray tube having two deflection systems, the first, or major deflection system, for deflecting the beam to a particular area of the face of the cathode ray tube, and the second, or minor deflection system, for scanning that particular area in a step-wise manner, the beam of the cathode ray tube being synchronously intensity modulated to produce the image of the desired alphanumeric character. In addition, a multicharacter buffer capable of temporarily storing a sufficient number of characters to allow time for the cathode ray tube beam to be translated across the face of the cathode ray tube, from one end to the other, as would occur at the end of a line, may be provided to permit operation with computer output data that is not line-formatted.

3,754,229

### PROPORTIONAL SYMBOL DISPLAY

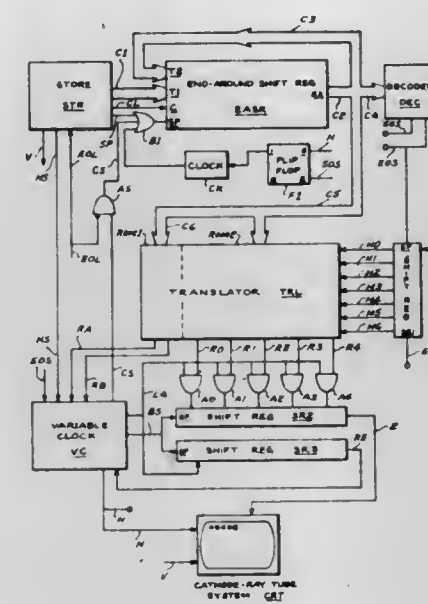
Solomon Manber, Sands Point, N.Y., assignor to Redatron Corporation, Hauppauge, N.Y.

Filed June 29, 1972, Ser. No. 267,641

Int. Cl. G06f 3/14

U.S. Cl. 340—324 AD

11 Claims



A display system wherein intensity modulated dot signals are used to generate visually displayed symbols or matrices of dots on a medium. Proportional spacing of the symbols is obtained by controllably varying the speed at which the dot signals are generated during uniform scans of the medium.

3,754,230

### PLASMA DISPLAY SYSTEM

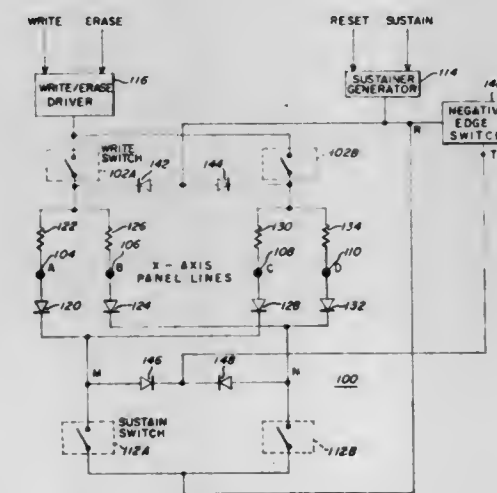
Ernest P. Auger, Billerica, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 21, 1970, Ser. No. 99,798

Int. Cl. G08b 5/36

U.S. Cl. 340—324 M

18 Claims



Visual display systems such as plasma displays in which a diode and resistor matrix provides writing, erasing and sustaining voltages to a plurality of elemental areas to produce visual indications without interference between the various supplied voltages, whether dc, ac or pulse for coupling control signals and logic to a large number of elements with a reduction in the required number of switches and circuit connections is described.

3,754,231

### COMBINED SEQUENTIAL AND SELECTIVE DATA DISPLAY

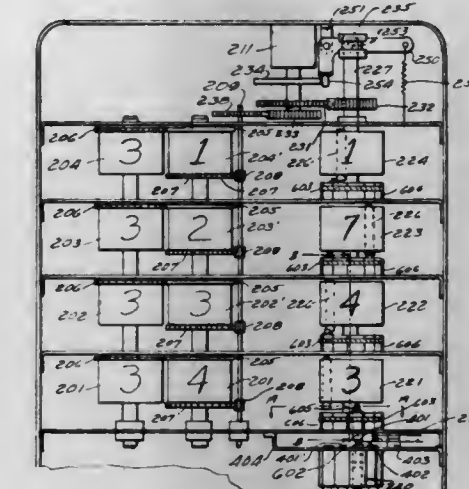
Frederick W. Pfeiffer, 1152 Barbara Dr., and John Billis, 14 Galway Ln., both of Cherry Hill, N.J.

Filed July 29, 1971, Ser. No. 167,107

Int. Cl. G09f 11/02

U.S. Cl. 340—325

7 Claims



A display system comprising a series of sequential characters in which each sequential character is initially displayed in conjunction with a random character. This sequential character and this random character moves to a second display position when a new sequential character with a new random character is to be displayed. This moving or progression of the first and second sequential character and their random characters to the next display positions will continue to successive positions when a new sequential and random characters are introduced until the combination of characters progress off the display. The number of times that the sequential and random characters appear on the display is limited by the size of the display.

3,754,232

### CIRCUIT ARRANGEMENT FOR BASELINE COMPENSATION

Jurgen Gut, and Ernst Spreitzhofer, both of Nubdorf, Germany, assignors to Bodenseewerk Perkin-Elmer & Co. GmbH, Überlingen, Bodensee, Germany

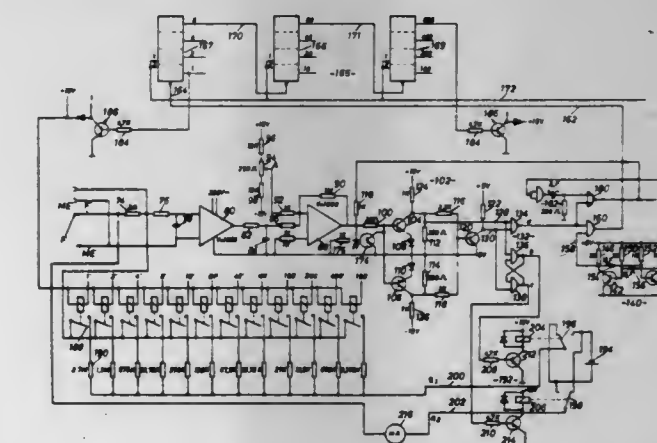
Continuation of Ser. No. 882,117, Dec. 4, 1969. This

application Dec. 21, 1971, Ser. No. 210,563

Int. Cl. H03k 13/02

U.S. Cl. 340—347 AD

1 Claim



An electronic counter operates as an integrating element and storage cell. Means are provided for applying a pulse sequence to the counter during the occurrence of a residual or baseline signal prior to or between the peaks and a digital-to-analog converter circuit is coupled to and controlled by individual counter stages of the counter for generating analog signals in correspondence with the states and weights of the

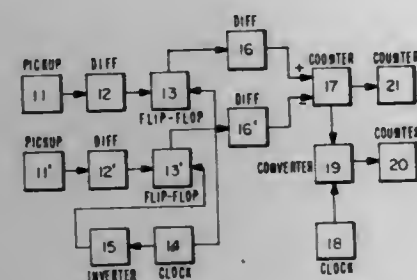






3,754,241

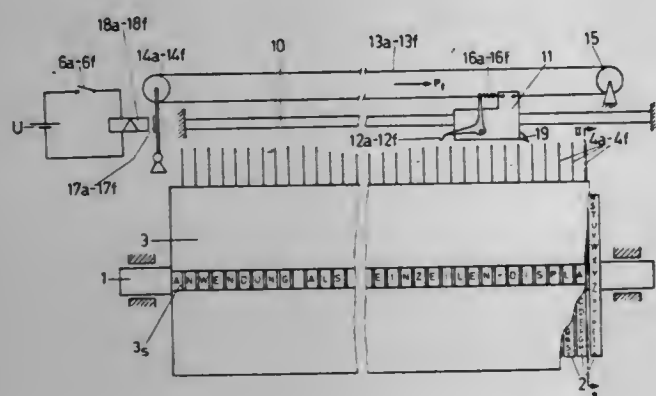
**APPARATUS FOR MEASURING PHASE DIFFERENCE**  
Osamu Machara, Kawasaki, Japan, assignor to Ona Sakki Co., Ltd., Tokyo, Japan  
Filed Oct. 26, 1971, Ser. No. 192,200  
Claims priority, application Japan, Oct. 27, 1970, 45/93977  
Int. Cl. G01r 25/00; H03r 13/02  
U.S. Cl. 340—347 SY 7 Claims



Apparatus for measuring phase differences of a rotating shaft by detecting a pair of generated AC frequencies adjacent the periphery of a tooth-wheel rotating at a fixed speed, even though the phase difference of the AC signals is greater or smaller than  $2\pi$ .

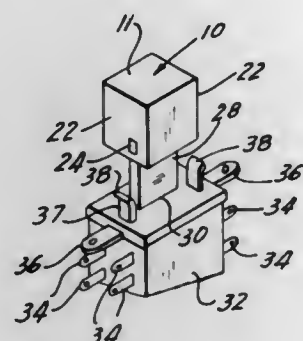
3,754,242

**ROTOR POSITION SELECTION MECHANISM**  
Kurt Ehrat, Zurich, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland  
Filed Oct. 19, 1970, Ser. No. 81,778  
Claims priority, application Switzerland, Oct. 23, 1969, 15829/69  
Int. Cl. G08b 5/00  
U.S. Cl. 340—373 R 12 Claims



The invention provides a rotor position selection mechanism for stopping rotary motion of one or more rotors or print wheels in a print head at desired angular positions each corresponding to a character on the rotor which is required to be printed. The rotor has a group of recesses positioned on a reference grid and located on the rotor so that as the rotor revolves, each group of recesses passes a set of feelers whose positions can be selected to correspond to any one of the patterns of recesses. In operation the positions of the feelers are set to represent a selected code word corresponding to one of the characters in the print wheel and a catch operated by all the set feelers sensing all the recesses on the rotor corresponding to the selected code word moves into a hole in the rotor to arrest its motion. Several rotors or print wheels may be provided, each with an associated group of feelers and a common setting mechanism may be used to set each group of feelers to a different selected code word so that a line of print may be formed by the print wheels being arrested at positions corresponding to the selected code words.

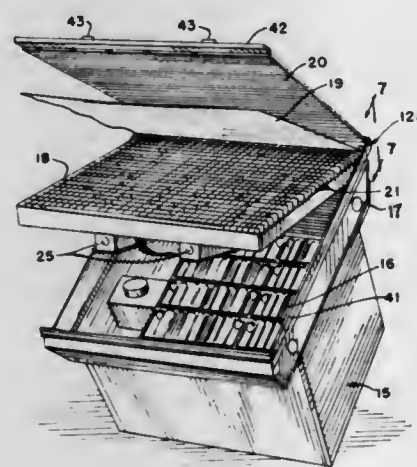
**CONTROL DEVICE WITH SELF-CONTAINED VISUAL INDICATION MEANS**  
Fumitaka Kaneko, and Shinzo Suzuki, both of Tokyo, Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan  
Filed Apr. 29, 1971, Ser. No. 138,487  
Claims priority, application Japan, July 23, 1970, 45/73809  
Int. Cl. G08b 5/00; H02b 1/02  
U.S. Cl. 340—378 R 6 Claims



A control member made of a light transmittable material selectively effects electrical connection between a power supply and a controlled device. The control member is provided with a self-contained visual indication means, preferably an electric light bulb, embedded therein. Appropriate electrical leads extend from the light bulb and are electrically connected to suitable contacts on the outer surface of the control member. The electrical switch or other device actuated by the control member is provided with suitable contacts operatively connected to a suitable power supply and adapted when the control member is in the "on" position to engage the contacts on the surface of said control member, thereby to provide power to the light bulb and thus to provide a visual indication of the status of the control member.

3,754,244

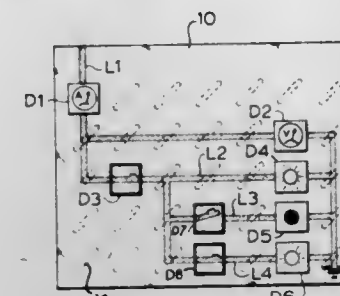
**GRAPHIC DISPLAY ASSEMBLY**  
Roscoe H. Garrett, Deerfield, Ill., assignor to The Riley Company, Skokie, Ill.  
Continuation of Ser. No. 701,179, Jan. 29, 1968, abandoned.  
This application Oct. 1, 1970, Ser. No. 77,307  
Int. Cl. G09f 9/14  
U.S. Cl. 340—381 1 Claim



A graphic display assembly is provided for use with a known type of industrial process annunciator system. The graphic display annunciator provides for indication of abnormal process functions, on a process diagram representing the process and for indication of points in the process where the condition is abnormal. Thus there is provided a clear and compact visual presentation of the condition of the process.

3,754,245

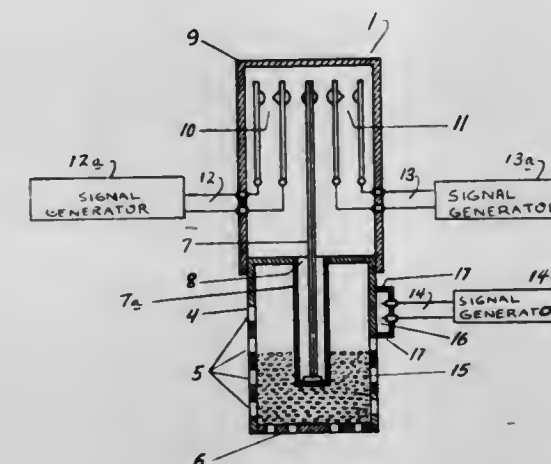
**SYSTEM INDICATOR BOARD**  
Henry Otto Peprnik, Downsview, Ontario, Canada, assignor to Ferranti-Packard Limited, Toronto, Canada  
Filed Dec. 27, 1971, Ser. No. 211,909  
Int. Cl. G09f 9/14  
U.S. Cl. 340—381 3 Claims



A board has an array of uniformly arranged slotted openings with surfacing material covering the unused ones of said slotted openings. Electrical indicator devices with projections designed to project through said slotted openings are mounted projecting through selected ones of said slotted openings at which openings the surfacing material has been broken. Means are provided for fastening the device in place. The electrical devices have been designed to represent the state of components or conditions of a system which are to be dynamically represented.

3,754,246

**APPARATUS FOR DETECTING SNOW, WATER OR HEAT**  
Einar L. Borufsen, Nordveien 14, 1342 Tar, Norway  
Filed July 9, 1971, Ser. No. 161,091  
Int. Cl. G08b 19/00  
U.S. Cl. 340—420 2 Claims



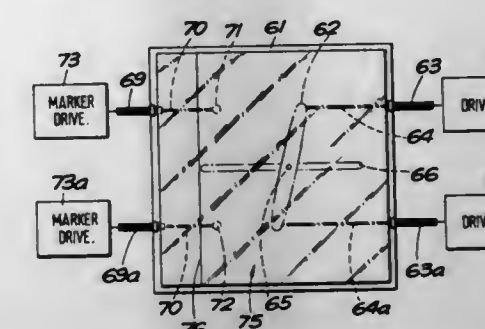
An indicator for detection of snow, water or extreme heat comprising a bimetallic thermostat element arranged in a receptacle to close a first relay when the receptacle is in snow or a second relay when the receptacle is exposed to intense heat, the relays being connected to first and second signal generators, respectively, that are activated when their respective relays are closed to transmit a characteristic radio signal. A third signal generator is activated when a chamber on the receptacle is flooded with water.

3,754,247

**BERTHING DISPLAY APPARATUS**  
Reginald Frederick Hansford, London, England, assignor to Decca Limited, London, England  
Filed Apr. 1, 1971, Ser. No. 130,282  
Int. Cl. G01s 7/04  
U.S. Cl. 343—5 R 7 Claims

A display apparatus which produces a display of a ship, a line representing an intended berth and indicators whose

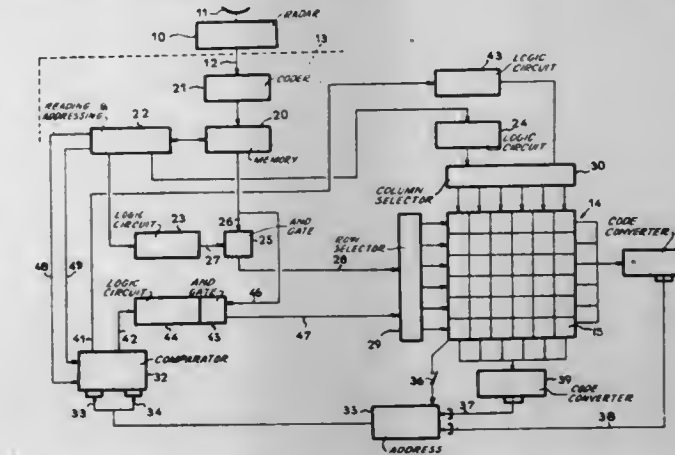
separation from the berth marker line represents the deviation of the closing rate of an associated part of the ship from a



value determined by a function generator which generates an optimum function from signals representing the distance of the part of the ship from the berth.

3,754,248

**VISUAL DISPLAY DEVICE FOR RADAR SYSTEM**  
Robert Casse, Paris; Bernard Maitre, Maurepas; Claude Thomine-Desmazures, Saint-Cloud, and Gerard Thouvenel, Croissy-sur-Seine, all of France, assignors to Electronique Marcel Dassault, Paris, France  
Filed Mar. 17, 1971, Ser. No. 125,113  
Int. Cl. G01s 7/04  
U.S. Cl. 343—5 R 9 Claims



A visual display device for radar systems comprises a panel including a plurality of juxtaposed light indicators, each such indicator being formed by one or more lamps, and means for selectively operating the light indicators as a function of the position(s) of one or more detected targets in the area being scanned by the radar. The display device has two modes of operation: a first mode of operation (watch mode) in which the plurality of indicators is associated to the whole of the area being scanned and a second or "precise locating mode" of operation in which the plurality of indicators is associated to a portion only of the area being scanned thereby taking full advantage of the power of resolution and discrimination of the radar system.

3,754,249

**LASER FIRE CONTROL SYSTEM SMALL BOAT APPLICATION**  
Stuart D. Kearney, II, Severna Park, Md., assignor to the United States of America as represented by the Secretary of the Navy  
Filed July 28, 1969, Ser. No. 846,313  
Int. Cl. G01s 9/02; F41g 7/00  
U.S. Cl. 343—6 R 4 Claims

A small boat surface to surface weapon control system comprising search radar, TV camera, laser transmitter and a semi-active guided missile is disclosed. The target is initially located by radar scanning devices and the bearing is transferred to a television camera mechanism which is mounted on the same mast as the radar antenna. The television camera and a laser

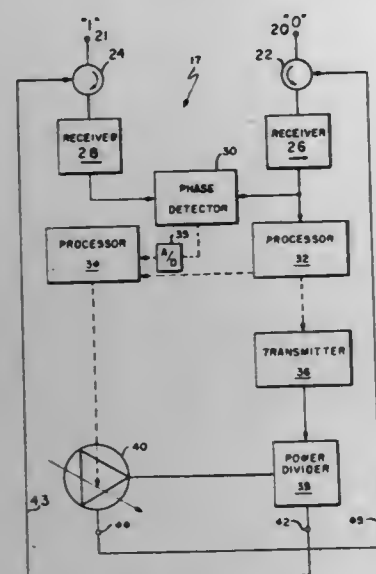






static relay where retransmission may be directed from the initiating station. Also the system may be used to provide selec-

the transmitter and receiver. The receiver uses zero crossing techniques for phase measurement so that possible bearing er-



tive automatic suppression of a retransmission in an unwanted direction.

3,754,258

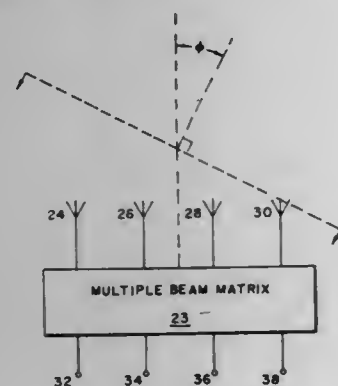
### LINEAR OR PLANAR RETRODIRECTIVE ANTENNA SYSTEM

H. Paris Coleman, Alexandria, Va., assignor to the United States of America as represented by the Secretary of the Navy

Filed Feb. 25, 1972, Ser. No. 229,369  
Int. Cl. H01q 15/14

U.S. Cl. 343-100 TD

6 Claims



A method and apparatus for obtaining automatic retrodirective performance from a linear or planar electromagnetic antenna array. The system may be employed in an active or passive manner and accomplishes selective retrodirectivity by the manipulation of the beam terminals on a multiple beam matrix. Also, control of the reradiated beam pattern is possible. Furthermore, this retrodirective system can also identify the angle of incidence of any particular transmission, and may therefore be employed as direction finding equipment.

3,754,259

### OMNIRANGE NAVIGATION APPARATUS AND METHOD

Robert W. Redlich, 9 Grand Park Blvd., Athens, Ohio

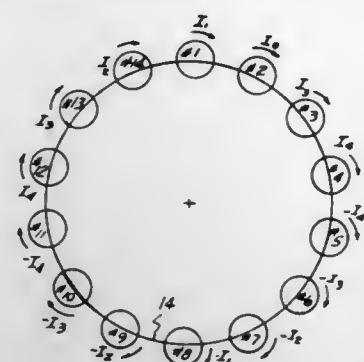
Filed July 22, 1970, Ser. No. 57,097

Int. Cl. G01s 1/04

U.S. Cl. 343-102

11 Claims

An omnirange navigation apparatus and method wherein a reference signal is radiated and a ring antenna array radiates a variable phase signal which rotates bodily at a first frequency without physically rotating the array and which has sharp zero crossings. The measured phase between the received reference and variable signals is equal to the bearing between



rors which might be caused by reflected signals are reduced in direct proportion to the slope at the zero crossings.

3,754,260

### LORAN-C THIRD CYCLE IDENTIFICATION THROUGH THE USE OF OMEGA

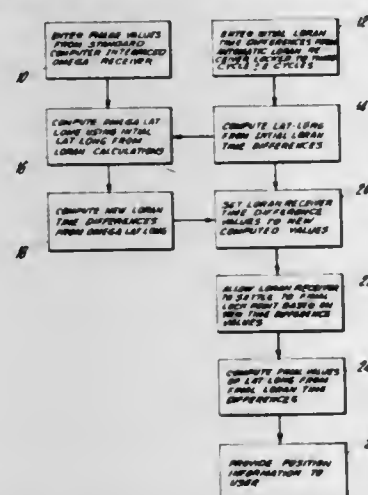
Martin C. Poppe, Jr.; John M. Beukers; James I. Meranda, and Christian B. Williams, all of Stony Brook, N.Y., assignors to Beukers Laboratories, Inc., Hauppauge, N.Y.

Filed Dec. 2, 1971, Ser. No. 204,016

Int. Cl. G01s 1/24, 1/30

U.S. Cl. 343-103 R

11 Claims



A tracking method and system for tracking the position of a remote target such as a weather balloon is disclosed which utilizes both Loran-C and Omega navigation techniques. The Loran-C receiver at the tracking station is locked on to an indeterminate cycle, e.g., one of the third cycle  $\pm 2$  cycle, of the received Loran pulses from the weather balloon to provide ambiguous Loran position data. Second ambiguous position data is derived from Omega signals also received from the remote target. The ambiguous Loran position data is employed to resolve the ambiguity of the Omega position data, after which the resolved Omega position data is employed to obtain precise Loran position data from the ambiguous Loran position data. The Loran receiver is then set to lock on to the proper cycle corresponding to the corrected Loran position data.

3,754,261

### RADIO NAVIGATION BEACON

Charles W. Earp, London, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,403

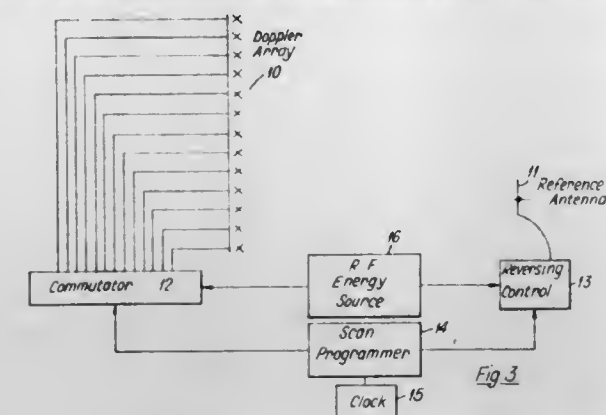
Int. Cl. G01s 1/38

U.S. Cl. 343-106 D

10 Claims

A method and apparatus for improved signal amplitude tapering in a Doppler Navigation system having a multi-element linear array which is R.F. excited element-by-element through a commutator to produce a Doppler signal at a

remote receiving point. A reference antenna is also provided to radiate a signal against which received Doppler signals can be interpreted at the remote point, in terms of angle with respect to a predetermined navigational path. The elements of



the array are commutated in sub-scans with or without alternation of scan direction and a portion of the sub-scans omit a few elements at one or both extremities of the array for tapering purposes.

3,754,262

### MICROWAVE AIRCRAFT GUIDANCE SYSTEM

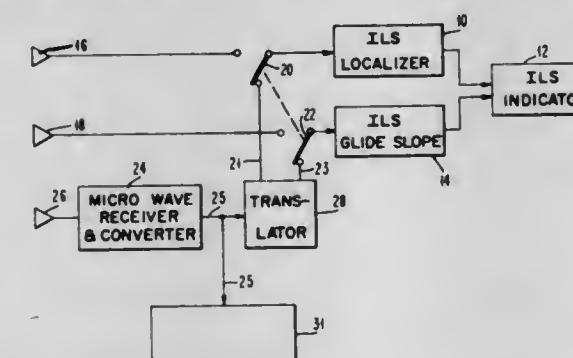
Donald J. Toman, Pleasantville, N.Y., and Warren Hundley, Upper Saddle River, N.J., assignors to Tull Aviation Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 54,456, July 13, 1970, abandoned. This application Apr. 24, 1972, Ser. No. 247,188

Int. Cl. G01s 1/14

U.S. Cl. 343-108 R

20 Claims



A microwave ILS system which is compatible with a conventional ILS system, including a microwave receiver having a converter operable by subtraction of a predetermined frequency to convert a pair of complementary sub-band portions of a predetermined band of microwave frequencies to conventional ILS system frequencies respectively for localizer and glide slope functions. The receiver includes means for selectively changing the conversion of the microwave frequency signals to select different pairs of complementary sub-band portions of the predetermined band of microwave frequencies for conversion to the conventional localizer and glide slope function frequencies.

3,754,263

### LIGHTNING TRACKING SYSTEM

Ronald J. Wojtasinski, Cocoa Beach, and James H. Jones, Titusville, both of Fla., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 28, 1972, Ser. No. 221,714

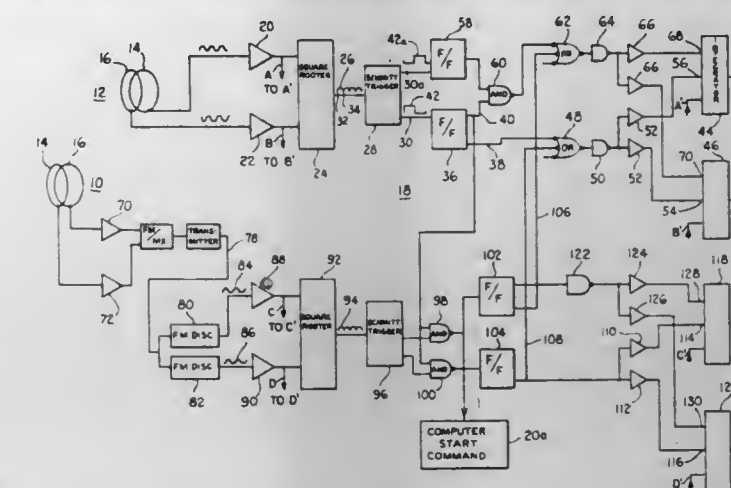
Int. Cl. G01s 3/02

U.S. Cl. 343-112 R

5 Claims

A system for locating lightning strikes by developing the coordinates of a pair of lines, each of which is produced at a reference sensing station. At each station there are a pair of directional antennas which produce analog signals responsive to a lightning stroke. These analog signals are fed to a pair of integrators which integrate the signals for a predetermined period of time so as to produce the X and Y co-ordinate of a

particular line. The analog signals are also fed through a square roter, a Schmitt trigger circuit, and flip-flops to produce pulses for starting and stopping the integrators. The system at the remote station is similar to that at the central sta-



tion and is tied to the circuitry at the central station through logic circuits to minimize the chance of error from spurious signals. Computers, printers, and plotters are utilized to plot the exact location of the lightning stroke.

3,754,264

### RADIO DIRECTION FINDING APPARATUS

William Thomas Blackband, Farnborough, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, London, England

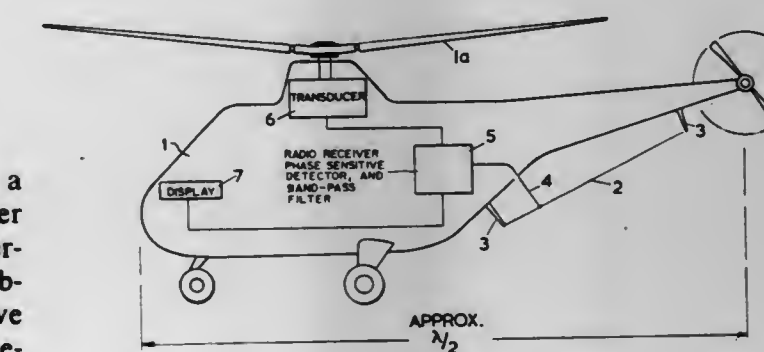
Filed Sept. 15, 1971, Ser. No. 180,820

Claims priority, application Great Britain, Sept. 16, 1970, 44,194/70

Int. Cl. G01s 3/20

U.S. Cl. 343-118

3 Claims



Radio direction finding apparatus for rotary wing aircraft includes an antenna, a radio receiver and modulation detection circuits for detecting a modulation component in the receiver output due to the interaction between the rotary wing and the antenna. The antenna is mounted on the aircraft so that the modulation component has a maximum value when the aircraft is orientated in the direction of the source of a suitable radio signal. An indicator is provided for indicating the strength of the modulation component. The detection circuits may include a phase sensitive detector or a band-pass filter.

3,754,265

### SIGNAL PROCESSING MEANS AND METHOD

Raymond S. Markowitz, Wyncote, Pa., assignor to American Electronic Laboratories, Inc., Colmar, Pa.

Filed Nov. 26, 1971, Ser. No. 202,515

Int. Cl. G01s 3/18

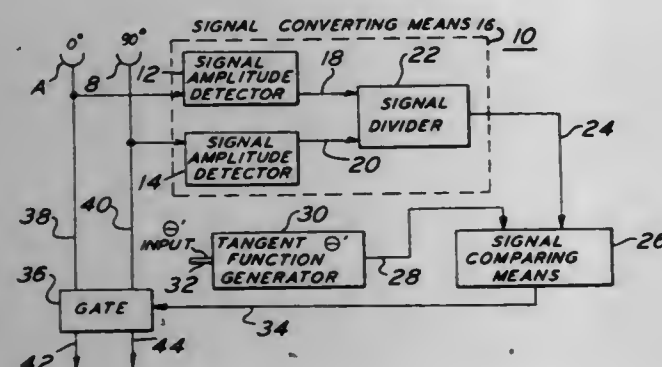
U.S. Cl. 343-119

18 Claims

A signal processing means and method in which a plurality of orthogonally disposed directional radio frequency signal



receiving means, each deliver an output signal proportional to the magnitude of the directional component of a received electromagnetic signal corresponding its directional disposition, a signal converting means receives signals from said directional receiving means and delivers an output signal which is a predetermined function of said signals, a function generating means produces an output signal which is a tangent function of angle  $\theta'$ , and a signal comparing means receives the output signals from said converting means and said func-



tion generating means and delivers an output signal when its said input signals have a predetermined relationship. A gating means delivers output signals from said directional receiving means in response to the delivery of an output signal from said signal comparing means, thereby delivering output signals from said directional receiving means to correspond with a received electromagnetic signal having a direction  $\theta$  corresponding to the angle  $\theta'$  of the tangent function being generated by the function generating means.

3,754,266

#### DIRECTION FINDER AUTOMATIC CALIBRATION UPDATING CONTROL SYSTEM

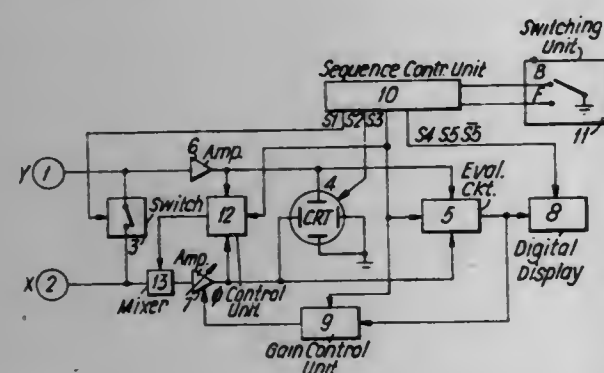
Dag Poppe, Gjetum; Odd Mathiesen, Oslo, and Gunnar Viggo Odgaard, Simenabraten, all of Norway, assignors to International Standard Electric Corporation, New York, N.Y.  
Filed Dec. 22, 1971, Ser. No. 210,870

Claims priority, application Norway, Dec. 23, 1970, 4929/70

Int. Cl. G01s 3/06

U.S. Cl. 343-119

8 Claims



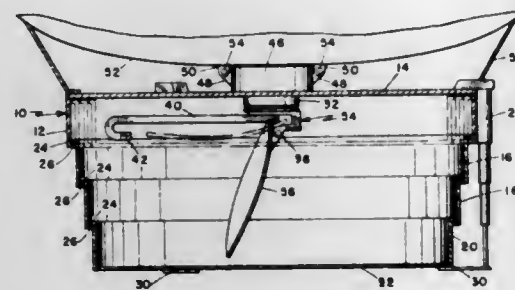
An updating control system for two channel direction finders which includes dual loop antennas and a sense antenna; and circuits for setting the direction finder to a "Frequency" condition during which the direction finder may be tuned to a new frequency and to a "Bearing" condition in which bearings corresponding to the new frequency are taken. Individual amplifying means are provided to connect each of the two loop antennas to a plate pair of a cathode ray tube. Circuits are also shown for updating (adjusting) the phase and gain of the two signals, and for interconnecting the inputs of the two amplifiers during the updating process and for instrumenting correction of quadrantal errors.

3,754,267  
COLLAPSIBLE RADOME AND ANTENNA SYSTEM  
Glenn A. Walters, Poway, and Richard H. Troester, Escondido, both of Calif., assignors to Cubic Corporation, San Diego, Calif.

Filed Mar. 4, 1971, Ser. No. 120,862  
Int. Cl. H01q 1/28

U.S. Cl. 343-705

7 Claims



A collapsible radome and antenna system in the form of a self-contained pod which is attached to an aircraft by quick disconnect means. In collapsed position the radome is a shallow cylindrical structure and the reflector of the antenna is folded. The radome has telescopic sections which are extended to an open position, the reflector unfolding when the structure is extended and being mounted on a scanning mechanism to move within the radome. In one form the radome has a fail safe capability to collapse in an emergency.

3,754,268

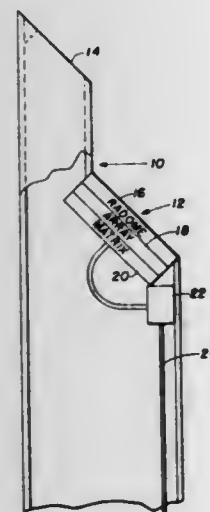
#### SUBMARINE-TO-SATELLITE COMMUNICATIONS ANTENNA

Jerry E. Boyna, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 8, 1972, Ser. No. 287,309  
Int. Cl. H01q 1/34

U.S. Cl. 343-709

4 Claims



A phased-array antenna system for an SHF communications link between submarines and earth-orbiting satellites. The compact antenna system is mounted in the head of a submarine periscope and provides increased data rate, low-sidelobes, variable beam control, multiple-beam capability, and circular polarization. RF energy to be transmitted is conducted from transmitting means in the submarine through a waveguide run the length of the periscope to the antenna system which includes a high-power switch to commute the energy to a four-port hybrid matrix. The matrix feeds selectively predetermined phase progressions of the energy to the radiating array which comprises a plurality of probe-fed, cavity elements.

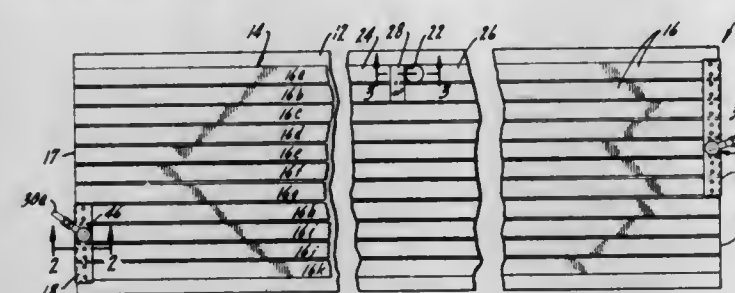
#### 3,754,269 OMNI-DIRECTIONAL ANTENNA MOUNTED IN CIRCULAR RADOME

Lawrence A. Clavin, Barrington; Charles M. Eaton, Western Springs; Leo F. Hansman, Schiller Park, and Lenard J. Duncan, Spring Grove, all of Ill., assignors to Vorta Systems, Inc., Round Lake, Ill.

Filed Mar. 7, 1972, Ser. No. 232,562  
Int. Cl. H01q 1/12

U.S. Cl. 343-742

11 Claims



There is disclosed a method for manufacturing a television antenna, as well as a television antenna which is manufactured according to the preferred method. The television antenna of the preferred embodiment comprises a layer of flexible non-conductive material, such as mylar, on top of which is affixed a plurality of strips of flexible conductive material. Electrical leads are connected to the flexible strips of conductive material and the entire flexible structure is then placed on a rigid housing. In the preferred embodiment, the rigid housing comprises a circular non-conductive shell. The flexible layer of laminated conductive and non-conductive material is placed circumferentially around the interior of the circular shell, thereby forming an omni-directional antenna which is completely impervious to corrosive elements.

3,754,270

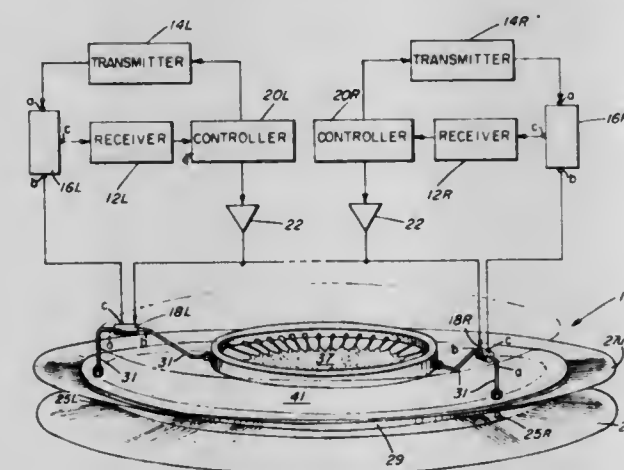
#### OMNIDIRECTIONAL MULTIBEAM ARRAY ANTENNA

Wilbur H. Thies, Jr., Santa Barbara, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Mar. 24, 1972, Ser. No. 237,670  
Int. Cl. H01q 19/06

U.S. Cl. 343-754

4 Claims



An omnidirectional multibeam array antenna assembly, for use particularly at radio frequencies, is shown. The preferred embodiment includes a circular dielectrically loaded parallel-plate lens joined by radially disposed transmission lines of equal length to antenna elements disposed on a circle concentric with such lens and radio frequency switching means to permit use of the assembly in either a "transmit" or "receive" mode. The dielectric constant of the material loading the parallel plate lens and the physical diameter of the circular lens are so selected as to produce equal RF path lengths to three (or four) points on a straight line tangent to the arc of elements relative to each one of a plurality of feed ports.

3,754,271

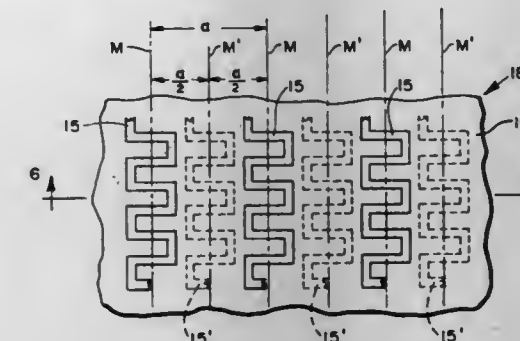
#### BROADBAND ANTENNA POLARIZER

James J. Epis, Sunnyvale, assignor to GTE Sylvania Incorporated, Mountain View, Calif.

Filed July 3, 1972, Ser. No. 268,479  
Int. Cl. H01q 19/00

U.S. Cl. 343-756

4 Claims



In a meanderline array random-polarizer comprising a plurality of stacked substantially identical arrays of laterally spaced square-wave shaped conductive strips or meanderlines arranged with parallel extending axes with each such axis spaced one array-period from its nearest counterparts, the improvement consisting of offsetting or staggering the meanderline axes of adjacent arrays by a distance preferably equal to one-half of the array-period. The meanderline axes in one set of alternate arrays are thus aligned in parallel planes spaced apart by an array-period; the meanderline axes in the remaining or second set of alternate arrays are also aligned in parallel planes spaced apart by one array-period; and the second set of parallel planes are offset or staggered by a distance equal to one-half of an array-period from the first set of parallel planes. A polarizer comprising a plurality of such staggered arrays has utility when placed in front of the aperture of pyramidal horn antenna for converting the linearly polarized wave of the horn to a circularly polarized wave.

3,754,272

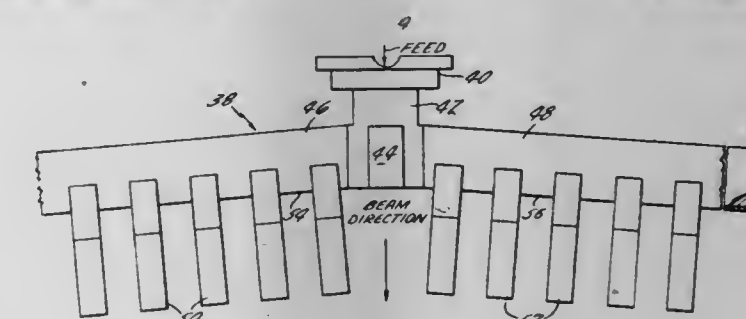
#### FREQUENCY INDEPENDENT NON-RESONANT SERIES FED SLOT ANTENNA

Lenrod L. Goldstone, and John H. Cross, both of Norwalk, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 28, 1972, Ser. No. 238,854  
Int. Cl. H01q 13/00

U.S. Cl. 343-778

6 Claims



An interferometer antenna comprises upper and lower arrays, each having a non-resonant, terminated, center fed series feed with slot or hole coupling into individual horn radiators non-resonantly spaced somewhat off a half wavelength apart, each half of each array being at an angle other than 180° with the other half. Each half of the upper and lower array is fed with a power divider located near the apex of the array which equally divides the energy between the left and right hand halves of the array. Non-resonant horn spacing and the angular disposition of the array halves provides a beam in the far field along the bisector of the angle between the right and left halves, independent of variations in frequency over useful frequency ranges.



3,754,273

## CORRUGATED WAVEGUIDE

Yoshihiro Takeuchi, Tsutomu Hashimoto, and Fumio Takeda, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

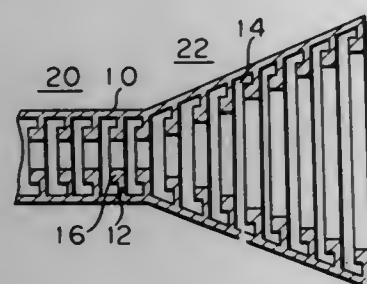
Filed Oct. 15, 1971, Ser. No. 189,540

Claims priority, application Japan, Oct. 24, 1970, 45/93689

Int. Cl. H01q 13/02; H03h 7/38

U.S. Cl. 343-786

6 Claims



The disclosed circular waveguide is provided on the inner wall surface with corrugated slots each having a width abruptly changed from a smaller value on that portion near to the axis of the waveguide to a larger value on the remaining portion of the slot. Also an electromagnetic horn is disclosed including such slots.

3,754,274

## CURRENT DRIVER CIRCUITRY FOR FERRITE PHASE SHIFTERS

Ernest P. Auger, Billerica, Mass., assignor to Raytheon Company, Lexington, Mass.

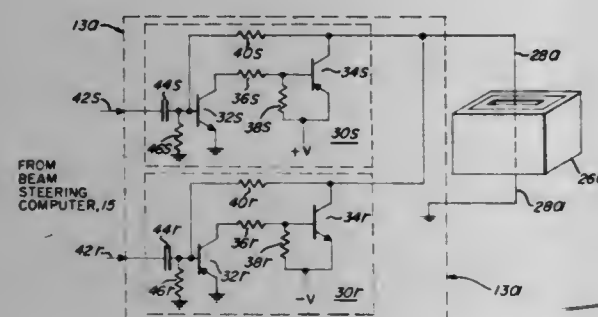
Continuation of Ser. No. 130,124, April 1, 1971, abandoned.

This application July 31, 1972, Ser. No. 276,627

Int. Cl. H01q 3/26

U.S. Cl. 343-854

3 Claims



Current driver circuitry for magnetically saturable loads, such circuitry including feedback means for monitoring the time rate of change of flux in such load and disconnecting such circuitry when such rate of change of flux indicates that a saturation condition has been reached.

3,754,275

## METHOD AND APPARATUS FOR CORRELATING A PIPELINE INSPECTION RECORD TO KNOWN EXTERNAL LOCATIONS

Nick G. Carter, and Charles C. Moore, III, both of Houston, Tex., assignors to AMF Incorporated, White Plains, N.Y.

Filed Sept. 17, 1971, Ser. No. 181,406

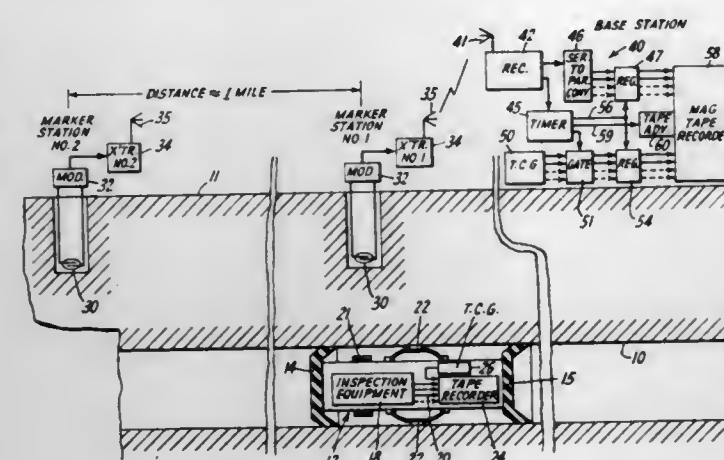
Int. Cl. G01d 5/00

U.S. Cl. 346-1

17 Claims

Apparatus and methods are disclosed for correlating a pipeline inspection record to known external locations along the pipeline. Inspection signals produced by inspection apparatus transported through a pipeline are recorded on magnetic tape along with regularly occurring coded time signals produced by a time code generator. At known locations external to the pipeline the passage of the inspection apparatus

through the pipeline is detected and the exact time of passage is recorded either at the respective known locations, or via telemetry, at a base station. Magnetic tape having inspection



signals and time coded signals is correlated with time signals recorded when inspection apparatus passed known locations to indicate the position of known external locations on the inspection record.

3,754,276

## INSTRUMENT FOR MECHANICALLY RECORDING STRAINS

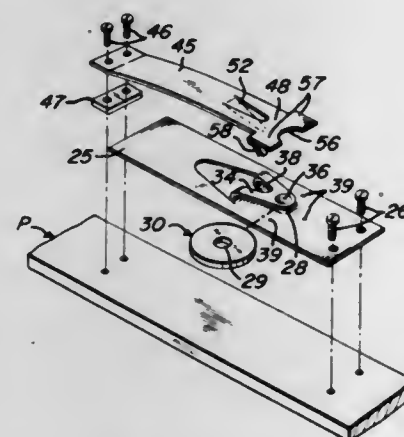
Thomas E. Endres, Kettering, Ohio, assignor to Technology Incorporated, Dayton, Ohio

Filed Aug. 9, 1971, Ser. No. 169,927

Int. Cl. G01d 15/02

U.S. Cl. 346-7

21 Claims



An annular recording target is rotatably supported by a U-shaped spring clamp which projects into the center hole of the target and is formed as an integral part of a base plate adapted to be secured to a member being monitored for strains. A recording or scratch element is supported in contact with the target by an arm forming part of another base plate which is also adapted to be attached to the member being monitored. The element moves radially relative to the target in response to linear movement between the base plates, and an actuating mechanism rotates or indexes the target in one direction in response to relative linear movement between the base plates in either direction. The actuating mechanism includes diametrically opposed sets of inclined spring fingers which are supported by the arm and engage either the radial or peripheral surface of the target at 90° relative to the linear direction of movement of the recording element. The recording element may be located at different radial positions for accommodating targets of different diameters, and in one embodiment, the target is constructed of a light transmittable plastics material which is processed to form a tinted face portion which is adapted to be penetrated by the scratch element.

3,754,277

## TRACE IDENTIFYING MEANS FOR MULTIPLE TRACE RECORDER

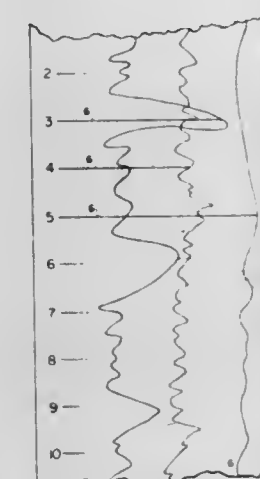
Peter R. Lowe, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jan. 3, 1972, Ser. No. 214,616

Int. Cl. G01d 1/00

U.S. Cl. 346-23

9 Claims



In a multiple trace recording system of the type which might use a CRT as the writing instrumentality, means are provided for positively identifying each trace on the record. The identifying means includes means for printing, along one margin of the record member, ordinal numbers representative of the several input signal channels. The identifying means further includes means for generating a transverse trace line extending from a point adjacent to each of the imprinted numbers to a point of juncture with the corresponding data trace.

3,754,278

## THERMAL PRINTING SYSTEM

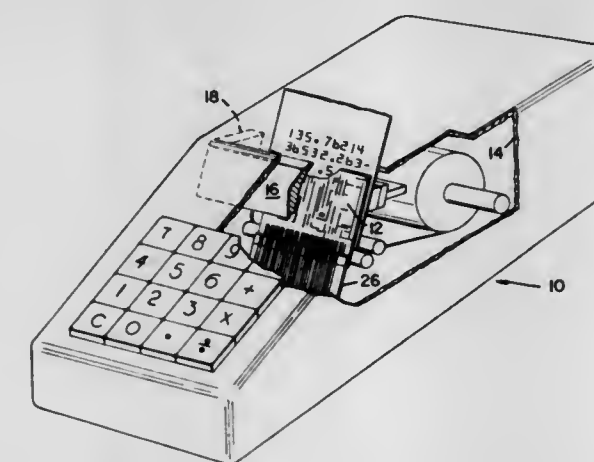
Howard C. Borden, Jr., Atherton, Calif., assignor to American Micro-systems, Inc., Santa Clara, Calif.

Filed Dec. 1, 1971, Ser. No. 203,647

Int. Cl. G01d 15/10

U.S. Cl. 346-76 R

14 Claims



A thermal printer for electronic calculators or other computing devices comprises a multi-layer print head with a

metallized layer on one outer surface formed as a series of master characters each comprised of a plurality of segments which are electrical resistance elements that extend between end contacts. These contacts are connected to an intermediate or buried metallized layer within the ceramic body which in turn provides for interconnections with another metallization layer including input ground and driver lead contact pads formed on the other outer surface of the ceramic body. A logic control sub-system for the printer receives signals from a driver output such as a calculator computing circuit and thereby controls the electrical energy furnished to the various character segments on the print head to heat them and produce the appropriate printout when the print head is in contact with heat sensitive paper. This sub-system stores the information received from the driver output and then utilizes the stored information in a multiplexing or time sharing arrangement to energize sequentially groups of preselected segment portions of all the master characters during a series of separate consecutive time periods of the print cycle.

3,754,279

## THERMAL RECORDER HAVING ANALOGUE STYLUS AND PRINT HEAD

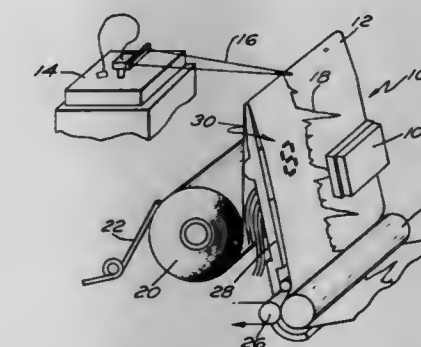
Leo F. Valenti, and Paul S. Follett, both of East Greenwich, R.I., assignors to Tech-Rite Electronics, Inc., East Greenwich, R.I.

Filed Jan. 31, 1972, Ser. No. 222,172

Int. Cl. G01d 15/10

U.S. Cl. 346-76 R

4 Claims



A recording device for recording numeric information on a continuously moving thermo-responsive sheet material and including a print head having a plurality of heat conducting segments that are in contact with the sheet material and that are selectively energized for thermographically producing a numeric character at intervals on the continuously moving sheet material.

3,754,280

## APPARATUS FOR PRODUCING RECORDED TRACES OF UNIFORM DENSITY

Peter R. Lowe, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 17, 1972, Ser. No. 235,536

Int. Cl. G01d

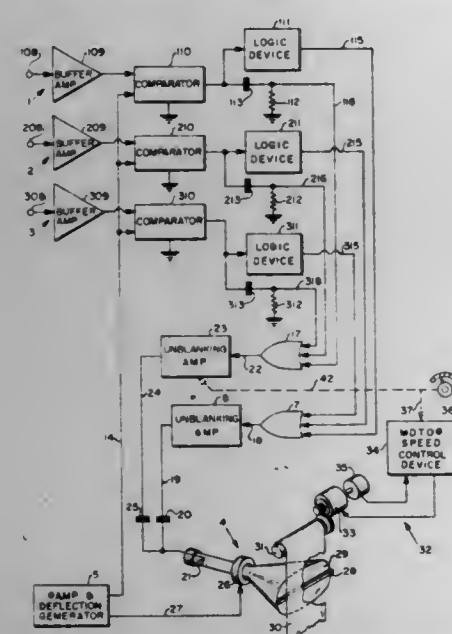
U.S. Cl. 346-110 R

2 Claims

The values of a plurality of data signals to be plotted against time as traces on a moving photosensitive record sheet are



sampled by being simultaneously compared continuously with a cyclically repeated ramp voltage by a plurality of comparators. Each of the latter produces an output each time that the ramp voltage reaches the value of the corresponding signal. The ramp voltage is synchronized with the horizontal sweep for a fiber optics cathode ray tube, across the optics strip of which the sheet is advanced at right angles. A logic device for each signal unblanks the normally blanked beam of the tube for a period in each sweep to mark a dynamic line on the



sheet. Each period is that in which the ramp voltage lies between the two values of the corresponding signal at which the corresponding comparator output is produced for the present and the immediately previous sweeps. When these two values are equal, an RC circuit responsive to the corresponding comparator output, and an amplifier adjusted in accordance with the speed of the sheet, cause the beam to mark a fixed length static line on the sheet having an intensity which is a direct function of the sheet speed.

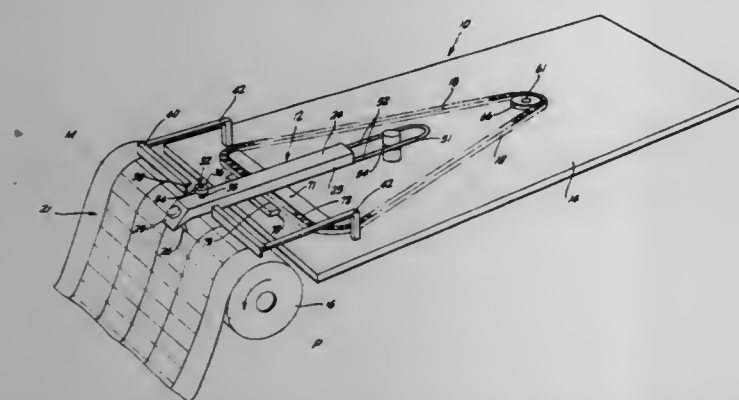
### 3,754,281 RECTILINEAR STYLUS SYSTEM FOR CHART RECORDER

Richard S. Kampf, Costa Mesa, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 17, 1972, Ser. No. 218,141  
Int. Cl. G01d 15/24

U.S. Cl. 346—139 R

5 Claims



A stylus arm adapted to track along a rectilinear marking path extending across at least one channel of a chart recorder. The free end of the stylus arm carries a stylus adapted to engage the chart, and a guide bearing adapted to engage an elongate guide surface to guide the stylus along the rectilinear path. The constrained end of the stylus arm includes a U-shaped portion which engages a recessed channel in a mounting pin secured to the support platform, so that the stylus arm is both pivotably and slidably mounted with respect to the

platform. Means are provided for driving the free end of the stylus arm from one side of the channel to the other, with the effective length of the stylus arm being extended as it approaches the outer reaches of the channel to permit the stylus to track along the rectilinear marking path.

### 3,754,282 HIGH RESOLUTION RECORDER

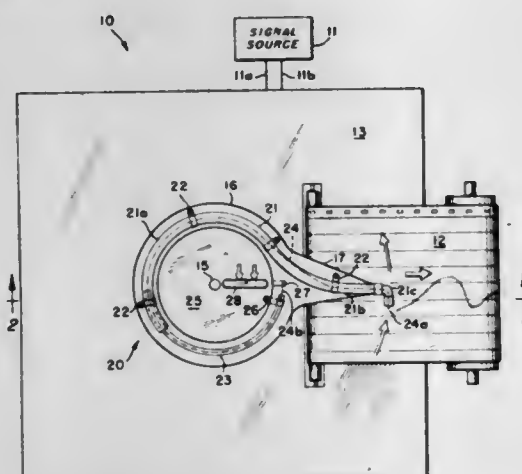
Leighton L. Morse, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 22, 1972, Ser. No. 317,874

Int. Cl. G01d

U.S. Cl. 346—139 C

—7 Claims



A recorder having a rotary driven stylus mechanism electrically cooperating with an electro-sensitive recording paper is modified to allow continuous unattended operation. An integral elongate stylus has a portion wrapped about an axis of rotation and the tip of a radially extending portion is brought to bear against the recording paper at a constant pressure and orientation irrespective of the accumulated erosion caused by prolonged operation. The aerodynamic resistance of a vane creates a force to displace the stylus to ensure its predetermined constant pressure and orientation as the stylus wears away to provide uniform operational characteristics over relatively long periods.

### 3,754,283 RECORDING DRUM WITH HELICAL ELECTRODE

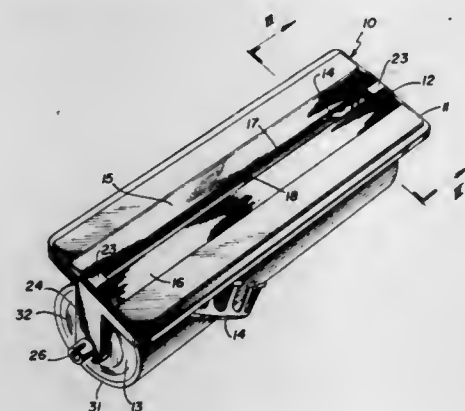
Milton Alden, Brockton, Mass., assignor to Alden Research Foundation, Brockton, Mass.

Division of Ser. No. 806,795, March 13, 1969, Pat. No. 3,611,424. This application Oct. 4, 1971, Ser. No. 186,093

Int. Cl. G01d 15/06

U.S. Cl. 346—139 C

1 Claim



A recording drum with helical electrode wherein the electrode has legs which are joined to the surface of the drum by a body of elastomer material.

## DESIGNS

AUGUST 21, 1973

### 228,160 GLOVE

Theresa Deraline Harrison, 1115 W. 97th St.,  
Los Angeles, Calif. 90044

Filed July 17, 1971, Ser. No. 24,934

Term of patent 14 years

Int. Cl. D2—02

U.S. Cl. D2—364



### 228,161 TABLE

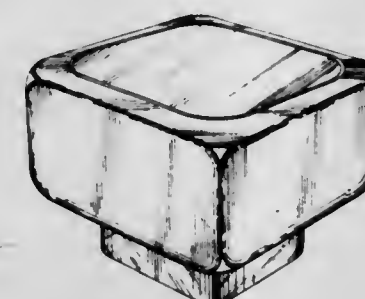
William C. Andrus, Wyoming, Mich., assignor to  
Steelcase Inc., Grand Rapids, Mich.

Filed Mar. 27, 1972, Ser. No. 238,729

Term of patent 14 years

Int. Cl. D6—03

U.S. Cl. D6—27



### 228,162

### COMBINED TABLE AND MULTIPLE SLATING UNIT

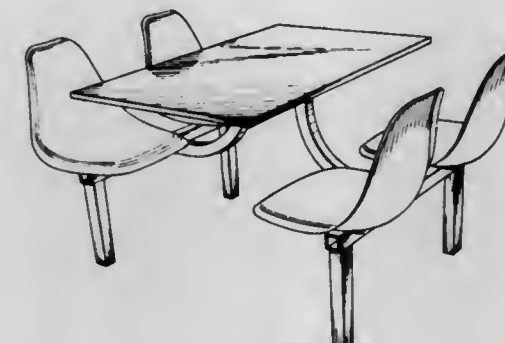
Roy W. Fink, Portage, Mich., assignor to The  
Vecta Group, Inc., Kalamazoo, Mich.

Filed Aug. 30, 1971, Ser. No. 176,428

Term of patent 14 years

Int. Cl. D6—06

U.S. Cl. D6—45



### 228,163 CHAIR

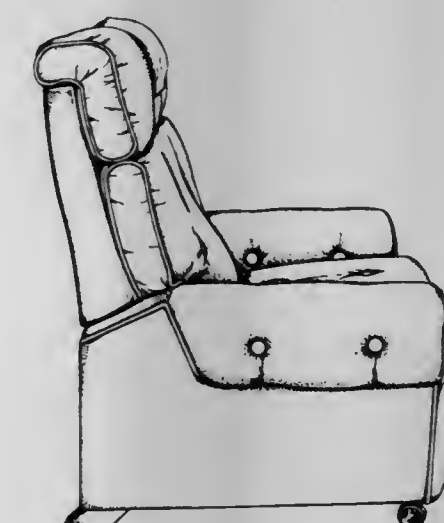
Stapleton Long, Morristown, Tenn., assignor to The  
Berkline Corporation, West Springfield, Mass.

Filed Mar. 20, 1972, Ser. No. 236,554

Term of patent 3½ years

Int. Cl. D6—02

U.S. Cl. D6—39



### 228,164 CHAIR

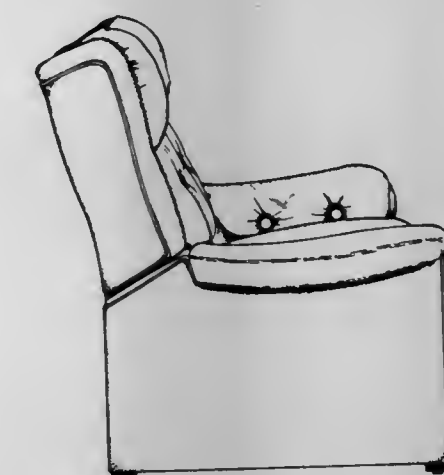
Stapleton Long, Morristown, Tenn., assignor to The  
Berkline Corporation, West Springfield, Mass.

Filed Mar. 20, 1972, Ser. No. 236,555

Term of patent 3½ years

Int. Cl. D6—02

U.S. Cl. D6—39

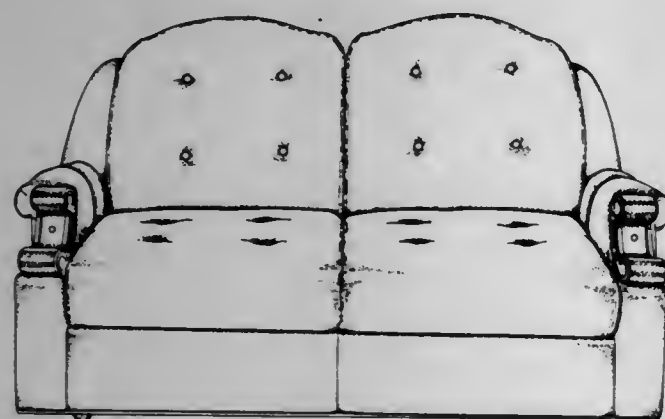




228,165  
SOFA

Stapleton Long, Morristown, Tenn., assignor to The  
Berkline Corporation, West Springfield, Mass.  
Filed Mar. 20, 1972, Ser. No. 236,553  
Term of patent 3½ years  
Int. Cl. D6—02

U.S. Cl. D6—63

228,168  
BATH MAT

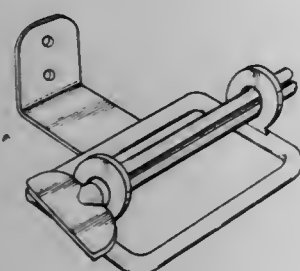
Ellie J. Huggins, Wheaton, Ill., assignor to  
Pretty Products, Inc., Coshocton, Ohio  
Filed Feb. 14, 1972, Ser. No. 226,398  
Term of patent 14 years  
Int. Cl. D6—11

U.S. Cl. D6—211

228,166  
DISPENSER FOR A COLLAPSIBLE  
TUBULAR CONTAINER

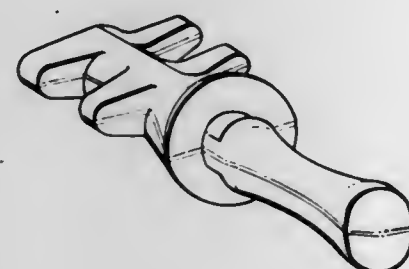
Edward O. Burckhardt, 1691 Colonial Drive,  
Eugene, Oreg. 97401  
Filed Feb. 22, 1972, Ser. No. 228,423  
Term of patent 7 years  
Int. Cl. D6—06

U.S. Cl. D6—87

228,169  
CAM FOR A FASTENING MECHANISM  
FOR CONTAINER DOORS

Barry Stanley Morris, Walsall, England, assignor to The  
Bloxwich Lock and Stamping Company Limited,  
Walsall, England  
Filed Oct. 30, 1972, Ser. No. 301,856  
Term of patent 14 years  
Int. Cl. D8—07

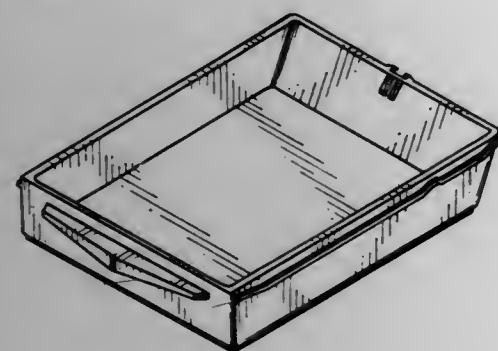
U.S. Cl. D8—137

228,167  
DRAWER WITH INTEGRAL HANDLE

Frank Holmes, Buena Park, George Read, Glendora, and  
William A. Moore, West Los Angeles, Calif., assignors  
to Ajax Hardware Manufacturing Corporation, City of  
Industry, Calif.

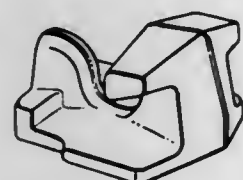
Filed Nov. 1, 1971, Ser. No. 194,803  
Term of patent 14 years  
Int. Cl. D6—06

U.S. Cl. D6—191

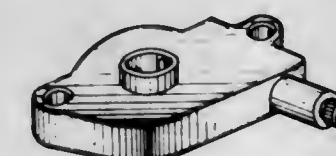
228,170  
KEEPER FOR A FASTENING MECHANISM  
FOR CONTAINER DOORS

Barry Stanley Morris, Walsall, England, assignor to The  
Bloxwich Lock and Stamping Company Limited,  
Walsall, England  
Filed Oct. 30, 1972, Ser. No. 301,857  
Term of patent 14 years  
Int. Cl. D8—07

U.S. Cl. D8—137

228,171  
WINDOW OPERATOR OR SIMILAR ARTICLE  
Lyle M. Northrup, New Hampton, Iowa, assignor to  
Lynor Engineering, Inc., New Hampton, Iowa  
Filed Nov. 26, 1971, Ser. No. 202,718  
Term of patent 14 years  
Int. Cl. D8—09

U.S. Cl. D8—153

228,172  
COMBINED BOTTLE AND CAP THEREFOR  
David S. Byrne, Atlantic Highlands, N.J., assignor to  
Warner-Lambert Company, Morris Plains, N.J.  
Filed Nov. 16, 1971, Ser. No. 199,406  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—118

228,173  
DECANTER  
Edward J. Kretz, Toledo, Ohio, assignor to  
Owens-Illinois, Inc., Toledo, Ohio  
Filed Apr. 24, 1972, Ser. No. 247,228  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—128

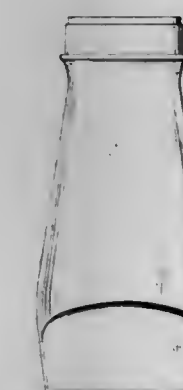
228,174  
BOTTLE

Edward J. Kretz, Toledo, Ohio, assignor to  
Owens-Illinois, Inc., Toledo, Ohio  
Filed Mar. 3, 1972, Ser. No. 231,782  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—129

228,175  
BOTTLE  
Edward J. Kretz, Toledo, Ohio, assignor to  
Owens-Illinois, Inc., Toledo, Ohio  
Filed Apr. 17, 1972, Ser. No. 245,022  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—149





228,176  
JAR

James E. Plummer, Toledo, Ohio, assignor to  
Owens-Illinois, Inc., Toledo, Ohio  
Filed Jan. 21, 1972, Ser. No. 219,921  
Term of patent 14 years  
Int. Cl. D9—01

U.S. Cl. D9—162



228,177

SNAP-ON PANELING OR SIMILAR ARTICLE  
Joseph N. LaBorde, Baton Rouge, La., assignor to  
Ethyl Corporation, Richmond, Va.  
Filed Dec. 22, 1971, Ser. No. 211,154  
Term of patent 14 years  
Int. Cl. D25—01

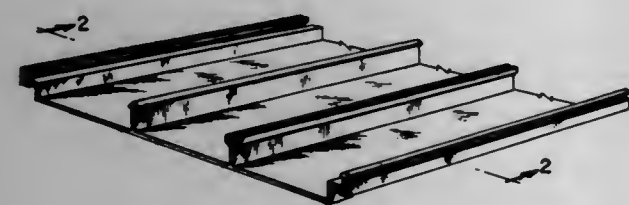
U.S. Cl. D13—1 J



228,178

SNAP-ON PANELING OR SIMILAR ARTICLE  
Joseph N. LaBorde, Baton Rouge, La., assignor to  
Ethyl Corporation, Richmond, Va.  
Filed Dec. 22, 1971, Ser. No. 211,155  
Term of patent 14 years  
Int. Cl. D25—01

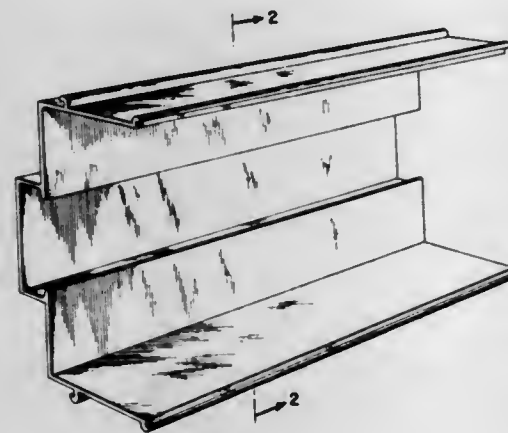
U.S. Cl. D13—1 J



228,179

DOOR JAMB OR SIMILAR ARTICLE  
Joseph N. LaBorde, Baton Rouge, La., assignor to  
Ethyl Corporation, Richmond, Va.  
Filed Dec. 22, 1971, Ser. No. 211,147  
Term of patent 14 years  
Int. Cl. D25—01

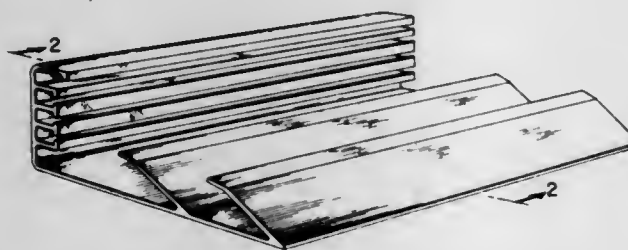
U.S. Cl. D13—6



228,180

WINDOW JAMB OR SIMILAR ARTICLE  
Joseph N. LaBorde, Baton Rouge, La., assignor to  
Ethyl Corporation, Richmond, Va.  
Filed Dec. 22, 1971, Ser. No. 211,150  
Term of patent 14 years  
Int. Cl. D25—01

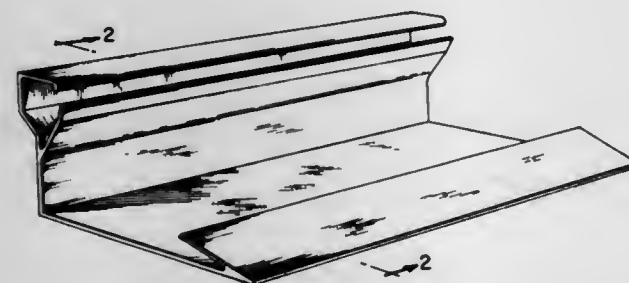
U.S. Cl. D13—6



228,181

SNAP-ON CASING OR SIMILAR ARTICLE  
Joseph N. LaBorde, Baton Rouge, La., assignor to  
Ethyl Corporation, Richmond, Va.  
Filed Dec. 22, 1971, Ser. No. 211,153  
Term of patent 14 years  
Int. Cl. D25—01

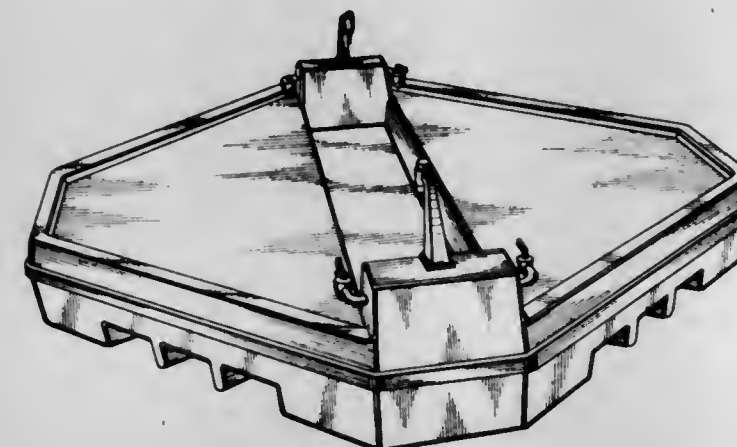
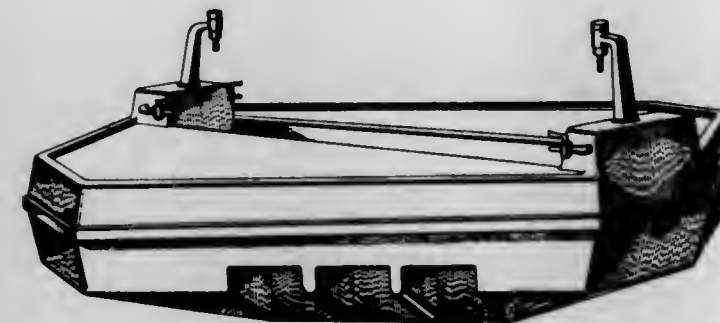
U.S. Cl. D13—6



228,182

LABORATORY TABLE  
Arthur W. Carlson, Muskegon, Mich., assignor to  
E. H. Sheldon and Company, Muskegon, Mich.  
Filed Mar. 10, 1971, Ser. No. 123,127  
Term of patent 14 years  
Int. Cl. D24—01

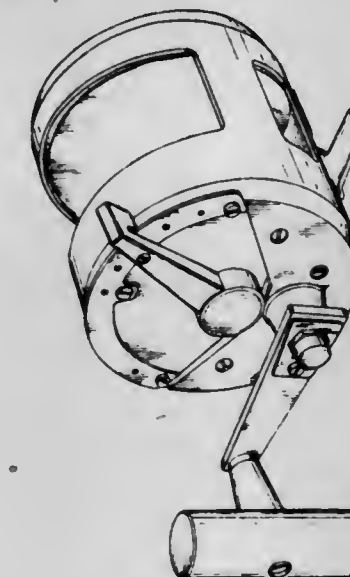
U.S. Cl. D16—2 C



228,183

CASTING REEL FOR SEA-FISHING  
Kent Tufvesson, Karlshamn, Sweden, assignor to  
ABU AB, Svangsta, Sweden  
Filed Jan. 21, 1971, Ser. No. 108,666  
Claims priority, application Sweden, July 21, 1970,  
218/70  
Term of patent 14 years  
Int. Cl. D22—05

U.S. Cl. D22—25



228,184

FISH LURE  
Ewell J. Harris, Rte. 3, Box 135A, Lot 13,  
Adrian, Mich. 49221  
Filed June 29, 1972, Ser. No. 267,407  
Term of patent 14 years  
Int. Cl. D22—05

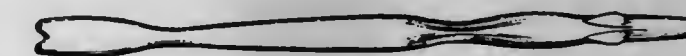
U.S. Cl. D22—27



228,185

SOFT PLASTIC BAIT FOR FISHING  
Joseph S. Wascow, 3048 N. Neva, Chicago, Ill. 60634  
Filed Sept. 5, 1972, Ser. No. 286,050  
Term of patent 14 years  
Int. Cl. D22—05

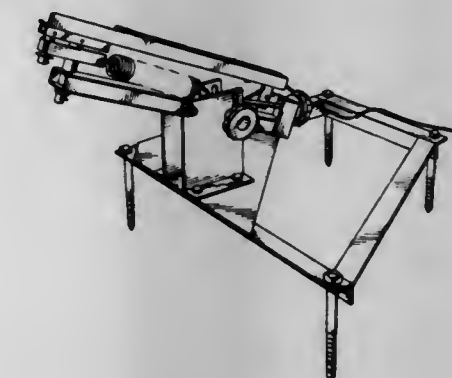
U.S. Cl. D22—27



228,186

TARGET TRAP  
Austin M. Wortley, Jr., Downingtown, Pa., assignor to  
Penguin Industries, Inc., Parkersburg, Pa.  
Filed Sept. 28, 1971, Ser. No. 184,653  
Term of patent 14 years  
Int. Cl. D22—04

U.S. Cl. D22—99



228,187

FREE STANDING FIREPLACE  
William R. Damm, 19434 NE. 159th,  
Woodinville, Wash. 98072  
Filed Sept. 30, 1971, Ser. No. 185,480  
Term of patent 14 years  
Int. Cl. D23—03

U.S. Cl. D23—97





**228,188**  
**DENTAL FLOSS APPLICATOR**  
 James F. Howison, Rte. 1, Box 1249K,  
 Virginia Beach, Va. 23456  
 Filed Apr. 16, 1971, Ser. No. 134,913  
 Term of patent 7 years  
 Int. Cl. D24—02

U.S. Cl. D24—1 D



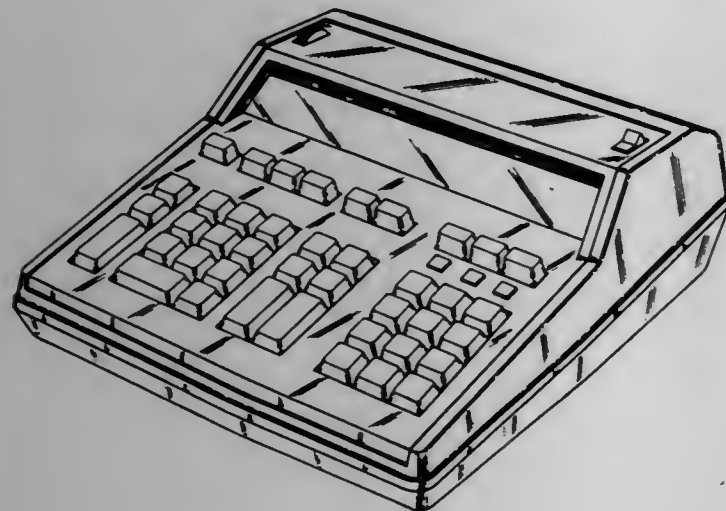
**228,189**  
**CASE FOR A CALCULATOR**  
 Myron Beitler, West Orange, N.J., and Gary Jaffae, Baltimore, Md., assignors to Litton Business Systems, Inc., Orange, N.J.  
 Filed Sept. 20, 1971, Ser. No. 182,310  
 Term of patent 7 years  
 Int. Cl. D14—02

U.S. Cl. D26—5 C



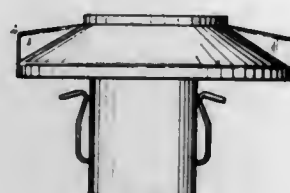
**228,190**  
**ELECTRONIC CALCULATOR**  
 Manfred Link, Nuremberg, Germany, assignor to Triumph Werke Nuernberg A.G., Nuremberg, Germany  
 Filed Feb. 24, 1972, Ser. No. 229,252  
 Term of patent 14 years  
 Int. Cl. D14—02

U.S. Cl. D26—5 C



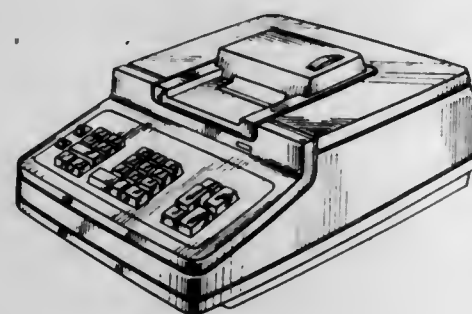
**228,191**  
**LAMPHOLDER SET FOR FLUORESCENT LAMPS**  
 James F. Sullivan, Eastchester, N.Y., assignor to Kulka Electric Corp., Mount Vernon, N.Y.  
 Filed Mar. 16, 1972, Ser. No. 235,464  
 Term of patent 14 years  
 Int. Cl. D13—03

U.S. Cl. D26—1 G



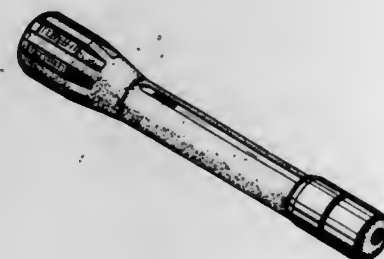
**228,192**  
**ELECTRONIC CALCULATOR**  
 John S. Kovacs, East Norristown, and Lewis H. Herr, Lansdale, Pa., assignors to Sperry Rand Corporation, New York, N.Y.  
 Filed Mar. 17, 1972, Ser. No. 235,885  
 Term of patent 14 years  
 Int. Cl. D14—02

U.S. Cl. D26—5 C



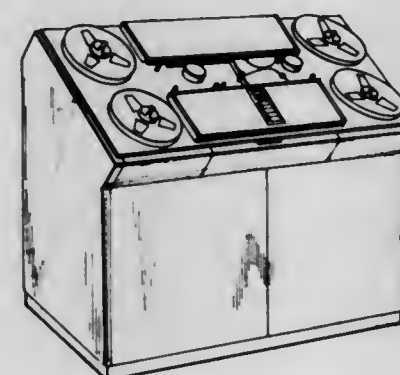
**228,193**  
**CORDLESS MICROPHONE**  
 Jerry R. Pruyne, Fort Collins, Colo., assignor to Sonotronics, Ltd., Fort Collins, Colo.  
 Filed Aug. 4, 1971, Ser. No. 169,163  
 Term of patent 14 years  
 Int. Cl. D14—01; D14—03

U.S. Cl. D26—14 J



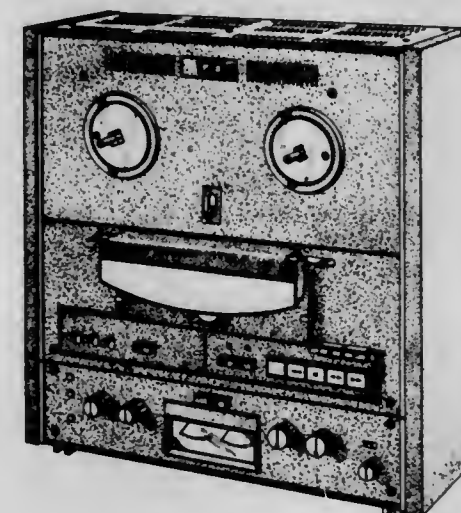
**228,194**  
**MAGNETIC TAPE DUPLICATOR CONSOLE**  
 Benjamin N. Yamada, Sunnyvale, Calif., assignor to Consolidated Video Systems, Inc., Santa Clara, Calif.  
 Filed Apr. 24, 1972, Ser. No. 247,262  
 Term of patent 14 years  
 Int. Cl. D14—01; D14—02

U.S. Cl. D26—14 B



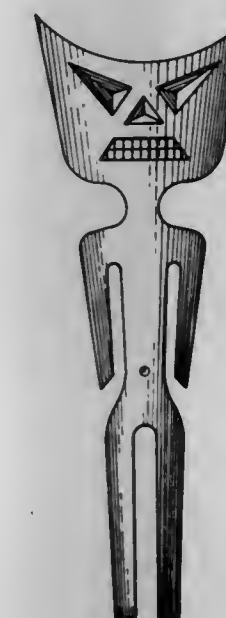
**228,195**  
**TAPE RECORDER**  
 Katsuo Taguchi, Higashikatsushika-gun, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan  
 Filed Sept. 25, 1972, Ser. No. 291,596  
 Term of patent 14 years  
 Int. Cl. D14—01

U.S. Cl. D26—14 B



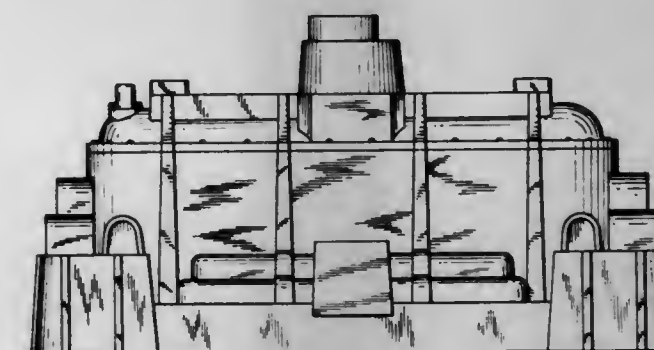
**228,196**  
**PALM FROND FIGURE**  
 Norwood R. Warehime, 704 W. 34th St., Baltimore, Md. 21211  
 Filed Oct. 20, 1970, Ser. No. 25,573  
 Term of patent 14 years  
 Int. Cl. D11—02

U.S. Cl. D29—23 E



**228,197**  
**HOME AQUARIUM FILTER**  
 David D. Lovitz, Short Hills, N.J., assignor to Sternco Industries, Inc., Harrison, N.J.  
 Filed Nov. 19, 1971, Ser. No. 200,647  
 Term of patent 14 years  
 Int. Cl. D30—02

U.S. Cl. D30—9





228,198

**GOLF CLUB GRIP**

Clifford A. Spencer, Akron, Ohio, assignor to  
Eaton Corporation, Cleveland, Ohio  
Filed May 21, 1971, Ser. No. 146,004  
Term of patent 14 years  
Int. Cl. D21-01

U.S. Cl. D34-5 GS

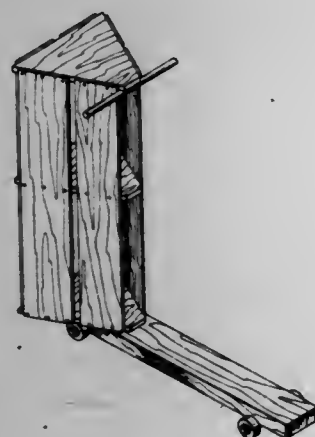


228,199

**SCOOTER**

James N. Howard, 12361 E. Colby Drive,  
Mishawaka, Ind. 46544  
Filed May 12, 1972, Ser. No. 252,951  
Term of patent 14 years  
Int. Cl. D21-01

U.S. Cl. D34-15 AT

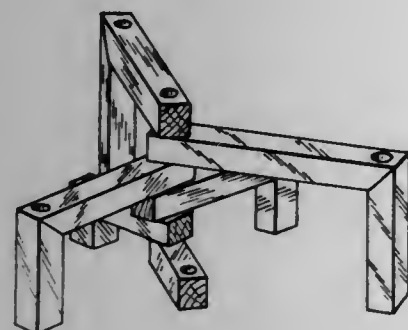


228,200

**CANDLE HOLDER**

Clifford R. Anderson, Albert City, Iowa 50510  
Filed July 19, 1971, Ser. No. 164,204  
Term of patent 14 years  
Int. Cl. D26-01

U.S. Cl. D48-2

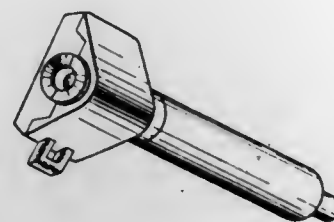


228,201

**FLASHLIGHT**

Sidney Schwartz, 307 5th Ave.,  
New York, N.Y. 10016  
Filed May 30, 1972, Ser. No. 258,236  
Term of patent 14 years  
Int. Cl. D26-02

U.S. Cl. D48-24 A

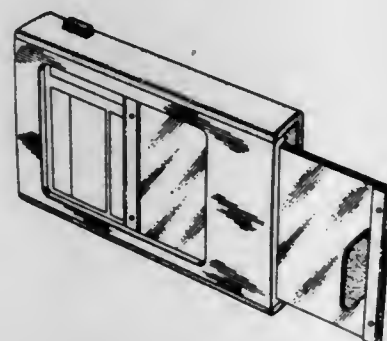


228,202

**COMBINED TAPE MEASURE, ANNOTATION PAD, AND STYLUS THEREFOR**

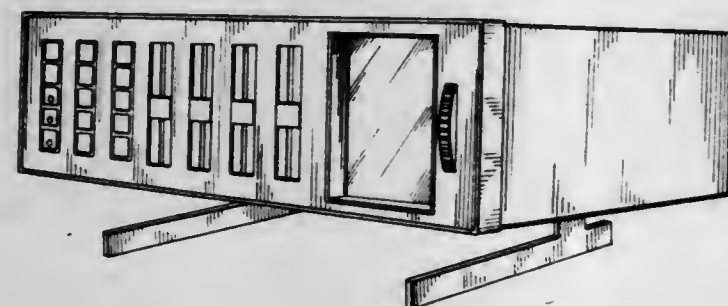
Michel Quenot, Besancon, France, assignor to Manu-  
facture Quenot Mabo, Besancon, France  
Filed Dec. 3, 1971, Ser. No. 204,781  
Claims priority, application France June 7, 1971  
Term of patent 14 years  
Int. Cl. D10-04

U.S. Cl. D52-1 R

228,203  
RADIO

Carl Yurdin, Port Washington, N.Y., assignor to  
Harman-Kardon Incorporated, Plainview, N.Y.  
Filed Aug. 10, 1971, Ser. No. 170,673  
Term of patent 14 years  
Int. Cl. D14-03

U.S. Cl. D56-4 B

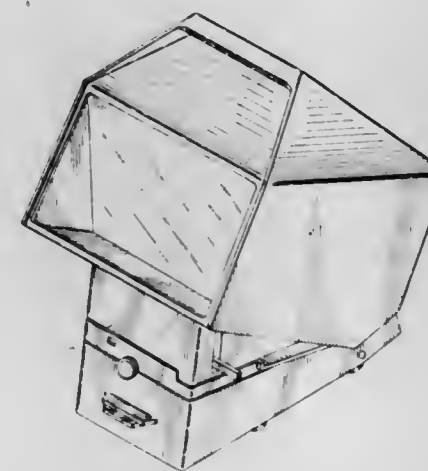


228,204

**MICROFILM READER**

Stephen P. Hines, Rochester, N.Y., assignor to  
Eastman Kodak Company, Rochester, N.Y.  
Filed Mar. 3, 1972, Ser. No. 231,802  
Term of patent 14 years  
Int. Cl. D16-03

U.S. Cl. D61-1 N

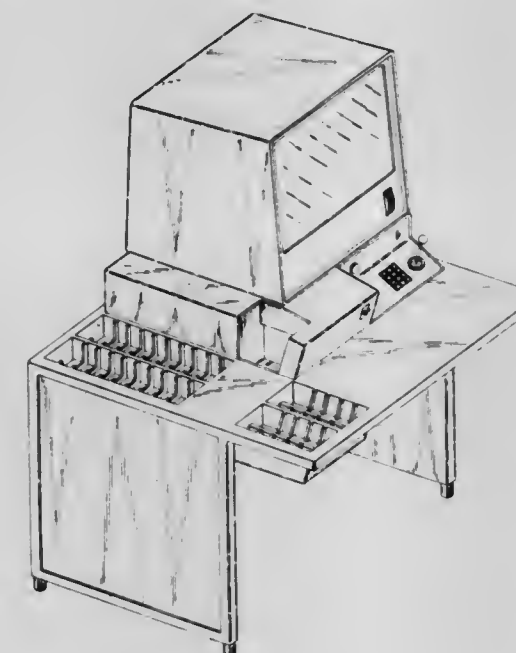


228,205

**COMBINED MICROFICHE RETRIEVAL AND VIEWER UNIT**

Andrew Virgil McClare, Rochester, N.Y., assignor to  
Eastman Kodak Company, Rochester, N.Y.  
Filed May 17, 1972, Ser. No. 254,344  
Term of patent 14 years  
Int. Cl. D16-02

U.S. Cl. D61-1 N

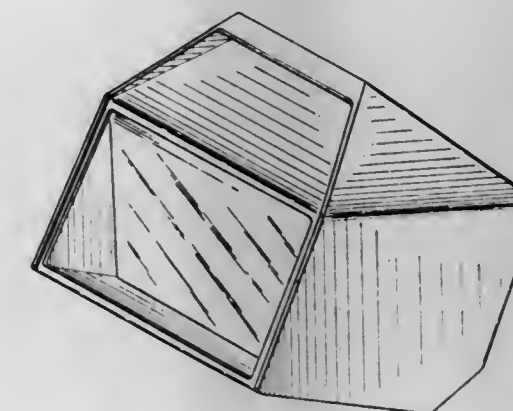


228,206

**VIEWING SCREEN HOUSING FOR A MICROFILM READER**

Stephen P. Hines, 1669 Lake Ave.,  
Rochester, N.Y. 14650  
Original application Mar. 3, 1972, Ser. No. 231,802.  
Divided and this application July 10, 1972, Ser. No.  
270,372  
Term of patent 14 years  
Int. Cl. D16-03

U.S. Cl. D61-1 N

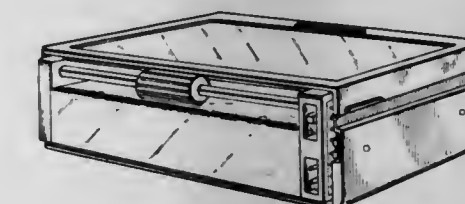


228,207

**COMBINED MICROFICHE READER AND PROJECTOR**

George Hoehne, Crescent Beach Road,  
Glen Cove, N.Y. 11542  
Filed Apr. 20, 1972, Ser. No. 246,098  
Term of patent 14 years  
Int. Cl. D16-03

U.S. Cl. D61-1 N

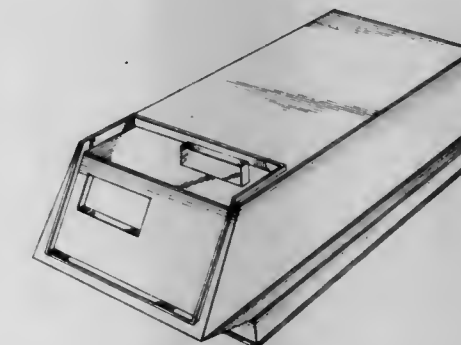


228,208

**AUTOMATIC TAPE DISPENSER**

William Macowski, Caldwell, N.J., assignor to  
Ketchum & McDougall, Inc., Roseland, N.J.  
Filed May 14, 1971, Ser. No. 143,716  
Term of patent 14 years  
Int. Cl. D19-02

U.S. Cl. D74-1 B



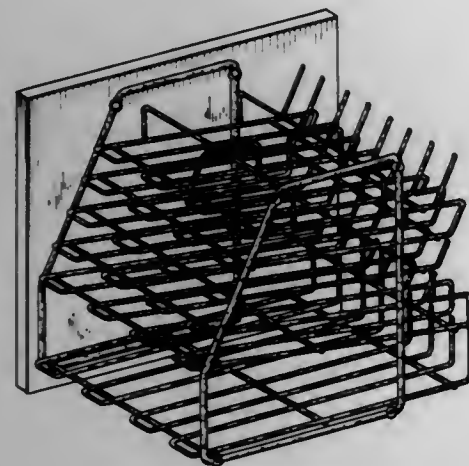


228,209

**STATIONERY ORGANIZER**

David Woods, Quakertown, Pa., assignor to J. G. Furniture Company, Inc., New York, N.Y.  
 Filed Mar. 31, 1971, Ser. No. 130,066  
 Term of patent 14 years  
 Int. Cl. D19—02

U.S. Cl. D74—9 A

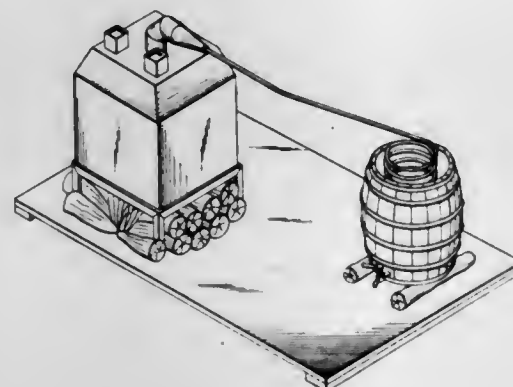


228,210

**BEVERAGE DISPENSER**

Clyde D. Scott, Rte. 3, Box 1837,  
 Fort Smith, Ark. 72901  
 Filed June 16, 1971, Ser. No. 153,911  
 Term of patent 14 years  
 Int. Cl. D7—99

U.S. Cl. D94—3 C

**LIST OF PATENTEEES**

TO WHOM

PATENTS WERE ISSUED ON THE 21ST DAY OF AUGUST, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

- Abramson, Carl N.; and Jones, Douglas G., to Adaptive Technology Inc. Asynchronous sampling and reconstruction for asynchronous sample data communication system. 3,754,098, Cl. 178-69.50r.
- Abu El-Haj, Marwan Jawdat: See—  
 Cronin, Timothy Henry; Hammen, Philip Dietrich; Abushanab, Elie; and Abu El-Haj, Marwan Jawdat, 3,753,987.
- Abushanab, Elie: See—  
 Cronin, Timothy Henry; Hammen, Philip Dietrich; Abushanab, Elie; and Abu El-Haj, Marwan Jawdat, 3,753,987.
- Acket, Gerard Adriaan; and Vlaardingerbroek, Marinus Teunis, to U.S. Philips Corporation. Semiconductor device for amplifying micro-wave. 3,754,191, Cl. 330-5.000.
- Adam, Roger Francois Jean. Device for irrigation especially of flower pots. 3,753,315, Cl. 77-38.000.
- Adamic, Joseph W., Jr., to Motorola, Inc. Increasing field inversion voltage of metal oxide on silicon integrated circuits. 3,753,806, Cl. 148-188.000.
- Adams & Whelan: See—  
 Whelan, John C., 3,753,727.
- Adams, Joseph H.; and Kurtz, Leonhard D., to Sutures, Inc. Method of fabricating pliable polyfilamentous plastic strands. 3,754,069, Cl. 264-131.000.
- Adams, Robert B., to Moore Products Co. Heat sensitive detector. 3,754,201, Cl. 338-28.000.
- Adams, Stuart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, to Boots Company Limited, The. Thioxanthene derivatives. 3,754,005, Cl. 260-328.000.
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 Abramson, Carl N.; and Jones, Douglas G., 3,754,098.
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- AEG-Elotherm G.m.b.H.: See—  
 Gosger, Peter, 3,753,878.
- Aerojet-General Corporation: See—  
 Cassidy, Frank H.; and Garcia, Ramon, 3,753,345.
- Afton, Eloff, Jr.: See—  
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- Agence National de Valorisation de La Recherche (ANVAR): See—  
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 Burger, Theodor; Hellmig, Erhard; and Vanheerentals, Jacques Leon, 3,753,707.
- Huyer, Friedrich; and Dietl, Wilhelm, 3,753,330.
- Agfa-Gevaert N.V.: See—  
 Poot, Albert Lucien; and Van Besauw, Jan Frans, 3,753,395.
- Aiello, Victor S.; Albanese, Joseph P.; Anderson, Robert V.; and Platt, Frank. Separating apparatus. 3,753,492, Cl. 210-96.000.
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 Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi, 3,753,798.
- Aitken, John: See—  
 Attali, Georges; Aitken, John; and Bernard, Jean-Louis, 3,753,294.
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 Kakuda, Hisashi; Takahashi, Shiro; and Aki, Junji, 3,753,743.
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 Leeuwrik, Cornelis Jan; Huntjens, Johannes Franciscus; and Vrouwenraets, Cornelis Martinus Franciscus, 3,753,953.
- Albanese, Joseph P.: See—  
 Aiello, Victor S.; Albanese, Joseph P.; Anderson, Robert V.; and Platt, Frank, 3,753,492.
- Alberto-Culver Company: See—  
 Cella, John A.; and Schmitt, William H., 3,753,739.
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- Alewitz, Sam, to Perfection Corporation. Anode fitting. 3,753,888, Cl. 204-197.000.
- Alexander, Winsor E.: See—  
 Dybwad, Jens P.; Alexander, Winsor E.; and Zinnow, Karl P., 3,753,472.
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 Savariau, Henri; and Bourric, Georges, 3,753,316.
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- Alliance Manufacturing Company, Inc., The: See—  
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- Alliance Manufacturing Company, The: See—  
 Deming, Andrew F., 3,754,187.
- Allied Chemical Corporation: See—  
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- Haylock, John Christopher; and Wagner, John Walter, 3,753,955.
- Weedon, Gene Clyde, 3,753,949.
- Allied Chemicals Corporation: See—  
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- Allis-Chalmers Manufacturing Company: See—  
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- Alps Motorola, Inc.: See—  
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- Alsthom-Savienn: See—  
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- American Cyanamid Company: See—  
 Forgione, Peter Salvatore, 3,753,861.
- Grayson, Martin, 3,754,035.
- Lamb, Glentworth; and Hinz, Charles Frank, 3,753,677.
- Lindsley, John Francis, 3,753,929.
- Meyer, Walter Edward; and Goldman, Leon, 3,754,089.
- American Electronic Laboratories, Inc.: See—  
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- American Limnetics Instruments, Inc.: See—  
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- American Micro-Systems, Inc.: See—  
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- American Spin-A-Batch Company: See—  
 Garrison, William H., 3,753,762.
- AMF Incorporated: See—  
 Carter, Nick G.; and Moore, Charles C., III, 3,754,275.
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 Pauza, William Vito; and Poltonavage, Edward Michael, 3,754,203.
- Zimmerman, Richard Henry; and Brenneman, Richard Lee, 3,753,874.
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 Kugera, William James; and Sandor, Louis, 3,753,789.
- Anarak Incorporated: See—  
 Graham, Charles H., 3,753,582.
- Anastasia, Louis J.; Carls, Erwin L.; Chilenskas, Albert A.; Graae, Johan E. A.; Jonke, Albert A.; Levitz, Norman M.; Steindler, Martin J.; and Trevorow, La Verne E., to United States of America, Atomic Energy Commission. Fluoride reprocessing of breeder uels. 3,753,920, Cl. 252-301.10r.
- Anderson, Robert V.: See—  
 Aiello, Victor S.; Albanese, Joseph P.; Anderson, Robert V.; and Platt, Frank, 3,753,492.
- Anderson, Robert W. Wind chill meter. 3,753,371, Cl. 73-344.000.
- Anderson, Wallace T., Jr.; and Mendelson, Ralph A., to TRW Inc. Refractory metal alloys for use in oxidation environments. 3,753,699, Cl. 75-174.000.
- Anderson, Wallace T., Jr.; and Mendelson, Ralph A., to TRW Inc. Refractory metal alloys for use in oxidation environments. 3,753,701, Cl. 75-175.500.
- Andersson, Sven Gote. Hotel signalling system. 3,754,227, Cl. 340-286.000.
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 Wilder, Thomas C.; and Andreola, John J., 3,753,686.
- Andrews, R. Eugene, to Tektronix, Inc. Automatic focus control circuit for a cathode ray oscilloscope. 3,754,159, Cl. 315-31.00r.
- Andrews, Theodore E.: See—



- Snelling, Charles D.; Andrews, Theodore E.; and Weller, John J., 3,754,064.
- Angello, Louis G.; Sweeney, Richard F.; and Litt, Morton H., to Allied Chemicals Corporation. Novel esters of polyfluoroalkoxy alkanols. 3,754,009, Cl. 260-408.000.
- Anfindsen, Ole Arnt. Apparatus for the adjustment of the working pressure of a tool. 3,753,384, Cl. 90-24.00r.
- Angelbeck, Albert W., to United States of America, Navy. High frequency lad line using low frequency detectors. 3,754,142, Cl. 250-199.000.
- Angerman, Glenn Donald: See—  
Fogarty, John Edward; Odar, Stanley Paul; and Angerman, Glenn Donald, 3,753,788.
- Anghel, Sever, to International Telephone and Telegraph Corporation. Microstrip filter. 3,754,198, Cl. 333-73.00s.
- Anheuser-Busch, Incorporated: See—  
Latham, S. Duane; Seeley, Robert D.; Reitz, Henry F.; and Reitz, Ronald F., 3,753,737.
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Badia, Frank A.; MacDonald, Donald F.; and Ansuini, Frank J., 3,753,694.
- Anzai, Norio; Takagui, Takeshi; Kosa, Yasunobu; Kubo, Masaharu; and Kawagoe, Hiroto, to Hitachi, Ltd. Insulated gate type field effect semiconductor device having a breakdown preventing element. 3,754,171, Cl. 317-235.00r.
- Aomama, Hideki: See—  
Takenaka, Yushisuke; and Aomama, Hideki, 3,753,517.
- API Corporation: See—  
Flicker, Howard D., 3,753,668.
- Appel, Hansgunter: See—  
Wingler, Frank; Pedain, Josef; Appel, Hansgunter; and Bartl, Herbert, 3,753,958.
- Applied Technologies Associates: See—  
Van Steenwyk, Donald H., 3,753,296.
- Aqualectra: See—  
Hancock, Bruce Jay; Johnson, Don E.; and Merkley, Zane W., 3,754,147.
- Aquarius Electronics: See—  
Bakerich, Frank; and Scully, Robert T., 3,753,433.
- Arco Industries Corporation: See—  
Rubright, Phillip L., 3,753,549.
- Arlt, Robert G.; and Hennessey, Timothy W., to Robbins & Myers, Inc. Means and method for aligning motor assembly. 3,753,281, Cl. 29-205.00r.
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Sturm, Hans Juergen; and Armbrust, Herbert, 3,754,017.
- Armco Steel Corporation: See—  
Burton, Albert C.; and Pierpont, George C., 3,753,815.
- Espy, Ronald H., 3,753,693.
- Armitage, Bernard John: See—  
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- Armstrong Cork Company: See—  
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Snelling, Charles D.; Andrews, Theodore E.; and Weller, John J., 3,754,064.
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- Arsenius, Torsten Henry, to SKF Industrial Trading and Development Company N.V. Pressure fluid distributor at a hydrostatic bearing. 3,753,604, Cl. 308-160.000.
- Arth, Glen E.; and Rasmussen, Gary H., to Merch & Co., Inc. Substituted 1,2a-methylene-6,7a-halomethylene-20-spiro-4-En-3-ones or 3-ols and acyl esters thereof. 3,753,979, Cl. 260-239.55r.
- Asahi Glass Company, Ltd.: See—  
Kakuda, Hisashi; Takahashi, Shiro; and Aki, Junji, 3,753,743.
- Asai, Mitsuko: See—  
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- Asakura, Kouichi: See—  
Komatsu, Noboru; Suzuki, Takatoshi; Ito, Takuo; Hara, Yoshiteru; and Asakura, Kouichi, 3,753,798.
- Ash, Arthur B.; Blumberg, Peter; Markovac, Anica; and La Montagne, Maurice P. Trifluoromethyl substituted-2,6-diphenyl-4-pyridyl carbinolamine antimalarials. 3,753,997, Cl. 260-296.00r.
- Ash, Edward B., to Rockwell International Corporation. Core clamping system for a nuclear reactor. 3,753,856, Cl. 176-87.000.
- Ashburn, James Gilbert, to Reynolds, R. J., Tobacco Company. Tobacco expansion process. 3,753,440, Cl. 131-140.00p.
- Aspro-Nicholas Limited: See—  
Rodway, Ronald Ernest; and Simmonds, Robin George, 3,753,988.
- Associated Engineering Limited: See—  
Blee, Timothy John, 3,753,879.
- Asta, Dall: See—  
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- Asta, Thomas J., to Gould Inc. Method and apparatus for adjusting battery electrolyte concentration. 3,753,786, Cl. 136-161.000.
- Atkins, Christopher Lee: See—  
Davis, John David; and Atkins, Christopher Lee, 3,753,447.
- Atlas Chemical Industries, Inc.: See—  
Restaino, Alfred Joseph, 3,753,962.
- Attali, Georges; Aitken, John; and Bernard, Jean-Louis, to Schlumberger Technology Corporation. Method and apparatus for measuring depth. 3,753,294, Cl. 33-133.000.
- Audesse, Emery G.: See—  
Hough, Harold L.; Audesse, Emery G.; and Hay, Warren H., 3,753,390.
- Audia, Samuel: See—  
Shepard, Richard W.; Ross, William A.; Audia, Samuel; and Holmes, Gary W., 3,753,412.
- Auger, Ernest P., to Raytheon Company. Plasma display system. 3,754,230, Cl. 340-324.00m.
- Auger, Ernest P., to Raytheon Company. Current driver circuitry for ferrite phase shifters. 3,754,274, Cl. 343-854.000.
- Aumuller, Walter: See—  
Weber, Helmut; Aumuller, Walter; Muth, Karl; and Weyer, Rudi, 3,754,030.
- Aupoin, Marcel; Frackhauser, Francois Moisson; and Royet, Jean, to Compagnie Generale d'Electricite. Superconductive cable for carrying either alternating or direct current. 3,754,095, Cl. 174-126.0cp.
- Automeasure, Inc.: See—  
Branda, Daniel Hamilton; and Branda, Richard Daniel, 3,753,293.
- Avco Corporation: See—  
DeBolt, Harold E., 3,754,112.
- Azetu, Masami: See—  
Yoshitake, Tatumi; and Azetu, Masami, 3,753,342.
- Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.p.A.: See—  
Aiuola, Franco; and Nannini, Luciano, 3,753,484.
- Babson, Arthur L.; and Babson, Susan R., to Warner-Lambert Company. Precipitating solution for amylase assay. 3,753,864, Cl. 195-103.50r.
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Babson, Arthur L.; and Babson, Susan R., 3,753,864.
- Bacchi, Ray M., to De Laval Turbine California, Inc. Automatic control system. 3,753,626, Cl. 417-1.000.
- Backteman, Hans, to Backtemans, AG. Container lifting twist-lock. 3,753,588, Cl. 294-82.00r.
- Backtemans, AG: See—  
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- Badalex Limited: See—  
Grenfell, Julian Pascoe; and Buchanan, John Brown, 3,753,513.
- Badia, Frank A.; MacDonald, Donald F.; and Ansuini, Frank J., to International Nickel Company, Inc. The Production of composite metallic articles. 3,753,694, Cl. 75-135.000.
- Badische Anilin & Soda-Fabrik Aktiengesellschaft: See—  
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- Badische Anilin- & Soda-Fabrik Aktiengesellschaft: See—  
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- Baker, Donald Brooks, to Bird Machine Company, Inc. Spray apparatus. 3,753,529, Cl. 239-110.000.
- Baker, Marion A. Golf ball. 3,753,565, Cl. 273-213.000.
- Baker Oil Tools, Inc.: See—  
Kammerer, Archer W., Jr.; and Johnson, Gary R., 3,753,471.
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- Balchunas, Charles A., to General Electric Company. Wall plug-in time switch. 3,754,107, Cl. 200-38.00a.
- Baldwin, Mart G.; and Reed, Samuel F., Jr., to United States of America, Army. Propellant compositions with hydroxy-terminated copolymers of butadiene and ferrocene derivatives. 3,753,812, Cl. 149-19.000.
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- Bartl, Herbert: See—  
Wingler, Frank; Pedain, Josef; Appel, Hansgunter; and Bartl, Herbert, 3,753,958.
- BASF Wyandotte Corporation: See—  
Mueller, Gerhard; and Raffenberg, Hermann-Josef, 3,753,554.
- Bassett, Kirk W.; and Butler, Richard A., Jr., to Butler Automatic, Inc. Web supply apparatus. 3,753,833, Cl. 156-504.000.
- Battelle Memorial Institute: See—  
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- Bauer, Karlheinz. Corrosion-protected anchoring rods for anchoring structural parts in the earth, as well as method of producing anchorings with corrosion-protected anchor rods. 3,753,354, Cl. 61-35.000.
- Bauer, Luther J.: See—  
Hedgewick, Peter; and Bauer, Luther J., 3,753,510.
- Bauer-Steinke, Ursula; Maier, Bruno; and Breithauer, Kalus, to Swiss Aluminum Ltd. Method of producing a tool for the non-cutting working of materials. 3,753,880, Cl. 204-129.500.

- Baxter Laboratories, Inc.: See—  
Janneck, Howard A.; Martinez, F. Jesus; and Schnitzius, George W., 3,753,712.
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- Bayer Aktiengesellschaft: See—  
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- Wenzel, Werner; Schenck, Hermann; Gudenau, Heinrich; and Wieting, Enno, to Still, Carl, Firma. Process and apparatus for making coke of even size. 3,753,866, Cl. 201-6.000.
- Werle, Arnold. Trailer construction. 3,753,574, Cl. 280-478.00a.
- Werner, David C. Fish lure. 3,753,310, Cl. 43-42.390.
- Westebbe, Peter: *See—*
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- Westinghouse Electric Corporation: *See—*
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- Veneziale, Lee E., Jr., 3,753,832.
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- Weyer, Rudi: *See—*
- Weber, Helmut; Aumuller, Walter; Muth, Karl; and Weyer, Rudi, 3,754,030.
- Wheeler, Seth, to Litton Business Systems, Inc. Pressure recording sheet. 3,753,841, Cl. 161-6.000.
- Whelan, John C., to Adams & Whelan. Method of restructuring rice. 3,753,727, Cl. 99-81.000.
- Whirlpool Corporation: *See—*
- Miller, Frank E., 3,753,400.
- White, James C. Process of bending structural members and tool therefor. 3,753,366, Cl. 72-409.000.
- White, Neville, to British Aircraft Corporation Limited. Space vehicle coupling mechanisms. 3,753,536, Cl. 244-1.0sd.
- Whiteley, Thomas E.: *See—*
- Tuites, Richard C.; Whiteley, Thomas E.; and Minsk, Louis M., 3,753,956.
- Wihl, Klemens, to Siemens Aktiengesellschaft. Member for use in the shaping of coil ends of stator windings disposed in sheet metal stator assemblies of electrical machines. 3,753,282, Cl. 29-205.00d.
- Wiemer, Erich, to Heinrich Koppers Gesellschaft mit beschränkter Haftung. Apparatus for charging coke ovens. 3,753,867, Cl. 202-262.000.
- Wieting, Enno: *See—*
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- Wilcox, Howard A.: *See—*
- Dinapoli, Nicholas; Friedman, Donald; Nicholls, Robin P.; Wilcox, Howard A.; and Wood, Charles E., 3,754,122.
- Wilder, Thomas C.; and Andreola, John J., to Kennecott Copper Corporation. Recovery of copper, nickel, cobalt and molybdenum from complex ores. 3,753,686, Cl. 75-21.000.
- Wilhelm, Billy M. Arrangement for inhibiting the unthreading of casing string. 3,753,464, Cl. 166-242.000.
- Wilkens, Mark W., to Farinon Electric. Redundant FM transmitting system. 3,754,188, Cl. 325-56.000.
- Willhalm, Bruno: *See—*
- Gautschi, Fritz; Willhalm, Bruno; and Huchi, George Hermann, 3,753,738.
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- Williams, Richard D., to Warn-Belleview, Inc. Cam and spring operated positive clutch. 3,753,479, Cl. 192-89.00a.
- Williams, Roger B., Jr., to Reliance Electric Company. Integrating conveyor scale. 3,754,126, Cl. 235-151.330.
- Williams, Roger J.; and Young, Marvin Kendall. Method for enzymatic conversion of lactose to glucose and galactose in lactose containing fluids. 3,753,725, Cl. 99-54.000.
- Willis, Arnold L., to MSL Industries, Inc. Pillow construction. 3,753,263, Cl. 5-337.000.
- Wilson, Raymond W., to Ford Motor Company. Tractor-implement hydraulic lift system. 3,753,467, Cl. 172-3.000.
- Wilson, Robert Laverne, to Ehrsam Company, The. Safety device for a slack take-up weight of a belt conveyor. 3,753,488, Cl. 198-208.000.
- Windmoller & Holscher: *See—*
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- Wingler, Frank; Pedain, Josef; Appel, Hansgunter; and Bartl, Herbert, to Bayer Aktiengesellschaft. Pulverisable acrylate resins. 3,753,958, Cl. 260-78.50r.
- Winkhaus, Gunter; Wargalla, Gerhard; and Kampf, Fritz, to Vereinigte Aluminium-Werke Aktiengesellschaft. Method of removing deposits formed in bauxite extraction. 3,753,776, Cl. 134-3.000.
- Winterbottom, Kenneth: *See—*
- Dobinson, Bryan; Massey, Derek James Rowland; Winterbottom, Kenneth; and Robinson, Brian, 3,753,649.
- Winton, Herbert D. Device for combining and mixing liquids. 3,753,444, Cl. 137-268.000.
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- Witzel, Bruce E., to Merck & Co., Inc. Piperidone antiinflammatory agents. 3,754,088, Cl. 424-267.000.
- Wojtasinski, Ronald J., to United States of America, National Aeronautics and Space Administration. Lightning tracking system. 3,754,263, Cl. 343-112.00r.
- Wolc, Stanley S. Translatable suction cleaning vehicle. 3,753,265, Cl. 15-1.700.
- Wolfgang, Bei Hanau: *See—*
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- Wright, Allen C., to Haws Drinking Faucet Company. Valve assembly for water fountains and the like. 3,753,448, Cl. 137-609.000.
- Wu, Ching Yong; and Swift, Harold E., to Goodrich, B. F., Company. The Diene polymerization. 3,754,048, Cl. 260-680.00b.
- Wurscher, Raimund August, to Intermedium AG. Apparatus for grinding drills. 3,753,320, Cl. 51-73.00r.
- Wutz, Max, to Heraeus, W. C., GmbH. Turbo molecular vacuum pump. 3,753,623, Cl. 417-424.000.
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- Yamamoto, Hisao; and Nakao, Masaru, to Sumitomo chemical Company, Ltd. Process for preparing 3-indolyl aliphatic acid derivatives. 3,754,004, Cl. 260-326.13a.
- Yamazaki, Eiichi; and Kawamura, Takao, to Hitachi, Ltd. Stepped bimetallic shadow mask mounting element. 3,754,157, Cl. 313-85.00s.
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- Yaphe, Wilfred; and Duckworth, Michael, to Research Corporation. Fractionation of agar. 3,753,972, Cl. 260-209.00r.
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- Yoshitake, Tatum; and Azetu, Masami, to Nishinippon Electric Wire & Cable Co., Ltd. Apparatus for winding up wire, strand, cable or the like. 3,753,342, Cl. 57-71.000.
- Youdin, Myron; and Riech, Theobald, to New York University. Lamp for use in a high pressure environment. 3,754,133, Cl. 240-11.20e.
- Young, Donald C., to Union Oil Company of California. Fertilizer solutions containing soluble iron complexes. 3,753,675, Cl. 71-1.000.
- Young, Marvin Kendall: *See—*
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- Young, Sanford Tyler; and Hill, Kenneth Lee, to FMC Corporation. Substituted dioxanes as herbicides. 3,753,678, Cl. 71-88.000.
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- Zabolotny, Ernest R., to Carrier Corporation. Electrolytic process for destruction of odorous impurities. 3,753,881, Cl. 204-130.000.
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- Zandonatti, Raymond A., to Tektronix, Inc. Electrical connection members for electronic devices and method of making same. 3,753,290, Cl. 29-628.000.
- Zarlengo, Vincent. Mounting adapter for cutting tools. 3,753,385, Cl. 90-31.000.
- Zebley, Donald Dane, to United Merchants and Manufacturers, Inc. Potential-energy torque-generating mechanism for operating a take-up roll. 3,753,452, Cl. 139-311.000.
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- Ziemek, Gerhard; and Nordmann, Gert, to Kabel-un Metallwerke Gu-
- tehoffnungshutte Aktiengesellschaft. Cable with welded corrugated metal sheath. 3,754,094, Cl. 174-102.00a.
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- Zimmerman, Neil L. Hydro-disintegrator. 3,753,408, Cl. 111-7.100.
- Zimmerman, Richard Henry; and Brenneman, Richard Lee, to AMP Incorporated. Method and electrolyte for electrodepositing a gold-arsenic alloy. 3,753,874, Cl. 204-43.00g.
- Zinnow, Karl P.: *See—*
- Dybwad, Jens P.; Alexander, Winser E.; and Zinnow, Karl P., 3,753,472.
- Zollinger, Otto. Yarn tensioning device and method. 3,753,535, Cl. 242-152.001.
- Zone Research Incorporated: *See—*
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- Zorzy, Plato. Electronic combination lock. 3,754,164, Cl. 317-134.000.



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- Aoki, Saburo: *See*—  
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Guthuber, Johann: *See*—  
Muhlner, Karl, Jirka, and Guthuber. Re. 27,736.  
Honma, Takamichi, Y. Tushitsuna and S. Aoki, to Nippon Electric Co., Ltd. Pulse position modulation communications system including means for suppressing zero-modulation signal components. Re. 27,738, 8-21-73, Cl. 332-9.  
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Mita, Yob, to Nippon Electric Co., Ltd. Light scanning device utilizing piezoelectric semiconductor material. Re. 27,737, 8-21-73, Cl. 250-211.  
Muhlner, Karl, K. Jirka, and J. Guthuber, to Kunststoffwerk Gebrüder Anzer GmbH & Co. Method of shaping the end of a pip of thermoplastic material into a bell. Re. 27,736, 8-21-73, Cl. 29-423.  
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Mita, Yoh. Re. 27,737.  
Pedersen, Carl. Apparatus for measuring the speed of an automobile. Re. 27,739, 8-21-73, Cl. 95-36.  
Schuman, Mark. Oscillating free piston pump. Re. 27,740, 8-21-73, Cl. 417-207.  
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- Lovitz, David D., to Sternes Industries, Inc. Home aquarium filter. 228,197, 8-21-73, Cl. D30-9.  
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Morris, Barry S., to The Bloxwich Lock and Stamping Co. Ltd. Keeper for a fastening mechanism for container doors. 228,170, 8-21-73, Cl. D8-137.  
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# CLASSIFICATION OF PATENTS

ISSUED AUGUST 21, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

243	CLASS 4	3,753,262	17	CLASS 35	3,753,301	150	CLASS 68	3,753,358	1R	3,753,705	25	3,753,758	11.5R	3,753,790	
	CLASS 5	3,753,263	42.5	3,753,302	19	CLASS 70	3,753,359	27	3,753,706	33.5L	3,753,759	11.5R	3,753,791		
337	3,753,264	39	CLASS 37	3,753,360	39	3,753,361	36.1	3,753,710	28	3,753,707	36.2	3,753,761	13	3,753,792	
338	3,753,265	58	3,753,303	185	CLASS 71	3,753,362	38.2	3,753,711	36.1	3,753,395	37LE	3,753,760	15.5	3,753,793	
64	CLASS 6	3,753,357	125R	CLASS 40	3,753,305	1	3,753,675	41	3,753,712	51	3,753,762	62	3,753,763	32	3,753,794
	CLASS 8	3,753,644	128	3,753,306	67	3,753,676	45.1	3,753,713	41	3,753,714	68	3,753,764	36	3,753,795	
25	3,753,645	25	CLASS 42	3,753,307	88	3,753,677	86P	3,753,715	45.1	3,753,716	76F	3,753,765	50E	3,753,796	
39	3,753,646	98	CLASS 43	3,753,308	120	3,753,680	87A	3,753,716	88	3,753,717	100A	3,753,767	131	3,753,797	
85	3,753,647	4	17.5	3,753,309	49	3,753,367	88	3,753,718	100	3,753,719	107.2	3,753,768	162	3,753,800	
115.7	3,753,648	42.39	3,753,310	43.14	3,753,311	50	3,753,363	115R	3,753,720	138.8F	3,753,771	171	3,753,801		
127.6	3,753,649	72	CLASS 44	3,753,670	71	3,753,364	50	3,753,363	130	3,753,721	139.5F	3,753,772	174	3,753,802	
171	3,753,650	157	CLASS 46	3,753,312	214	3,753,370	76	3,753,365	212	3,753,722	161UA	3,753,773	175	3,753,803	
	CLASS 15	3,753,265	202	3,753,313	475	3,753,368	214	3,753,366	213	3,753,723	213	3,753,774	177	3,753,804	
110	3,753,266	70	CLASS 17	3,753,270	15.4	3,753,369	475	3,753,368	213	3,753,724	213	3,753,775	187	3,753,805	
160	3,753,269	156.3	CLASS 19	3,753,271	34.11	3,753,314	344	3,753,371	213	3,753,725	213	3,753,776	188	3,753,806	
210R	3,753,267	54R	CLASS 21	3,753,651	38	3,753,315	354	3,753,372	213	3,753,726	213	3,753,777	189	3,753,807	
377	3,753,268		CLASS 23	3,753,652	210	3,753,671	398C	3,753,373	213	3,753,727	213	3,753,778		3,753,808	
	CLASS 17	3,753,270	CLASS 23	3,753,654	31	3,753,316	5.7	3,753,374	213	3,753,728	213	3,753,779		3,753,809	
	CLASS 19	3,753,271	35	3,753,317	35	3,753,317	422	3,753,378	213	3,753,729	213	3,753,780		3,753,810	
	CLASS 21	3,753,651	CLASS 23	3,753,655	11	3,753,318	498	3,753,375	213	3,753,730	213	3,753,781		3,753,811	
230PC	3,753,656		CLASS 23	3,753,652	42	3,753,319	665GA	3,753,376	213	3,753,731	213	3,753,782		3,753,812	
230B	3,753,655		CLASS 23	3,753,653	73R	3,753,320	856	3,753,377	213	3,753,732	213	3,753,783		3,753,813	
230R	3,753,652		CLASS 23	3,753,654	101R	3,753,321		3,753,378	213	3,753,733	213	3,753,784		3,753,814	
232E	3,753,656		CLASS 23	3,753,655	284	3,753,322		3,753,379	213	3,753,734	213	3,753,785		3,753,815	
253R	3,753,657		CLASS 23	3,753,656	169	3,753,323		3,753,380	213	3,753,735	213	3,753,786		3,753,816	
259.5	3,753,658		CLASS 23	3,753,657	377	3,753,324		3,753,381	213	3,753,736	213	3,753,787		3,753,817	
267A	3,753,659		CLASS 23	3,753,658	489	3,753,325		3,753,382	213	3,753,737	213	3,753,788		3,753,818	
277R	3,753,660		CLASS 23	3,753,659	731	3,753,326		3,753,383	213	3,753,738	213	3,753,789		3,753,819	
285	3,753,661		CLASS 23	3,753,660	742	3,753,327		3,753,384	213	3,753,739	213	3,753,790		3,753,820	
289	3,753,662		CLASS 23	3,753,661	745	3,753,328		3,753,385	213	3,753,740	213	3,753,791		3,753,821	
	CLASS 24	3,753,272	CLASS 23	3,753,662	123	3,753,330		3,753,386	213	3,753,741	213	3,753,792		3,753,822	
81E	3,753,273		CLASS 23	3,753,663	123	3,753,331		3,753,387	213	3,753,742	213	3,753,793		3,753,823	
15	3,753,274		CLASS 23	3,753,664	123	3,753,332		3,753,388	213	3,753,743	213	3,753,794		3,753,824	
34	3,753,275		CLASS 23	3,753,665	123	3,753,333		3,753,389	213	3,753,744	213	3,753,795		3,753,825	
129.5	3,753,276		CLASS 23	3,753,666	123	3,753,334		3,753,390	213	3,753,745	213	3,753,796		3,753,826	
148.4A	3,753,277		CLASS 23	3,753,667	123	3,753,335		3,753,391	213	3,753,746	213	3,753,797		3,753,827	
190	3,753,278		CLASS 23	3,753,668	123	3,753,336		3,753,392	213	3,753,747	213	3,753,798		3,753,828	
191	3,753,279		CLASS 23	3,753,669	123	3,753,337		3,753,393	213	3,753,748	213	3,753,799		3,753,829	
191.6	3,753,280		CLASS 23	3,753,670	123	3,753,338		3,753,394	213	3,753,749	213	3,753,800		3,753,830	
195	3,753,281		CLASS 23	3,753,671	123	3,753,339		3,753,395	213	3,753,750	213	3,753,801		3,753,831	
	3,753,282		CLASS 23	3,753,672	123	3,753,340		3,753,396	213	3,753,751	213	3,753,802		3,753,832	
196	3,753,283		CLASS 23	3,753,673	123	3,753,341		3,753,397	213	3,753,752	213	3,753,803		3,753,833	
197	3,753,284		CLASS 23	3,753,674	123	3,753,342		3,753,398	213	3,753,753	213	3,753,804		3,753,834	
199	3,753,285		CLASS 23	3,753,675	123	3,753,343		3,753,399	213	3,753,754	213	3,753,805		3,753,835	
203D	3,753,286		CLASS 23	3,753,676	123	3,753,344		3,753,400	213	3,753,755	213	3,753,806		3,753,836	
	3,753,287		CLASS 23	3,753,677	123	3,753,345		3,753,401	213	3,753,756	213	3,753,807		3,753,837	
205D	3,753,288		CLASS 23	3,753,678	123	3,753,346		3,753,402	213	3,753,757	213	3,753,808		3,753,838	
205R	3,753,289		CLASS 23	3,753,679	123	3,753,347		3,753,403	213	3,753,758	213	3,753,809		3,753,839	
267	3,753,290		CLASS 23	3,753,680	123	3,753,348		3,753,404	213	3,753,759	213	3,753,810		3,753,840	
401	3,753,291		CLASS 23	3,753,681	123	3,753,349		3,753,405	213	3,753,760	213	3,753,811		3,753,841	
423	3,753,292		CLASS 23	3,753,682	123	3,753,350		3,753,406	213	3,753,761	213	3,753,812		3,753,842	
425	3,753,293		CLASS 23	3,753,683	123	3,753,351		3,753,407	213	3,753,762	213	3,753,813		3,753,843	
470.3	3,753,294		CLASS 23	3,753,684	123	3,753,352		3,753,408	213	3,753,763	213	3,753,814		3,753,844	
470.5	3,753,295		CLASS 23	3,753,685	123	3,753,353		3,753,409	213	3,753,764	213	3,753,815		3,753,845	
527.7	3,753,296		CLASS 23	3,753,686	123	3,753,354		3,753,410	213	3,753,765	213	3,753,816		3,753,846	
580	3,753,297		CLASS 23	3,753,687	123	3,753,355		3,753,411	213	3,753,766	213	3,753,817		3,753,847	
628	3,753,298		CLASS 23	3,753,688	123	3,753,356		3,753,412	213	3,753,767	213	3,753,818		3,753,848	
	3,753,299		CLASS 23	3,753,689	123	3,753,357		3,753,413	213	3,753,768	213	3,753,819		3,753,849	
	3,753,300		CLASS 23	3,753,690	123	3,753,358		3,753,414	213	3,753,769	213	3,753,820		3,753,850	
420	3,753,301		CLASS 23	3,753,691	123	3,753,359		3,753,415	213	3,753,770	213	3,753,821		3,753,851	
	3,753,302		CLASS 23	3,753,692	123	3,753,360		3,753,416	213	3,753,771	213	3,753,822		3,753,852	
11	3,753,303		CLASS 23	3,753,693	123	3,753,361		3,753,417	213	3,753,772	213	3,753,823		3,753,853	
33	3,753,304		CLASS 23	3,753,694	123	3,753,362		3,753,418	213	3,753,773	213	3,753,824		3,753,854	
8	3,753,305		CLASS 23	3,753,695	123	3,753,363		3,753,419	213	3,753,774	213	3,753,825		3,753,855	
133	3,753,306		CLASS 23	3,753,696	123	3,753,364		3,753,420	213	3,753,775	213	3,753,826		3,753,856	
170	3,753,307		CLASS 23	3,753,697	123	3,753,365		3,753,421	213	3,753,776	213	3,753,827		3,753,857	
304	3,753,308		CLASS 23	3,753,698	123	3,753,366		3,753,422	213	3,753,777	213	3,753,828		3,753,858	
	3,753,309		CLASS 23	3,753,699	123	3,753,367		3,753,423	213	3,753,778	213	3,753,829		3,753,859	
58	3,753,310		CLASS 23	3,753,700	123	3,753,368		3,753,424	213	3,753,779	213	3,753,830		3,753,860	
116	3,753,311		CLASS 23	3,753,701	123	3,753,369		3,753,425	213	3,753,780	213	3,753,831		3,753,861	
237	3,753,312		CLASS 23	3,753,702	123	3,753,370		3,753,426	213	3,753,781	213	3,753,832		3,753,862	
	3,753,313		CLASS 23	3,753,703	123	3,753,371		3,753,427	213	3,753,782	213	3,753,833		3,753,863	
	3,753,314		CLASS 23	3,753,704	123	3,753,372		3,753,428	213	3,753,783	213	3,753,834		3,753,864	
	3,753,315		CLASS 23	3,753,705	123	3,753,373		3,753,429	213	3,753,784	213	3,753,835		3,753,865	
	3,753,316		CLASS 23	3,753,706	123	3,753,374		3,753,430	213	3,753,785	213	3,753,836		3,753,866	
	3,753,317		CLASS 23	3,753,707	123	3,753,375		3,753,431	213	3,753,786	213	3,753,837		3,753,867	
	3,753,318		CLASS 23	3,753,708	123	3,753,376		3,753,432	213	3,753,787	2				



## CLASSIFICATION OF PATENTS

44	CLASS 173	310	3,753,895	152.1	3,753,535	88.1R	3,753,965	97	3,754,068	CLASS 317	9	3,754,174
163	3,753,468		3,753,896		CLASS 244	88.2R	3,753,964	131	3,754,069	14D	3,754,163	
	3,753,469				1SD	3,753,536	3,753,966	272	3,754,070	13A	3,754,164	
	CLASS 174	459	3,753,491	3.12	3,753,537	94.3	3,753,967		3,754,071	141S	3,754,165	
102A	3,754,094				3,753,538	112.5	3,753,969	97	3,753,556	148.5B	3,754,166	
126CP	3,754,095				3,753,539		3,753,970	328	3,753,557	151	3,754,167	
	CLASS 175	IOF	3,753,505	5	3,753,540	124R	3,753,971			234R	3,754,168	
292	3,753,470	33	3,753,897	50	3,753,541	209R	3,753,972	67	3,753,558		3,754,169	
320	3,753,471		3,753,898	137R	3,753,541	210K	3,753,973				3,754,170	
	CLASS 176		3,753,899		CLASS 248	210.5	3,753,974	3	3,753,559	235R	3,754,171	
19R	3,753,852	45	3,753,900	23	3,753,542		3,753,975	9	3,753,560	246	3,754,172	
38	3,753,853	49	3,753,901	313	3,753,543		3,753,976			259	3,754,173	
67	3,753,854	54	3,753,902		CLASS 249	233.3A	3,753,976					
78	3,753,855	96	3,753,902		3,753,544	239.55R	3,753,979					
87	3,753,856	140	3,753,903		3,753,545	239.57	3,753,980					
	CLASS 177	170	3,753,904		CLASS 250	239.9	3,753,978					
210	3,753,472	206	3,753,905		3,754,142	240A	3,753,982					
	CLASS 178	242	3,753,497	199	3,754,143	240D	3,753,981					
5.4ST	3,754,096	350	3,753,498	211R	Re.27.737	240J	3,753,983					
69.5R	3,754,097	446	3,753,499	213R	3,754,144		3,753,984					
	3,754,098	490	3,753,500	219DF	3,754,145		3,753,985					
	CLASS 179		3,753,501	302	3,754,146		3,753,986					
15AQ	3,754,100	4	3,753,502	326	3,754,137		3,753,987					
15BS	3,754,102	61	3,753,503	340	3,754,138		3,753,988					
15BT	3,754,099	166	3,753,504	507	3,754,139		3,753,989					
15FS	3,754,101				3,754,140		3,753,990					
18FF	3,754,103				3,754,141		3,753,991					
100.2P	3,754,104				CLASS 251		3,753,992					
170.2	3,754,105				3,753,548		3,753,993					
	CLASS 180				9	3,753,546	3,753,994					
19H	3,753,473	16R	3,753,506		120	3,753,547	3,753,995					
91	3,753,475	130R	3,753,507		305	3,753,549	3,753,996					
104	3,753,474	309	3,753,508		CLASS 252		3,753,997					
	CLASS 181				8.5A	3,753,903	3,753,998					
73.2	3,753,476	9	3,753,510		8.55D	3,753,904	3,753,999					
	CLASS 182	46A	3,753,511		28	3,753,906	3,754,000					
41A	3,753,477	9.5	3,754,109		33.4	3,753,907	3,754,001					
85AA	3,753,478	10.49	3,754,110		47.5	3,753,908	3,754,002					
89A	3,753,479	10.55	3,754,111		62.1	3,753,909	3,754,003					
141	3,753,480	10.61	3,754,112		62.9	3,753,910	3,754,004					
142R	3,753,481	107	3,754,113		77	3,753,911	3,754,005					
	CLASS 195	125R	3,754,114		89	3,753,912	3,754,006					
7	3,753,857		3,754,115		95	3,753,913	3,754,007					
31F	3,753,858	222	3,754,116		107	3,753,914	3,754,008					
47	3,753,859	383	3,754,117		182	3,753,915	3,754,009					
65	3,753,860	523	3,754,118		188.3	3,753,916	3,754,010					
68	3,753,861	43R	3,753,512		301.1R	3,753,917	3,754,011					
96	3,753,862				301.2R	3,753,918	3,754,012					
103.5C	3,753,863	1	3,753,513		316	3,753,919	3,754,013					
103.5R	3,753,864	129	3,753,514		378R	3,753,920	3,754,014					
127	3,753,865	191	3,753,515		389R	3,753,921	3,754,015					
	CLASS 197				408	3,753,922	3,754,016					
6.6	3,753,482	95	3,753,516		415	3,753,923	3,754,017					
127R	3,753,483	383	3,753,518		428	3,753,924	3,754,018					
	CLASS 198				429B	3,753,925	3,754,019					
20R	3,753,484	5C	3,753,519		451	3,753,926	3,754,020					
31AC	3,753,485	42.06	3,753,520		527	3,753,927	3,754,021					
131	3,753,486				CLASS 224		3,754,022					
177R	3,753,487	64	3,753,521		301.1R	3,753,920	3,754,023					
208	3,753,488	97	3,753,517		301.2R	3,753,921	3,754,024					
219	3,753,489	141	3,753,522		316	3,753,922	3,754,025					
	CLASS 200				378R	3,753,923	3,754,026					
14	3,754,106				389R	3,753,924	3,754,027					
38A	3,754,107				408	3,753,925	3,754,028					
153G	3,754,108				415	3,753,926	3,754,029					
	CLASS 201				428	3,753,927	3,754,030					
6	3,753,866				429B	3,753,928	3,754,031					
	CLASS 202				451	3,753,929	3,754,032					
262	3,753,867				527	3,753,930	3,754,033					
	CLASS 204				CLASS 254		3,754,034					
1T	3,753,868	61.11E	3,754,120		133	3,753,550	3,754,035					
2	3,753,869	61.6R	3,754,119		150	3,753,551	3,754,036					
34	3,753,870	92DN	3,754,122		172R	3,753,552	3,754,037					
35R	3,753,871	92EA	3,754,121		2BP	3,753,931	3,754,038					
41	3,753,872	151.11	3,754,124		2.5AE	3,753,933	3,754,039					
43G	3,753,874	151.12	3,754,125		2.5R	3,753,932	3,754,040					
43	3,753,873	151.3	3,754,126		17.3	3,753,934	3,754,041					
56R	3,753,875	151.33	3,754,127		22CA	3,753,935	3,754,042					
59R	3,753,876	151.33	3,754,128		27R	3,753,936	3,754,043					
106	3,753,877	153AC	3,754,129		28.5D	3,753,937	3,754,044					
129.1	3,753,878	156	3,754,129		29.6RW	3,753,938	3,754,045					
129.2	3,753,879	201	3,754,129		29.6Z	3,753,939	3,754,046					
129.5	3,753,880				29.7N	3,753,941	3,754,047					
130	3,753,881				30.2R	3,753,942	3,754,048					
140	3,753,882				30.2	3,753,943	3,754,049					
144.5	3,753,883				32.6A	3,753,944	3,754,050					
162XA	3,753,884	6.43	3,754,130		33.2R	3,753,945	3,754,051					
181	3,753,885	7.1G	3,754,131		45.85H	3,753,946	3,754,052					
186	3,753,886	10R	3,754,132		47CZ	3,753,947	3,754,053					
195M	3,753,887	11.2E	3,754,133		47EN	3,753,948	3,754,054					
197	3,753,888	41.37	3,754,134		49	3,753,949	3,754,055					
198	3,753,889	46.59	3,754,135		63BB	3,753,951	3,754,056					
224	3,753,890	73R	3,754,136		63R	3,753,952	3,754,057					
	CLASS 206				75NP	3,753,953	3,754,058					
62P	3,753,490	34	3,753,530		78A	3,753,957	3,754,059					
	CLASS 208				78L	3,753,955	3,754,060					
62	3,753,891				78.4D	3,753,954	3,754,061					
102	3,753,892				78.4R	3,753,956	3,754,062					
164	3,753,893				78.5BB	3,753,959	3,754,063					
216	3,753,894				78.5R	3,753,958	3,754,064					
					80M	3,753,962	3,754,065					
					80.78	3,753,961	3,754,066					
					82	3,753,963	3,754,067					

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6R	3,754,249	754	3,754,270	249	3,753,611	239	3,753,625	79	3,754,073		3,754,096
6.5LC	3,754,250	756	3,754,271		CLASS 352		CLASS 410	210.5	3,754,074	319	3,754,091
6.5	3,754,252	778	3,754,272	109	3,753,612			341	3,754,077	326	3,754,093
6.8LC	3,754,251	786	3,754,273	121	3,753,613			343	3,754,075	328	3,754,092
7ED	3,754,253	854	3,754,274	142	3,753,614	36	3,753,630	345	3,754,076	363	3,753,638
7.7	3,754,254	CLASS 346					CLASS 417	359	3,754,078	387	3,753,639
18A	3,754,255	1	3,754,275		CLASS 355	1	3,753,626	479	3,754,079	392	3,753,640
18E	3,754,256	7	3,754,276	8	3,753,615	207	Re.27,740	489	3,754,080	450	3,753,641
100TD	3,754,257	23	3,754,277		CLASS 356	213	3,753,627	520	3,754,081		
	3,754,258	76R	3,754,278	28	3,753,616	310	3,753,628			CLASS 425	
102	3,754,259		3,754,279	71	3,753,617	388	3,753,629		CLASS 424		
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106D	3,754,261	139C	3,754,282	106S	3,753,619	520	3,753,632	118	3,754,083	123	3,753,634
108R	3,754,262		3,754,283		CLASS 403		CLASS 418	181	3,754,084	162	3,753,635
112R	3,754,263	139P	3,754,281					211	3,754,085	163	3,753,636
118	3,754,264			76	3,753,620			211	3,754,086	313	3,753,637
119	3,754,265	CLASS 350		116	3,753,621	3	3,753,631	241	3,754,087		CLASS 431
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1 : Re.27,740	3,753,582	3,754,177	3,754,044	3,753,828	3,753,529
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## PATENT OFFICE NOTICES

### Printing Practitioners' Names on Patents

On September 8, 1972 (903 O.G. 369), the Patent Office requested comments on a proposal regarding the printing of a firm name or the names of individual practitioners on the patent, as indicated by the applicant at the time the issue fee is paid. The comments received indicated strong support for the proposed procedure.

In view of these comments, the Patent Office has adopted the following revised procedure for printing a firm name, the names of up to three registered patent practitioners, or no practitioner's name on the patent.

The Notice of Allowance form, POL-85, has been redesigned in part to provide a space on POL-85b, the Base Issue Fee Transmittal form, for the person submitting the base issue fee to indicate, for printing, the names of up to three registered patent attorneys and agents or, alternatively, the name of a single firm which has as a member at least one registered patent attorney or agent. If the person submitting the base issue fee desires that no practitioner's name be printed on the patent, the space provided on the revised Base Issue Fee Transmittal form should be left blank. If no name is given, no name will be printed.

The adoption of this new procedure is intended to solve various problems encountered since the practice of recognizing firms was discontinued. While some slight additional effort on the part of the attorney or agent is thus involved if he desires to have a printed entry on the patent, the following advantages are provided by the new procedure: (1) it permits printing firm names on patents even though firms are no longer registered with or recognized by the Patent Office in new application; (2) it allows the names of those individuals who actually performed the work of preparing and prosecuting the application to appear on the printed patent; and (3) it grants an attorney or agent the option of not having his name appear on the printed patent.

The revised form POL-85 will be placed in use as soon as a supply of the form is received from the printer. Thereafter, the new practice, as indicated above, will be followed in patent printing as the Base Issue Fee Transmittal Portion of that form (POL-85b) is received.

RENE D. TEGTMEYER,  
Acting Commissioner of Patents.

Aug. 3, 1973.

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of Patent 3,485,082, defendant having admitted such inducement. Plaintiff's cause of action for unfair competition is dismissed with prejudice, complaint dismissed, Mar. 20, 1973.

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3,209,080. (See 3,014,994.)

3,274,906, Worson and Dill, JOINT INSTALLATION, filed Apr. 19, 1973, D.C., N.D. Calif. (San Francisco), Doc. C-73-0639 SC, *Edoco Technical Products, Inc. v. Frederickson & Watson Construction Co.*

3,303,615, L. O'Neal, INFLATABLE DOCK SEAL, filed Apr. 12, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c954, *Larry O'Neal and O'Neal Tarpaulin & Awning Company v. Atlas Industries, Inc.*

3,311,928, Werth and King, PROCESS OF BASTING AND REMOVAL OF BASTING, filed Apr. 18, 1973, D.C., N.D. Ind. (Fort Wayne), Doc. 73-F-36, *Solvez Corporation v. Joseph H. Cohen & Sons, Inc.*

3,312,390. (See 2,953,296.)

3,436,011. (See 2,953,296.)

3,502,785, A. D. Nickola, MOUNTING PEDESTAL FOR UTILITIES, filed Apr. 18, 1973, D.C., E.D. Mich. (Flint), Doc. 634, *Anne D. Nickola v. Kenneth Peterson, doing business as Kay-Dee Products.*

3,532,296, A. E. Murrall, LINE SPOOL BRAKING DEVICE FOR FISHING REELS, filed Apr. 11, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-S05-DWW, *Abu Aktiebolag v. Daiwa Corporation and Daiwa Seiko, Inc.*

3,541,631, Kluge and Paulson, INDUSTRIAL VACUUM LOADER AND CLEANER, filed Apr. 12, 1973, D.C., E.D. Wis. (Milwaukee), Doc. 73-C-200, *Super Products Corporation v. D. P. Way Corporation, et al.*

3,613,044, W. G. Rarick, POWER SUPPLY CORD HATCH, filed Jan. 28, 1972, D.C., N.D. Ind. (Fort Wayne), Doc. 72-F-4, *Lyall Electric, Inc. v. Geisel Distributors, Inc. et al.* Defendants enjoined permanently, consent judgement, Apr. 11, 1973.

3,615,117, P. E. Neldlinger, ANTISAIL TARPAULIN, filed Apr. 9, 1973, D.C., W.D.N.C. (Charlotte), Doc. C-C-73-78, *East Akron Tarp & Ratchet Mfg. Co., Inc. v. Austin Cushion and Canvas.*

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U. S. PATENT OFFICE

1043

3,650,460, B. P. Lokey, PAPER BAG; 3,687,356, Goodrich and Waxlax, GUSSETED TYPE BAGS, filed Apr. 9, 1973, D.C., S.D. Ill. (Peoria), Doc. P-C-73-31, *St. Regis Paper Company v. Bemis Company, Inc.*

3,687,356. (See 3,650,460.)

3,687,467, W. B. Kosmowski, COLLET, filed Apr. 6, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-762-R, *Digital Systems, Inc. v. Advanced Controls Corporation et al.*

3,693,667, W. C. Arnold, HEALD FRAME, filed Apr. 19, 1973, D.C. (District of Columbia), Doc. 756-73, *H. J. Theller Corporation v. Bonas Machine Company, Limited.*

3,695,138, C. W. Andersen, PORTABLE MUSIC LABORATORY, filed Apr. 11, 1973, D.C. Minn. (Minneapolis), Doc. 4-73-C-207, *Musitronic Inc. v. Wurlitzer Company.*

3,722,399, J. E. Cole, POPCORN POPPER HAVING AUTOMATIC BUTTERING MEANS, filed Apr. 16, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c979, *Scovill Manufacturing Co. v. National Presto Industries Inc. et al.*

3,722,817, A. B. Fletcher, SPRAYER, filed Apr. 13, 1973, D.C., W.D. Okla. (Oklahoma City), Doc. 73-255-C, *F & F Manufacturing, Inc. v. Dixon Distributors, Inc.*

3,725,158, Messerschmidt, Jr., Heyman and Johnsen II, MULTI-COMPONENT POWDERLESS ETCHING BATH ADDITIVE; 3,725,159, Messerschmidt, Heyman and Johnsen II, POWDERLESS ETCHING BATH COMPOSITIONS, filed Apr. 16, 1973, D.C. Del. (Wilmington), Doc. 4628, *Mona Industries, Inc. v. Philip A. Hunt Chemical Corporation.*

3,725,159. (See 3,725,158.)

Re. 24,837. (See 3,128,737.)



## Certificates of Correction for the Week of Aug. 28, 1973

Re. 27,580	3,688,766	3,710,747	3,720,560
D.225,785	3,688,992	3,710,797	3,720,576
3,318,815	3,690,798	3,711,941	3,720,608
3,442,190	3,690,934	3,712,270	3,720,642
3,454,385	3,691,410	3,712,686	3,720,756
3,525,846	3,691,578	3,712,825	3,720,873
3,528,358	3,691,742	3,712,937	3,720,935
3,571,954	3,692,113	3,713,141	3,720,990
3,584,097	3,692,649	3,713,334	3,721,052
3,586,679	3,692,860	3,713,715	3,721,141
3,588,428	3,692,948	3,713,728	3,721,164
3,596,789	3,693,131	3,713,815	3,721,269
3,599,563	3,693,428	3,713,847	3,721,282
3,600,433	3,693,521	3,713,983	3,721,366
3,602,719	3,694,913	3,714,045	3,721,518
3,619,164	3,696,961	3,714,077	3,721,616
3,619,991	3,697,197	3,714,106	3,721,674
3,622,008	3,697,620	3,714,396	3,721,690
3,626,950	3,699,416	3,714,647	3,721,710
3,632,479	3,699,520	3,715,019	3,721,879
3,638,423	3,700,031	3,715,422	3,722,131
3,641,895	3,700,595	3,715,957	3,722,152
3,644,078	3,700,784	3,716,048	3,722,194
3,648,130	3,702,153	3,716,221	3,722,273
3,648,998	3,702,392	3,716,293	3,722,379
3,652,562	3,703,979	3,716,909	3,722,646
3,657,127	3,704,201	3,717,093	3,722,987
3,658,937	3,704,324	3,717,254	3,722,990
3,663,881	3,704,818	3,717,363	3,723,059
3,669,964	3,705,354	3,717,585	3,723,363
3,670,043	3,705,670	3,717,631	3,723,407
3,670,162	3,705,671	3,718,064	3,723,429
3,671,259	3,705,801	3,718,077	3,723,845
3,671,851	3,705,877	3,718,102	3,724,027
3,673,143	3,706,441	3,718,160	3,724,030
3,673,165	3,706,686	3,718,322	3,724,350
3,675,485	3,707,484	3,718,459	3,724,452
3,676,344	3,708,415	3,718,547	3,724,480
3,678,824	3,708,582	3,718,905	3,725,060
3,679,607	3,709,430	3,718,911	3,725,117
3,683,425	3,709,724	3,719,487	3,725,176
3,684,025	3,709,761	3,719,559	3,725,189
3,684,100	3,710,374	3,719,628	3,725,734
3,684,722	3,710,491	3,719,661	3,725,939
3,684,728	3,710,494	3,720,330	3,725,959
3,686,549	3,710,546	3,720,407	
3,688,332	3,710,678	3,720,528	

## Disclaimers

3,614,484.—*Andrew Shoh*, Ridgefield, Conn. ULTRASONIC MOTION ADAPTER FOR A MACHINE TOOL. Patent dated Oct. 19, 1971. Disclaimer filed May 21, 1973, by the assignee, *Branson Instruments Incorporated*.

Hereby disclaims the portion of the term of the patent subsequent to Nov. 9, 1988.

3,633,927.—*Dale A. Van Deven*, Ann Arbor, Mich. MOLDED-LIP HYDRODYNAMIC SHAFT SEAL. Patent dated Jan. 11, 1972. Disclaimer filed June 28, 1973, by the assignee, *Federal-Mogul Corporation*.

Hereby enters this disclaimer to claims 1 through 8 of said patent.

3,704,241.—*Shunsaku Noguchi* and *Shoji Kishimoto*, Osaka, Japan. 4-PYRAZOLE ACETIC ACID COMPOUNDS. Patent dated Nov. 28, 1972. Disclaimer filed July 25, 1973, by the assignee, *Takeda Chemical Industries, Ltd.*

Hereby enters this disclaimer to claims 1 to 8 of said patent.

3,729,610.—*Iwao Kondo*, Tokyo, Japan. ELECTRICAL DISCHARGE MACHINING DEVICE USING LOGICAL CONTROL. Patent dated Apr. 24, 1973. Disclaimer filed Oct. 30, 1972, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to Jan. 4, 1989.

3,733,778.—*Ernest C. Hungate*, *Harold A. Ogletree*, and *Graeson T. Nickel*, Greensboro, N.C. POLLUTION CONTROL METHOD AND APPARATUS. Patent dated May 22, 1973. Disclaimer filed Apr. 2, 1973, by the assignee, *Air Conditioning Corporation*.

Hereby disclaims the portion of the term of the patent subsequent to Apr. 10, 1990.

## Disclaimers and Dedications

2,748,872.—*Mordica O. Johnston*, Glendale, Calif. WELL TOOL ANCHORING DEVICE. Patent dated June 5, 1956. Disclaimer and dedication filed Mar. 28, 1973, by the assignee, *First City National Bank of Houston*.

Hereby enters this disclaimer to the entire remaining term of said patent and thereby dedicates the patent to the Public.

2,751,011.—*Mordica O. Johnston*, Glendale, Calif. SIDE WALL TESTING APPARATUS. Patent dated June 19, 1956. Disclaimer and dedication filed Mar. 28, 1973, by the assignee, *First City National Bank of Houston*.

Hereby enters this disclaimer to the entire remaining term of said patent and thereby dedicates the patent to the Public.

2,751,020.—*Mordica O. Johnston*, Glendale, Calif. VALVE FOR USE WITH SIDE WALL TESTING APPARATUS. Patent dated June 19, 1956. Disclaimer and dedication filed Mar. 28, 1973, by the assignee, *First City National Bank of Houston*.

Hereby enters this disclaimer to the entire remaining term of said patent and thereby dedicates the patent to the Public.

2,760,580.—*Mordica O. Johnston*, Glendale, Calif. SIDE WALL TESTER. Patent dated Aug. 28, 1956. Disclaimer and dedication filed Mar. 28, 1973, by the assignee, *First City National Bank of Houston*.

Hereby enters this disclaimer to the entire remaining term of said patent and thereby dedicates the patent to the Public.

## Dedications

2,859,561.—*Joseph E. Jendrisak*, Northville, Mich. APPARATUS FOR BENDING GLASS SHEETS OR PLATES. Patent dated Nov. 11, 1958. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,094,463.—*John H. Biel*, Milwaukee, Wis. COMPOSITION CONSISTING OF 2-PYRROLIDYL-METHYL-N-LOWER ALKYL AND 3-PIPERIDYL-N-LOWER ALKYL PHENYLGLYCOLATES AS ANTI-SPASMODICS AND CENTRAL STIMULANT, AND PROCESS OF PREPARATION. Patent dated June 18, 1963. Dedication filed Mar. 5, 1973, by the assignee, *Libbey-Owens-Ford Company*.

Hereby dedicates to the Public the entire remaining term of said patent.

## PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

## CONDITION OF PATENT APPLICATIONS AS OF AUGUST 4, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
<b>CHEMICAL EXAMINING GROUPS</b>	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director.....	5-30-72
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director.....	8-01-72
Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Acting Director.....	7-03-72
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director....	6-01-72
Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director..	3-23-72
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	
<b>ELECTRICAL EXAMINING GROUPS</b>	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director.....	12-27-72
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director.....	11-07-72
Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director.....	10-02-72
Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director..	2-23-72
Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director.....	11-17-72
Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	
DESIGNS, GROUP 290—R. L. CAMPBELL, Director.....	11-17-71
Industrial Arts; Household, Personal and Fine Arts.	
<b>MECHANICAL EXAMINING GROUPS</b>	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. BUCHLER, Acting Director.....	11-01-72
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director.....	7-05-72
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director.....	10-18-72
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director.....	9-25-72
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director.....	9-01-72
Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	

Expiration of patents: The patents within the range of numbers indicated below expire during August 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 263. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,757,378 to 2,761,141, inclusive  
Plant Patents..... Numbers 1,505 to 1,508, inclusive



# REISSUES

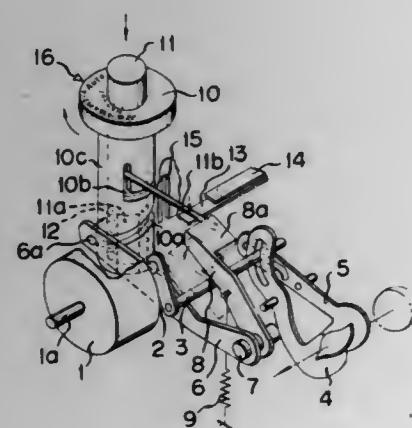
AUGUST 28, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

## 27,741 MANUAL DIAPHRAGM SETTING DEVICE FOR A CAMERA HAVING AUTOMATIC EXPOSURE ADJUSTING DEVICE

Yozo Iida, Tokyo, Japan, assignor to Nippon Kogaku, K.K., Tokyo Japan  
Original No. 3,601,023, dated Aug. 24, 1971, Ser. No. 832,623, June 12, 1969. Application for reissue Aug. 18, 1972, Ser. No. 281,860  
Claims priority, application Japan, June 26, 1968, 43/54,196

Int. Cl. C03b 7/12, 9/02  
U.S. Cl. 95—10 C 9 Claims.

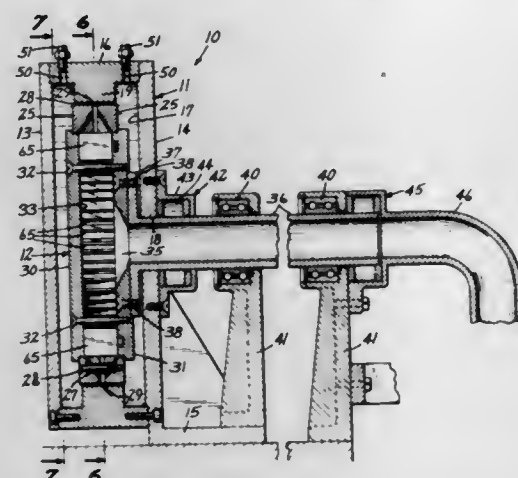


A manual control for the diaphragm of a camera is provided to override the automatic setting of the diaphragm by an exposure meter built into the camera. By a scissoring, or pinching action of two levers pivoted on a common shaft, a rocker actuating shaft controlling the automatic setting of the aperture blades is moved into and held in a desired aperture setting position upon depression of a pushbutton and rotation of an aperture setting sleeve. An operating rod movable upon depression of the pushbutton permits biased movement of one lever and also opens the exposure meter circuit. A cam groove in the aperture setting sleeve positions the other lever to the desired aperture setting positions.

27,742  
**CENTRIFUGAL CLASSIFIER**  
Charles E. Lapple, Los Altos, Calif., assignor to Donaldson Company, Inc., Minneapolis, Minn.  
Original No. 3,491,879, dated Jan. 27, 1970, Ser. No. 631,628, Apr. 18, 1967. Application for reissue Jan. 17, 1972, Ser. No. 218,566  
Int. Cl. B07b 7/083

U.S. Cl. 209—144 8 Claims  
Apparatus for classifying particles of a powder according to size having a rotor and a stator separated by a narrow annular air gap. The rotor has a hollow coaxial chamber therein in communication with the air gap along the periphery of the rotor, and a central coaxial opening for the egress of an elutriating fluid and the fine fraction of the powder. The elutriating fluid under pressure is supplied to the chamber through the gap and a vortex is produced generally within the rotor in the flow of fluid by the rotation of the rotor. The powder to be classified is supplied to the vortex and the coarse fraction

of the powder, which is forced toward the stator, is removed through a coarse fraction passageway while the

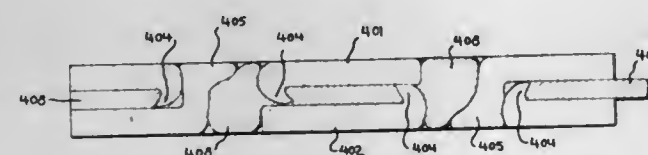


fine fraction is removed with the fluid through the axial opening in the rotor.

## 27,743 ELECTRICAL CONNECTION FOR TERMINATING ALUMINUM FOIL

Edgar Arthur Weimer, Jr., Harrisburg, Pa., assignor to AMP Domestic Inc.  
Original No. 3,247,316, dated Apr. 19, 1966, Ser. No. 361,853, Apr. 22, 1964, which is a continuation-in-part of abandoned application 857,158, Dec. 3, 1959, and application Ser. No. 141,166, Sept. 27, 1961, now Patent No. 3,138,658. Application for reissue Nov. 28, 1969, Ser. No. 876,185, which is a continuation of abandoned applications Ser. No. 646,741, Apr. 27, 1967, and Ser. No. 726,621, Apr. 29, 1968  
Int. Cl. H01r 5/00

U.S. Cl. 174—94 R 6 Claims



An improved electrical connector provided by a pair coextensive plates having opposed apertures therein and lances on the plates projecting toward the apertures, so that when the plates are pressed together by opposing anvils some of the lances pass through the sheet and opposing apertures to be compressed by an anvil while other lances become embedded therein.

27,744  
**STRAPPING MACHINE**  
Ronald J. Billett, Sunnyvale, and Terence H. West, San Jose, Calif., assignors to FMC Corporation, Philadelphia, Pa.  
Original No. 3,269,300, dated Aug. 30, 1966, Ser. No. 421,883, Dec. 29, 1964. Application for reissue Aug. 29, 1972, Ser. No. 284,564  
Int. Cl. B65b 13/32

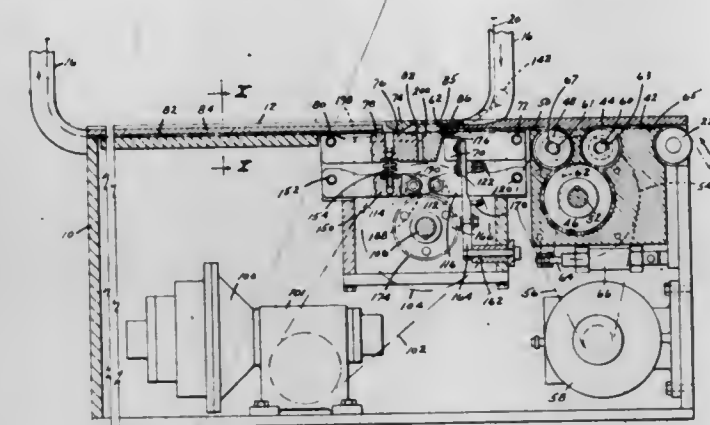
U.S. Cl. 100—8 15 Claims  
1. Apparatus for securing a tensioned plastic strap about an article, said apparatus comprising means for supporting an article in strapping position, gripping means for

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U. S. PATENT OFFICE

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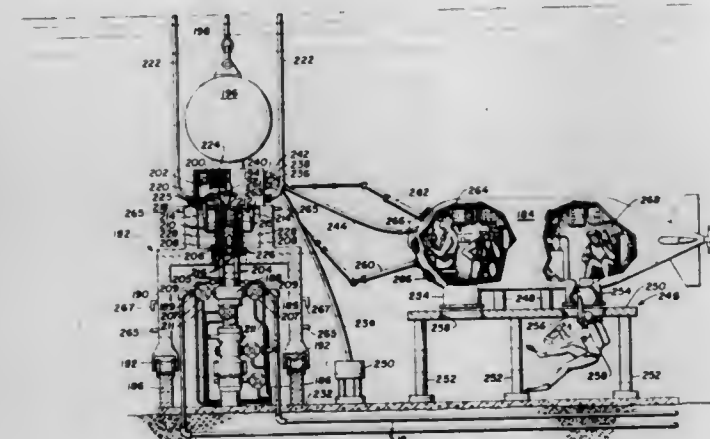
holding the leading end of a strap looped about the article in relaxed spaced overlapping relationship with respect to a strap portion extending to a supply, tensioning means for tensioning the strap about the article, holding means for holding the strap under tension about the article, means for disengaging said tensioning means whereby the



strap portion extending to the supply from said holding means is relaxed, means for melting the facing surface areas of the overlapping strap portions, squeezing means for squeezing the melted surface areas together whereby a fused joint is formed, and cutting means for cutting the strap from the supply adjacent the fused joint.

27,745  
**SUBSEA PRODUCTION SYSTEM**  
Warren B. Brooks, Darien, Conn., Charles Ovid Baker, Garland, and Eugene L. Jones, Dallas, Tex., assignors to Mobil Oil Corporation  
Original No. 3,520,358, dated July 14, 1970, Ser. No. 649,959, June 29, 1967. Application for reissue Apr. 9, 1971, Ser. No. 132,864  
Int. Cl. E21b 43/01

U.S. Cl. 166—5 50 Claims

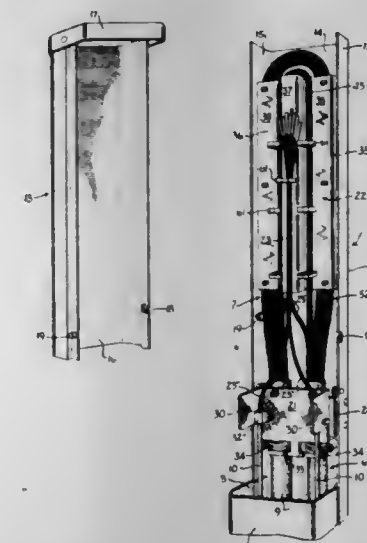


This specification discloses a subsea system for the production of fluid minerals. The system includes a product gathering network provided with production satellites in which the gas-oil-water ratios of each well are periodically

tested and the flow rates are automatically controlled. A power distribution network connects a central power station, either floating or bottom supported, at the site or on land nearby, with the various satellite stations and submerged wellhead units. Provision is made for entry into the satellites and diver maintenance at the submerged wellheads. Also, as a part of this subsea system, is a remotely controlled wireline unit. Submersible vehicles function as underwater rest stations for divers working on the subsea equipment as well as conveyances for transporting divers and nondiving personnel to the satellites and wellhead units. General purpose submersible vehicles with articulated manipulators, as well as specialized robot submersibles such as pipe welders and wireline units, permit diverless installation of equipment as well as maintenance and control of the installed equipment.

27,746  
**TERMINAL ENCLOSURE FOR BURIED CABLE PLANT**  
Douglas L. P. Hamilton, Jensen Beach, Fla., assignor to Utility Products Co., Milwaukee, Wis.  
Original No. 3,604,835, dated Sept. 14, 1971, Ser. No. 30,669, Apr. 22, 1970. Application for reissue Nov. 15, 1972, Ser. No. 306,658  
Int. Cl. H02g 9/02

U.S. Cl. 174—38 13 Claims



A terminal chamber in the top part of a terminal enclosure for a buried cable installation is compartmented by platelike supporting and partition members, both carried by a channel-shaped rear member comprising the main enclosure body. Both compartmenting members are in forwardly spaced generally parallel relation to the rear member web. The supporting member, near the bottom of the terminal chamber supports upright stretches of cable and service lines. The partition member, spaced above it, has spliced conductors and an unassigned conductor loop secured to and overlying its front face, while a loop of unassigned conductors lies behind it.



# PATENTS

GRANTED AUGUST 28, 1973

## GENERAL AND MECHANICAL

3,754,284

### BELT FOR DISPOSABLE GARMENT

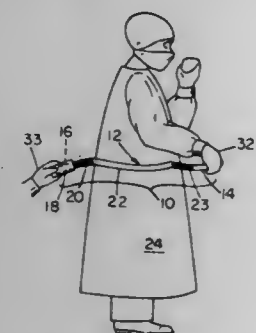
Edward G. Hartigan, Schaumburg, and Richard L. Zoepfel, Lake Villa, both of Ill., assignors to The Kendall Company, Walpole, Mass.

Filed Feb. 15, 1972, Ser. No. 226,497

Int. Cl. A41d 13/00

U.S. Cl. 2-114

16 Claims



A belt for use in sterile operating room gowning procedure is composed of flexible material, lengthwise dimensionally stable. The belt has a first and a second end, an intermediate attachment portion adjacent the first belt end and adapted for attachment to an operating room gown, and a second intermediate portion adjacent the second belt end, the second intermediate portion being transversely micropleated to form a compacted portion having an initial compacted length. The compacted portion is extensible responsive to tension on the second belt end to an extended length at least twice and preferably six to seven times the initial compacted length, and substantially maintains this extended length after tension on the second end is released. The belt with the compacted portion in extended condition is long enough to surround the gown wearer's body with the belt ends secured together.

3,754,285

### DECORATIVE BELT LINKS

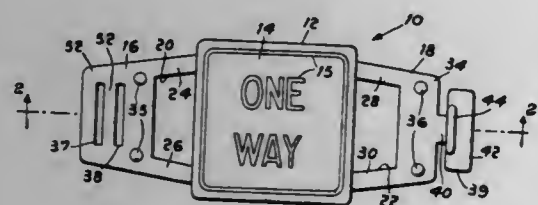
George Greene, 59 Central Ave., Caldwell, N.J.

Filed Apr. 24, 1972, Ser. No. 246,877

Int. Cl. A41f 1/00, 19/00

U.S. Cl. 2-336

10 Claims



A unitary belt link of thin flexible material includes a central display area and integral longitudinal link portions extending from opposite sides of the central area. Cooperating coupling members are disposed at the opposite ends of the link. Open areas around the opposite sides of the central area extend laterally toward the edges of the link and provide narrow strips along the edges which connect the central area to the ends. The end coupling members preferably include lateral slots at one end and a larger laterally extending T-shaped integral tab at the other end engageable with the slots.

A raised lateral surface on the tab fits within a slot to secure the tab in position. A plurality of like successive links are coupled together to form an adjustable length belt with decorative designs or indicia being displayed on the central areas. A single link may have the ends coupled together to form a decorative band.

3,754,286

### ARTIFICIAL FOOT HAVING ANKLE FLEXIBLE MOUNT

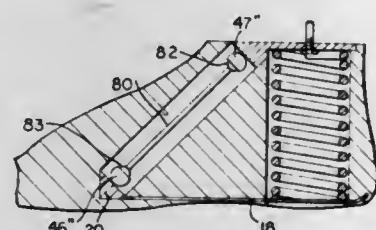
Michael W. Ryan, 187 Marquette, Vallejo, Calif.

Filed Jan. 21, 1972, Ser. No. 219,670

Int. Cl. A61f 1/04, 1/08

U.S. Cl. 3-32

7 Claims



An artificial foot including an improved ankle and foot mount is attached to a conventional stump mounted artificial leg. A coil spring extends downwardly from rigid attachment to the artificial limb in the vicinity of the ankle at the upper end and attaches rigidly to a plate in the plane of the sole of the foot at the lower end. The sole plate, extending from the heel to the ball of the foot, cantilevers from the coil spring to emulate natural foot action during walking. A second sole plate support, capable of accommodating both tension and compression as well as side to side foot motion, extends from a mount on the sole plate at the ball of the artificial foot upwardly at an angle to a mount on the ankle of the artificial limb. This provides improved toe action of the artificial limb. Provision is made for mounting either a spring or a variable resistance shock absorber to act in combination with the second spring to imitate natural foot motion.

3,754,287

### STOOL SPECIMEN COLLECTOR

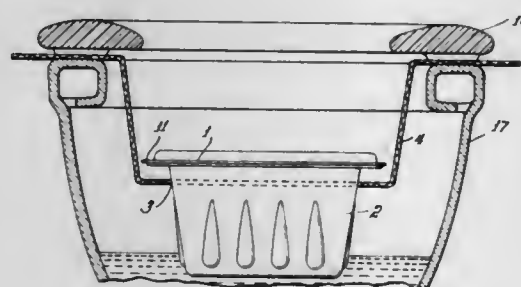
Lawrence A. Taylor, 1282 Whispering Pines Dr., St. Louis, Mo.

Filed Dec. 23, 1971, Ser. No. 211,313

Int. Cl. A47k 17/00

U.S. Cl. 4-1

8 Claims



A stool specimen container serves also as the original receiver from the donor. The receiver-container is nested within a tub which, when receiving, floats on the water in a water closet supported in position by a frame which rests on the closet bowl. After deposit of the specimen, the covered container is lifted from the tub. All parts of the assemblage may be disposable.

AUGUST 28, 1973

GENERAL AND MECHANICAL

1049

3,754,288

### WASTE DISPOSAL SYSTEM

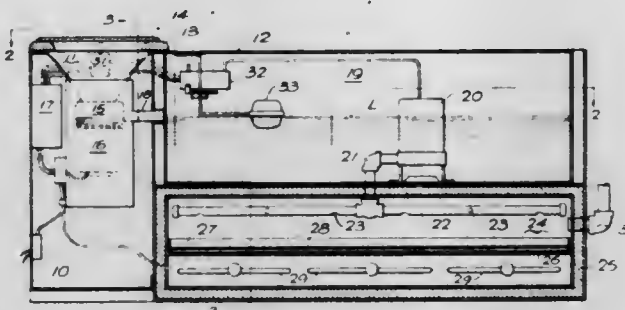
Ernest Weiss, 3140 S. Ocean Dr., Hallendale, Fla.

Filed July 29, 1971, Ser. No. 167,351

Int. Cl. A47k 11/02

U.S. Cl. 4-131

5 Claims



A waste disposal system comprises a receiving chamber including a mechanical grinding device, a liquifying tank in communication therewith and a source of liquifying chemicals connected thereto, an incinerating chamber communicates with the liquifying chamber by way of a pump and includes heating means. Waste products and chemicals added thereto result in substantial liquification of the waste products in the liquifying tank and the subsequent delivery of portions of the liquified waste and liquid carrier to the incinerator chamber act in the manner of a flash boiler to quickly incinerate the waste products and evaporate the liquid carrier.

3,754,289

### BED BASE

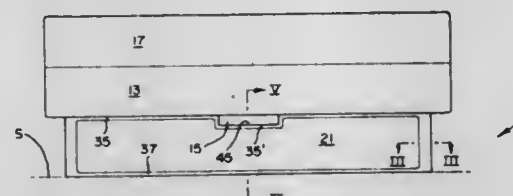
Edward J. Larkin, 4899 Fleetview, Memphis, Tenn.

Filed Feb. 28, 1972, Ser. No. 229,962

Int. Cl. A47c 19/00

U.S. Cl. 5-201

5 Claims



A bed base for supporting a box spring which includes a downwardly projecting support member extending substantially along the longitudinal centerline thereof and normally having a mattress resting thereon. The bed base includes a pair of side panels and a pair of end panels. The side panels are shorter than the box spring is long, and the end panels are shorter than the box spring is wide. The side and end panels are equal in width and span a distance or enclose the space between the box spring and the floor. The opposite ends of the side panels include vertical tongue structure and the opposite ends of the end panels are provided with vertical grooves for receiving the tongues of the side panels to rigidly and removably lock the side panels to the end panels, thus establishing a continuous ledge for restingly support the box spring with the perimeter thereof projecting outwardly from the bed base. The box spring is precluded from side to side shifting by providing a groove in each of the end panels for receiving the downwardly projecting support member.

3,754,290

### FLY FISHERMAN'S LEADER CUTTER

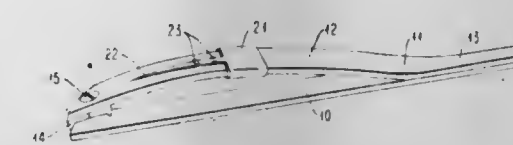
Joseph Harrington Nicholson, deceased, late of Union Valley Rd., Mahopac, N.Y. (Alice Barker Nicholson, executrix)

Filed Nov. 17, 1970, Ser. No. 90,354

Int. Cl. B25f 1/00; B26b 17/04

U.S. Cl. 7-1 H

4 Claims



A cutter for a fly fisherman's leader line. The cutter is a bifurcated spring loaded tool having a cutting instrument with an observable convex edge affixed to one of the bifurcations. Provision is also made for the cutter to carry a hook cleaner and hook storer. The cutter is particularly adapted for use in cutting highly resistant materials such as nylon, dacron and other synthetics.

3,754,291

### QUICK RELEASE LIFE SAVING EQUIPMENT

John L. Harris, and Robert W. Hellman, both of Marina Del Rey, Calif., assignors to Del Amo Enterprises, Inc., Torrance, Calif.

Filed Nov. 26, 1971, Ser. No. 202,255

Int. Cl. B63c 9/22

U.S. Cl. 9-14

16 Claims



Life saving equipment in which a life buoy is disposed in a container having a fall-away construction defined by pivotal connections between a front wall and bottom wall and between a rear wall and the bottom wall. A remote cable release interconnects a latching component on the front wall and stationary portion of the container. A float pole is connected by a line to the life buoy and disposed in the container for substantially simultaneous release with the life buoy. The life buoy is formed with ends curved in horseshoe manner and a drogue and signal generator, connected by a line to the life buoy, may be stored between the buoy ends.

3,754,292

### APPARATUS FOR MAKING A DRILL SCREW WITH AN EXTRUDED POINT

Bernard F. Reiland, 1616 Roncevalles Ave., Rockford, Ill. Division of Ser. No. 4,940, Jan. 22, 1970, Pat. No. 3,683,436.

This application May 26, 1972, Ser. No. 257,385

Int. Cl. B23g 9/00

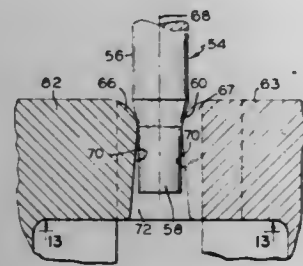
U.S. Cl. 10-9

3 Claims

A method of making a drill point, self-thread-forming screw comprises cold forging the work-entering end of a screw blank



between laterally movable complementary die members which completely enclose the blank end to achieve unrestricted longitudinal extrusion of the complete cross section of the screw and at the same time controlled lateral expansion thereof. Offset jaws on the die members form a pair of flutes extending the length of the drill point on opposite sides



thereof and land portions therebetween. Such land portions are provided with a hook at the work-entering extremities of the forward faces thereof. Due to control of the lateral expansion of the blank end, no flashings are formed on the drill point, which requires only a sharpening operation for completion.

3,754,293

## PORTABLE BRIDGE SECTION CONNECTION

Gerhard Wagner, Mainz-Lerchenberg, and Walter Kinzel, Mainz, both of Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Köln-Deutz, Germany

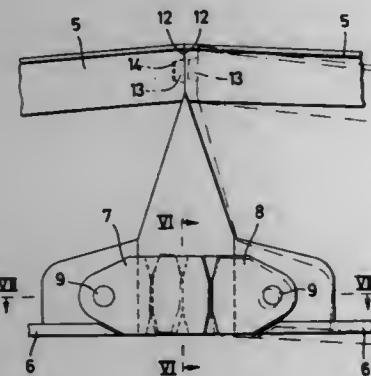
Filed Apr. 12, 1971, Ser. No. 133,154

Claims priority, application Germany, Apr. 11, 1970, P 20 17 489.4

Int. Cl. E01d 1/00

U.S. Cl. 14-1

3 Claims



A bridge system adapted to be mounted on a vehicle, which comprises two bridge sections adapted selectively from a transport position in which they are located one above the other to be moved into the bridging position in which said bridge sections are in longitudinal alignment with each other, and in which the lower chord means of the bridge sections are equipped with jaw clutches adapted vertically to be inserted into each other for interlocking said bridge sections in their bridging position, those head ends of the upper chords of said bridge sections which in bridging position of said bridge sections contact each other being provided with strip means for preventing vertical displacement of the bridge sections in bridging position thereof.

3,754,294

## CARPET SWEEPER

Hiroshi Fukuba, 2-320-82, Matsugaoka, Nagareyama, Chiba, Japan

Filed Jan. 3, 1972, Ser. No. 214,825

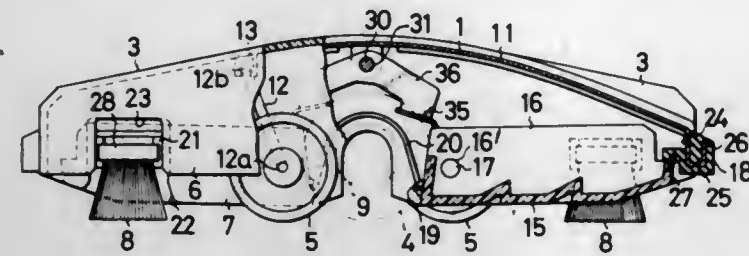
Int. Cl. A471 1/33

U.S. Cl. 15-42

3 Claims

An arcuate frame top plate is formed with a longitudinally elongated groove for receiving the lower end of a handle. Box

frames for supporting friction wheels at the opposite ends of a rotary brush and rolling wheels for driving the rotary brush are fixed to the opposite sides of the top plate. Dust receptacles pivoted to the opposing inner sides of the box frames are pro-



vided on their opposite sides with auxiliary brush supports which are exposed from the opposite sides of the box frames and are manipulated for opening the receptacles when the dust therein is discharged.

3,754,295

## TWO-HEADED BRUSH

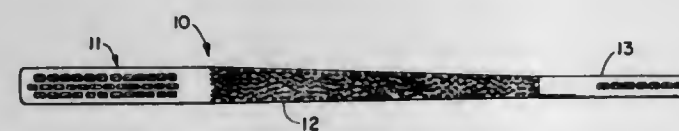
Richard L. Hyman, Iowa City, Iowa, assignor to Cooper Laboratories, Inc., Johnson, Iowa

Filed Feb. 1, 1972, Ser. No. 222,606

Int. Cl. A46b 9/04

U.S. Cl. 15-167 R

2 Claims



A two-headed brush particularly useful as a toothbrush havin a tapered design with two groups of bristles, one extending laterally from a relatively broad head portion and the other extending laterally from a narrow end portion. A roughened central handle portion is provided for a firm grip.

3,754,296

## ROTARY FLAIL TYPE CHIPPING HEAD

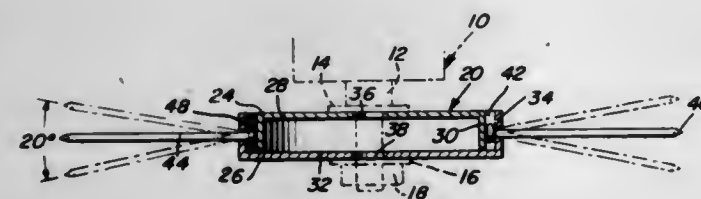
George N. Talbert, 102 Pine, Abilene, Kans.

Filed Dec. 16, 1971, Ser. No. 208,711

Int. Cl. B44d 3/16

U.S. Cl. 15-236 R

8 Claims



A cylindrical body for concentric mounting on a driven rotary shaft and including peripherally spaced radial openings outwardly from which tine-type elongated members project. The tine members extend generally radially of the cylindrical body and are supported at their inner ends for lateral swinging of the outer ends of the tines in all directions to limit positions of deflection displaced approximately 10° relative to a radial disposition. Further, the radial innermost ends of the tines are supported from the cylindrical body member in a manner such that the tines will be biased, by centrifugal force, to radially extending positions upon rapid rotation of the body about its center axis.

3,754,297

## ROTARY DISC CUTTING DEVICE

Anthony B. Metz, 129 Chester Ave., Chelsea, Mass.

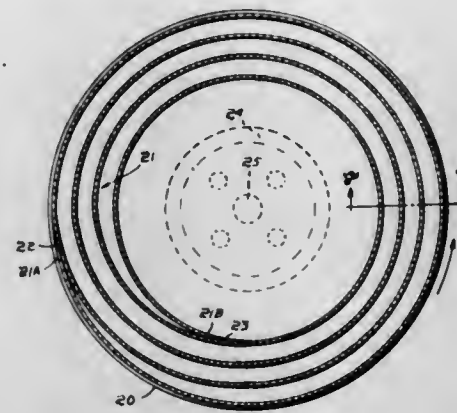
Continuation-in-part of Ser. No. 107,328, Jan. 18, 1971,

abandoned. This application Mar. 13, 1972, Ser. No. 234,248

Int. Cl. B44d 3/16

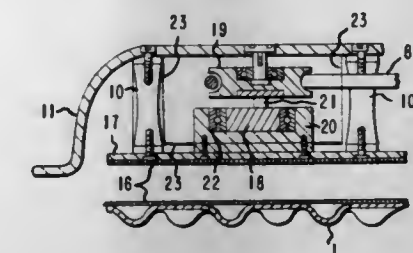
U.S. Cl. 15-236 R

12 Claims



Rotary disc devices are disclosed for use in removing paint or other surface layers from or otherwise treating the surfaces of wood, metal, and brick. Each device consists of a disc having a coiled blade length of the band saw type embedded therein with its teeth exposed.

projections on the rug side, and means to move said plate in a horizontal elliptical, but non-rotating path over an amplitude



of 1/32 inch to one-half inch at a frequency of 500 to 14,000 cycles per minute with suction applied to the perforations in the plate.

3,754,300

## COMMODE HINGE

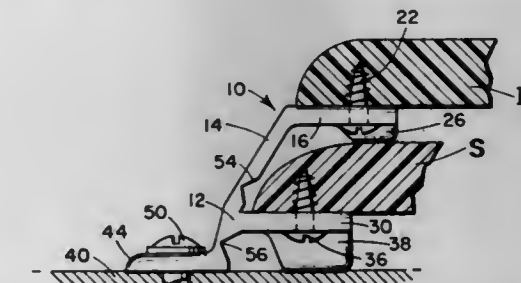
Charles E. Shepherd, P.O. Box 9445, Houston, Tex.

Filed Aug. 31, 1971, Ser. No. 176,520

Int. Cl. E05d 7/00

U.S. Cl. 16-150

5 Claims



3,754,298

## SPECTACLES, GOGGLES AND THE LIKE

Raymond Louis Menil, Bois-Colombes, France, assignor to

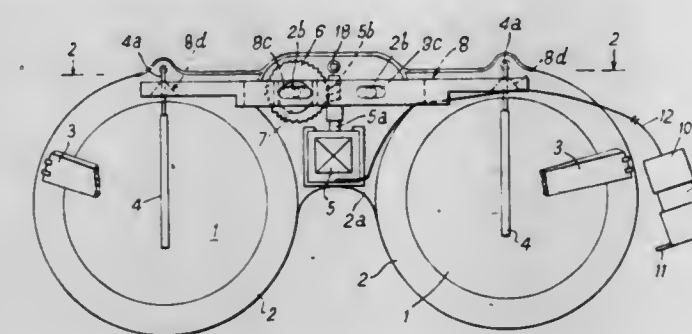
Tagada S. A., Hauts-de-Selne, France

Filed Mar. 18, 1971, Ser. No. 125,725

Int. Cl. B60s 1/22

U.S. Cl. 15-250.3

2 Claims



Spectacles, goggles and the like having glasses or lenses comprise wipers therefore mounted pivotally in front of an outer surface thereof, a frame, and driving means for the wipers mounted in said frame. To provide a toy in the form of a practical joke, the mounting may have an orifice forming a nozzle for projecting a liquid, said orifice comprising a ferrule for connection to a conduit for the liquid.

A hinge for a commode or the like comprising a plurality of flanges for mounting a commode lid and seat to a commode bowl. Longitudinal grooves are formed in the hinge for providing hinge axes for said lid and seat for pivotal movement of these members relative to the commode bowl.

3,754,301

## APPARATUS FOR EXTRACTING VISCERA FROM FISH

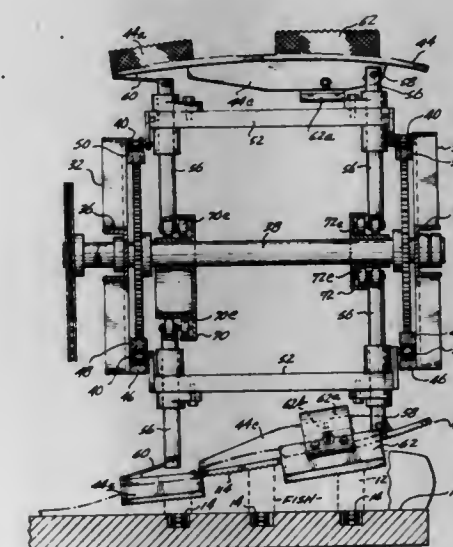
Eldon L. Grimes, Seattle, Wash., assignor to Marine Construction & Design Co., Seattle, Wash.

Filed Aug. 16, 1971, Ser. No. 172,162

Int. Cl. A22c 25/14

U.S. Cl. 17-58

14 Claims



3,754,299

## SUCTION CLEANING MACHINE

Richard E. Turner, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 17, 1971, Ser. No. 209,136

Int. Cl. A471 9/04

U.S. Cl. 15-363

6 Claims

An improved suction cleaning machine incorporates a perforated carpet contacting plate exhibiting carpet contacting

An arcuate segmental rocker actuated by cam-controlled carriage elements squeezes out the viscera. Rolling action of the rocker is effected by cam controlled programming of



depression and elevation of the respective end portions of the rocker sequentially as the fish is advanced on a support table. Completion of extraction is assured by a rotary brush means stationed along the feed path drawing out partially extruded viscera from the body cavity and severing any vestigial connecting membranes.

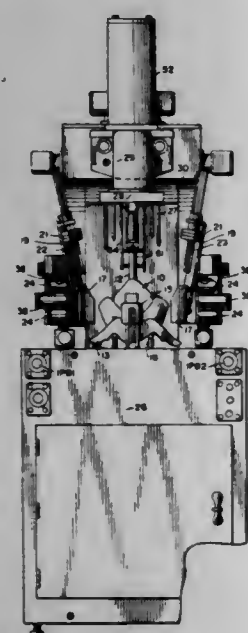
### 3,754,302 POULTRY CARCASS-TREATING PROCESS AND APPARATUS

James M. Blair, Mt. Prospect; Michael Sebring, Downers Grove, both of Ill.; Warren H. Underwood, and William P. Bley, both of Minneapolis, Minn., assignors to Armour and Company, Chicago, Ill.

Filed Jan. 14, 1971, Ser. No. 106,492  
Int. Cl. A22c 21/00

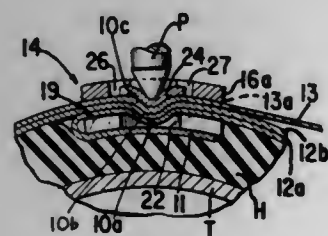
U.S. Cl. 17-45

9 Claims



A dressed raw poultry carcass, with its front portion engaging an abutment, is pressed from the rear to clamp the carcass against the abutment, and side rails carry arms rearwardly to engage the knees of the bird, thus positioning the carcass firmly for fluid injection or other treatment.

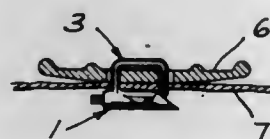
3,754,303  
HIGH COMPRESSION BAND CLAMP  
Leonard J. Pollock, Oceanside, N.Y., assignor to Ideal Corporation, Brooklyn, N.Y.  
Filed Mar. 30, 1972, Ser. No. 239,550  
Int. Cl. B65d 63/06  
U.S. Cl. 24-23 W  
7 Claims



A band clamp for high compression fastening of a hose or other flexible tubing, making use of a metal band adapted to encircle the tubing once or twice from an inner band end fixed to the base of a one-piece buckle and to be drawn through and interlocked with the buckle under high tension, is provided with a buckle structure enabling the band to be tensioned and locked in place by any of the conventional lock-up procedures. The buckle is made so rigid that the band can be tightened by a tool gripping its free end and thrusting against

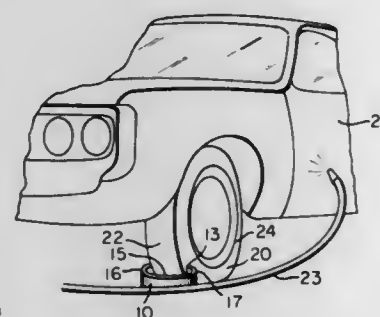
the buckle, and then locked by being bent up against and cut off over the front edge of the top wall of the buckle; yet that wall is made with a deformable thinned central section which, when the band has been similarly tightened, can be punched to force it and underlying portions of the band into an interlocking depressed configuration, whereupon the free end of the band may be broken off along said front edge.

3,754,304  
BUTTON FASTENER  
Henry J. Modrey, 158 Eagle Dr., Stamford, Conn.  
Continuation-in-part of Ser. No. 873,039, Oct. 31, 1969, abandoned. This application Mar. 17, 1972, Ser. No. 235,552  
Int. Cl. A44b 9/00, 1/18  
U.S. Cl. 24-90 W  
17 Claims



A button fastener for attaching an item, for instance a button to sheet material and particularly to fabric, by placing the button on one side of the fabric and by looping a flexible filament secured on one end to an elongate sleeve successively through the fabric, the holes of the button and again through the fabric. The filament is then threaded through the sleeve and pulled as tight as desired. The sleeve wall locks the filament portion now located within the sleeve in its tightened position, thereby securing the button flatly to the fabric with the sleeve anchored flatly against the opposite side of the fabric.

3,754,305  
AUTOMOBILE TIRE CLAMP THAT PROVIDES FREE HOSE MOVEMENT AROUND A CAR  
John H. Kline, 58 Holly St., Wilmington, Del.  
Filed May 27, 1971, Ser. No. 147,476  
Int. Cl. A44b 21/00  
U.S. Cl. 24-256  
3 Claims

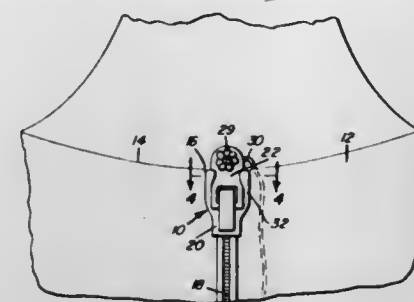


A clamp that can be attached to the tire of an automobile to provide a smooth curved substantially vertical wall in front of and to the sides of that part of the wedge-shaped space formed by the tire and the ground that tends to wedge and stop the movement of a hose as it is pulled around the front or rear of a car, as well as the combination of the clamp and the tire.

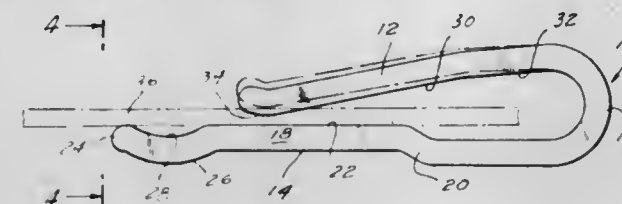
3,754,306  
ANCHOR FOR ZIPPER HANDLE  
Joseph Cirone, 41 Maxwell St., Jersey City, N.J.  
Filed Aug. 4, 1971, Ser. No. 168,842  
Int. Cl. A44b 19/30, 19/26  
U.S. Cl. 24-205.14 R  
2 Claims

A zipper construction in which the slider is provided with a spring clip structure that retains the operating handle for the slider in a longitudinally extending position above the slider

with a pull line attached to the handle by which the slider may be moved vertically to open and close the zipper. The handle on the zipper slider in its upwardly extending position overlying and concealing the top edge of an opening in a garment such as an opening in the neckline of a dress or similar garment thereby concealing the open edges of the neckline and eliminating the necessity of providing a hook and eye or other similar fastener assembly to close the upper edge of an opening in a garment such as presently employed in conventional garment construction.

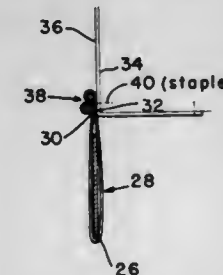


3,754,307  
GARMENT CLIP  
Monroe Froehlich, Jr., South Salem, N.Y., assignor to DHJ Industries Inc., New York, N.Y.  
Filed Mar. 1, 1972, Ser. No. 230,691  
Int. Cl. A44b 21/00  
U.S. Cl. 24-255 TV  
1 Claim



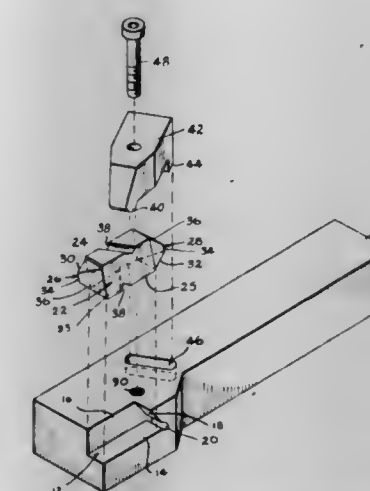
A garment clip for readily receiving garments formed of very flexible material such as double knit garments and holding them in a firm gripping manner and which can be inexpensively produced by molding of plastic or other suitable material.

3,754,308  
FURNITURE SKIRT CONSTRUCTION AND METHOD OF MAKING SAME  
Herbert C. Staley, P.O. Box 1812, High Point, N.C.  
Continuation of Ser. No. 146,178, May 24, 1971. This application Apr. 24, 1972; Ser. No. 247,204  
Int. Cl. B68g 7/00  
U.S. Cl. 29-91.1  
5 Claims



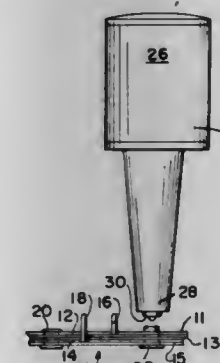
An upholstered furniture skirt construction and method for making same wherein a U-shaped curtain with evenly and upwardly positioned first and second edges is secured adjacent the front surface of the upholstered furniture article, and a double welt is extended continuously along and over these edges so that the skirt hangs substantially vertically from the front surface of the furniture article.

3,754,309  
CUTTING INSERT AND CLAMPING ARRANGEMENT THEREFOR  
Dennis G. Jones, and George G. Barkley, both of Greensburg, Pa., assignors to Kennametal Inc., Latrobe, Pa.  
Continuation of Ser. No. 74,649, Sept. 23, 1970, abandoned.  
This application Jan. 28, 1972, Ser. No. 221,765  
Int. Cl. B26d 1/00  
U.S. Cl. 29-96 R  
11 Claims



The specification discloses a cutting insert which is invertible and which has a diagonal notch in each of the top and bottom sides thereof which is engaged by a clamp element which presses the insert downwardly into a pocket provided therefor in a holder while simultaneously drawing the insert against the sides of the pocket.

3,754,310  
METHOD OF MAKING AN ELECTRICAL ASSEMBLY FASTENED WITH THERMOPLASTIC EYELET  
Gerald J. Shea, Buffalo Grove, Ill., assignor to Underwriters Safety Device Co., Chicago, Ill.  
Filed July 29, 1971, Ser. No. 167,234  
Int. Cl. H01g 13/00  
U.S. Cl. 29-25.42  
5 Claims



The assembly includes at least two pieces of material, each having a hole therein aligned with the hole in the other piece of material, and a plastic eyelet positioned in the holes and having a radially extending flange on one end thereof which engages one piece of material and a rolled over rim at the other end thereof which engages the other piece of material to hold the pieces of material together. The method includes the steps of: assembling the pieces of material with a plastic sleeve positioned in the holes, the sleeve having the radially extending flange on one end with the other end of the sleeve extending beyond one piece of material; holding the flange against one piece of material while raising the temperature of the extending end of the sleeve above its softening temperature; and simultaneously shaping at least a part of the extending end of the sleeve into the rolled over rim which extends radially from the extending end of the sleeve and in abutment with the other piece of material.



3,754,311

**WOUND FILM CAPACITOR AND METHOD OF WINDING SAME ABOUT ITS LEAD WIRES**

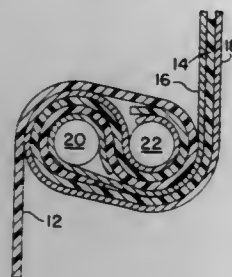
Charles C. Rayburn, 8501 West Higgins Rd., Falls Church, Va.

Division of Ser. No. 16,834, March 5, 1970, Pat. No. 3,638,086. This application Oct. 7, 1971, Ser. No. 187,570

Int. Cl. H01g 13/00

U.S. Cl. 29—25.42

6 Claims



Wound film capacitor and method of making wherein at least two layers of shrinkable thermoplastic dielectric are sandwiched between two layers of metalized or, preferably, foil, electrodes. A pair of lead wires are then positioned against the outer surfaces of the foils and rotated together in the manner of mandrels to wind the film and foil layers into a capacitor body. Flat, or otherwise deformed portions formed on a short portion of one end of each lead wire which is outside of the capacitor during winding are then drawn into the center of the capacitor by pulling on the other end of the wires. The capacitor body is then heated to shrink the dielectric and thereby cause the leads to be held in extremely firm engagement with the foil layers. Since the foils encircle at least 270° of the periphery of the lead wires, a very firm, low resistance, pressure bond is made which renders the capacitor able to withstand substantial amounts of heat applied during a soldering operation. The elimination of mandrel holes allows the capacitor to be extremely compact and usable for many applications without the addition of additional thicknesses of sealing materials.

3,754,312

**RING COMPRESSOR**

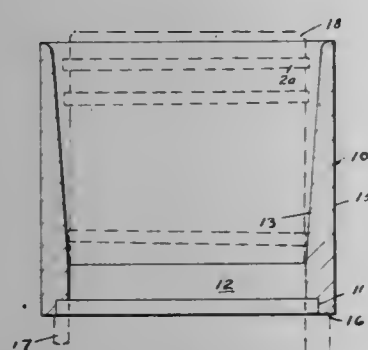
Felix A. Komorek, 1960 Woodlawn Ave., Erie, Pa.

Filed Oct. 27, 1971, Ser. No. 193,032

Int. Cl. B23p 19/00, 15/10

U.S. Cl. 29—200 P

1 Claim U.S. Cl. 29—225



A ring compressor especially suitable for use in installing pistons with rings in removable cylinders of internal combustion engines, pumps and the like. The compressor is made of a cylindrical tube having an inside bore with an inside diameter that is substantially equal to the inside diameter of the sleeve in which a piston is to be installed. The bore of the compressor flares out to a larger diameter at its distal end and has a counterbore that is suitable to receive the end of the cylinder on the engine. The counterbore can rest on the end of the cylinder of the engine to line up the bore of the compressor with the cylinder so that the piston with rings on it slides smoothly into place through the compressor.

3,754,313

**LOCATING ELONGATE MAGNETIC-ELEMENTS**

Malcolm William McCulloch, 2 Phillip Ave., Swanley, England

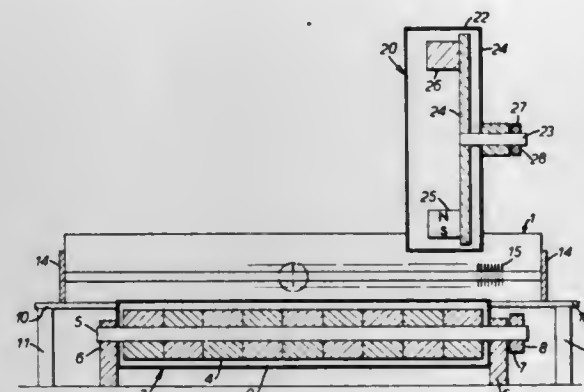
Filed Dec. 6, 1971, Ser. No. 205,231

Claims priority, application Great Britain, Dec. 9, 1970, 58,425/70

Int. Cl. H05k 13/04; B23q 7/10; B23p 19/00

U.S. Cl. 29—203 P

10 Claims



A machine for locating reed relay contact elements in holes in an operable trough which opens to allow the reed elements to drop out of it comprises magnets mounted for rotation below the trough so that the reed elements rotate under the influence of the magnetic field from the magnets and thereby locate in the holes in the trough. A further rotating magnet structure is mounted over the magnets and above the trough to remove, on movement of the trough between it and the magnets, any reed elements that are not located in holes in the trough.

3,754,314

**AUTOMOBILE DOOR LOCK REMOVAL TOOL**

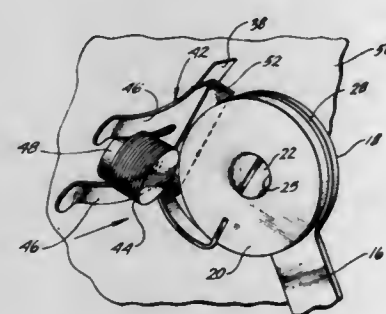
Thomas J. Snorgrass, 2436 Adella Ave., South El Monte, Calif.

Filed Sept. 10, 1971, Ser. No. 179,321

Int. Cl. B25b 27/20

1 Claim U.S. Cl. 29—225

13 Claims



A tool for removing the clip that holds the key barrel of an automobile door lock in place includes a pair of clip-straddling members at the end of an elongated handle. The members are sized to fit inside the door and are spaced apart to form a slotted opening between them that permits the members to straddle a projecting tongue portion of the clip. A keeper, preferably an elongated leaf spring, extends lengthwise adjacent to the slotted opening and fits around the clip to hold it between the clip-straddling members after the clip is removed from the key barrel.

3,754,315

**METHOD AND MEANS FOR ATTACHING PROTECTION STRUCTURE TO A VEHICLE FRAME**

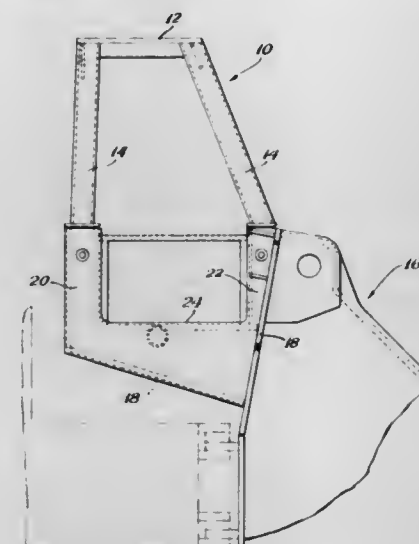
Theodore A. Heltman, Libertyville, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Feb. 24, 1972, Ser. No. 228,859

Int. Cl. B23p 17/00, 19/00, 19/02

U.S. Cl. 29—400

8 Claims



Method and means for attaching a rollover protection structure for protecting an operator of a vehicle, said structure having four posts secured to a top plate and positioned to generally define the confines of an operator's compartment. An extension, having at least one tapered surface, is secured to each post and is receivable by a complementary socket secured to the vehicle frame. Vibration and noise dampening material is positioned between the socket and the extension and fastening means secure each extension within the corresponding socket.

3,754,316

**AUTOMATIC GAGING APPARATUS OF MODULAR CONSTRUCTION AND METHOD OF MANUFACTURE**

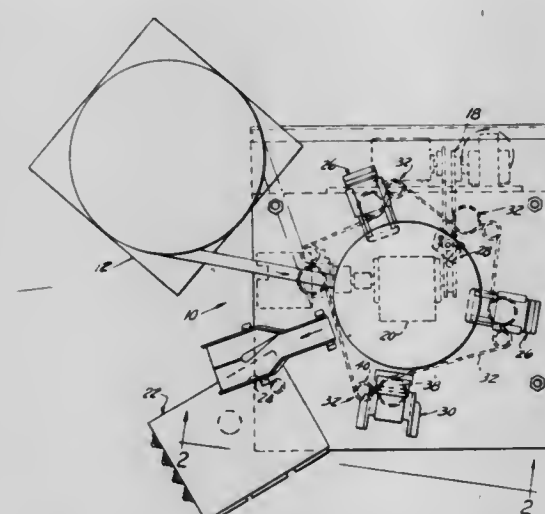
Roy Jerome Jacques, 303 Porter Dr., Englewood, Ohio

Filed June 22, 1972, Ser. No. 265,407

Int. Cl. B23p 17/00, 19/00

U.S. Cl. 29—400

4 Claims



A rotary transfer type of automatic gaging system is disclosed which allows the use of standardized modular components in fabricating gaging systems for a variety of applications requiring a variety of gaging and/or other motions in varying numbers and at varying numbers of work stations. The system includes an endless chain or belt drive extending about the rotary index table and engaging a series of standard cam modules located at each work station, rotatable about axes

parallel to the table axis so that their number may be varied according to design requirements. Each of the cam modules are capable of driving one, two, or three motion modules, providing an output motion in the vertical direction from below, or vertically from above the table, or in the horizontal direction, respectively. These motion modules are adapted to nest together at each cam module to allow use of one, two, or three distinct motions at each station.

3,754,317

**LONGITUDINAL MULTI-ELASTOMER RESILIENT BUSHING**

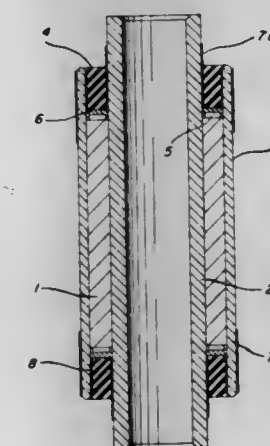
John E. M. Taylor, 27900 Fairmount Blvd., Pepper Pike, Ohio

Filed July 24, 1970, Ser. No. 58,113

Int. Cl. B23p 11/02

U.S. Cl. 29—451

21 Claims



Forcible assembly of a short elastomeric insert concentrically between an inner and an outer rigid cylinder and subsequent casting or pressing in place of — additional longitudinally arrayed elastomers of selected physical properties so as to fill remaining annular spaces after emplacement of small, highly-compressible, deformation-control elastomers, the entire assembly providing an economical, long-life, resilient bushing.

3,754,318

**METHOD FOR MAKING PARTIALLY-SOLDER-CLAD METAL**

George P. Trost, 34 Forest St., North Attleboro, Mass.

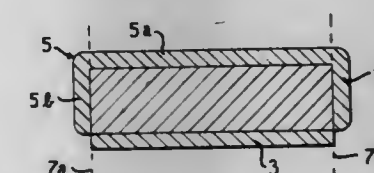
Division of Ser. No. 592,579, Nov. 7, 1966, Pat. No. 3,482,303.

This application Sept. 19, 1969, Ser. No. 871,231

Int. Cl. B23p 3/00, 17/00

U.S. Cl. 29—460

3 Claims



Among the several objects of the invention may be noted the provision of a method for manufacturing a solder-clad metal composite which does not require application and subsequent removal of a temporary stop-off material in areas of metal which are not to be clad with the solder; the provision of a method for manufacturing multilayer metallic members comprising a solderable metal layer having selected portions of the layer clad with solder by a hot-dipping process and without requiring subsequent removal of any stop-off material; and the provision of clad metal produced according to the methods of the invention. Other objects and features will be in part apparent and in part pointed out hereinafter.



3,754,319

**METHOD OF FABRICATING A KNIFE HANDLE**

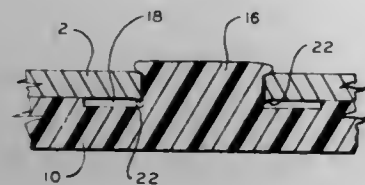
Nilo M. Miori, Solvey, N.Y., assignor to Camillus Cutlery Company, Camillus, N.Y.

Filed Feb. 18, 1972, Ser. No. 227,519

Int. Cl. B21d 39/00; B23p 11/00

U.S. Cl. 29—509

5 Claims



In the fabrication of knife handles having a plastic cover attached to a metal liner, the covers are molded with at least two studs projecting from the side of the cover which faces the metal liner. Holes are provided in the liner through which the studs are inserted with opposing faces of the cover and liner flush. An annular depression is formed in the cover around each stud to accommodate any burrs or protrusions of the metal liner formed while making the holes for the studs.

3,754,320

**METHOD OF MAKING BARRIER-FREE SEMICONDUCTOR SWITCHING DEVICE**

Max Guntersdorfer, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Division of Ser. No. 828,199, May 27, 1969, Pat. No.

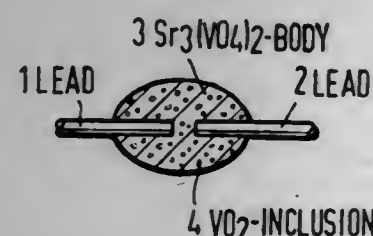
3,614,559. This application Oct. 14, 1970, Ser. No. 80,742

Claims priority, application Germany, May 27, 1968, P 17 64 373.1

Int. Cl. B01j 17/00

U.S. Cl. 29—576

5 Claims



Described is a barrier-free semiconductor component for switching, having at least two electrodes. The component is characterized by the fact that its semiconductor body is comprised of strontium vanadate with sporadic vanadium oxide inclusions.

3,754,321

**METHOD OF PRODUCING A SILICON TRANSISTOR DEVICE**

Helmuth Murrmann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Erlangen, Berlin, Germany

Filed Mar. 18, 1971, Ser. No. 125,701

Claims priority, application Germany, Mar. 19, 1970, P 20 13 220.1

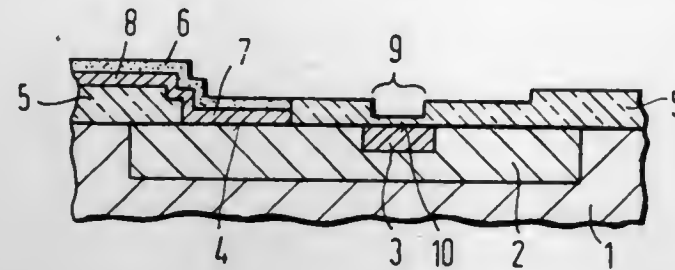
Int. Cl. B01j 17/00

U.S. Cl. 29—578

7 Claims

To contact a silicon transistor produced according to the method of planar technique, the electrode which contacts the base zone is first mounted and fastened by a metallurgical

process upon the silicon of the base zone. Then, the emitter electrode is mounted upon the emitter zone and so connected



with the same that the metal of the emitter electrode cannot short circuit or otherwise impair the p-n junction of the emitter zone (entire emitter).

3,754,322

**METHODS OF MAKING PRINTED CIRCUIT COIL**

David Horace Chandler, Essex, England, assignor to The Marconi Company Limited, London, England

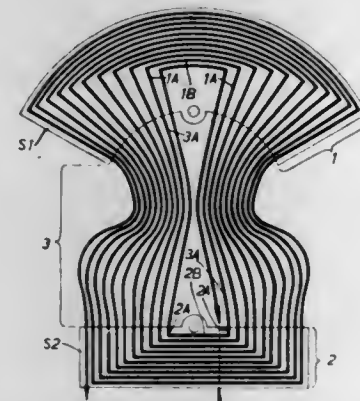
Filed Mar. 22, 1971, Ser. No. 126,617

Claims priority, application Great Britain, May 14, 1970, 23,332/70

Int. Cl. H05k 3/22

U.S. Cl. 29—625

2 Claims



A printed circuit coil for a cathode ray tube is shaped so that it can be bent to form a flared coil. When the coil is flat the turns of the coil each consist of three portions. The first portion comprises a pair of conductive lengths diverging towards one end of the coil and joined there by an arcuate length, the second is a pair of lengths joined at the other end of the coil by a straight length, and the third is a pair of curved conductive lengths completing the turn.

3,754,323

**ENSURED SPLICING OF WIRES**

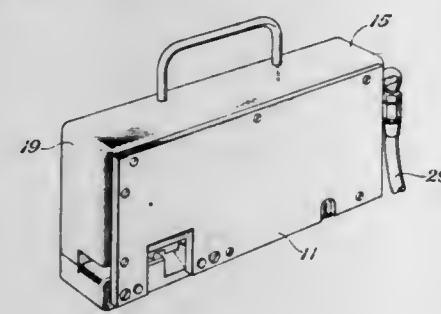
Albert L. Pence, and Van Zandt Smith, both of P.O. Box 9429, Austin, Tex.

Filed Nov. 27, 1970, Ser. No. 93,107

Int. Cl. H02g 1/14; H01r 43/04

U.S. Cl. 29—628

5 Claims



Method and apparatus for splicing conductors characterized by inserting the conductors to be spliced within a

3,754,326

**COMBINATION RAZOR, RAZOR TRAY AND BLADE DISPENSER**

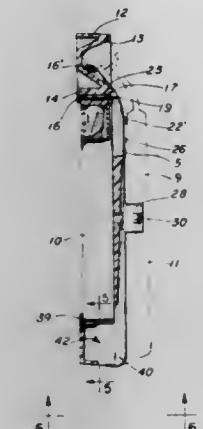
Martin Glaberson, Ardsley, N.Y., assignor to Warner Lambert Company, Morris Plains, N.J.

Filed Dec. 6, 1971, Ser. No. 205,023

Int. Cl. B26b 21/24, 21/40; B65d 85/54

U.S. Cl. 30—40

11 Claims



crimpable connector means, passing penetrating radiation through the connector means and conductors, monitoring a quantum level of a function that is responsive to the attenuation of the penetrating radiation and crimping the connector means to join the conductors only if the penetrating radiation is attenuated an amount sufficient to indicate proper insertion of the conductors, indicated by the quantum level of the function being in a predetermined scalar direction from a predetermined level. Also disclosed are specific types of penetrating radiation; for example, energy and nuclear particles; and specific structures.

3,754,324

**SOLDER RESIST**

John H. Krehble, Sr., and Kerry M. Krafthefer, both of Downers Grove, Ill., assignors to Molex Products Company, Downers Grove, Ill.

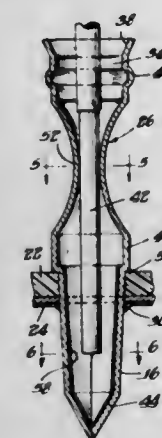
Division of Ser. No. 883,859, Dec. 10, 1969, Pat. No.

3,686,625. This application Oct. 15, 1971, Ser. No. 189,697

Int. Cl. H01r 9/00

U.S. Cl. 29—630 D

14 Claims



A solder resist, i.e., a material that is not wet by and hence not adhered to by solder is applied to a portion of a sheet metal blank. The sheet metal blank is stamped and formed to produce a substantially cylindrical female terminal for receipt of a plug-in male terminal as of a solid state device. The terminal is flow soldered in place in a printed circuit board, and the solder resist prevents solder from adhering in areas where it would adversely affect operability of the female terminal.

The specific disclosure provides a combination of a bonded blade cartridge holder having a handle and a cartridge having at least one cutting edge at one end of the handle, a blade cartridge dispenser, and a razor tray. The tray comprises an elongated member, an opened receptacle at one end of the elongated member, and means including a wall extending downwardly from said one end for guiding the dispenser transversely of the elongated member into position beneath the elongated member. The tray further comprises means extending downwardly from the elongated member for biasing the dispenser into abutting engagement with the guiding means, and means extending upwardly from the elongated member for releasably engaging the handle with the at least one cutting edge positioned in the receptacle.

3,754,327

**COOKIE CUTTERS**

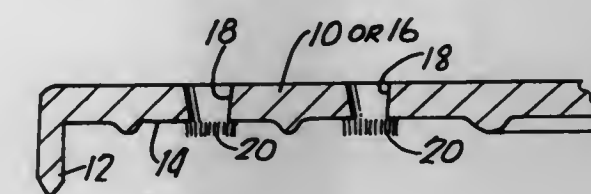
Mary Ann Lisa, Hoboken, N.J., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,781

Int. Cl. B26b 3/00

U.S. Cl. 30—316

1 Claim



A cookie cutter is provided with openings extending inward from the outer surface to felt tips on the inner cookie contacting surface. Edible liquid coloring material can be inserted into the openings whereby each cookie is automatically decorated as it is cut from sheet of cookie dough.

3,754,325

**HAIR TRIMMING DEVICE**

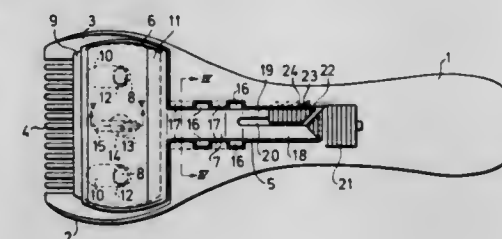
Evert Anton Tornvall, Granholmstgatan 11, Malmo, Sweden

Filed May 24, 1972, Ser. No. 256,433

Int. Cl. B26b 21/14

U.S. Cl. 30—30

2 Claims



The cutting edge of a hair trimming device is engaged by a cover member slidable on a base member and provided with a resilient laterally and vertically movable means which upon movement of the cover member towards the toothed front edge of the base member laterally engages catch teeth on the base member to adjust the cutting edge in a plurality of operating positions at various distances from the toothed front edge whereas said means is vertically disengageable from the catch teeth to enable the cutting edge to be moved in the opposite direction.

3,754,328

**GUARD FOR POWER CHAIN SAW**

William R. Knerr, 11737 E. Muskrat Rd., Carson City, Mich.

Filed May 1, 1972, Ser. No. 249,102

Int. Cl. B27b 17/02

U.S. Cl. 30—382

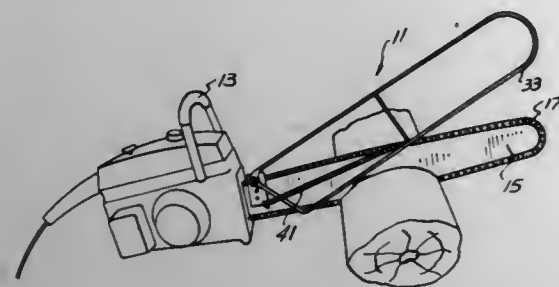
6 Claims

For a power chain saw having a guide bar and chain saw element, a guard which includes brackets mounted on said guide bar upon which a framework is pivotally mounted to protect



tively enclose the chain saw element throughout its length and height together with stops on said brackets for initially main-

tooth engaging jaws carries an adjustable beak which is pivotally connected to the jaw and which has a tooth-engaging



taining the framework to enclose said chain saw element together with a spring for biasing said framework into normal protective position.

3,754,329

#### RAZOR BLADE WITH RF SPUTTERED COATING

George C. Lane, Danbury, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 680,794, Nov. 6, 1967, Pat. No. 3,635,811.

This application Sept. 29, 1971, Ser. No. 184,848

Int. Cl. B26b 21/54

U.S. Cl. 30—346.53

12 Claims

The specific disclosure provides for a razor blade comprising at least one cutting edge portion defined by two face portions having a narrow included angle therebetween. At least a portion of each of the face portions has an RF sputtered coating of a hard metal having a thickness of less than about 600 Angstrom units. The disclosure also provides for coating the sputtered metal coating with a sputtered coating of an organic plastic material having a thickness of from about 200 to about 2000 Angstrom units.

3,754,330  
SAW CHUCK

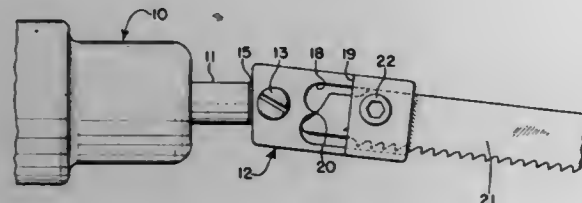
Charles L. Anderson, and Andrew Anderson, both of Rt. 1, Box 198, Antioch, Ill.

Filed June 5, 1972, Ser. No. 259,799

Int. Cl. B27b 11/06

U.S. Cl. 30—392

5 Claims



A chuck for a portable reciprocating power saw wherein the chuck is of a minimum length and will firmly hold saw blades of various widths.

3,754,331

#### UNIVERSAL DENTAL EXTRACTION FORCEPS

Frank A. Agnone, 327 N. Washington Ave., Scranton, Pa.

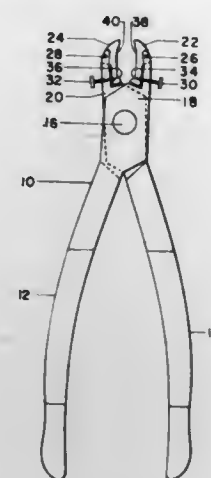
Filed June 12, 1972, Ser. No. 261,634

Int. Cl. A61c 3/10

U.S. Cl. 32—62

4 Claims

Dental extraction forceps which are adjustable to provide fitted contact with the surface of a tooth include pivotal handles, each having a tooth-engaging jaw. At least one of the



surface which can be positively moved into fitted contact with a tooth surface by means of an adjusting screw.

3,754,332

#### TREATMENT MEMBER

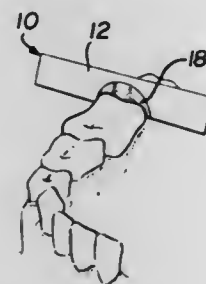
Lamar G. Warren, Jr., 4100 Hospital Dr., Plantation, Fla.

Filed Sept. 9, 1970, Ser. No. 70,771

Int. Cl. A61c 15/00, 5/12; A61f 13/00

U.S. Cl. 32—64

2 Claims



A member for use in the treatment of caries in the teeth with fluoride or other chemicals which are carried by a section of the member which may be detachable. The member is worked between two teeth at a contact area to place the detachable section in contact with the teeth. The chemical agent is applied to the detachable section either before or after it is placed in contact with the teeth. The detachable section remains between the teeth when the rest of the member is removed, and preferably dissolves in the mouth when wet.

3,754,333

#### SCRIBER SETTING HEIGHT GAGE

Ludwig F. Perwas, Mountainview Avenue, Orangeburg, N.Y.

Continuation-in-part of Ser. No. 501,220, Oct. 22, 1965,

abandoned. This application Sept. 12, 1968, Ser. No. 759,340

Int. Cl. G01b 5/00

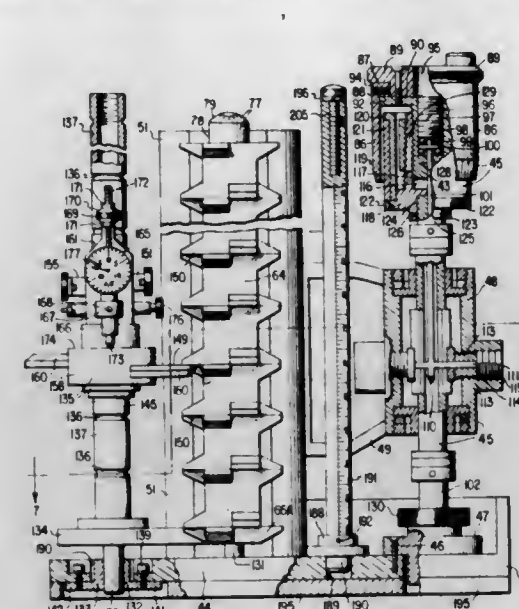
U.S. Cl. 33—170

3 Claims

A device for checking dimensions of machine parts or the like, consisting of a dual inter-dependent keyed linear structures having inter-connected operating elements to maintain the unique multiple gage stack feature of my U.S. Pat. No. 3,180,029 with the use of much smaller gage blocks, to accommodate an extra large micrometer thimble graduated about its circumference to one hundred thousandths in ten thousandths of an inch, permitting when the micrometer screw thread is 10 threads to an inch to obtain a reading within one turn of the thimble when the one hundred thousandths gage blocks are utilized and within ten turns when the one inch gage blocks are used. A scriber setting mechanism is in-

corporated to allow the setting of a scriber, that is secured in a standard height gage, to a required height by utilizing the spring loaded scriber setting arms instead of the spring loaded

the straight edge of the scale arm. The sum of the scale readings at said points of contact of the pin with the object is



dial indicator point that would be held in another standard height gage. Although the gage stack and scriber setting unit is extended the micrometer thimble remains within easy reach for comfortable manipulation.

3,754,334

#### GARLAND MARKER

Ray Haapala, Rt. 2, Box 270, Dassel, Minn.

Filed July 30, 1971, Ser. No. 167,664

Int. Cl. G01b 5/20

U.S. Cl. 33—174 T

3 Claims



For marking garlands on cakes, there is an elongate, flexible plastic strip having a row of teeth along one edge. The strip is adjustably held in a desired condition of curvature by a rod upon which opposite ends of the strip are held by stops.

3,754,335

#### INSTRUMENT FOR DETERMINING THE DIAMETER OR RADIUS OF AN OBJECT OF CIRCULAR CROSS SECTION

Delbert D. Culbertson, Salem, Oreg.

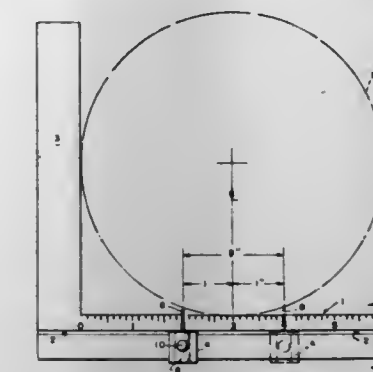
Continuation-in-part of Ser. No. 862,835, Oct. 1, 1969, abandoned. This application Apr. 7, 1971, Ser. No. 132,156

Int. Cl. G01b 5/08

U.S. Cl. 33—178 R

4 Claims

One of a pair of interconnected arms, defining straight edges arranged angularly to provide an included angle of less than 180°, is graduated to form a scale of linear measurement which increases in magnitude outward from the apex of the angle. An index pin is mounted for movement along the scale and projects inward thereof for engagement with an object of circular cross section contacting the straight edges of both arms. The pin is moved along the scale into contact with the object at both sides of the point of contact of the object with



related to the diameter of the object by some whole integer or fraction thereof, depending upon the magnitude of said included angle and the type of said scale.

3,754,336

#### VEHICLE DRYING APPARATUS

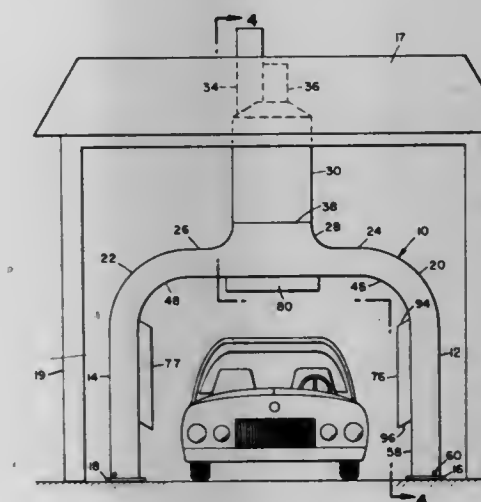
Eugene P. Feld, 2213 Mission Blvd., Santa Rosa, Calif.

Filed Aug. 10, 1971, Ser. No. 170,597

Int. Cl. F26b 19/00

U.S. Cl. 34—230

9 Claims



A drying apparatus is provided for blowing water, usually as droplets, from a vehicle, by having the vehicle move along a path between two opposed substantially parallel, high velocity air streams which are at a slight angle to the direction of movement of the vehicle. Additionally, an air stream may be directed downwardly from above on the vehicle. The air streams are derived from a single blower, which can be isolated from the operational area and insulated to minimize noise.

The apparatus finds particular use in combination with automobile car washes in being compact, economically constructed, and providing high efficiency in directing the air stream from the blower to the air outlet, so as to maintain the air pressure.

3,754,337

#### SELF-INSTRUCTIONAL AND SELF-TESTING APPARATUS

James Richard Harte, 10 West Concord, Kansas City, Mo.

Continuation-in-part of Ser. No. 141,289, May 7, 1971. This application July 29, 1971, Ser. No. 167,368

Int. Cl. G09b 3/08

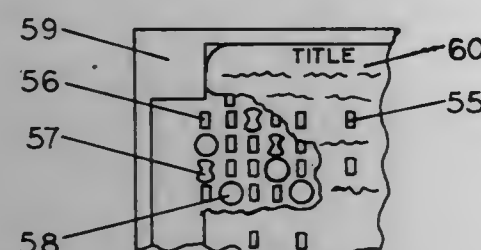
U.S. Cl. 35—9 R

2 Claims

This apparatus is a simple manually operated self-instructional and self-testing apparatus which has a plurality of holes or depressions of different sizes, shapes, and/or different depths in a solid flat surface; an answer sheet or question and



answer sheet; and a stylus with a shaped tip. All question and answer sheets, or answer sheets contain indicator zones that correspond to the multiple choice, true false, or matching questions. In the usual operation of the apparatus answer sheets or question and answer sheets containing indicator zones are positioned on the upper surface of the flat solid structure that contains many specially constructed holes or depressions. When the question and answer sheets are correctly positioned all indicator zones are directly above a hole or depression. The holes or depressions are of several cross sectional sizes, shapes, and/or depths. The student pushes a stylus through the indicator zones he feels correspond to correct answers. The stylus used by the student to perforate the indicator zones of the question and answer sheet is of a special



configuration. The stylus is so constructed that when it first penetrates the indicator zone it produces one shape of hole, and if the student is able to push it deeper, or manipulate it further, this first shape is transformed into a second shape, or into a second and then a third shape. The different hole sizes, shapes, and/or depths in the underlying solid surface are the determining factors that limit the depth to which the stylus can penetrate the indicator zone, or be further manipulated in the indicator zone. Thus the size, shape, or depth of the underlying hole or depression will determine what will be the final shape of the hole pattern produced at an indicator zone by manipulation of the stylus. The different shapes of holes produced in the indicator zones indicate the correctness, partial correctness, or incorrectness of the student's responses.

3,754,338

## SPINAL COLUMN SIMULATOR

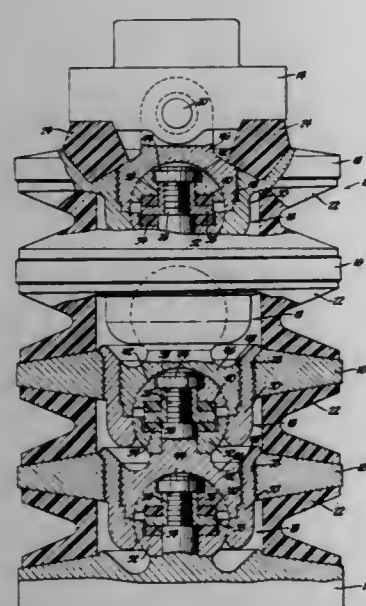
Clyde C. Culver, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 30, 1972, Ser. No. 239,489

Int. Cl. G09b 23/00

U.S. Cl. 35-17

9 Claims



A spinal column simulator includes a plurality of vertebrae simulating members connected by respective split-ball and socket connections. Viscoelastic material extends between the members and normally maintains them against relative angular movement, while viscoelastic material located between the ball portions normally maintains the members against move-

ment toward or away from each other and consequent shortening or lengthening of the simulator. This viscoelastic material may be polyvinyl chloride solid, polyvinyl chloride foam, polyethylene foam, or polyurethane foam. The viscoelastic material absorbs a quantity of energy as the members move angularly or axially of the simulator under impact loading, and this quantity of energy is equal to between 1.25 and 2.75 times the energy expended by the viscoelastic material in returning the members to their original positions such that the members move in a manner simulating the movement of a human spinal column under impact loading. The viscoelastic material extending between the members has a generally annular but slightly eccentric configuration such that the angular movement of the members in opposite directions and the relative absorption and expenditure of energy during this movement varies in a manner simulating forward and rearward movements of the human neck portion of the spinal column under impact loading.

3,754,339

## ATHLETE'S FOOT PREVENTIVE DEVICE

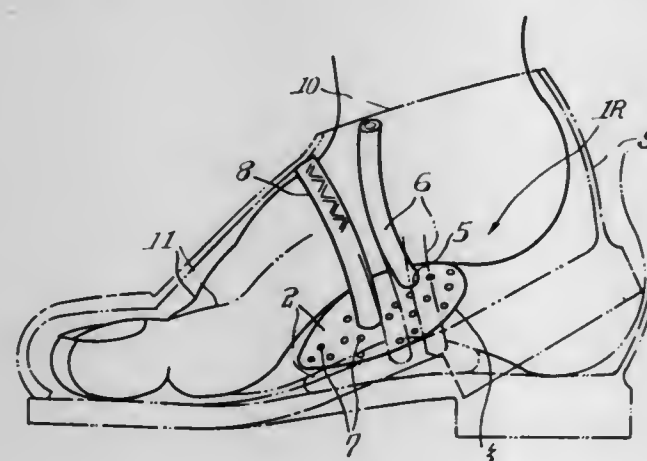
Suetsugu Terasaki, 1-11-13, Tenjin, Fukuoka, Japan

Filed Apr. 19, 1972, Ser. No. 245,477

Int. Cl. A43b 7/06

U.S. Cl. 36-3 B

2 Claims



A device for preventing athlete's foot or other eczema is provided which operates with the walking motion of the user's feet and includes bellows units adapted to be arranged beneath the plantar arches of his feet. The bellows units are each operable to expand and contract as the user's heel rises and falls and thus eject air into the interior of the shoe through orifices formed in the walls of the unit. Such ejection of air causes air flows in the shoe interior effectively to prevent any accumulation of moisture or temperature therein.

3,754,340

## DEVICES FOR ATTACHING HEELS TO SHOE SOLES

Giuseppe Pais, 15 Chaussee de Chatelet, Gilly, Belgium

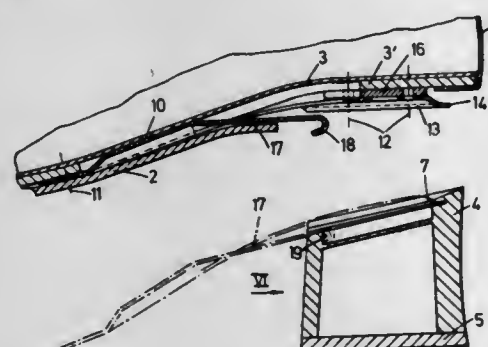
Claims priority, application Belgium, Sept. 30, 1970, 2503

Filed Aug. 11, 1971, Ser. No. 170,861

Int. Cl. A43b 21/36

U.S. Cl. 36-42

1 Claim



A device for coupling the sole and heel of a shoe comprising a plate which is secured adjacent to the sole and which has a

shank extending rearwardly to engage the heel. The shank has a hook which is adapted to be received in a recess in the heel to retain it in position.

3,754,341

## CHAIN TRENCHER WITH SHOCK-RESISTANT SILENT DRIVE

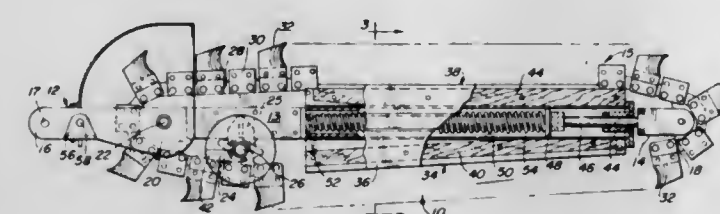
Robert H. Caldwell, Jacksonville, and Larry I. Pauline, Alexander, both of Ill., assignors to Grizzly Corporation, Jacksonville, Ill.

Filed Apr. 13, 1972, Ser. No. 243,766

Int. Cl. E02f 5/06

U.S. Cl. 37-86

3 Claims



An attachment to the frame of a tractor including auxiliary hydraulic power and having an endless digging chain with a reversible oil-hydraulic drive for light and medium trenching, said chain and sprocket drive having oaken chain guide rails combined with a resilient sprocket mounting structure for silent shock-resistant chain and cutter operation and longer chain and cutter life.

3,754,342

## MEANS FOR THE MOVING DISPLAY OF ADVERTISING OR LIKE MATERIAL

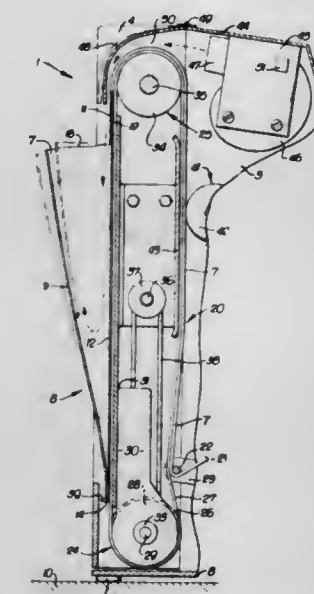
James D. Santacrose, 9563 Olympic Blvd., Beverly Hills, Calif., and Neil L. Hanson, 1355 Cambridge Rd., San Marino, Calif.

Filed Mar. 24, 1972, Ser. No. 237,742

Int. Cl. G09f 11/15

U.S. Cl. 40-37

9 Claims



A moving advertising display is provided comprising a series of air receiving pockets carrying like or dissimilar messages on their sidewalls, which pockets are presented in succession at a generally eye level display station being traversed with air, to fill the pockets for responsive movement of the message carrying sidewalls in an attention-getting manner.

3,754,343

## QUICK CHANGE DISPLAY FRAME

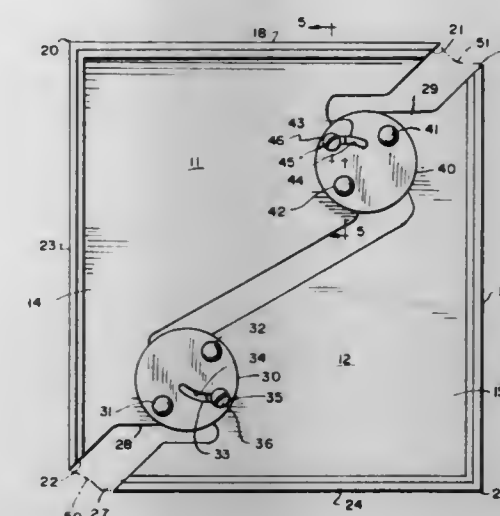
Samuel J. Popell, Chicago, Ill., assignor to Popell Brothers Inc., Chicago, Ill.

Filed Aug. 12, 1971, Ser. No. 171,057

Int. Cl. G09f 1/12

U.S. Cl. 40-155

9 Claims



A quick change display frame is shown, especially useful for removably mounting pictures, including a first triangular frame portion, a second triangular frame portion. As shown, each triangular member is identical to the other. The two triangular frame portions are interconnected by a pair of cam plates. As shown, each cam plate is identical to the other. A cam slot and pin constrains one of the triangular frame portions for arcuate movement out of planar contact with respect to the other frame portion to permit easy insertion of a preselected picture in the frame. Thereafter the frame portions are once again moved together as constrained by the cam plate action into planar contact to fix the picture or other display article in the frame.

3,754,344

## GUN RECOIL ABSORBER

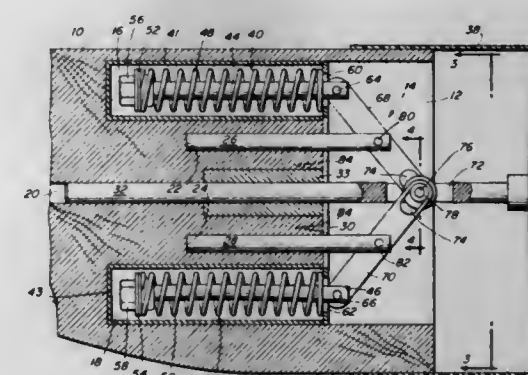
James Spiliotis, 8 Kirkland Rd., Peabody, Mass.

Filed Apr. 28, 1972, Ser. No. 248,609

Int. Cl. F41c 23/00

U.S. Cl. 42-74

10 Claims



A mechanism is disclosed for absorbing recoil shocks upon the discharge of any ordnance device having a high muzzle velocity, particularly, of the shoulder-support type. A separate movable member encloses the gunstock end and is coupled to spring-tensioned axially actuated means. The end member resting against the shoulder of the user remains substantially stationary while the remainder of the mechanism housed within the gunstock moves to absorb all the energy.



3,754,345

**FISHING LINE LURE RETRIEVER**

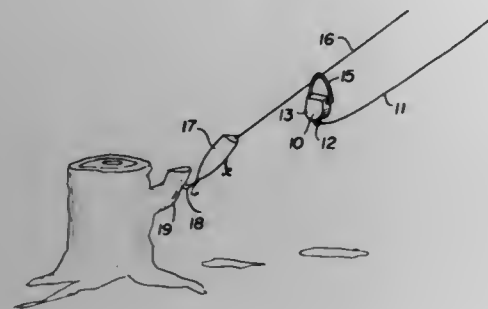
Clyde F. Whitehead, Rt. 1, Box 355, Albemarle, N.C.

Filed Apr. 5, 1972, Ser. No. 241,219

Int. Cl. A01k 97/00

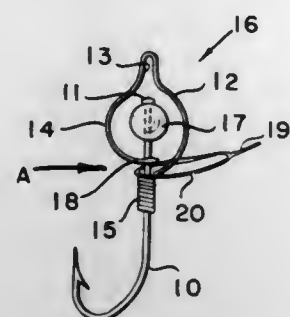
U.S. Cl. 43—17.2

3 Claims



A weight which is readily attachable to a snagged fishing line for the purpose of releasing the hooked lure of the fishing line. The weight is fastened to its own control line by means of a metal eye and fastens to the fishing line by means of a wire bail which may be locked into the weight, or unlocked to fasten about or to release the fishing line.

the ends of a shank with one or two connectors whereby the bight of a line may be attached or disengaged rapidly without



the tying and untying of knots. A small wire tool is provided to aid in attaching and disengaging the line from the connector.

3,754,348

**FLOATING FISH TRAP**

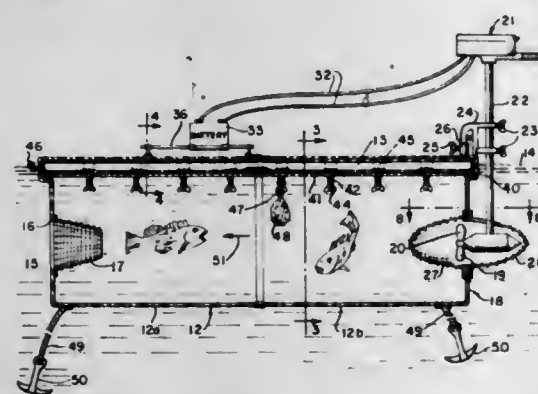
Frank J. Ramsey, P.O. Box 394, Stephenville, Tex.

Filed Sept. 2, 1971, Ser. No. 177,889

Int. Cl. A01k 69/06

U.S. Cl. 43—103

23 Claims



A horizontally elongated housing is equipped at the top thereof with an inflatable pad so that it floats in water. The housing contains bait and a fish entrance cone is provided at one end of the housing. The other end has a water passage with a motor-driven impeller, so that a stream of water is caused to flow through the housing and out of the fish entrance to attract fish which swim against the water stream toward the bait in the housing.

3,754,349

**MULTIPLE USE TOY**

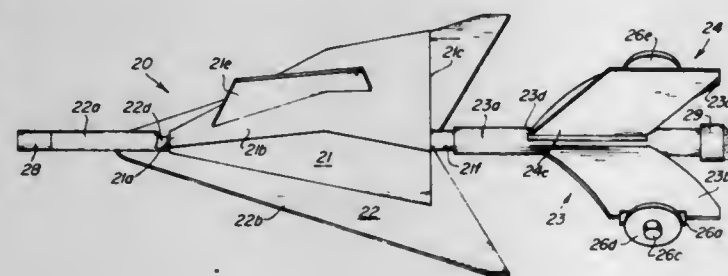
Leon C. Wallace, 2483 S. Fourth East, Salt Lake City, Utah

Filed Mar. 17, 1971, Ser. No. 125,144

Int. Cl. A63h 33/06

U.S. Cl. 46—17

10 Claims



A childrens toy consisting of a number of basic components that can be assembled together in various configurations thereby forming distinctly different toys, with at least ten separate and distinct toys being produced with the components of the present invention.

3,754,347

**FISHING HOOKS, SINKERS, AND LURE APPARATUS**

Welbourne D. McGahee, 1896 Collidge Ave., Melbourne, Fla.

Filed Oct. 30, 1972; Ser. No. 302,217

Int. Cl. A01k 91/04

U.S. Cl. 43—44.83

13 Claims

A fishhook, a single-ended or double-ended sinker, a line swivel, and a fishing lure, each having one or more beads on

3,754,350

**SOUND PRODUCING ATTACHMENT FOR BICYCLES**

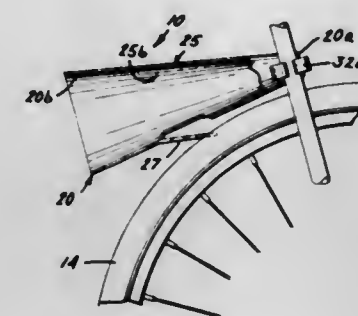
Ronald R. Gorke, 1875 N. Barclay St., St. Paul, Minn.

Filed July 10, 1972, Ser. No. 270,079

Int. Cl. A63h 5/00

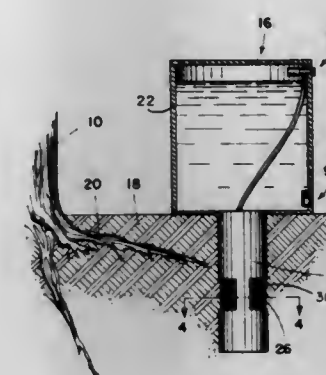
U.S. Cl. 46—175 R

7 Claims



A megaphone-shaped attachment for bicycles constructed from a plastic material (e.g., polyethylene) and having one or more perforated wall portions bendable outwardly from the megaphone for forming a flap engageable with the rear bicycle tire to produce a noise simulating an internal combustion engine.

chamber which has porous walls in contact with the soil surrounding the roots of the tree or plant, a supply pipe connecting the chamber to the reservoir and an air pipe extending from the chamber to the atmosphere. The supply pipe is



located so that water flows into the chamber from the reservoir only when the water level within the chamber drops below the lower end of the supply pipe so that only a controlled amount of water is permitted to enter the soil around the roots of the tree or plant.

3,754,351

**DOLL**

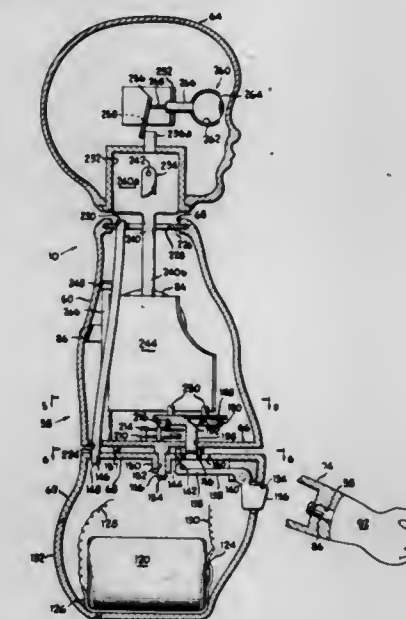
Marvin I. Glass, Chicago; Burton C. Meyer, Downers Grove, and Donald F. Nix, Des Plaines, all of Ill., assignors to Marvin Glass &amp; Associates, Chicago, Ill.

Filed Feb. 26, 1971, Ser. No. 119,122

Int. Cl. A63h 33/26

U.S. Cl. 46—247

8 Claims



A doll and associated implements with the doll having a movable torso and related driving mechanism for driving the doll through stages of a functional mode of operation simulating the pouring of a beverage and serving food. In addition, the head and eyes of the doll are associated with driving mechanism so that the head tilts down and the eyes gaze downwardly during certain stages of the pouring and serving function.

**WINDOW LIFTER, ESPECIALLY FOR CURVED SIDE WINDOWS OF MOTOR VEHICLES**

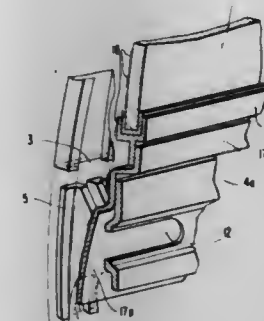
Werner Bretschwerdt, Stuttgart-Botnang; Gunter Gmelner; Erwin Kollé, both of Sindelfingen (Wurt.), and Herbert Bonisch, Darmstadt (Wurt.), all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 16, 1970, Ser. No. 72,760  
Claims priority, application Germany, Sept. 19, 1969, P 19 47 386.0

Int. Cl. E05f 11/52

U.S. Cl. 49—227

19 Claims



A window lifter, particularly for curved side windows of motor vehicles, in which the window panes are displaceable in lateral guide rails that extend essentially only over the height of the window opening and in which an upright column is arranged on the inside of the window compartment, that is matched to the curvature of the window pane; a guide part is securely connected with the bottom edge of the window pane to permit adjustment of the window in its height by means of the guide column; the guide column itself is constructed as a sectional member open on one side in which a sliding body is guided that is securely connected to the guide part of the pane.

3,754,352

**DEVICE FOR WATERING TREES AND OTHER PLANTS**

Gary G. Bates, 9735 Harrison Rd., Romulus, Mich.

Filed Apr. 24, 1972, Ser. No. 247,114

Int. Cl. A01g 29/00

U.S. Cl. 47—48.5

12 Claims

A device for the controlled watering of trees and plants. The device includes a sealed reservoir holding a supply of water, a



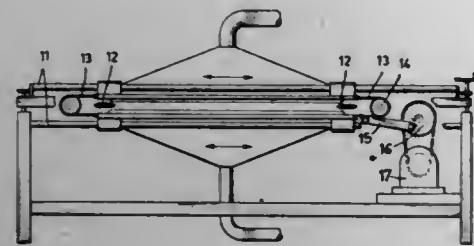
### 3,754,354 GRINDING DEVICE

Rauno Sakari Frantlana, Minna Canthinkata 56A6, Kuopio, Finland

Filed Sept. 23, 1971, Ser. No. 183,024  
Int. Cl. B24b 7/12, 55/06

U.S. Cl. 51-61

4 Claims



The present invention relates to a grinding device in particular for the grinding of large-surface plates such as doors, shelves and table boards, but also of curved surfaces, and its purpose is to produce a grinding device that does not make the edges of the object to be ground round and in which the grinding paper, grinding cloth or the screen-like material can be replaced fast and easily, and the grinding dust of which is removed by means of suction so that the grinding material and the objects to be ground are cooled.

### 3,754,355 SEGMENTAL GRINDING WHEEL

Loren B. Hanchett, Big Rapids, Mich., assignor to MWA Company, Owosso, Mich.

Filed June 23, 1971, Ser. No. 155,690  
Int. Cl. B24b 5/00, 7/00

U.S. Cl. 51-209 R

2 Claims



A segmental grinding wheel having a plurality of abrasive segments mounted on a one-piece chuck body. Each segment is secured to the chuck body by a removable, wedge-like clamp, and a second clamp which is an integral part of the chuck body.

### 3,754,356 POSITIONING MACHINE

Frank B. Hamlin, Edwardsville, Ill., and Willis L. Wells, Clayton, Mo., assignors to Hamlin Casting Corp., Edwardsville, Ill.

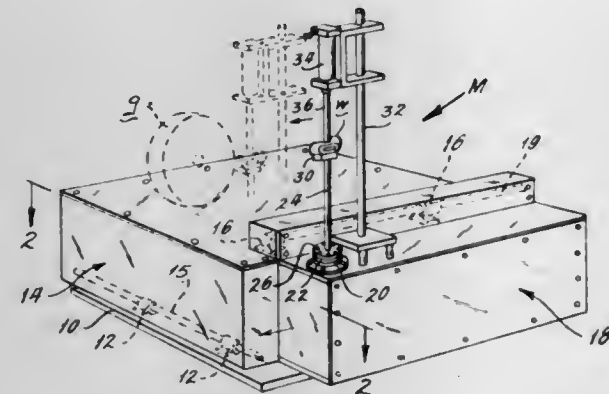
Filed Feb. 28, 1972, Ser. No. 229,859  
Int. Cl. B24b 47/08

U.S. Cl. 51-233

18 Claims

A positioning machine has a rotatable spindle which carries objects to be positioned, and that spindle is journaled in a

shiftable carriage which in turn is mounted on another shiftable carriage. The two carriages move in directions perpendicular to one another and each is shifted by a motor which may be an air cylinder or a hydraulic cylinder. Each carriage further has its own positioning turret for determining the distance it moves, and that turret is provided with a plurality of positioning rods. As the turret rotates, its positioning rods individually pass through a control position, and the rod in the control position at any given time forms a blockage between the carriage and the supporting structure for that carriage, so as to control the distance the carriage moves. The spindle is



also operated by a motor which likewise may be an air or a hydraulic cylinder, and geared to the spindle is a rack, the movement of which is determined by still another turret. That turret has rods, the control position for which is in alignment with the end of the rack, so that the rod in the control position at any given time forms a blockage between the end of the rack and the carriage which supports the spindle, thus controlling movement of the rack and the angular position of the object. The three turrets are mechanically connected so that they rotate in unison and are indexed by a single indexing mechanism.

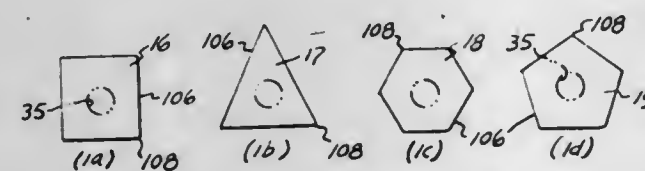
### 3,754,357 METHOD FOR PERFORMING SUCCESSIVE GRINDING OPERATIONS ON A WORKPIECE

Oscar Schnellmann, Zurich, Switzerland, and Henry Willy Stier, Dearborn Heights, Mich., assignors to Carmet Company, Pittsburgh, Pa.

Division of Ser. No. 751,879, Aug. 12, 1968, Pat. No. 3,587,192. This application Apr. 28, 1971, Ser. No. 138,222  
Int. Cl. B24b 1/00, 21/16

U.S. Cl. 51-323

5 Claims



A method of performing successive grinding operations on a given workpiece by automatic profile grinding machine with indexing mechanism especially for contour grinding of relatively small parts such as tool inserts, comprised of a grinding wheel, work stations arranged around said grinding wheel, universal work feeding mechanism associated with each work station, individual cam mechanisms for each work station to index the grinding steps, electric and fluid pressure control mechanisms to control operation of the machine, work measuring mechanism and adjusting mechanism associated with the measuring mechanism to compensate for wear or out of balance condition of the grinding wheel.

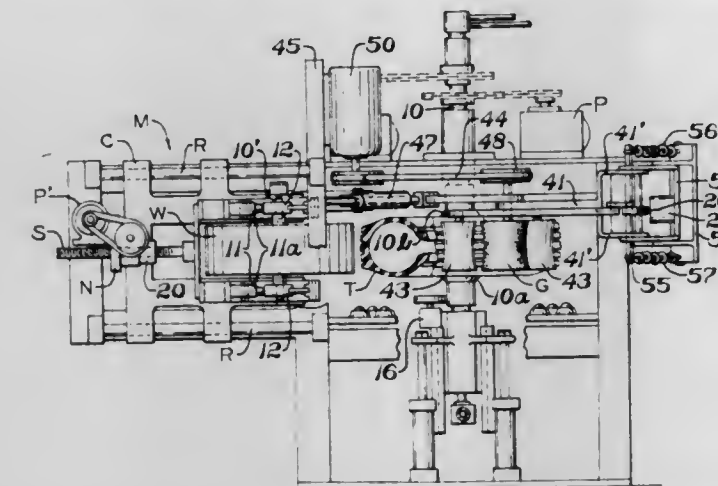
### 3,754,358 METHOD FOR CORRECTING NON-UNIFORMITY IN A ROTATING TIRE

Harmon G. Shively, Tallmadge, and Clifford A. Landsness, Akron, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Division of Ser. No. 849,340, Aug. 12, 1969, Pat. No. 3,681,877. This application June 15, 1971, Ser. No. 153,241  
Int. Cl. B24b 1/00

U.S. Cl. 51-324

6 Claims



The method for reducing the radial force variation of a rotating tire by grinding from the tread a portion thereof as determined by the radial motion of a floating load wheel which provides an electrical signal proportional to the movement of the load wheel axis. The electrical signal is employed in a circuit such that when a reference voltage is exceeded, the signal is effective to move a grinder to and away from contact with the tire tread in increments of constant radial depth but of varying time duration. A pulse is synchronized with the tire rotation so each pulse indicates a unit angle of tire rotation. A comparator conducts the pulses only when the signal exceeds a predetermined value such that the pulses activate alternately a pair of one-shot multivibrators which energize actuating solenoids for applying or retracting the grinder. The solenoids move a bell crank which causes a snap-action toggle to advance or retract the grinder with respect to the tire tread.

### 3,754,359 ABRASION TOOLS

Lazare Scandaletos, Paris, France, assignor to S.P.A.M. D'Avray, France

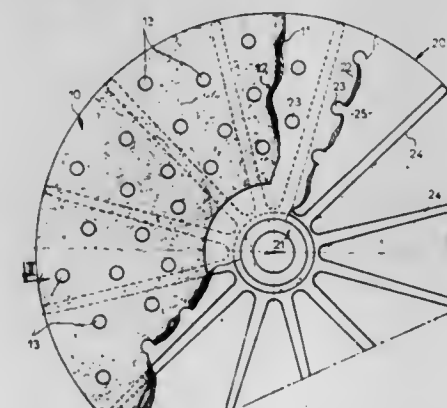
Filed Sept. 14, 1971, Ser. No. 180,326

Claims priority, application France, Sept. 16, 1970, 7033603; June 11, 1971, 7121348

Int. Cl. B24b 55/02

U.S. Cl. 51-356

9 Claims



An abrasion tool consists in the combination of a perforated flexible disk covered with an abrasive/adhesive complex and of a generally annular support plate provided with a central hub portion and with a plurality of radially extending channels communicating with the perforations of the disk, whereby centrifugal action causes air to flow and cool the work and the tool, and to remove the dust produced by abrasion.

### 3,754,360 SURVEYOR'S STAKE

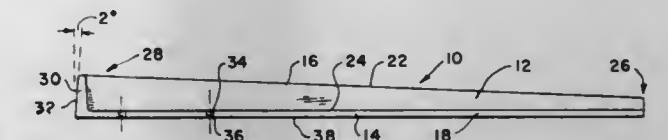
Robert W. Herr, 2136 Garden Park Dr., Fort Wayne, Ind.

Filed Dec. 27, 1971, Ser. No. 212,241

Int. Cl. G01c 15/00

U.S. Cl. 52-103

6 Claims



A surveyor's stake which comprises an elongated, molded plastic member including a plurality of gradually, convergently tapered ribs whereby the member has a relatively narrow point end and wider head end. The point end is truncated in a plane perpendicular to the longitudinal dimension of the stake and the head end is provided with a driving flange.

### 3,754,361 TRANSPORTABLE DRILLING MAST SUBSTRUCTURE WITH ELEVATABLE DRAWWORKS

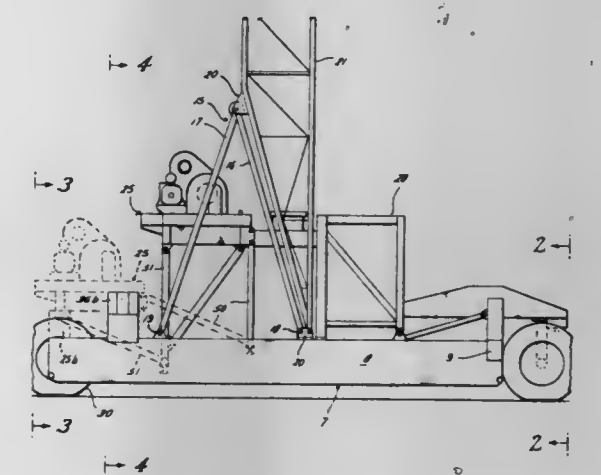
Donald R. Branham, and Paul E. Borg, both of Houston, Tex., assignors to Pyramid Derrick & Equipment, Houston, Tex.

Filed June 26, 1972, Ser. No. 266,329

Int. Cl. E04h 12/34

U.S. Cl. 52-115

2 Claims



A transportable support structure for a drilling mast and drawworks includes spaced longitudinally extending members with lateral brace members extending therebetween to provide a support structure for a gin pole support and a drilling mast as well as an elevatable drawworks support structure which is pivotally secured to the transportable support structure. Support means are provided for supporting the elevatable drawworks support in an intermediate position between retracted position on the support structure and elevated position to enable the support structure, drilling mast and drawworks to be moved from one location to another.

### 3,754,362 VERTICAL DRAINAGE SYSTEM

Berthold H. Dalmier, Remscheid-Lennep; Wilhelm Herveling, Wuppertal-Elberfeld; Helmut Werner, Elsenfeld, and Hans Stapp, Momlingen, all of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed Oct. 20, 1971, Ser. No. 190,742

Claims priority, application Germany, Oct. 29, 1970, G 70 39 906.3

Int. Cl. E02d 27/48

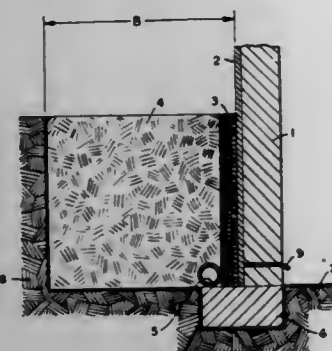
U.S. Cl. 52-169

10 Claims

A vertical drainage system for a basement or other below grade foundation wall having a sealer coat on its outer surface,



a filamentary web or sheet composed of a fiber-forming synthetic thermoplastic polymer, preferably in the form of rows of looped amorphous melt-spun and bonded filaments,



being laid along the wall between its outer sealer coat and the adjacent earth, and pipe means or the like near the bottom or footing of the wall to drain off water percolating downwardly through the filamentary filter layer.

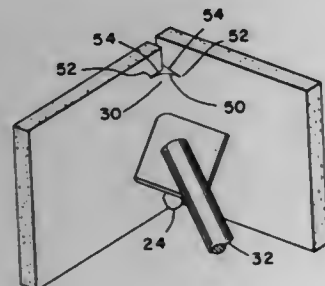
3,754,363

**ELASTOMERIC MONOLITHIC DRYWALL CORNER**  
Joseph W. Schneller, Williamsville, and Richard E. Smith, Tonawanda, both of N.Y., assignors to National Gypsum Company, Buffalo, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,733  
Int. Cl. E04b 2/10

U.S. Cl. 52—287

3 Claims



A room having a monolithic wall surface throughout formed from gypsum wallboards, with perpendicularly disposed walls made monolithic by an elongate, concave, elastomeric bead formed in situ, with feathered edges flush with the adjacent wallboards.

3,754,364

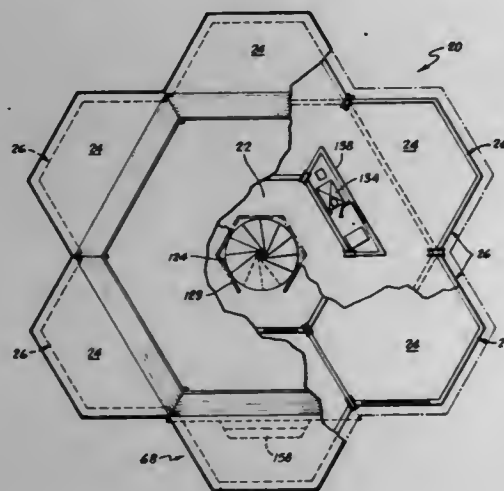
**BUILDING STRUCTURE**

Lory F. Ice, San Jose, Calif., assignor to Inter-Concept Enterprises Inc., Santa Clara, Calif.

Filed Nov. 4, 1971, Ser. No. 195,660  
Int. Cl. E04b 1/34; E02d 27/12

U.S. Cl. 52—187

25 Claims



A building structure having a general honeycomb-like configuration comprised of a hexagonal foundation enclosing a

central area with semi-hexagonal portions of the building cantilevered outwardly from some or all of the foundation sides. Vertical columns located at the corners of the hexagonal foundation are connected to horizontal beams that support stressed skin second floor sections and/or roof sections. The cantilevered building portions have sidewalls formed from prefabricated panels that are sealed against the vertical columns along their edges. For an embodiment adaptable as a single family two-storey home, a circular staircase is provided within the central area of the main floor while a modified version adaptable as a two apartment structure utilizes a staircase on the outer side of the building.

3,754,365

**WALL SIDING FASTENERS**

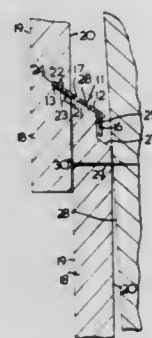
Robert B. Carrick, Willowdale; Harold K. Dormer, Oakville, and Bruce M. Hudd, Mississauga, all of Ontario, Canada, assignors to Abitibi Paper Company Ltd., Toronto, Ontario, Canada

Filed Nov. 5, 1971, Ser. No. 196,108

Claims priority, application Canada, Oct. 26, 1971, 126,083  
Int. Cl. E04c 1/34

U.S. Cl. 52—471

6 Claims



For a wall siding installation, each panel is provided with a fastener having a rigid, strip-like main body extending from a recess in the rear face of the panel near the bottom thereof. The rear portion of the body in the recess has a flexible rib extending along one face of the body and engaging the adjacent wall of the recess, the opposite face of the body engaging the opposite wall of the recess, such that the fastener is frictionally retained in the recess. If desired, the fastener may be additionally retained in the recess by a suitable adhesive. Two or more spaced, parallel flexible ribs may be provided.

3,754,366

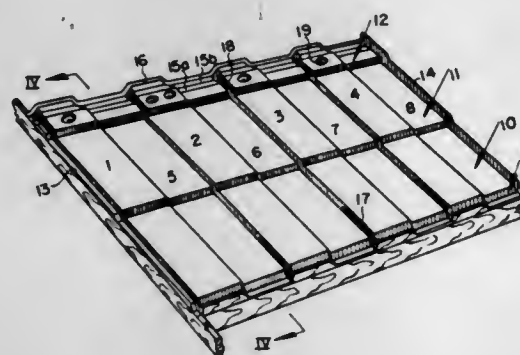
**STEPPED ROOFING SHEETS**

John G. Jansson, P. O. Box 3286, 730 30 Kolsva, and Ake E. Sjoblom, Landstormsvagen 8, 702 27 Orebro, both of Sweden

Filed Nov. 17, 1971, Ser. No. 199,651

Int. Cl. E04d 1/06, 1/26  
U.S. Cl. 52—535

11 Claims



A building element for covering of roofs, walls and the like, comprising sheet members which are arranged for intercon-

nection in any chosen number in rows after each other in two directions perpendicular to each other for forming a continuous covering. The means for interconnection of the sheet members are provided which permit movement of adjacent sheet members in the same vertical row while maintaining the interconnection of said sheet members, said means including one or more couplings provided in the upper edge of each sheet and as complement to said couplings, corresponding couplings provided and arranged in the lower edge of the sheet members on line with the upper couplings, that the upper and lower couplings of two sheet members may be connected after each other and on level with each other to define a coherent covering.

3,754,367

**PLASTER CASING BEAD**

Theodore S. O'Konski, Pittsburgh, Pa., and Richard E. Thoman, Galion, Ohio, assignors to Wheeling-Pittsburgh Steel Corporation, Pittsburgh, Pa.

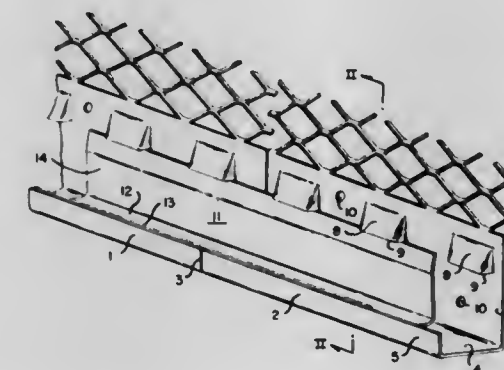
Continuation of Ser. No. 95,622, Dec. 7, 1970, abandoned.

This application June 12, 1972, Ser. No. 261,903

Int. Cl. E04f 13/06

U.S. Cl. 52—726

10 Claims



The application discloses casing bead employed, as on metal lath, for plaster. The casing bead sections are adapted for joinder in abutting end-to-end relation. A splicing clip is utilized as a part of the assembly and interacts with end-to-end abutting sections of the casing bead to hold the same in rigid alignment.

3,754,368

**STERILE PACKAGING METHOD**

Francis C. Moore, and Leon R. Perkinson, both of Indianapolis, Ind., assignors to Moore-Perk Corporation, Indianapolis, Ind.

Continuation-in-part of Ser. No. 112,762, Feb. 4, 1971, which is a continuation-in-part of Ser. No. 873,786, Nov. 4, 1969, Pat. No. 3,618,283. This application Nov. 5, 1971, Ser. No. 195,926

Int. Cl. B65b 55/18

U.S. Cl. 53—21 FC

5 Claims

A sterile packaging method which involves the steps of sealing a suitable fluid or solid product within a container capable of withstanding prolonged exposure to temperatures up to 212° F., and thereafter heating the container and its contents for an extended period, but at a temperature substantially below the boiling point of water, until the container's interior surfaces and contents are sterilized.

3,754,369

**SEALING AND CHARGING CONTAINERS WITH GAS**  
Terrance R. Copstead, Charlotte, N.C., assignor to Electronic Data Controls Corporation, Winston-Salem, N.C.

Filed Apr. 26, 1972, Ser. No. 247,842

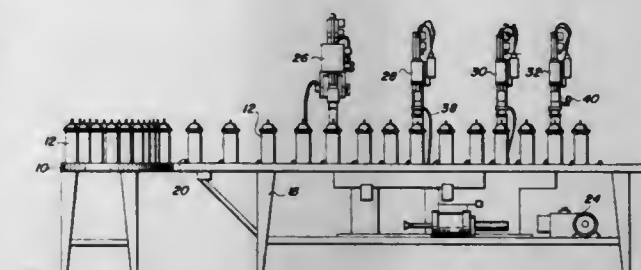
Int. Cl. B65b 31/00

U.S. Cl. 53—22 R

2 Claims

Sealing and filling a metal container having a sealed body construction and an aerosol discharge valve disposed at an

opening in the top of the container. The container is advanced in stepped increments along an assembly line including a plurality of stations. At the first station, the discharge valve is crimped to the container body to close the opening therein. At a second station, the discharge valve is temporarily opened



3,754,370

**BAG DISPENSING APPARATUS AND METHOD**

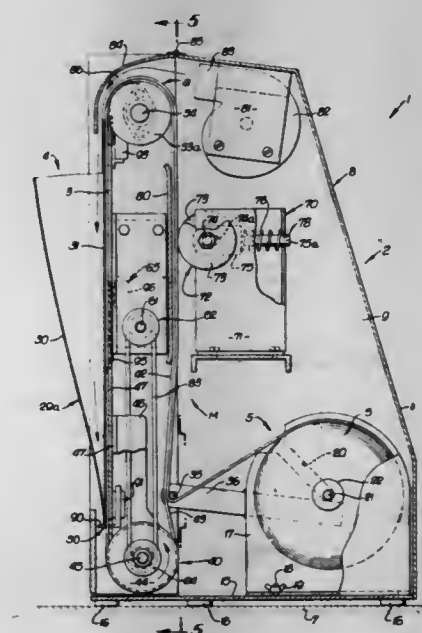
Neil L. Hanson, 1355 Cambridge Rd., San Marino, Calif.

Filed Mar. 24, 1972, Ser. No. 237,769

Int. Cl. B65b 43

U.S. Cl. 53—29

27 Claims



Preformed bags e.g. of thin-film plastic are singly dispensed in opened condition from a rolled supply in which the bags are closed and interconnected, by an apparatus and method which passes the bag from the supply roll to a dispensing station and in the course of such passage relatively moving the opposing bag sidewalls to selectively sever one sidewall to open the bag and at the dispensing station inflating the bag for convenience in loading, easy grasping and removal.

3,754,371

**METHOD AND APPARATUS FOR CLOSING THE MOUTHS OF FLEXIBLE CONTAINERS BY TWISTING**

Robert J. Walker, III, 92 River Dr., Jupiter, Fla.

Filed May 26, 1972, Ser. No. 257,422

Int. Cl. B65b 7/00, 7/12, 51/00

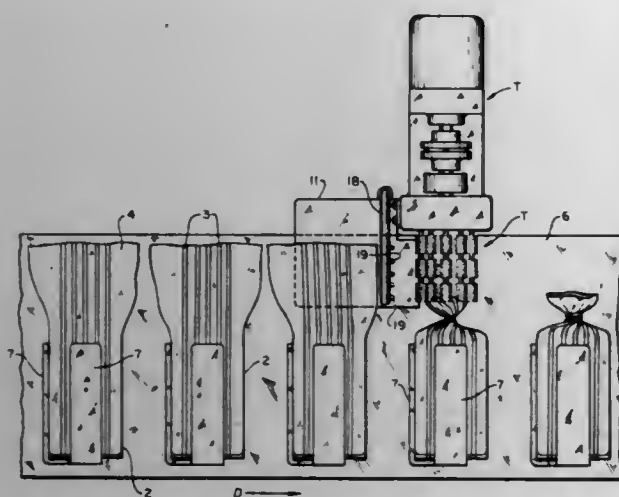
U.S. Cl. 53—38

15 Claims

Flat mouths of containers of flexible material with contents in the body of the containers, are moved in one general direction between a mandrel rotatable about an axis and



movable means for pressing the mouths against the mandrel, to shape the mouths on the mandrel, and then twist the mouth



walls adjacent an end of the mandrel. Further movement of a container in such direction results in pulling of a twisted mouth from the mandrel.

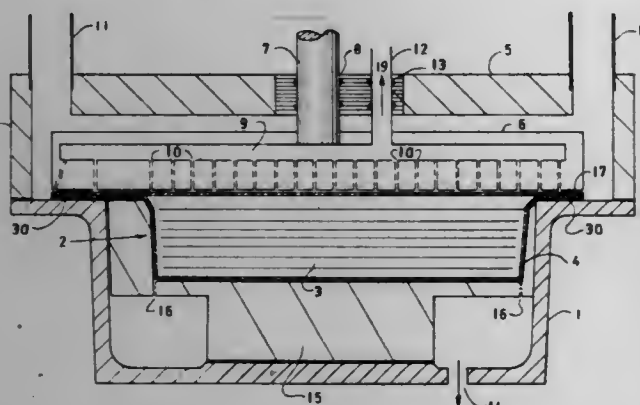
3,754,372

### APPARATUS FOR MAKING THERMOPLASTIC VACUUM PACKAGES

Richard R. Perdue, Greenville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.  
Division of Ser. No. 9,580, Feb. 9, 1970. This application Oct. 26, 1971, Ser. No. 192,583  
Int. Cl. B65b 31/02

U.S. Cl. 53—112 R

5 Claims



A vacuum package is prepared by placing a product between two webs at least one of which is heat softenable, applying differential air pressure to draw the heat softenable web against a heated surface, evacuating the space between the webs, and then releasing the web and using air or gas pressure to drive the softened web onto the product and at the same time contact the other web around the periphery of the product, thus enabling the two webs to be sealed together. A heated platen having vacuum ports therein is used to apply suction and heat to the softenable web. In the resulting package the heated web conforms closely to the shape of the product it contacts.

3,754,373

### COMPRESSING AND PACKAGING MACHINE FOR SOFT AND SEMI-SOFT MATERIALS

Jorge Galvez Figari, Enrique Larreta St. No. 12, Madrid, Spain

Filed Nov. 4, 1971, Ser. No. 195,673

Claims priority, application Spain, Mar. 16, 1971, 389,277

Int. Cl. B65b 1/24

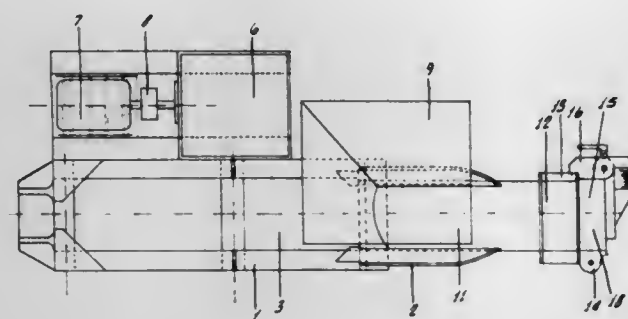
U.S. Cl. 53—124 A

4 Claims

The present invention refers to a machine devoted to the compression of soft and semi-soft materials such as wool,

forage grass, garbage and others, and to the packaging of such materials in the compressed condition.

Products of this type are generally packaged by bailing, with or without an external cover, and secured by lines or hoops, extending around the outside of the bails. The bailed material is, therefore, generally exposed and so it must be protected from damage by weather both during transportation and storage. With regard to garbage, there is no satisfactory process presently known for packaging this material in its raw, untreated condition, and even when the material is treated to inhibit the natural fermentation, it is generally considered that



the only practical method of packaging the material is to deposit it loosely in sacks.

The essence of the present invention is the creation of a high pressure pressing machine for packaging such material, including raw domestic garbage. The machine includes a work chamber for eliminating or reducing any water or humidity or in its interstices, in proportions which vary between 15 and 40 per cent of its weight. This pressing operation to reduce the water content of the material simultaneously reduces the volume of the material treated by as much as seven of eight parts of the original volume.

3,754,374

### SINGLE DOSAGE PACKAGING APPARATUS

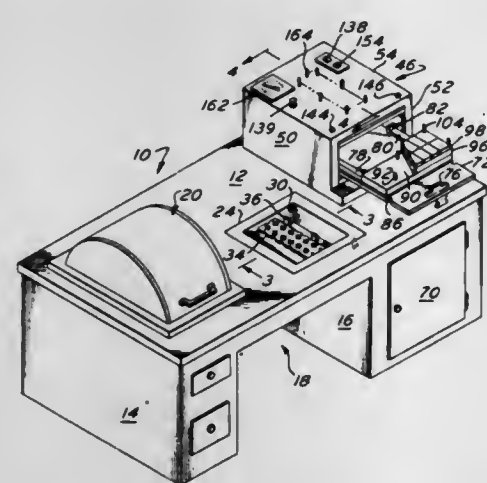
Russell R. Haines, Cherry Hill, N.J., assignor to Paco Packaging Inc., Pennsauken, N.J.

Filed Feb. 8, 1971, Ser. No. 113,404

Int. Cl. B65b 7/28, 51/14, 67/02

U.S. Cl. 53—373

11 Claims



Apparatus is disclosed for custom blister-packaging a plurality of single dosages of pharmaceuticals with each dosage appropriately identified as to the user. The apparatus is for use by hospitals, nursing homes, large pharmaceutical dispensers and the like.

### 3,754,375 ANISOTROPIC ORGANOSILICON POLYMER MEMBRANE

Jean Bouchilloux, Bron; Albert Fabre, Lyon 3e, and Alphonse Faure, Bron, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Mar. 2, 1971, Ser. No. 120,328

Claims priority, application France, Mar. 3, 1970, 707570

Int. Cl. B01d 53/22; C08c 17/08

U.S. Cl. 55—16

13 Claims

An anisotropic membrane is provided having excellent mechanical properties combined with good permeation characteristics which comprises a vinyltriorganosilane polymer or copolymer consisting of a dense layer, of average thickness between 0.01 and 10  $\mu$ , and a porous layer with open pores, of thickness up to 500  $\mu$  in which the volume of the interstitial spaces in the porous layer represents 20 to 80 percent of the total volume of the membrane.

3,754,376

### INERT GAS STRIPPING OF CONTAMINATED WATER

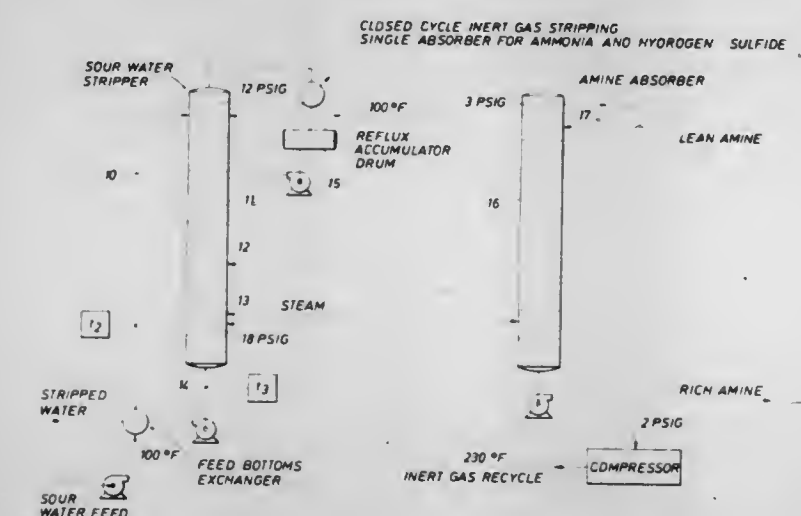
Robert D. Kent, Bellaire, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Feb. 1, 1972, Ser. No. 222,480

Int. Cl. B01d 19/00, 53/14

U.S. Cl. 55—51

9 Claims



Water containing contaminating gases such as hydrogen sulfide, carbon dioxide and ammonia is freed of these contaminants by closed system stripping process which employs an inert gas and steam.

3,754,377

### GAS-LIQUID MASS TRANSFER PROCESS

Kenyon E. Clonts, Houston, Tex., assignor to Merichem Company, Houston, Tex.

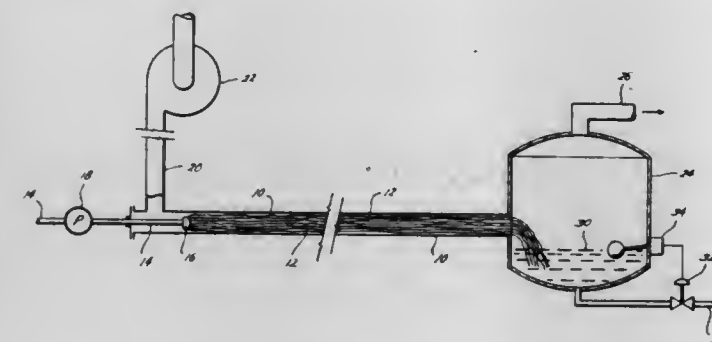
Continuation-in-part of Ser. No. 161,207, July 9, 1971,

abandoned. This application Nov. 17, 1972, Ser. No. 307,470

Int. Cl. B01d 53/16

U.S. Cl. 55—73

5 Claims



A component of at least one of two fluids is transferred into the other by introducing a liquid onto the surface of fibers ex-

tending generally linearly along a conduit with the fibers filling the cross-sectional area of at least a portion of the length of the conduit and being wetted by the liquid, flowing a gas through the conduit past the fibers thereby dragging a film of the liquid along the fibers, collecting the liquid in a gravity separator approximate the downstream end of the fibers and then separately removing the two fluids from the separator.

3,754,378

### APPARATUS FOR REMOVING DUST FROM AN AIR STREAM

Kenneth M. Christensen; Howard E. Bauman, both of Hopkins; Robert G. Walker, Minneapolis, all of Minn.; Bob K. Davis, deceased, late of Minneapolis, Minn., and D. Kenneth, administrator Lindgren, Jr., Hopkins, Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

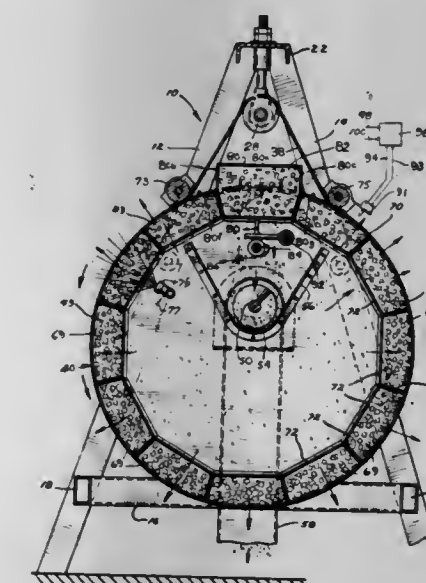
Continuation of Ser. No. 764,043, Sept. 27, 1968, abandoned.

This application Sept. 8, 1971, Ser. No. 178,808

Int. Cl. B01d 46/36

U.S. Cl. 55—91

11 Claims



To remove dust from an air stream, a filter has been devised which consists of a filtration bed composed of a multiplicity of granules that are coated with a thin film of dust-trapping liquid (normally water). The air stream containing dust particles is forced through the wetted bed until the liquid film is nearly evaporated. The granules in the bed are then subjected to violent agitation to shake the accumulated dust from their surfaces into an auger conveyor which removes the dust to a collecting bin. The apparatus consists of a plurality of adjacent chambers mounted on the periphery of a large drum that rotates past the wetting section, a filtration section and finally an agitation section in which hammers strike successive chambers to agitate and thereby remove collected contaminants.

3,754,379

### APPARATUS FOR ELECTRODE RAPPER CONTROL

Richard J. Bridges, and Paul D. Harper, both of c/o Koppers Company Inc., Koppers Building, Pittsburgh, Pa.

Filed Feb. 11, 1971, Ser. No. 114,545

Int. Cl. B03c 3/76

U.S. Cl. 55—104

8 Claims

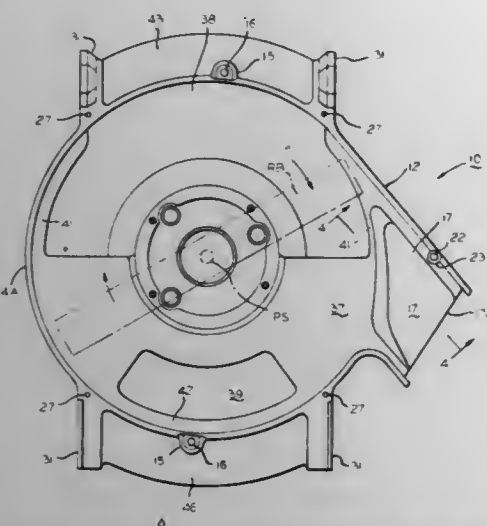
A rapper control senses the particle load collected on selected electrostatic precipitator electrodes and automatically energizes corresponding rappers connected to the selected electrodes when the collected particle load magnitude on the electrodes exceeds a predetermined limit and de-energizes the rappers when the collected particle load magnitude obtains a predetermined minimum to optimize the amount of precipitant on the collecting electrodes. The con-







ing wheels secured thereto. The web of the lower housing member at the discharge has a ramp thereon for deflecting



hard objects in an upward direction toward the upper housing member where it is deflected downward at the discharge opening.

3,754,387

## TOBACCO HARVESTER

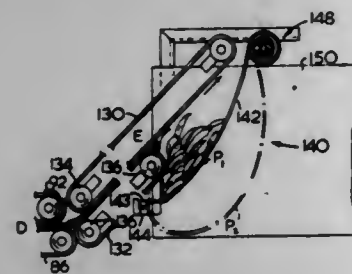
Leonard A. Chapman, London, Ontario, Canada, assignor to Eagle Machine Company Limited, London, Ontario, Canada

Division of Ser. No. 52,345, July 6, 1970. This application Feb. 18, 1972, Ser. No. 227,511

Int. Cl. A01d 45/16

U.S. Cl. 56—27.5

6 Claims



Improved apparatus for harvesting growing tobacco leaves from a standing tobacco crop is described. The harvester includes means for orienting the tobacco leaves and maintaining such orientation during and after defoliation until deposition of the leaves in container means provided on the harvester. Improved leaf defoliation elements are provided and devices for separating leaves in the picking swath from those above the picking swath are provided. The harvester is designed such as to reduce leaf damage to a minimum. The harvester also includes improved means for effecting directional control thereof relative to the tobacco plants to still further reduce damage to the tobacco leaves.

3,754,388

## HAY STACK FORMING APPARATUS

Allan B. Neely, Jr., 14889 E. 25th, Aurora, Colo.

Filed Sept. 13, 1972, Ser. No. 288,564

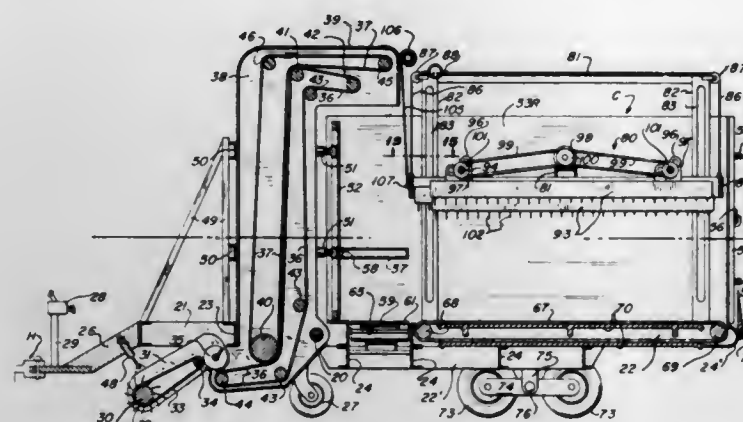
Int. Cl. A01d 43/02

U.S. Cl. 56—346

10 Claims

An apparatus to pick up loose hay in a field and to form the same into a compacted hay stack. Thereafter, the hay stack may be discharged from the apparatus. The apparatus, which may be upon a trailer, is provided with pickup and lifting components affixed to a forward section thereof. A walled, stack chamber is formed upon a rear section of the trailer so that loose hay picked up and lifted by the aforementioned com-

ponents of the forward section will drop into the chamber. Conveyors form the floor of this chamber to move the hay out of the chamber and a float having reciprocating shifting bars in a horizontally disposed arrangement will ride upon the hay



stack being formed in the chamber to shift and to distribute the hay to the rearward section of the apparatus. Discharge of a stack within this chamber is effected by opening gates at the rear end thereof.

3,754,389

## YARN GUIDING MECHANISM IN A TWO-FOR-ONE YARN TWISTER

Teiji Nakahara, and Hideo Yanabu, both of Kyoto, Japan, assignors to Murata Machinery, Ltd., Kyoto, Japan

Division of Ser. No. 831,054, June 6, 1969, Pat. No. 3,636,698.

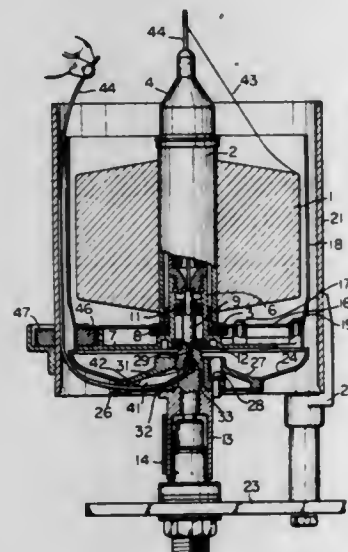
This application Jan. 25, 1971, Ser. No. 109,698

Claims priority, application Japan, June 8, 1968, 43/39557

Int. Cl. D01h 1/10, 7/86

U.S. Cl. 57—58.83

5 Claims



In a two-for-one yarn twister, a specially shaped yarn guide path is formed radially extending from a central longitudinal aperture of a spindle to a peripheral yarn guide of a storage disc. Further, a successive yarn guide path from the peripheral yarn guide towards an upper yarn guide member is given as a clearance between an inside and outside balloon limiting mantle.

3,754,390

## WATCH MOVEMENT CONSTRUCTION

Katsutoshi Maeda, Ichikawa-shi, and Norio Kobayashi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

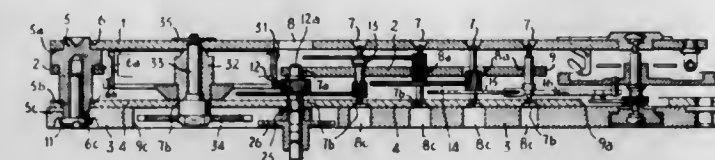
Filed May 25, 1972, Ser. No. 256,752

Claims priority, application Japan, May 27, 1971, 46/36458

Int. Cl. G04b 13/00, 33/00

U.S. Cl. 58—7

4 Claims



A watch movement construction wherein two bridges and two frame plates for bearing or accommodating a plurality of the movement elements wherein the bridges and frame plates are held apart in fixed relative positions by two spacers and bridge screws threaded into the spacers. The bridges and frame plates are made flat and are provided at predetermined positions with cut-outs or mount holes for easy assembly of the construction and for receiving the shafts of rotary members of the construction. The cut-outs and mount holes can be formed by simple pressing or drilling operations.

3,754,391

## DRIVING ARRANGEMENT FOR QUARTZ VIBRATOR TIMEPIECES

Kinji Fujita, Suwa-gun, Nagano-ku, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

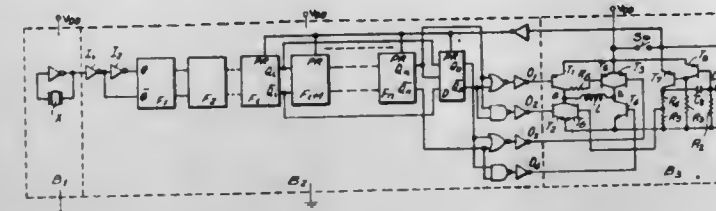
Filed Dec. 23, 1971, Ser. No. 211,502

Claims priority, application Japan, Dec. 26, 1970, 45/118908

Int. Cl. G04b 27/00

U.S. Cl. 58—23 R

3 Claims



A timepiece having a high frequency time keeping oscillator including a quartz vibrator coupled through ripple binary dividers and waveform shaping circuits to a motor driving circuit. A pulse motor is operatively coupled to said motor driver circuit which also includes a sub-circuit having a monostable multivibrator. The ripple binary dividers and waveform shaping circuits are preset by a make-switch so as to produce motor driver signals for application to said motor driver circuit immediately after the make-switch is opened, while pulses are applied by said sub-circuit to said pulse motor during such resetting.

3,754,392

## APPARATUS FOR DRIVING A LIGHT EMITTING DIODE OF HOROLOGIC DISPLAY

R. Gary Daniels, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 17, 1971, Ser. No. 143,826

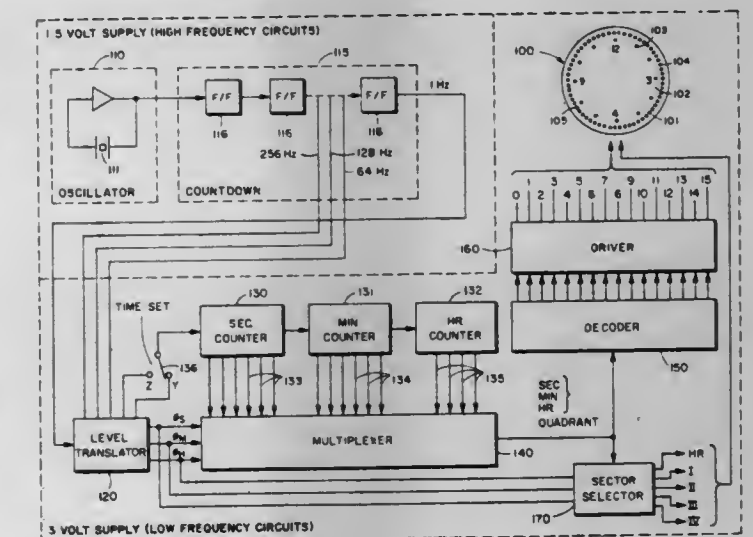
Int. Cl. G04b 19/30, 19/06

U.S. Cl. 58—50 R

19 Claims

There is disclosed a logic and driving circuit for a light emitting diode type horologic display in which three diodes

are read out at any given time to represent the time of day. Power consumption is kept to a minimum by the use of a two voltage level system with the lower voltage supplying those portions of the circuit working at a high frequency while the higher voltage supplies the display and those portions of the driving circuit operating at a considerably lower frequency. In addition to a crystal frequency standard and a "divide-by-two" flip-flop countdown circuit which provides a 1 Hz signal to a series of toggle flip-flop counting circuits which function as the seconds, minutes and hours storage elements, there is provided a multiplexer coupled to the outputs of these counting circuits which is strobed with pulses having a combined duration of only a fraction of the sampling cycle. This results in a low duty cycle for the output of the multiplexer and thus for the display itself which conserves on the power necessary to drive the display. Since hour, minute and second information is sequentially sampled by the multiplexing circuit, multiplexing eliminates decoder and driver redundancy. Provision



is made in the multiplexing logic for dividing the horological display into quadrants or sectors so as to further reduce the number of driver and decoder elements. As a result there is also provided a quadrant selecting circuit. The sampling pulses for the multiplexing circuit are conveniently derived from the frequency standard countdown circuit. The driving system utilizes complementary metal oxide semiconductor (CMOS) components in which power drain is minimized because these elements draw appreciable power only when switching. A further power consumption advantage is obtained by utilizing NAND gate logic to permit the use of these low power CMOS components. Toggle flip-flops are chosen for the counters because they are available in metal oxide semiconductor form and because the total number of transistors utilized is reduced. The logic described herein is used with a horologic display in which the minutes and seconds are displayed in the single ring of elements with the hours being displayed in another single ring of elements.

3,754,393

## GAS TURBINE ENGINE COMBUSTOR

Noritoshi Handa, Yokohama City, Japan, assignor to Nissan Motor Company Limited, Yokohama City, Japan

Filed Oct. 1, 1971, Ser. No. 185,577

Claims priority, application Japan, Dec. 5, 1970, 45/107276

Int. Cl. F02c 7/08

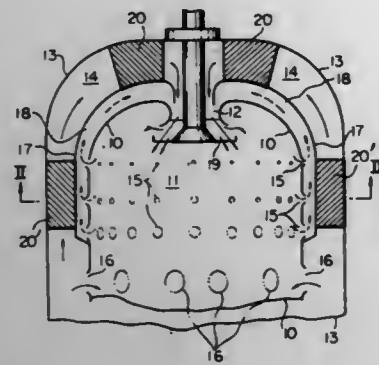
U.S. Cl. 60—39.52

3 Claims

A gas turbine engine has a combustor having a combustion chamber and an air passage substantially surrounding the combustion chamber and leading from a compressor of the gas turbine engine. The air passage communicates with the combustion chamber through primary and secondary air inlets. A hot gas recirculating passage is formed between the combustion chamber and the air passage, providing communi-



cation between the combustion chamber and the primary air inlet. A limited portion of the hot gases produced in the combustion chamber is recirculated to the air inlet through the



recirculating passage so as to be cooled by air circulated through the air passage, whereby the maximum temperature of the hot gases is reduced and the recirculated gases are returned to remove a combustible content remaining therein.

3,754,394

### HYDRAULIC CONTROL SYSTEM FOR ELECTRIC LIFT TRUCK

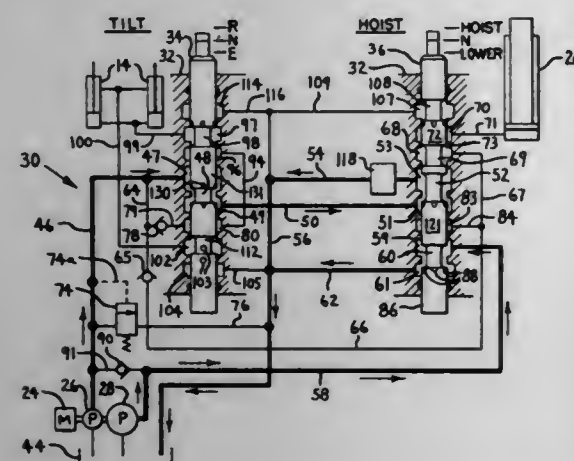
Donald C. Morrison, Portland, Oreg., assignor to Hyster Company, Portland, Oreg.

Filed Dec. 2, 1971, Ser. No. 204,106

Int. Cl. F15b 13/09

U.S. Cl. 60-484

22 Claims



A hydraulic control system for a batter-powered electric lift truck includes hydraulically powered mast-tilting cylinders and fork hoist cylinders supplied with pressure fluid from an electric motor-driven small and large capacity pair of pumps. The hydraulic circuit supplying pressure fluid to the cylinders includes a pair of spool-type metering valves, one for the tilt cylinders and one for the hoist cylinder. The hoist spool is a three-position spool having a neutral position, a lowering position and a hoisting position range. When the spool is stroked through the hoist range from low to high, fluid is metered by the spool to the hoist cylinder first at a small flow rate and gradually at increasing rates only from the small pump until the maximum flow capacity of the small pump is reached. Thereafter, as stroking continues, flow from the large pump is added gradually and progressively to the maximum flow of the small pump until the full flow capacities of both pumps is utilized to extend the hoist cylinder. Thus through operator control of the hoist spool the hoist can be operated at either low or high speed and in small, slow increments for precise positioning. In the illustrated circuit, this progressive additive-metering of the flow from the small and large pumps occurs regardless of the position of the tilt spool. Both pumps, as well as the valve block housing the tilt and hoist spools, are enclosed within the hydraulic fluid reservoir for the system.

### 3,754,395 HYDRAULIC PRESSURE CONTROLLING DEVICE FOR INTENSIFYING CYLINDER

Toyoju Mochizuki, 5-10, 7-chome, Roppongi, Minatoku, Tokyo, and Mamoru Watanabe, 16-9, 6-chome, Takinogawa, Kitaku, Tokyo, both of Japan

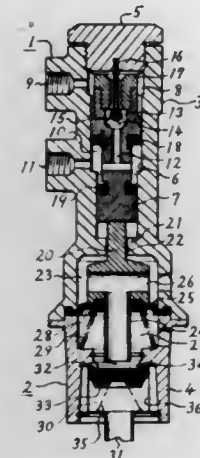
Filed Nov. 10, 1971, Ser. No. 197,350

Claims priority, application Japan, Nov. 13, 1970, 45/99478

Int. Cl. F15b 7/00; F17d

U.S. Cl. 60-575

7 Claims



A relay piston for driving a pneumatic pressure controlling device for a servo motor is disposed at a position where it is displaced by hydraulic pressure in a low-pressure chamber connected to a master cylinder. A high-pressure chamber is formed in communication with the low-pressure chamber through a passage in the relay piston, the high-pressure chamber being connected to an intensifying cylinder. In the passage there is provided a valve adapted to intercept communication between the high-pressure chamber and the low-pressure chamber in accordance with advancement of the relay piston. The force that is applied to the relay piston by hydraulic pressure in the high-pressure chamber, when the valve is closed, is the resultant of the force component acting to advance the relay piston which is greater than the force component acting to let the relay piston move forwardly.

3,754,396

### IMPACTING DEVICE

Eero Antero Erma, Klinten, Sweden, assignor to Atlas Copco Aktiebolag, Stockholm, Sweden

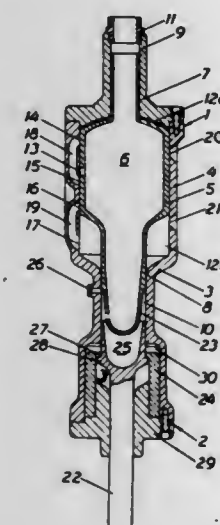
Filed Nov. 3, 1970, Ser. No. 86,467

Claims priority, application Sweden, Nov. 7, 1969, 15297/69

Int. Cl. F15b 7/00; F01I 21/02; E21b 1/00

U.S. Cl. 60-563

3 Claims



The impacting device is primarily intended for rock drills and consists of a drive piston, a hammer piston and an auxilia-

ry piston, wherein the drive piston drives the hammer piston by means of an elastic fluid cushion. The powertransmitting fluid cushion obtains a very high working pressure by being fed with elastic fluid under pressure and by being compressed by the drive piston during its working stroke. The auxiliary piston stops the hammer piston during its return stroke by absorbing the kinetic energy of the hammer piston. The hammer piston is stopped in a predetermined position corresponding to the optimum energy output before the succeeding stroke.

3,754,397

### COLLOID ENGINE BEAM THRUST VECTORING

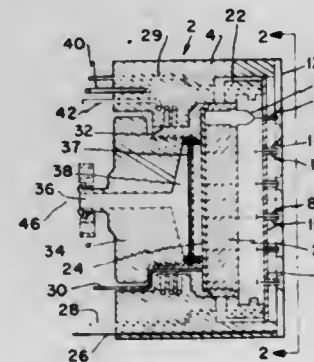
Philip W. Kidd, Palos Verdes Peninsula, and Norman E. Law, Cypress, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Oct. 23, 1970, Ser. No. 83,486

Int. Cl. H05h 5/00

U.S. Cl. 60-202

3 Claims



To provide thrust vectoring in a colloid beam engine, a plurality of deflector electrodes surround the colloid needles upstream of the extractor. To change the direction of the colloid beam, a bias voltage is applied to the deflector electrodes whereby to vary the thrust vector of the colloid beam.

3,754,398

### THERMAL ENGINE EXHAUST REACTOR WITH OVER-TEMPERATURE PROTECTION

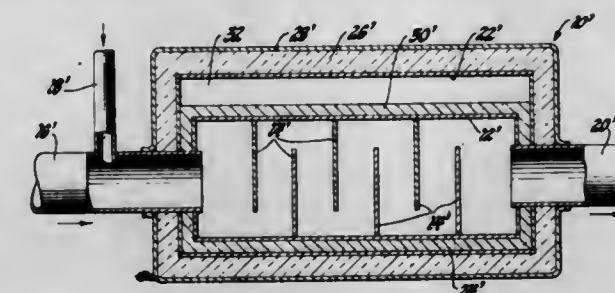
James N. Mattavi, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1971, Ser. No. 211,972

Int. Cl. F01n 3/00

U.S. Cl. 60-298

3 Claims



A thermal reactor preferably having in a preferred embodiment, an insulated reaction chamber in which engine exhaust gases are exothermically reacted to reduce undesirable exhaust emissions. The inner liner of the reaction chamber is protected against overheating during temporary periods of excessive temperature operation by surrounding the outer surfaces of the liner with a fusible material having a melting point between the normal operating temperature of the reactor and the maximum operating temperature. The latent heat of fusion of the fusible material acts as a heat sink, absorbing heat upon melting of the material so as to maintain the walls of the inner liner below their maximum operating temperatures during temporary periods of abnormally high temperature operation due to engine malfunction or the like.

3,754,399

### EXHAUST GAS PURIFYING DEVICE FOR AN OUTBOARD PROPULSION UNIT

Shun Ono, and Tsugio Nakatani, both of Hamamatsu, Japan, assignors to Yamaha Hatsudoki Kaisha, Iwata-shi, Japan

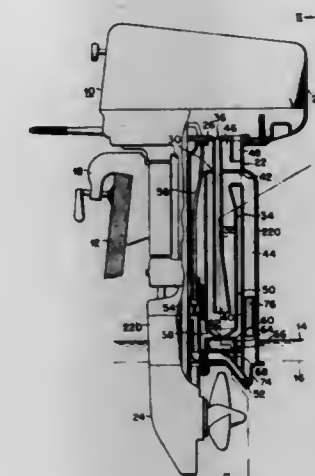
Filed Apr. 26, 1972, Ser. No. 247,533

Claims priority, application Japan, Apr. 30, 1971, 46/34569 (utility model)

Int. Cl. F02b 75/10

U.S. Cl. 60-309

11 Claims



An exhaust gas purifying device of an outboard motor comprising an exhaust gas discharge pipe; a expansion chamber where exhaust gas introduced from the pipe is rapidly expanded for cooling; a cooling chamber for elevating the efficiency of cooling the exhaust gas; and a reservoir for holding the ingredients of the exhaust gas which are liquefied when the gas is cooled, thus enabling the exhaust gas to be drawn off to the outside in a state free from harmful ingredients.

3,754,400

### VARIABLE PRESSURE HYDRAULIC SYSTEM

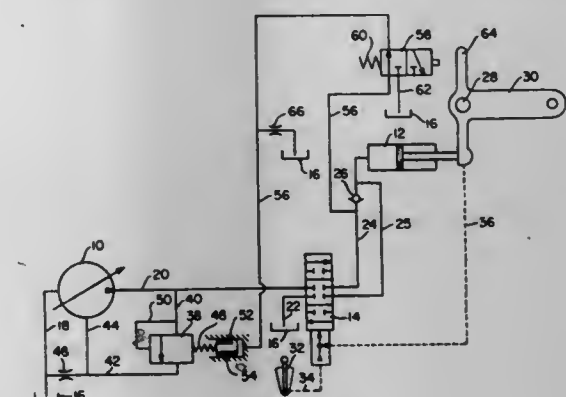
Donald James Parquet, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 20, 1972, Ser. No. 245,793

Int. Cl. F15b 15/18

U.S. Cl. 60-445

13 Claims



A hydraulic system in which a motor is operated by a variable displacement pump in which displacement is regulated by a control valve which is sensitive to the pressure at the hydraulic motor to maintain the pump outlet pressure higher than the motor pressure. A valve in the pilot line between the motor and control valve is responsive to a predetermined movement of the motor to block fluid communication between the motor and control valve so that when the motor reaches a predetermined position, the pressure in the system is reduced.

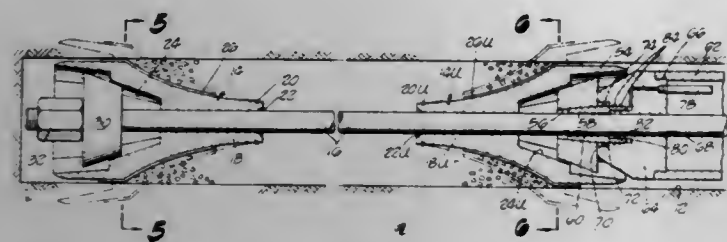


### 3,754,401 EARTH ANCHOR

Joseph H. Lipow, 5114 Venice Blvd., Inglewood, Calif.  
Filed Dec. 29, 1971, Ser. No. 213,434  
Int. Cl. E02d 5/74

U.S. Cl. 61—39

14 Claims



This invention relates to the anchoring of a tension member into the earth. Two packing members are positioned in a hole in the earth about a quantity of packing material. The packing members are then forced toward one another which compresses the packing material and forces it into the surrounding earth. The earth surrounding the packing material is also compressed and thereby strengthened. The packing members are then locked in this compressed mode about a structural tension member. The strengthened earth and the anchoring unit then act together to anchor the structural tension member securely in the earth.

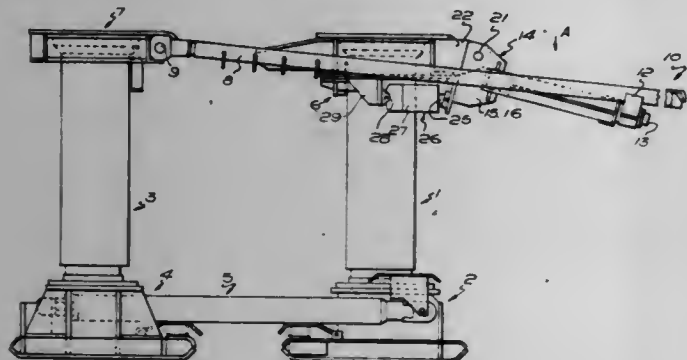
### 3,754,402 MINE ROOF SUPPORTS

David Beaumont Smith, Wakefield, England, assignor to Fletcher Sutcliffe Wild Limited  
Filed June 23, 1971, Ser. No. 156,013  
Claims priority, application Great Britain, June 26, 1970, 31,005/70

Int. Cl. E21d 15/45

U.S. Cl. 61—45 D

4 Claims



A support means for a cantilever of a mine roof support which cantilever includes two spaced parallel arms, comprising a bar located transversely of and beneath said two arms and adapted to urge said arms upwardly towards the mine roof, said bar being pivoted at approximately its mid-length about an axis parallel to the axes of said two arms, and means to urge said pivot bar upwardly, whereby said arms are able to extend upwardly to different extents due to the pivoting of said pivot bar.

### 3,754,403 OFFSHORE MARINE STRUCTURE EMBODYING ANCHOR PILE MEANS

George E. Mott, Metairie, and James P. Wilbourn, New Orleans, both of La., assignors to Texaco Inc., New York, N.Y.

Filed Feb. 9, 1972, Ser. No. 224,734

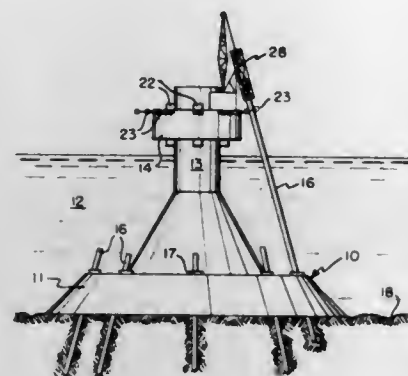
Int. Cl. E02b 17/00; E02d 11/00

U.S. Cl. 61—46.5

8 Claims

The invention relates to a buoyant marine structure as would be found, or is usable in a body of water which lies

above a penetrable substratum. The structure is comprised of several operably connected components and is controllably buoyant as to be floated or propelled to a proposed working site. Thereafter, the buoyancy is regulated to sink the hull por-



tion of the structure to a resting place on the ocean floor. A series of anchoring piles are carried on the structure in such manner that they can be readily released from a fixed position to enter the penetrable substratum, and thereafter be driven to a desired depth.

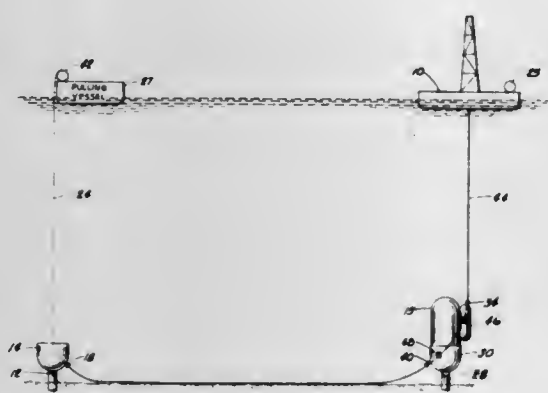
### 3,754,404 METHOD FOR BENDING AND LAYING PIPE UNDER WATER

Thomas S. Moore, Oklahoma City, Okla., assignor to Transworld Drilling Company, Oklahoma City, Okla.  
Continuation-in-part of Ser. No. 851,400, Aug. 19, 1969. This application May 24, 1971, Ser. No. 146,242

Int. Cl. F16l 1/00; E21b 43/01

U.S. Cl. 61—72.3

9 Claims



The present invention relates to a method for laying pipe under water to interconnect at least two installations, such as surface or submerged facilities associated with wells, manifolds, collection facilities and the like. More particularly, it relates to a method for bending and laying pipe under water. In one embodiment, the method utilizes a submersible chamber in which workmen may operate in a dry atmosphere.

### 3,754,405 METHOD OF CONTROLLING THE HYDROCARBON DEW POINT OF A GAS STREAM

Ward F. Rosen, Oklahoma City, Okla., assignor to Black, Sivalls & Bryson, Inc., Kansas City, Mo.

Filed Feb. 10, 1969, Ser. No. 797,960

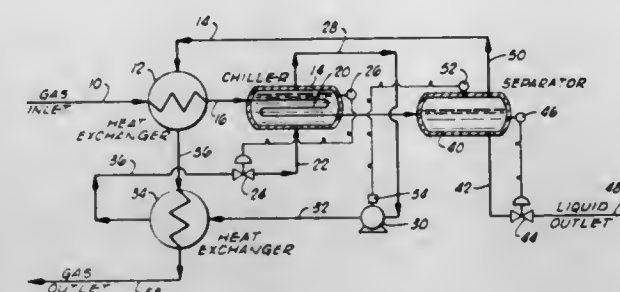
Int. Cl. F25j 3/00, 3/06

U.S. Cl. 62—21

6 Claims

The present invention relates to a method of controlling the hydrocarbon dew point of a gas stream in order to prevent condensation of the gas stream in subsequent gas transmission and distribution systems. The gas stream is passed in heat

exchange relationship with an expanded refrigerant stream thereby cooling the gas stream and liquifying only those condensable components in said gas stream required to obtain a desired residue gas dew point. The cooled residue gas is then



passed in heat exchange relationship with the refrigerant stream after the refrigerant stream has been compressed thereby condensing the refrigerant stream and heating the residue gas stream well above its dew point.

### 3,754,406 THE PRODUCTION OF OXYGEN

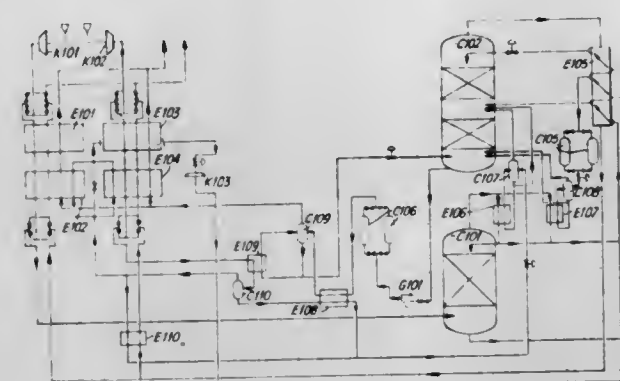
Rodney John Allam, Guildford, Surrey, England, assignor to Air Products and Chemicals, Inc., Allentown, Pa.  
Filed Mar. 15, 1971, Ser. No. 124,253

Claims priority, application Great Britain, Mar. 16, 1970, 12,586/70

Int. Cl. F25j 3/02, 3/04

U.S. Cl. 62—41

13 Claims



A plant for the production of low purity oxygen, in which a low pressure stream of incoming air is cooled against outgoing gas streams and fed into a high pressure fractionating column, and a high pressure stream of incoming air is cooled against outgoing gas streams, partially condensed against boiling liquid oxygen product in a product vaporizer, and separated into gas and liquid streams, the liquid stream being sub-cooled and expanded into a low pressure fractionating column while a major part of the gas stream is re-heated and expanded to provide plant refrigeration. Crude liquid oxygen from the bottom of the high pressure column is cooled against waste outgoing nitrogen from the low pressure column and then admitted to the low pressure column after first being used to liquefy some of the nitrogen from the high pressure column in an external reboiler/condenser. Liquid oxygen product from the low pressure column is pumped to a higher pressure before being passed through the sub-cooler and the product vaporizer. The remainder of the high pressure column nitrogen is liquefied in a second external reboiler/condenser by the separated high pressure liquid feed on its way to the low pressure column. The liquefied high pressure column nitrogen is used as reflux for the two columns, that for the low pressure column being cooled against outgoing waste nitrogen. The expander exhaust is likewise cooled against outgoing waste nitrogen before admission to the low pressure column.

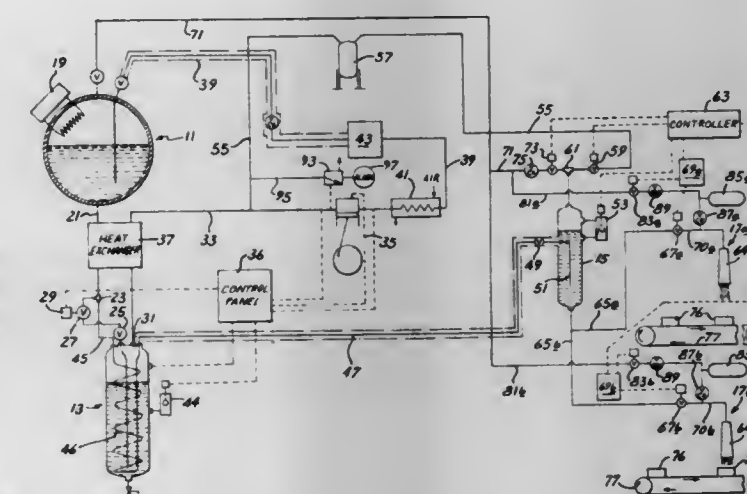
### 3,754,407 METHOD AND SYSTEM FOR COOLING MATERIAL USING CARBON DIOXIDE SNOW

Lewis Tyree, Jr., 10401 S. Oakley Ave., Chicago, Ill.  
Continuation-in-part of Ser. No. 14,525, Feb. 26, 1970, Pat. No. 3,660,985. This application May 8, 1972, Ser. No. 250,885

Int. Cl. F17c 7/02

U.S. Cl. 62—55

13 Claims



High pressure liquid CO<sub>2</sub> from a storage vessel is subcooled by flashing a portion of a liquid stream therefrom to liquid plus vapor and passing the remaining portion of the liquid stream in heat-exchange therewith. The lower pressure vapor, which is compressed and returned to the storage vessel, is used to transfer the subcooled liquid CO<sub>2</sub> to a holding tank which may be located at a substantial distance from and above the storage vessel. High pressure vapor from the storage vessel is employed to intermittently supply subcooled high pressure CO<sub>2</sub> to one or more snow-making devices, located closer to the holding tank, which apply CO<sub>2</sub> snow to the material being cooled. High pressure vapor is also employed to prevent snow formation in the system upstream of the snow-making devices.

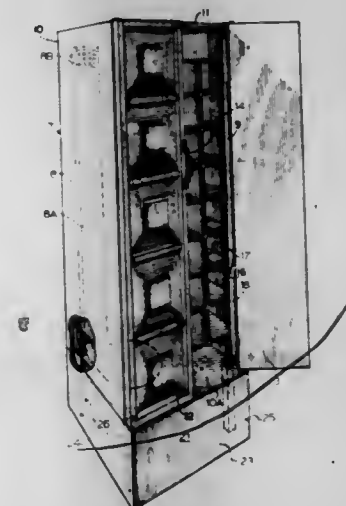
### 3,754,408 DOMESTIC WINE COOLER

Robert L. Littleton, 347 Maynard, Ann Arbor, Mich.  
Filed May 8, 1972, Ser. No. 251,150

Int. Cl. F25d 23/00

U.S. Cl. 62—302

3 Claims



A modular, refrigerated cabinet having a removable, portable wine rack on its interior, with means to support the rack.



3,754,409

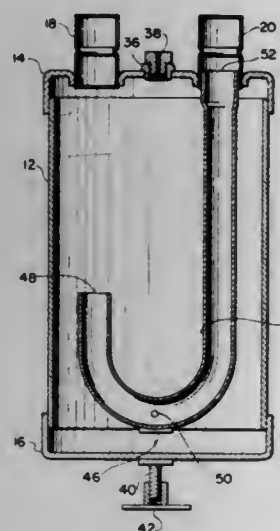
**LIQUID TRAPPING SUCTION ACCUMULATOR**

George T. Wreen, Jr., Crittenden; Hugh W. Mann, Portsmouth, and Elwood R. Zeek, Crittenden, all of Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.  
Filed Mar. 6, 1972, Ser. No. 232,110  
Int. Cl. F25b 43/00

U.S. Cl. 62—503

5 Claims

U.S. Cl. 64—11 B



A liquid trapping suction accumulator of the type used intermediate the compressor and evaporator in a vapor-compression refrigeration system as a protective device for the compressor. The device provides for minimal pressure drop in the system while still performing the function of compressor protection, and provides for safe removal of accumulated oil and/or liquid refrigerant from the accumulator chamber.

3,754,410

**COMBINATION COMPRESSOR-CONDENSER**

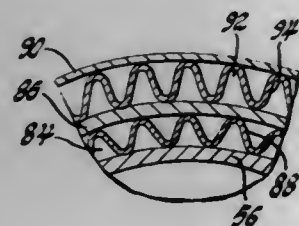
James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 10, 1972, Ser. No. 242,410

Int. Cl. F25b 39/04

U.S. Cl. 62—507

3 Claims



A combination compressor and condenser assembly for an automobile air conditioning system which has a cylindrical compressor housing with a drive shaft extending axially from the end of the housing. An annular member is connected at its opposite edges to the housing and forms a condenser cavity between the cylindrical housing and the member for cooling refrigerant which is discharged from the compressor through a port in the housing. An air shroud encircles the annular member to form an air passage adjacent the condenser cavity and conducts a flow of air discharged from an integral pulley-fan assembly which is connected to the compressor's drive shaft.

3,754,411

**TELESCOPING DRIVE OR PROPELLER SHAFTS**

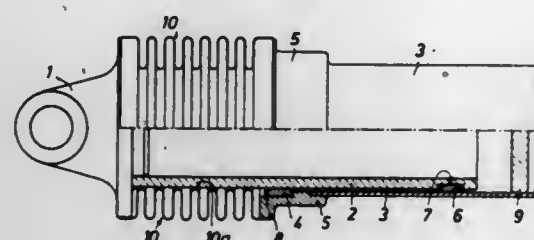
Michel Orain, Conflans Saint-Honorine, France, assignor to Societe Anonyme: Glaenger Spicer, Poissy, France

Filed Feb. 28, 1972, Ser. No. 229,882

Claims priority, application France, Apr. 16, 1971, 7113640

Int. Cl. F16d 6/00

9 Claims



A torque transmission device for telescoping drive or propeller shafts. The device comprises a slide relatively slidably mounted within a torque transmission tube and a resilient bellows connected between the slide and a sleeve fixed to an end of the torque transmission tube such that the bellows is in sliding contact with the slide and/or the tube for its stabilization. A first slide ring is mounted on the sleeve for sliding contact with the slide. A second slide ring is also mounted on the sleeve in sliding contact with the slide or at the end of the slide in sliding contact with the interior wall of the torque transmission tube in which case the bellows is enclosed entirely within the tube between the latter and the slide.

3,754,412

**SLIP CLUTCH DRIVE MECHANISM**

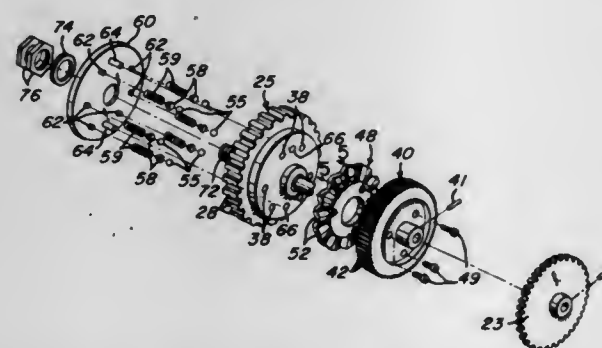
Forrest A. Briggs, Dayton, Ohio, assignor to The Standard Register Company, Dayton, Ohio

Filed Sept. 13, 1971, Ser. No. 179,942

Int. Cl. F16d 7/06

U.S. Cl. 64—29

7 Claims



A substantially constant torque is transmitted to a braked shaft through a slip clutch including a wheel-like drive member supported for rotation by the shaft and having angularly disposed axial holes which receive corresponding balls. Compression springs are positioned within the holes to urge the balls into engagement with an annular driven member which is secured to the shaft and has angularly disposed V-shaped peripheral recesses for receiving the balls. The recesses and balls are angularly spaced and arranged so that at least one ball is seated in drive position (within a recess) at substantially any angular position of the drive member relative to the driven member to assure immediate rotative movement of the shaft when the brake is released. An axially adjustable plate rotates with the drive member and engages the springs to provide for conveniently changing the substantially constant torque transmitted to the shaft through the balls and the driven member. The clutch functions in the same manner in either direction of rotation of the drive member.

3,754,413

**FRICTION CLUTCH**

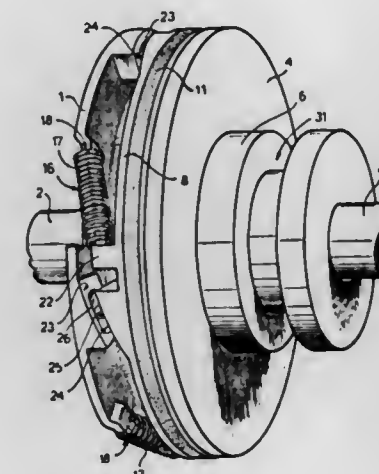
Bartolomeo Borrioli, Ivrea, (Turin), Italy, assignor to Ing. C. Olivetti & C. S.p.A., Ivrea, Italy

Filed June 8, 1972, Ser. No. 260,798

Int. Cl. F16d 7/02

U.S. Cl. 64—30 R

1 Claim



A friction clutch includes a driving disk, a driven disk and an intermediate disk which is spring-coupled to the driving disk for imparting rotation thereto. The intermediate disk has a surface of friction material for gripping the driver disk when the latter is shifted into engagement with the former. The opposite face of the intermediate disk is provided with a plurality of inclined lugs at its periphery which mate with corresponding inclined lugs on the driving disk. Upon engagement of the clutch, the spring coupling and inclined lugs serve to create an exchange of forces for making the maximum transmissible value of torque independent of variations in the coefficient of friction between the coupled surfaces.

3,754,414

**METHOD OF KNITTING RUNPROOF COURSES**

Pavel Uhlir, Trebic, Czechoslovakia, assignor to ELITEX, Zavody textilního strojírenství, generalni reditelství, Liberec, Czechoslovakia

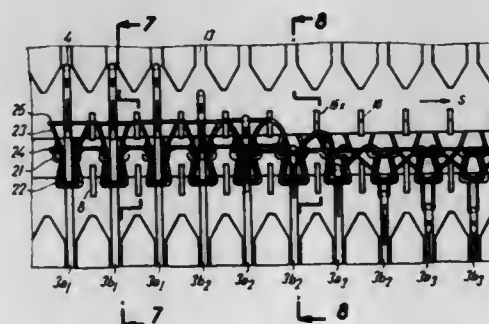
Filed Oct. 29, 1969, Ser. No. 872,182

Claims priority, application Czechoslovakia, Oct. 31, 1968, 7420/68

Int. Cl. D04b 9/10, 15/06

U.S. Cl. 66—14

2 Claims



Runproof courses are formed by providing alternate needles of a circular knitting machine with doubled loops formed of independent yarns and thereafter pulling one of said yarns from said loop and crossing the pulled yarn over to an adjacent loop.

3,754,415

**NEEDLE BAR DRIVE FOR WARP KNITTING MACHINE**

Karl Kohl, 10 Chlorodontstrasse, Obettshausen, Germany

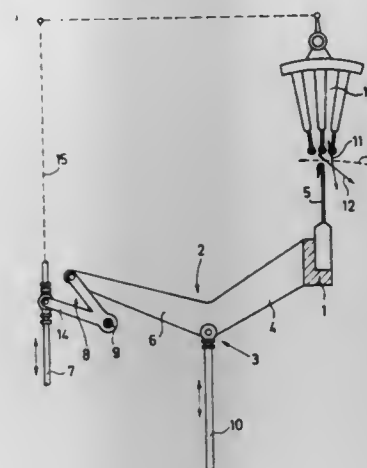
Filed Dec. 6, 1971, Ser. No. 204,933

Claims priority, application Germany, Dec. 7, 1970, P 20 60 101.8

Int. Cl. D04b 23/00

U.S. Cl. 66—86

2 Claims



A drive for imparting to a warp knitting machine needle bar a compound motion including a vertically reciprocating component and a substantially horizontal swinging component comprises a control lever rising from a fulcrum. The needle bar is mounted on the outer end of a first control lever arm. A vertically reciprocable push-rod is linked to the control lever fulcrum and a bell-crank lever is linked to the outer end of the second control lever arm, another push-rod rocking the bell-crank lever.

3,754,416

**APPARATUS FOR THE PRODUCTION OF KNIT GOODS**

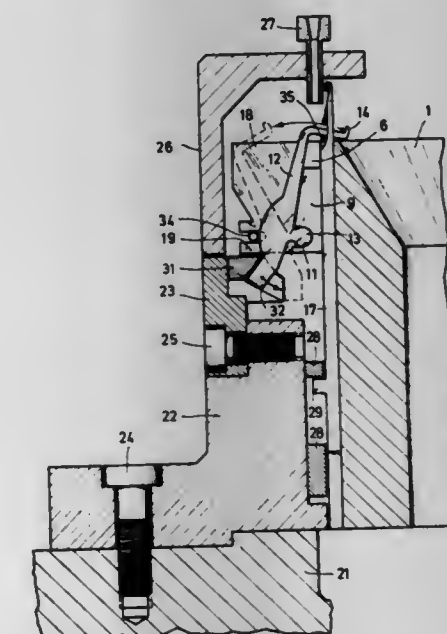
Harry Apprich, Uhlandweg 34, 7305 Altbach/Neckar, Germany

Filed July 7, 1971, Ser. No. 160,357

Int. Cl. D04b 15/06, 15/14

U.S. Cl. 66—106

20 Claims



An apparatus for the production of knit goods comprising a needle guiding body having reciprocating loop forming needles and a plurality of trick parts secured thereto. A plurality of the trick parts have a step-like offset bearing plate mounted thereto, one face of which is turned away from the needle guiding body and carries at least one sinker, the opposite facing which is turned towards the needle guiding body bears at least one needle spatially separated from the sinker.



### 3,754,417 OXYGEN BLEACHING

Allan Geoffrey Jamieson, Husum, Sweden, assignor to Canadian Industries Limited, Montreal, Quebec, Canada

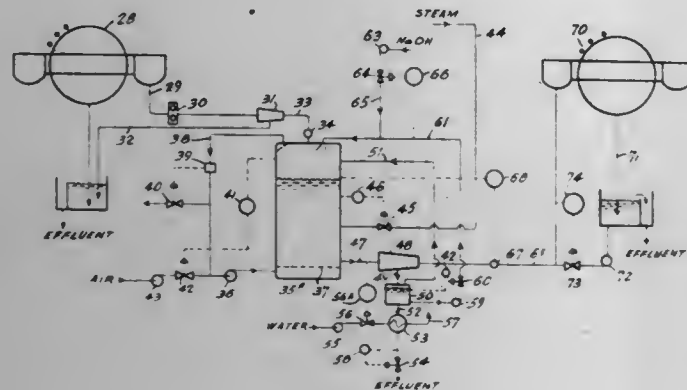
Filed Dec. 10, 1970, Ser. No. 96,949

Claims priority, application Canada, Jan. 8, 1970, 071726

Int. Cl. D21c 9/10

U.S. Cl. 68—15

13 Claims



An apparatus for treating lignocellulosic material such as wood pulp with oxygen under pressure as a step in an oxygen bleaching process. The apparatus introduces the lignocellulosic material, oxygen and other reagents into the pressurized vessel continuously, and continuously withdraws the treated product and spent reagents. The apparatus permits the carrying out of a continuous oxygen bleaching process.

### 3,754,418 LOCK APPARATUS

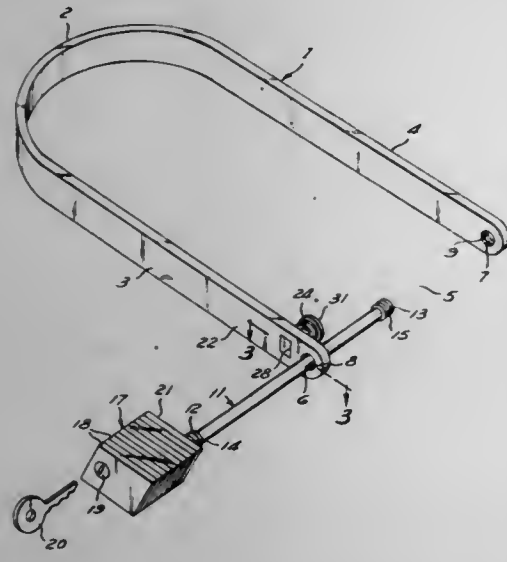
Peter B. Miller, 508 Hendricks Isle, Fort Lauderdale, Fla.

Filed July 27, 1972, Ser. No. 275,799

Int. Cl. E05b 73/00

U.S. Cl. 70—18

16 Claims



Lock apparatus suitable for various uses but particularly disclosed for locking bicycles, comprising a generally U-shaped member adapted to extend around at least one article to be secured by the apparatus and having coaxial openings near the open ends of its spaced arms. An arm of the U-shaped member slidably and non-rotatably carries a locking pin that can be manually pushed to an extended position where it projects from the inside of the arm in which it is mounted and that is spring-loaded to bias it in the opposite retracted position. A closure bar has spaced external portions adapted to engage and be firmly secured in the openings in the arms of the U-shaped member when the bar is properly located and rotated; when so positioned, the bar extends across and closes the open end of the U-shaped member and is firmly secured in the arms.

The bar must be rotated to release it from the arm openings so the bar can be slid axially in the arms to open the U-shaped member. The bar carries, at an end outside of the U-shaped member, a lock case having a known internal locking mechanism adapted to be actuated to unlocking condition by a key or other unlocking means. The lock case has an opening into which the locking pin can extend and be secured by the locking mechanism to prevent rotation of the bar, when the lock casing is positioned with its opening aligned with the pin. Exposed parts are formed of metal resistant to cutting, breaking, bending, or other forcing to open the lock apparatus. The arm openings and bar engaging portions are threaded in one disclosed embodiment; in another they form bayonet type connections.

### 3,754,419 HIGH SECURITY PADLOCK FOR RAILROAD SWITCH LOCKING MECHANISM

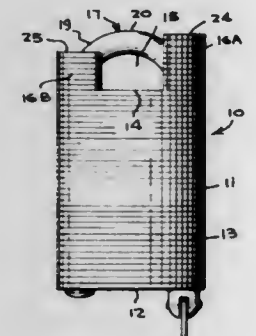
James L. Taylor, Rochester, N.Y., assignor to Sargent & Greenleaf, Inc., Rochester, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,040

Int. Cl. E05b 67/02

U.S. Cl. 70—52

10 Claims



A high security padlock for railroad switch locking stands, including a U-shaped shackle to extend through an aperture in an eye formation of a locking lever on the stand, and a padlock body having a pair of shroud shoulder formations projecting upwardly for unequal heights in enshrouding relation to three sides of the respective shackle legs. The shoulder formations extend into recesses in portions of the stand flanking the eye, when the shackle is in the eye, with the shorter shoulder spaced far enough to the confronting surface of the stand to permit insertion of the user's finger into holding relation with the shackle.

### 3,754,420 ANTI-THEFT APPARATUS FOR SKIS

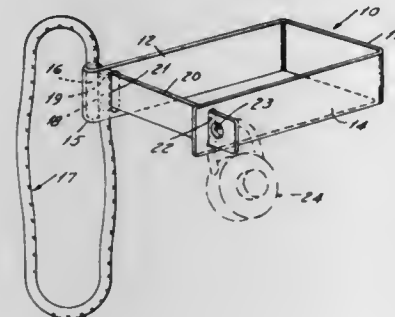
Werner B. Oeilerich, 14170 Barbara St., Livonia, Mich.

Filed Oct. 30, 1972, Ser. No. 301,868

Int. Cl. E05b 73/00; A47f 7/00

U.S. Cl. 70—58

3 Claims



A locking means for skis and the like which includes a U-shaped member having a pair of spaced apart side walls adapted to be slidably mounted over a pair of skis placed bot-

### 3,754,421 LOCKING COUPLING MECHANISM FOR REEL STORAGE CONTAINER

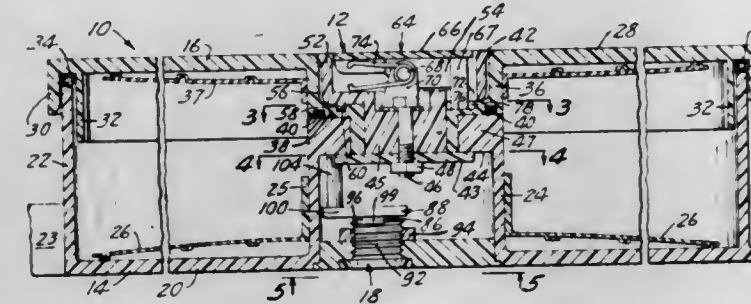
Wayne M. Wirth, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 1, 1971, Ser. No. 194,248

Int. Cl. E05b 65/52

U.S. Cl. 70—63

9 Claims



A mechanism for releasably coupling the portions of a reel storage container, including a key-operated cylinder lock for locking the mechanism in the coupled position.

### 3,754,422 CYLINDER LOCK AND U-SHAPED KEY AND METHOD OF FORMING SAME

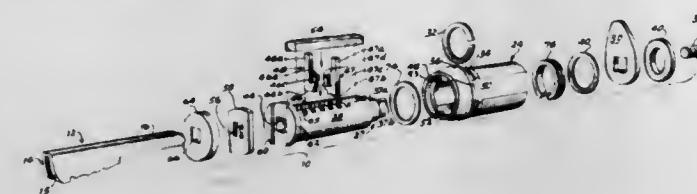
Wells F. Stackhouse, Ashville, N.Y., assignor to American Locker Co., Inc., Jamestown, N.Y.

Filed June 26, 1972, Ser. No. 266,141

Int. Cl. E05c 19/02, 29/10

U.S. Cl. 70—364 R

13 Claims



A cylinder type lock is designed to receive a U-shaped key having tumbler manipulating grooves formed in facing surfaces of its essentially parallel side portions. The key is formed by providing V-shaped slots in a key blank to bound the inwardly facing surfaces of the side portions and a connecting bridge portion, cutting the manipulating grooves in the inwardly facing surfaces of the side portions in a predetermined relationship to the slots and then folding the side portions relative to the bridge portion.

### 3,754,423 CYLINDER LOCK ASSEMBLY

Edward H. Seidewand, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed July 24, 1972, Ser. No. 274,218

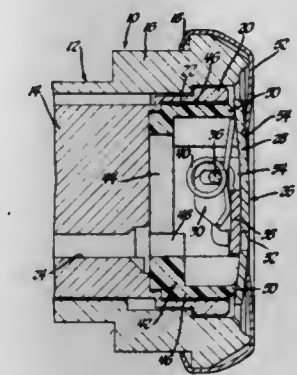
Int. Cl. E05b 17/18

U.S. Cl. 70—455

4 Claims

A cylinder lock assembly including a cylinder portion, a barrel portion rotatably disposed on the cylinder portion, a

plastic cover support member disposed in a cavity at the out-board end of the barrel portion, the support member having a wall portion with a beveled edge protruding beyond the confines of the cavity, a cover disc disposed over the cavity and engaging the beveled edge of the wall portion, and a retaining



ring attached to the cylinder portion and engaging the cover disc in line contact to retain the latter on the lock assembly. The retaining ring forcibly urges the cover disc against the beveled edge thereby resiliently deforming the latter so that the cover disc is tightly pressed against the retaining ring to effect a seal against foreign matter intrusion.

### 3,754,424 METHOD FOR NECKING-IN CAN BODIES

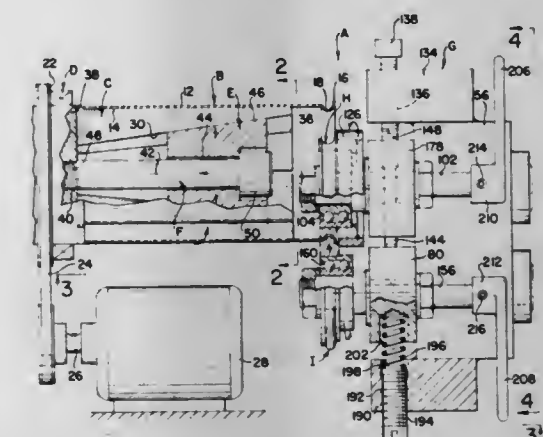
Samuel P. Costanzo, Sunnyvale, Calif., assignor to Gulf & Western Industrial Products Company, Salem, Ohio

Continuation-in-part of Ser. No. 136,958, April 23, 1971. This application May 17, 1972, Ser. No. 254,049

Int. Cl. B21d 19/06

U.S. Cl. 72—105

32 Claims



Apparatus for necking-in at least one end portion of a substantially cylindrical can body includes expandable and contractable gripping means for positively gripping a peripheral surface of the can body over a major portion of the circumference and length thereof to positively hold the can body in a substantially cylindrical shape. Female and male forming rolls act against a terminal end portion of the can body to deform the terminal end portion inwardly. The female forming roll is positioned within an open end portion of the can body and is moved outwardly into engagement with the terminal end portion of the can body to form an outwardly extending flange thereon for stiffening the end portion of the can body against wrinkling. A male forming roll positioned outside of the can body is moved toward the female forming roll to neck-in the terminal end portion of the can body.



3,754,425

## ROLLING MILLS

Ali Bindernagel, Dusseldorf-Oberkassel, and Werner Demny, Dusseldorf, both of Germany, assignors to Friedrich Kocks, Dusseldorf, Germany

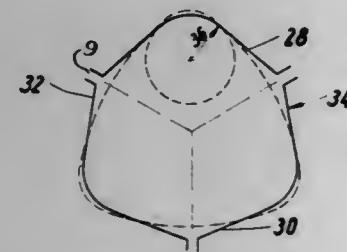
Filed July 14, 1971, Ser. No. 162,499

Claims priority, application Germany, July 7, 1970, P 20 35 482.9

Int. Cl. B21b 13/08, 13/10

U.S. Cl. 72-234

4 Claims U.S. Cl. 72-302



A rolling mill is provided having a roll line made up of a plurality of successive three roll stands, each defining a pass, which line includes at least two sizing passes disposed beyond a row of flat passes, the rolls of each sizing pass having sizing grooves shaped so that the reduction in cross section of the work in the pass defined by the sizing grooves is at an analytical minimum when the work is in a non twisted state between passes.

3,754,426

## ROLL CHANGING ARRANGEMENT FOR A ROLLING MILL

James Richard Adair, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

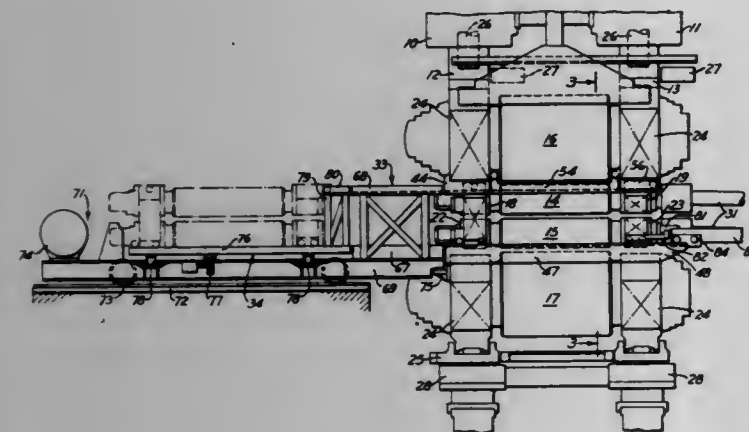
Filed Jan. 10, 1972, Ser. No. 216,599

Claims priority, application Great Britain, Feb. 25, 1971, 5,436/71

Int. Cl. B21b 31/08

U.S. Cl. 72-238

11 Claims



The disclosure of this invention relates to a rolling mill wherein the chocks of the work roll on the drive side of the mill are split to enable the work rolls to be removed and replaced while strip is still being passed between the rolls. The chocks of the work rolls on the operating side can be nested or split. The work roll chocks are provided with wheels which during the roll changing operation are carried by a pair of upper tracks secured to the housings and chocks of the upper backup roll and by a pair of lower tracks carried only by the housings. A bridge is located at the front of the mill between a side shifting unit and the mill. The bridge has tracks which serve as continuations of the housing tracks and which receive the wheels of the work roll chocks as the rolls are brought to and from the mill to transfer them from and to the side shifter.

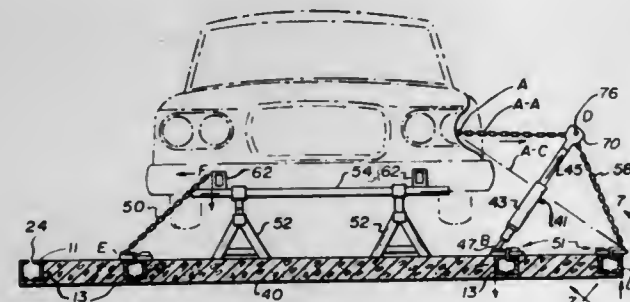
3,754,427  
METHOD FOR REFORMING AND STRAIGHTENING MEMBERS

Wayne E. Hunnicutt, Big Bend, and Peter G. Rossbach, Waukesha, both of Wis., assignors to Applied Power Industries, Inc., Milwaukee, Wis.

Division of Ser. No. 744,824, July 15, 1968, Pat. No. 3,590,623. This application Apr. 19, 1971, Ser. No. 135,274

Int. Cl. B21d 11/02

6 Claims



A method and apparatus are disclosed for reforming and straightening members such as bent or damaged bodies and frames of vehicles, and portions thereof, wherein a force effective from a platform surface is applied via force transmitting means to straighten said bodies and frames.

3,754,428

## METHOD AND APPARATUS FOR SEVERING TUBING

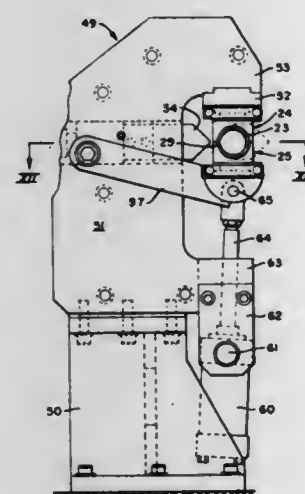
Peter Alexoff, Poland, Ohio, assignor to George A. Mitchell Company, Youngstown, Ohio

Filed July 28, 1972, Ser. No. 275,924

Int. Cl. B21d 31/02

U.S. Cl. 72-331

15 Claims



Method and apparatus for severing tubing using a conventional pointed shearing blade acting in one motion which fails to produce undesirable inwardly extending deformations. The normal circular shape of the tubing is deformed in jaws prior to shearing to include a portion projecting outwardly from the exterior surface of the tubing and presenting an apex. Then, beginning at the apex, the tubing is severed while the projecting portion is simultaneously reshaped to conform substantially with the normal circular shape of the tubing.

3,754,429

## APPARATUS AND METHOD FOR SHAPING A CYLINDRICAL METAL TUBULAR COMPONENT

Robert Creuzet, Route de Beynac, Marmande, France

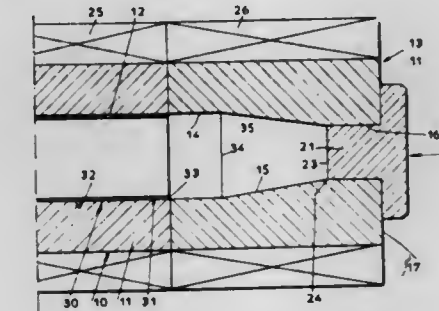
Filed Jan. 20, 1971, Ser. No. 107,893

Claims priority, application France, Jan. 22, 1970, 7002258

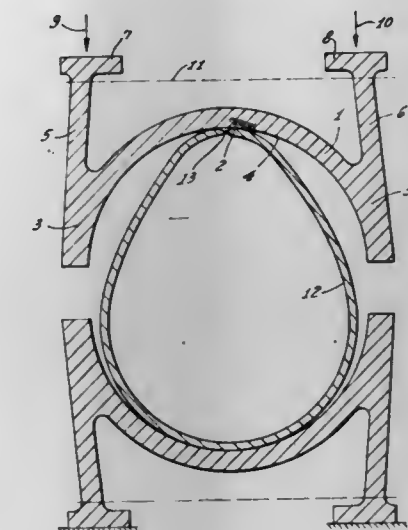
Int. Cl. B21d 41/04

U.S. Cl. 72-342

3 Claims



An apparatus and method for shaping an end of a cylindrical metal tubular component into a shaped mouth piece. A heated die is provided whose inner surface corresponds to the outer surface of the mouth piece to be produced, with means to progressively force said end into said die. In front of the die is provided a block having a duct for maintaining the tubular component in position during the forcing operation, cooling means surrounding said block to avoid a rise in temperature of the part of the component not in the course of being shaped.



constructed as tunnel arch with rearwardly extended abutments for application of the pressworking forces. These extensions are sides that protrude beyond the tunnel apex, and they may be tensioned for control and adjustment of the contour of the working surface of the die member.

3,754,430

## METHOD AND APPARATUS FOR EXPANDING TUBES

Fred E. Halstead, Wayne, Ark., assignor to Halstead Industries, Inc., Fellenopole, Pa.

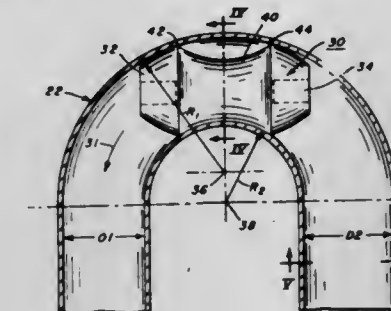
Filed Mar. 20, 1972, Ser. No. 236,313

Int. Cl. B21d 39/08

U.S. Cl. 72-370

8 Claims

U.S. Cl. 72-447



Method and apparatus for expanding tubing, particularly metallic tubing having a U-shaped bend therein, wherein a plug is inserted into one end of the tubing and forced therethrough by fluid pressure. In order to facilitate passage of the plug around the U-shaped bend, the plug is provided with generally rounded (e.g., spheroidal) ends and a recessed central portion having a generally concave cross section. In this manner, the plug, under the influence of fluid pressure, can pass through straight sections of the conduit and can easily pass around a U-shaped bend therein without becoming jammed in the tube and without materially distorting the circular cross-sectional shape of the tube.

3,754,431

## PRESS DIE FOR BENDING U-SHAPED BLANKS INTO PIPES

Detlef Ramdohr, Krefeld-Traar, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Aug. 9, 1971, Ser. No. 170,034

Int. Cl. B21d 37/10

U.S. Cl. 72-416

2 Claims

Press die with plural members for bending and rounding U-shaped blanks or sections thereof into pipes, each die member

3,754,432

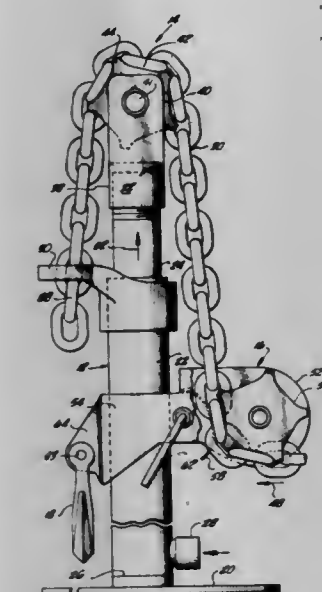
## FORCE UNIT FOR METAL WORKING

William Kenneth Hagerty, 605 E. Norwood Pl., Alhambra, Calif.

Filed May 18, 1970, Ser. No. 38,406

Int. Cl. B21d 11/14

22 Claims



A force unit that may be readily employed to develop a pulling force for physically shaping, or molding, a work piece by bending, is disclosed. The force unit includes a power member which is physically moved by a hydraulically operated ram for the purpose of retracting a load chain or cable that is attached at one end to a stabilized work piece to be shaped and at an opposite end to the force unit. The ram is vertically mounted on an appropriate support. A fulcrum pulley is mounted at any vertical position along the length of the ram or a support post to which it may be attached. An anchor is employed to secure the force unit from movement in the direction of the work piece.



3,754,433

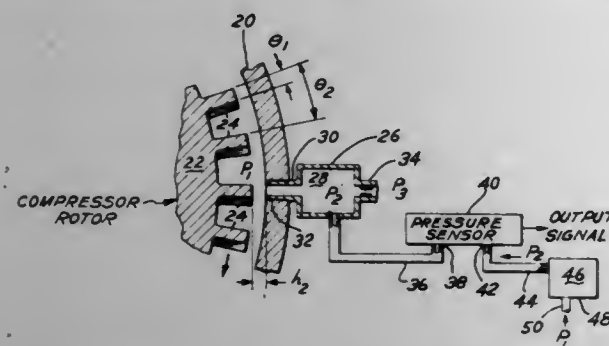
## FLUIDIC PROXIMITY SENSOR

James M. Hyer, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Sept. 17, 1971, Ser. No. 181,455  
Int. Cl. G01b 13/12

U.S. Cl. 73-37.6

10 Claims



A fluidic proximity sensor particularly adapted to sense clearance between gas turbine engine compressor blade tips and adjacent wall of a compressor housing. In one embodiment, there is provided an air flow passage having a chamber with an inlet and a restricted outlet in series flow relationship. The inlet receives compressor pressurized air and is arranged in a predetermined relatively close spaced-apart relationship with a compressor blade tip which sweeps the inlet to vary the effective flow area thereof. The resulting pressure pulses are integrated in the chamber and the resulting pressure compared to a regulated reference fluid pressure by means of a pressure differential responsive device, the output of which represents the radial clearance between the compressor blade tips and adjacent housing wall. In another embodiment, a second air flow passage connected in parallel flow with the above-mentioned air flow passage is provided with a pair of series flow restrictions between which a reference pressure is generated. The inlet to the second passage is not affected by the compressor blade tips. The reference pressure is compared to the chamber pressure representing the radial clearance between the compressor blade tips and adjacent wall.

3,754,434

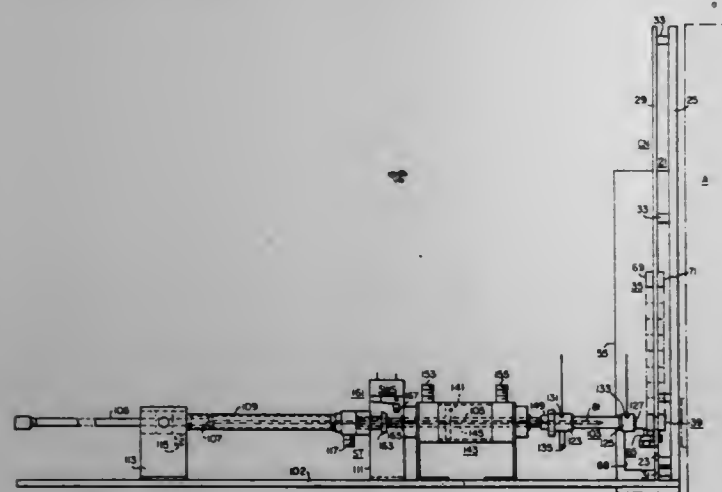
## CHEMICAL ANALYSIS

Lloyd V. Guild, Bethel Park, Pa., assignor to Scientific Kit Corporation, Inc., Pittsburgh, Pa.

Filed Feb. 22, 1971, Ser. No. 117,646  
Int. Cl. G01n 1/10, 31/08

U.S. Cl. 73-61.1 R

18 Claims



There is disclosed a method, apparatus, and parts such as a sample holder and a pipette for automatic chemical analysis of a plurality of samples by use of a chromatograph or the like.

The samples are in unique sample holders which are advanced along a gravity conveyor, each in its turn being set in a test position. At the test position an entrance self-sealable septum of the sample holder is punctured by a hypodermic pipette having a sample-receiving chamber which is at reduced pressure. When the pipette enters the holder the sample is sucked into the chamber. Then the pipette punctures an exit self-sealable septum and enters the testing means, for example, the chromatograph. There the sample is rapidly evaporated from the pipette and the vapor analyzed. The pipette is then withdrawn from the holder and the residue of sample in the holder reduced. The conveyor is advanced one step so that a new sample holder is in the test position. This new holder is held and then the first sample holder is discharged from the conveyor.

3,754,435

## MATERIAL TESTER

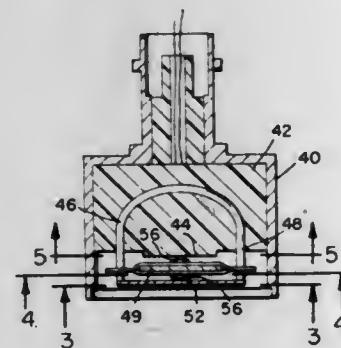
Milton F. Zeuschel, Issaquah, Wash., assignor to Automation Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 836,295, June 25, 1969, abandoned.  
This application Nov. 15, 1971, Ser. No. 198,654

Int. Cl. G01n 29/04

U.S. Cl. 73-71.5 U

4 Claims



A nondestructive material tester is provided with a search unit capable of being air coupled to the workpiece under test. The search unit includes an electrically and acoustically non-conductive insert having an elevated surface between a transducer and the back reflective surface to form a restricted volume. The area between the transducer and the elevated surface causes an increase in the concentration of ultrasonic energy in this restricted volume and therefore increases the sensitivity of the search unit. A reflector is mounted over the transducer and positioned to cause destructive interference or out-of-phase reflections resulting in cancellation of the reflected waves.

3,754,436

## HARDNESS TESTING APPARATUS

Richard F. Saxton, 3270 Fairhill Dr., Rocky River, Ohio  
Filed Aug. 31, 1972, Ser. No. 285,380

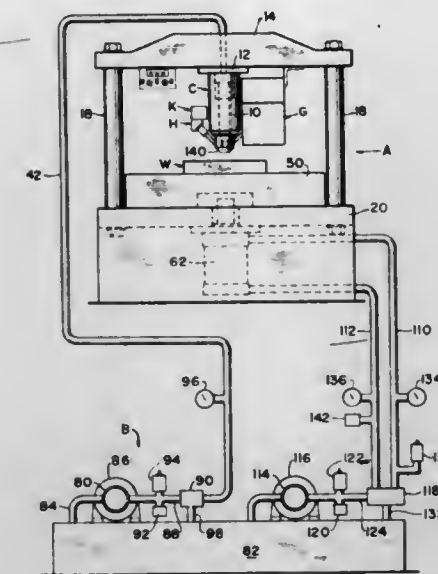
Int. Cl. G01n 3/42

U.S. Cl. 73-81

2 Claims

A hardness testing apparatus of the indenter type wherein

the work is held against movement during indentation by a more particularly to a fixture to which strain gauges may be fluid-actuated indenter and subsequent measurement of the secured to detect small changes in load compared to the load.



indentation by a laser-scanner-photoreader carried by the test head.

3,754,437

## TORQUE LOADING DEVICE

Horst Kanbel, Monheim-Baumberg; Lothar Saemann, Dusseldorf, and Manfred Baumgarten, Langenfeld, all of Germany, assignors to Aviatec GmbH, Dusseldorf, Germany

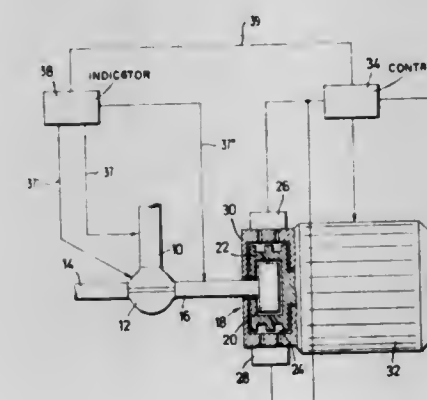
Filed Nov. 19, 1971, Ser. No. 200,497

Claims priority, application Germany, Nov. 21, 1970, P 20 57 347.1

Int. Cl. G01n 3/36

U.S. Cl. 73-99

7 Claims



An installation for testing rotating workpieces as regards their behavior at different rotational speeds and different torque loads of a test program by means of an electric driving and braking motor and by means of a hydraulic coupling, in which the rotor of the motor preferably constructed as D.C. machine is rigidly connected with one of the coupling parts, and in which a control installation is provided for loading the coupling with torque shocks of such frequency, with respect to which the motor acts as flywheel, and for loading the motor with torque changes of a frequency lying below the same.

3,754,438

## LOAD MEASURING DEVICE

William U. Matson, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

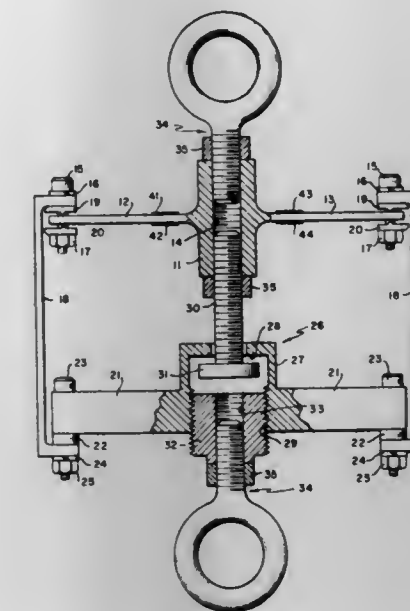
Filed May 25, 1972, Ser. No. 256,865

Int. Cl. G01l 1/22

U.S. Cl. 73-141 A

4 Claims

This disclosure is directed to a load bearing fixture and



The fixture is further suitable for handling overloads which are many times that of the load.

3,754,439

OCEANOLOGICAL AND METEOROLOGICAL STATION  
Peter Bauer, Bremen, Germany, assignor to Erno Raumfahrt-technik GmbH, Bremen, Germany

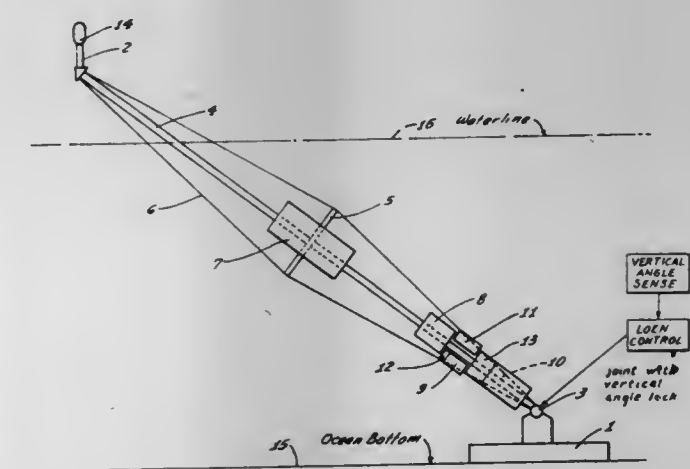
Filed Aug. 2, 1971, Ser. No. 167,999

Claims priority, application Germany, Aug. 5, 1970, P 20 38 870.9

Int. Cl. G01v 9/00; G01w 1/00

U.S. Cl. 73-170 A

5 Claims



Equipment establishing a station for providing for oceanological and meteorological measurements in the continental shelf region and in similar, shallow parts of the ocean, and having a base anchoring the station to the bottom of the ocean, a mast pivotally linked to the base for up and down pivoting as well as for turning on a vertical axis; and variable buoyancy is provided at the mast above the point of pivoting. Instrumentation, including sensing means for taking oceanological and meteorological readings as well as a radio receiver transmitter and a controller are disposed on top of the mast.







3,754,447

**WHEEL BALANCING APPARATUS**

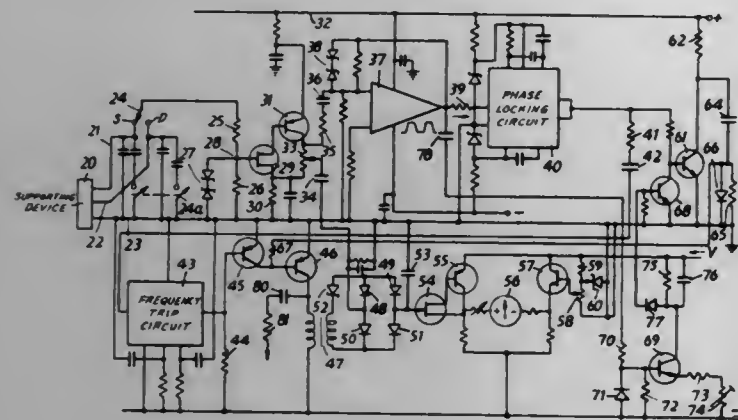
Brian Turton-Smith; Trevor Edwin Clegg, and John Stevens, all of London, England, assignors to Westinghouse Brake and Signal Company Limited, London, England  
Filed June 1, 1971, Ser. No. 148,336

Claims priority, application Great Britain, June 18, 1970, 29,155/70; May 3, 1971, 12,685/71

Int. Cl. G01m 1/22

U.S. Cl. 73—457

13 Claims



In an on-the-car wheel balancer the wheel suspension is supported upon a jacking support which includes a force transducer, the wheel is rotated and the fundamental of the electrical signal produced by the transducer or a signal related thereto in a given manner, is utilized to produce a strobing pulse and an out-of-balance weight indication.

The fundamental due to wheel unbalance is cleared of noise due to suspension resonances by means of a tracking filter or preferably by means of a phase locking circuit which locks a multivibrator into the fundamental wheel frequency.

**ERRATA**

For Classes 73—506 thru 89—1.814 see:  
Patents Nos. 3,754,471 thru 3,754,497

3,754,448

**SONIC ENERGY METAL WORKING PROCESS**

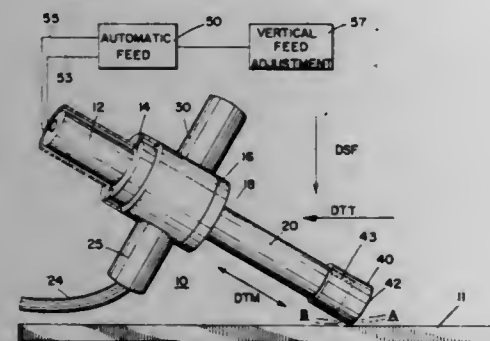
Raymond C. McDaniel, Columbus, Ohio, assignor to The Ohio State University, Columbus, Ohio

Filed June 8, 1971, Ser. No. 150,957

Int. Cl. B23d 1/08, 13/00; H01v 7/00

U.S. Cl. 90—38 R

7 Claims



Utilization of a resonant electromechanical transducer for delivering high power (energy to a nonresonant load surface, excited from a fixed frequency power supply. The application of the tool to the work surface is accomplished by a flat surface tool coupled perpendicular to the horn axis and parallel to the end surface of the transducer tip. The sonic energy is delivered to the workpiece by coupling only a small fraction of the total tool surface to the work surface. The velocity of the cutting surface of the tool relative to the workpiece is a function of the excitation level of the transducer; the velocity being independent of the average velocity by which the trans-

ducer is moved across the work surface. The rate of removal of material in a metal cutting, chip forming, or shaving operation is a function of the excitation and the depth of cut independent of the transducer-transfer-velocity; whereas, outside of certain limits the transducer-transfer-velocity is utilized to reduce the cutting rate of the tool.

3,754,449

**FLUIDIC CONTROL MECHANISM**

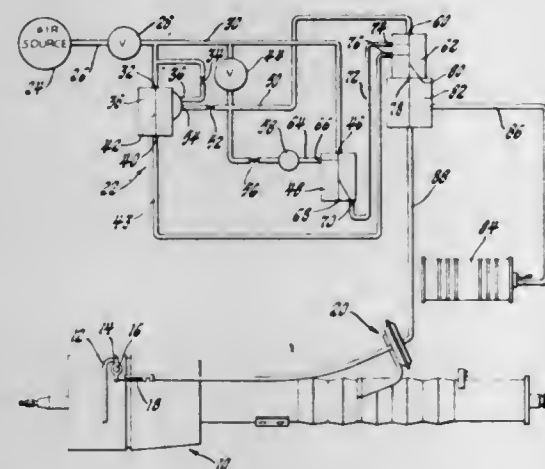
Donald A. Niedzielski, Bay City, and Edgar C. Paffrath, Saaginaw, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 1, 1971, Ser. No. 130,381

Int. Cl. F15b 13/042, 21/02

U.S. Cl. 91—35

3 Claims



A fluidic mechanism for positioning a member to a predetermined position. The mechanism includes a pair of selectively operable control valves which control fluid communication between a fluid source and a plurality of fluidic amplifiers. The output of one fluidic amplifier controls a vacuum control valve such that actuation of both of the selectively operable control valves operates the vacuum control valve to provide fluid communication between a vacuum source and a vacuum motor. The output of the vacuum motor operates to control the positioning of the member.

3,754,450

**INTERCHANGEABLE BACKING PLATE FOR MOVABLE WALL OF A SERVOMOTOR**

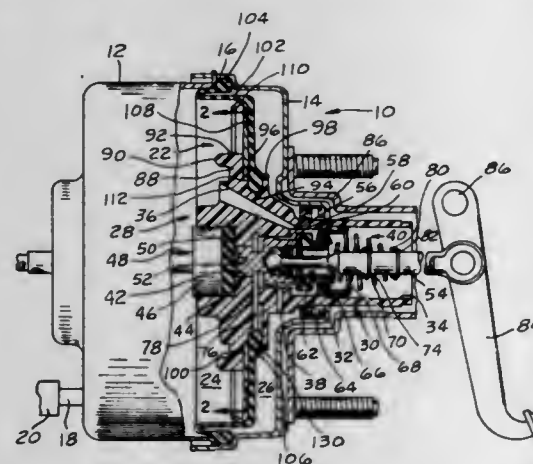
James B. Putt, and Oswald O. Kytta, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Sept. 29, 1971, Ser. No. 184,773

Int. Cl. F15b 9/10; F01b 19/00

U.S. Cl. 91—376

9 Claims



A method of placing and retaining a backing plate on a valve control retaining hub of a servomotor adjacent a diaphragm.

3,754,451

**METHOD OF ELIMINATING COHESION BETWEEN OVERLYING PLIES OF PLASTIC FILM MATERIAL**

Thomas J. Dahlberg, Minneapolis, Minn., assignor to Possis Machine Corporation, Minneapolis, Minn.

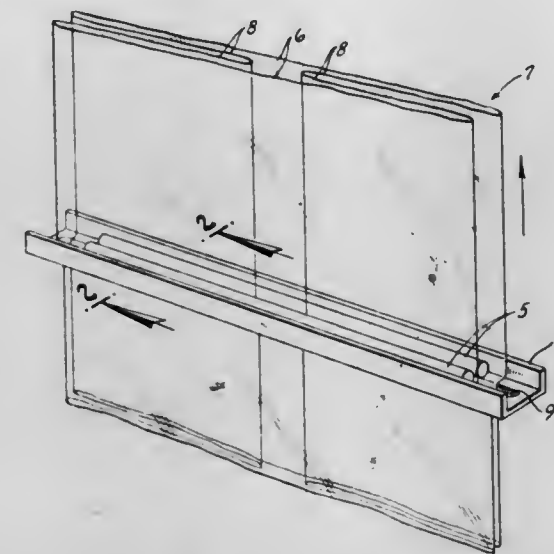
Filed July 12, 1971, Ser. No. 161,669

Claims priority, application Great Britain, Aug. 24, 1970, U.S. Cl. 95—11 R 40,586/70

Int. Cl. B31b 1/78

U.S. Cl. 93—1 R

1 Claim



Adhesion between the overlying plies of a flattened tubular web of plastic film material is eliminated by drawing the web lengthwise past a rod which is supported in a position transverse to the web and is interposed between its plies.

**ERRATUM**

For Class 93—41 see:  
Patent No. 3,754,456

3,754,452

**OPTICAL PRINTER**

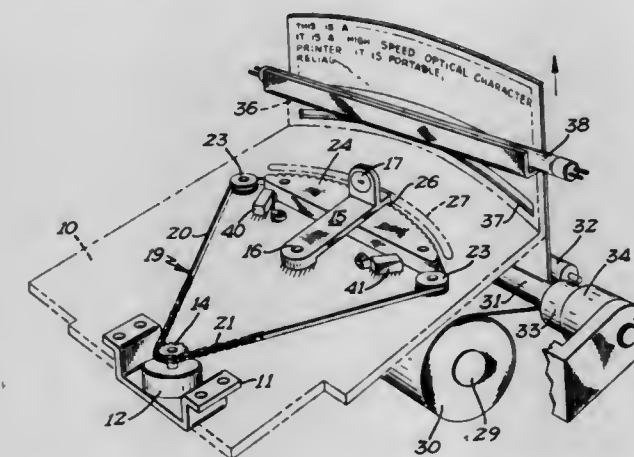
Leslie R. Walstrom, Excelsior, Minn., assignor to Fabri-Tek Incorporated, Minneapolis, Minn.

Filed Feb. 18, 1972, Ser. No. 227,391

Int. Cl. B41b 21/20

U.S. Cl. 95—4.5 R

16 Claims



An optical printer having a rotating character font, a curved image receiving surface and a lens. The lens is moved incrementally through an arc by a stepper motor to project selected characters from the character font along a line on the image receiving surface. A damping system is provided to control undesired movement in the lens.

3,754,453

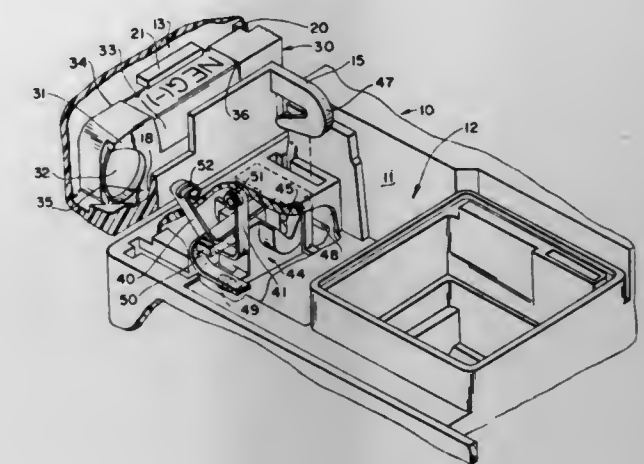
**BATTERY RECEIVING MECHANISM FOR CAMERA**

Paul J. Ernisse, and Joseph V. Poweska, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 29, 1971, Ser. No. 167,324

Int. Cl. G03b 19/00

7 Claims



A battery compartment is located in the film compartment cover where it may be swung out for ready accessibility. Battery contacts on the main camera housing are movable by a cam integral with the cover hinge in response to opening and closing the cover. Relative movement between battery and contacts cleans the contacting surfaces.

3,754,454

**SAFETY APPARATUS FOR SHUTTER BUTTON IN CAMERA**

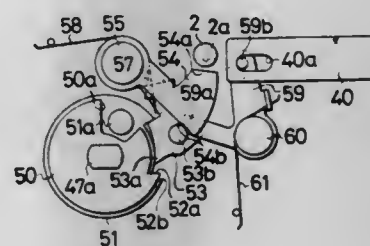
Hiroshi Nakamura, Sakai, and Akio Okamoto, Osaka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 12, 1973, Ser. No. 323,016

Int. Cl. G03b 17/42, 19/04

U.S. Cl. 95—31 R

6 Claims



An apparatus comprising a rotary member rotatable in operative relation to a film winding operation, a driven member supported on the rotary member and rotatable with respect to the rotary member within a limited range, a release member downwardly movable by a shutter release operation and an engageable member urged toward the driven member by the winding operation but adapted to be urged toward the release member when the shutter is released. The engageable member has a portion engageable in and disengageable from a transport lock notch in the driven member and another portion engageable in and disengageable from a release lock portion of the release member, the engageable member being disposed with at least one of the engageable and disengageable portions engaged in the notch or the release lock portion. The apparatus further includes means for braking the driven member at least from an intermediate stage of the winding operation until the completion of the winding operation and means for retaining the driven member at its overcocked position upon the driven member reaching this position and permitting the rotary member to rotate reversely by the overcocked amount.



3,754,455

**MOTOR DRIVEN STILL CAMERA**

Kayoshi Tsujimoto, Osaka City; Yoshio Kuramoto, Toyonaka City, and Toshio Kobori, Sakai City, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

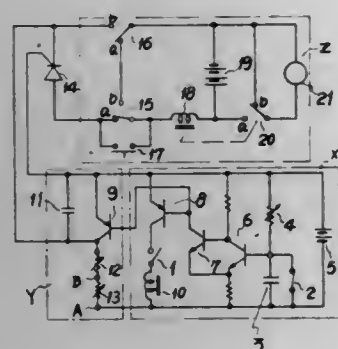
Filed Sept. 24, 1971, Ser. No. 183,603

Claims priority, application Japan, Oct. 7, 1970, 45/88480; Oct. 30, 1970, 45/96084; Nov. 26, 1970, 45/105205

Int. Cl. G03b 19/04

U.S. Cl. 95—31 EL

25 Claims



In a still camera having a motor for advancing a film, the motor is actuated by means of a trigger-signal which is to be produced after an adjusted delay time after deenergization of an electromagnet for holding a previously opened shutter in the open state to the start of rotation of the motor. By adjusting the pause time appropriately, the film starts advancing without redundant delay, thereby enabling the efficient consecutive taking of many pictures over a predetermined period of time.

3,754,456

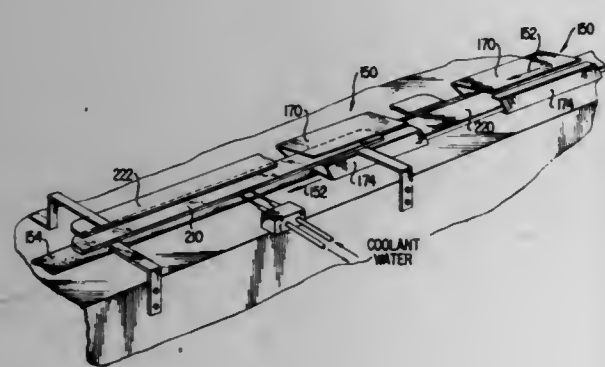
**BLANK CONSTRUCTIONS FOR HERMETICALLY SEALED CARTONS AND METHODS OF FORMING SAME**  
William P. Andrews, Richmond and Vincent J. Serio, Jr., Henrico County, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. No. 876,699, Nov. 14, 1969, abandoned. This application May 27, 1971, Ser. No. 147,469

Int. Cl. B31b 1/36

U.S. Cl. 93—41

10 Claims



Blank constructions for use in making hermetically sealed, lined carton constructions formed continuously from strips of paperboard stock and liner material. An improved side seam construction is also disclosed wherein a paperboard-to-paperboard seal is obtained when using a liner material at least the outer surface of which is metal foil. The blank construction is formed by methods which permit one end of the liner material to overhang the paperboard stock material whereby covered side seams are provided which prevent air or liquid leakage through the pores of the paperboard stock. An R.F. induction heating method is disclosed for making side seams on lined cartons.

3,754,457

**PHOTOGRAPHIC CASSETTE**

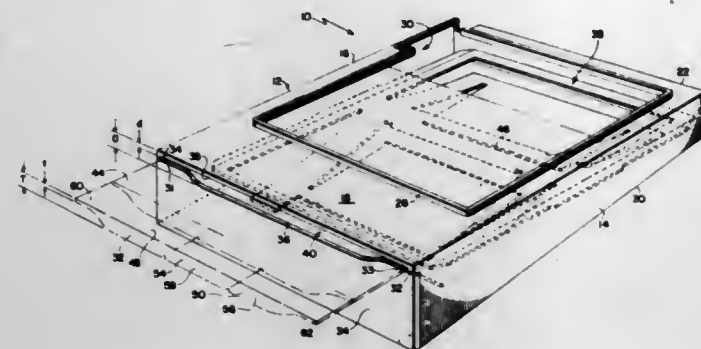
Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 27, 1972, Ser. No. 275,536

Int. Cl. G03b 19/10

U.S. Cl. 95—19

14 Claims



A film cassette having a plurality of walls including a forward wall and an end wall which cooperate with each other to define an opening through which a film unit is adapted to be advanced, leading end first, to the exterior of the cassette. Each of the film units includes near a leading end thereof a laterally extending reservoir of processing liquid which is adapted to be ruptured and the contents thereof spread in contact with a photosensitive element of the film unit to initiate formation of a visible image in the film unit. The slot has a configuration similar to that of the film unit and reservoir, as viewed leading end first, in order to prevent the movement of more than one film unit at a time from the cassette.

3,754,458

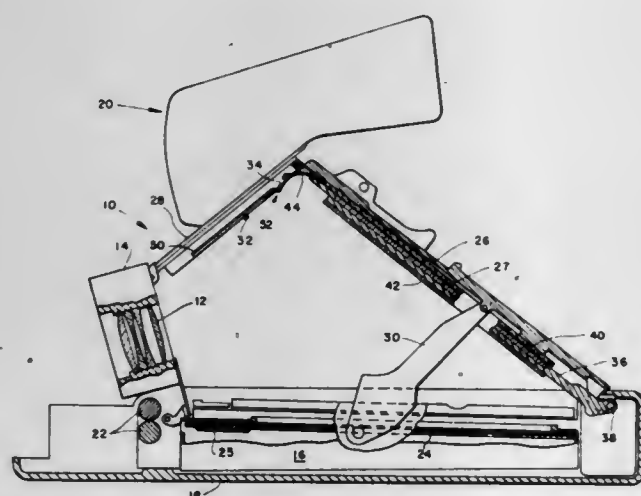
**LIGHT SEAL FOR A REFLEX CAMERA VIEWFINDER**  
William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 9, 1971, Ser. No. 151,255

Int. Cl. G03b 19/12

U.S. Cl. 95—42

12 Claims



A resilient flap prevents light from entering a reflex camera through a viewfinder during a photographic exposure. A film unit stored in the camera is covered by a capping plate during framing and focusing. When the shutter operates, the capping plate pivots about one end to uncover the film unit for an exposure. The resilient flap is swung by the free end of the capping plate to a position where it will block light which would otherwise enter the camera through the viewfinder. The use of a resilient material in the flap allows it to conform to a non-rigid wall which separates the viewfinder from the camera.

3,754,459

**IDEOGRAPHIC-LANGUAGE INPUT APPARATUS PUBLICATION SYSTEM UTILIZING SAME**

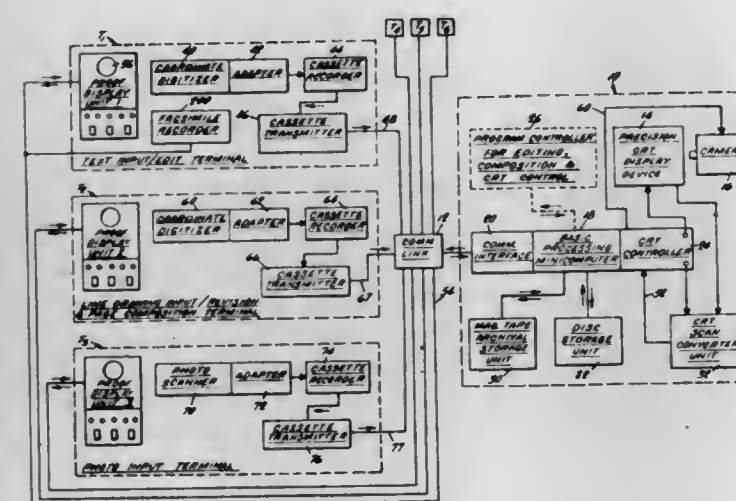
Aaron H. Coleman, Levittown, Pa., and Hugh W. Stewart, Princeton, N.J., assignors to CPS Associates, Inc., Croydon, Pa.

Filed June 2, 1972, Ser. No. 259,195

Int. Cl. B41b 13/10

U.S. Cl. 95—4.5

4 Claims



A coordinate digitizer is utilized in a phototypesetting automatic publications system, by means of which ideographic symbols are selected and electrically entered into the system. An array or "menu" of ideographic symbols is provided, and a coordinate digitizer including a pointer is connected so that designation of a particular symbol in the array by the pointer causes the generation of signals representative of the coordinates of that symbol in the array. A computer memory stores data for each of the symbols so that when coordinate signals corresponding to a particular symbol in the array are supplied to the computer means, the corresponding data are retrieved and utilized to form that symbol in the phototypesetter. The data thus retrieved from the computer memory are also utilized to operate a local symbol display, such as a facsimile recorder or cathode-ray tube display device, positioned adjacent the coordinate digitizer so that rapid proofing of the entered symbols may be provided. Preferably the ideographic-data input terminal is remote from the computer storage means and connected thereto by an appropriate communications link, and preferably scan converting means are provided adjacent the computer storage means to produce signals representing a lower-definition version of the symbols to be reproduced, which latter signals are sent back to the remote terminal to form the local display. Editing and format commands are also included in the "menu" to effect editing and composing of the text.

3,754,460

**DEVICE FOR OPERATING FILM PRESSURE PLATE IN PHOTOGRAPHIC CAMERA**

Harumi Tanaka, Kobe, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Feb. 10, 1972, Ser. No. 225,211

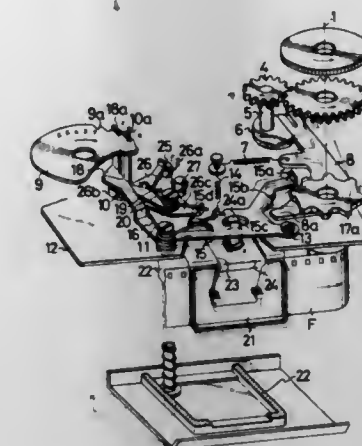
Int. Cl. G03b 1/48, 1/66

U.S. Cl. 95—31 R

10 Claims

A device includes winding means and counter driving means. The winding means has a drive cam rotatable in one direction in operative relation to a film winding operation and to be stopped after completing a definite angle of rotation when the film has been transported by one frame. Under the control of the winding means, the counter driving means is rapidly moved in a first direction upon initiation of the winding operation and returned in a second direction opposite to the first direction upon completion of the winding operation.

A film pressure plate is associated with the counter driving means to free the film from pressure simultaneously with the



initiation of the film winding operation and press the film upon completion of the winding operation.

3,754,461

**FRESH VEGETABLE PROCESSING**

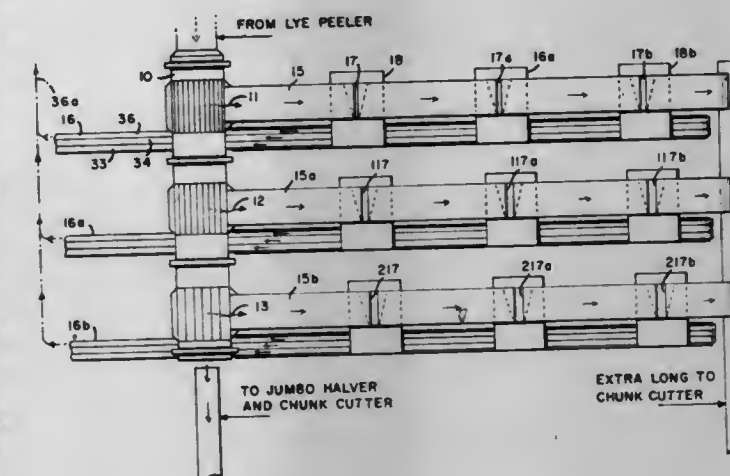
Louis P. Lazzarini, San Jose, Calif., assignor to Genevieve I. Hanscom, Robert Magnuson, Lois J. Thomson as Trustees of the Estate of Roy M. Magnuson, deceased

Filed June 21, 1971, Ser. No. 154,783

Int. Cl. A23n 15/00

U.S. Cl. 99—233.7

2 Claims



The processing apparatus is adapted to work on washed and cleaned field run fresh vegetable articles such as sweet potatoes, for example, wherein the potatoes are first graded for diameter and separated, for example, into three diameters, and each of the three diameter groups is then separately subjected to a length grading step to sort to four length subgroups including the extra large sweet potatoes, for example, that go over the end of the conveyors.

Each length subgroup is then placed on a feeding and cutting device such as a shuffle feed mechanism wherein the potatoes are arranged in rows as they are being fed along, and in certain rows adjacent the end of the shuffle feed there are formed article centering pockets or recesses and the potatoes are fed through slicing knives and cut into segments. The respective segments are placed in different conveying positions, and the discharge from each subgroup of the various sized groups by diameter are again mingled, and the potatoes are carried to a canning position or a processing position of some sort.



3,754,462

## INFUSOR DRIVE MEANS

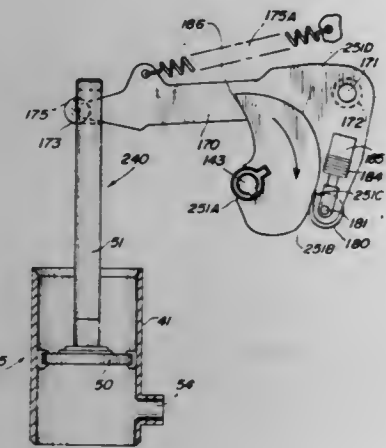
Frank D. Brill, Norridge, Ill., assignor to The Seeburg Corporation of Delaware, Chicago, Ill.

Filed Sept. 28, 1971, Ser. No. 184,499

Int. Cl. A47J 31/18, 42/46; A47G 19/14

U.S. Cl. 99—287

1 Claim



An infusor apparatus for a coffee brewing machine has a cam driven piston means. The cam has appropriate dwells formed thereon to interrupt the travel of the piston means during the compression stroke approximately halfway along the stroke and again at the completion thereof, in order to relieve the pressure within the chamber during and after brewing so that infusible or brewed material will not be blown from the chamber when it is suddenly opened after brewing is completed.

3,754,463

## MACHINE FOR MAKING COFFEE AND THE LIKE

Thomas Maria Vernooy, De Meern, Netherlands, assignor to Koninklijke Fabriek Inventum and Fabriek voor Machines en Elektrische Apparaten N.V., Leijenseweg, Bilthoven, Netherlands

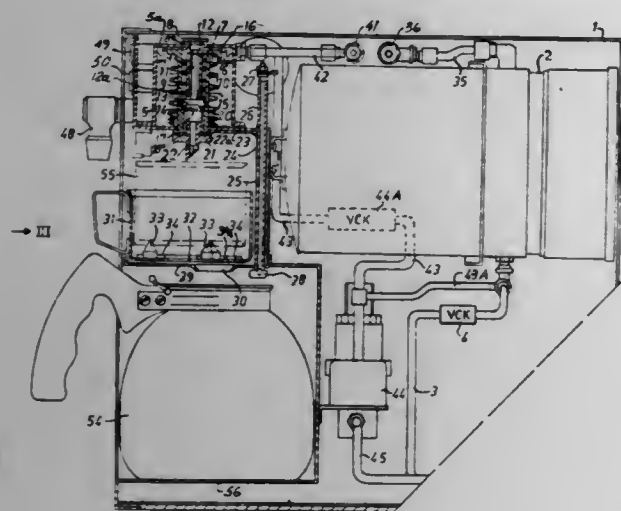
Filed Dec. 29, 1971, Ser. No. 213,611

Claims priority, application Netherlands, Dec. 28, 1970, 7018834

Int. Cl. A47J 31/00

U.S. Cl. 99—295

25 Claims



A machine for making a beverage such as coffee. A can piercing member is adapted to move up and down relative to a housing having a reservoir in which water can be heated and then passed through the can. The reservoir communicates with a cylinder having a piston, so that the expansion of the water in the reservoir due to heating causes relative displacement of the piston and the cylinder, and this displacement causes the piercing member to perforate the container for the coffee or similar material.

3,754,464

## CONTROL SYSTEM

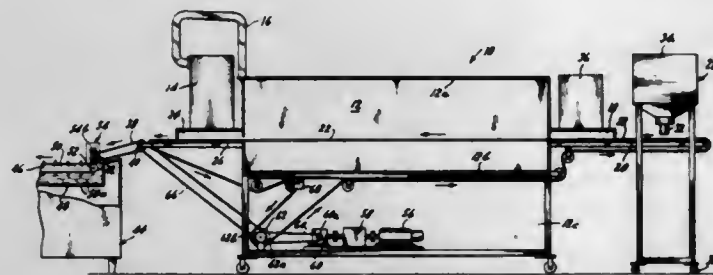
Harold B. Kaufman, Jr.; Ernest W. Stein, both of New York, and Robert F. Schiffmann, Brooklyn, all of N.Y., assignors to DCA Food Industries, Inc., New York, N.Y.

Filed Oct. 6, 1970, Ser. No. 78,462

Int. Cl. A23; A47J

U.S. Cl. 99—334

14 Claims



A system for synchronizing the transfer of products between sequential processing equipment. Food products, such as dough pieces consisting of yeast raised dough and requiring "proofing," are introduced at an input end of a microwave proofer, and are initially transported at a "loading speed." When a first product row reaches the end of the proofer belt, and the products are ready to be transferred to a subsequent food processor such as a fryer, which may move the products at a different and independently controlled speed, the proofer transport is temporarily halted. The production cycle then commences. During the production cycle, the system provides intermittent start-stop operation of the proofer transport mechanism, advancing the proofer conveyor (at a higher "discharge speed") each time that the fryer conveyor belt advances into the next dough piece receiving position, and stopping the proofer conveyor in response to the readiness for transfer of each subsequent row of product into the continuously moving pockets of the fryer conveyor. Additional rows of raw product pieces are periodically deposited at the proofer's input end each subsequent time that the proofer conveyor is halted. Timing and processing controls for the transport equipment and for related sub-systems are included to insure synchronized product transfer, to accurately control proofing and transport periods and to provide regulation or proofing interval independently of the processing interval or speed of the subsequent frying equipment.

3,754,465

## CENTER-OF-CAN HOLDER FOR A TELL-TALE INDICATOR CARD

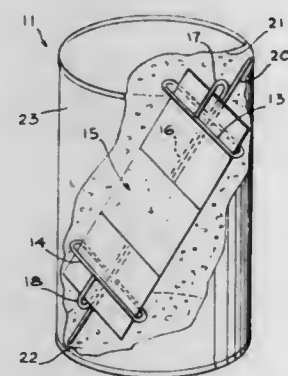
Vincent A. Romito, North Hollywood, and Arthur W. Hanna, Sunland, both of Calif., assignors to Sterilizer Control Royalties, North Hollywood, Calif.

Filed Jan. 14, 1972, Ser. No. 217,864

Int. Cl. A47J 27/212; G01k 11/20

U.S. Cl. 99—342

6 Claims



A device for holding an indicator card at a position near the geometric center of a sealed pilot can containing food or the like for sterilization thereof, thus providing a record of the time-temperature effect at the center of the contents of the

can, to which said can has been subjected in the processing for cooking and/or heat sterilization thereof.

3,754,466

## APPARATUS FOR THE IMPREGNATION TREATMENT AND EVENTUAL STERILIZATION OF COCOA SEEDS OR BEANS WITH WATER OR ALKALINE SOLUTIONS

Claudio Taralli, and Elio Stefani, both of Milan, Italy, assignors to Carle & Montanari S.p.A., Milan, Italy

Division of Ser. No. 881,414, Dec. 2, 1969. This application

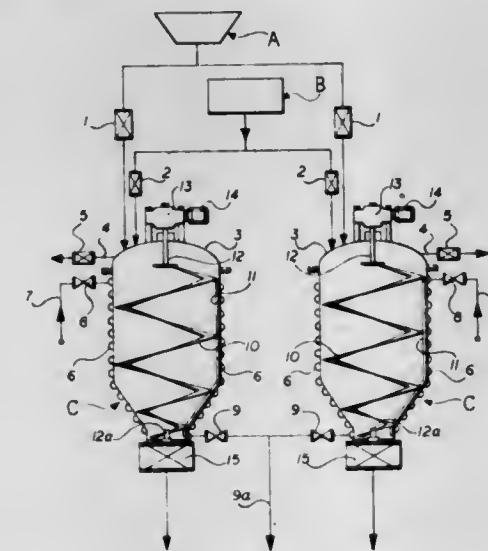
Mar. 10, 1972, Ser. No. 233,530

Claims priority, application Italy, Dec. 4, 1968, 24571 A/68

Int. Cl. B01f 7/16

U.S. Cl. 99—348

10 Claims



A process for impregnating a substance, such as cocoa seeds or beans, with a fluid, such as water or an alkaline solution. The substance is subjected to vacuum action in a suitable environment for a selected period of time, and then mixed with the fluid in an impregnating environment at a pressure of at least one atmosphere. The impregnated substance is rapidly dried in an environment at a pressure which is less than one atmosphere.

3,754,467

## HEAT PROCESSING OF CANNED FOODSTUFFS

Ronald Jowitt, Kent, Beckenham, and Stuart Nigel Thorne, Cambridge, both of England, assignors to National Research Development Corporation, London, England

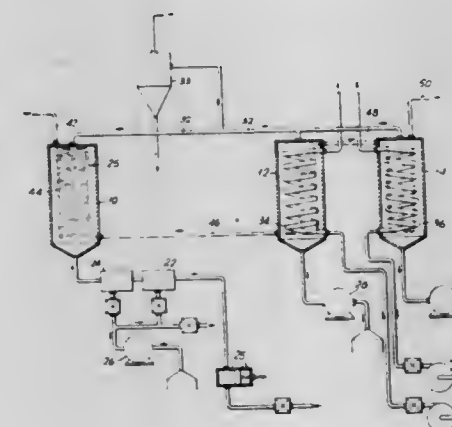
Filed Feb. 26, 1971, Ser. No. 119,310

Claims priority, application Great Britain, Feb. 27, 1970, 9,727/70

Int. Cl. A23b 3/02

U.S. Cl. 99—361

7 Claims



An apparatus for heat-processing canned foodstuffs has a gas-fluidised heating bed optionally followed by one or more

gas-fluidised cooling beds. The cans are fed downward through the heating bed so as to subject them to a progressively increasing external pressure which compensates for rises in their internal pressure as they are heated.

3,754,468

## APPARATUS FOR DEEP-FAT COOKING

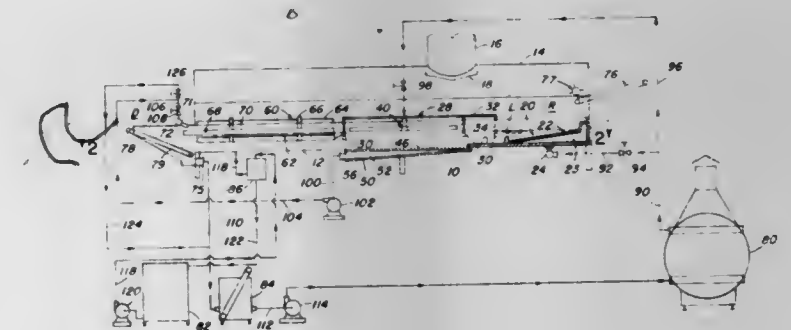
Edward S. Wright, Pittsburgh, Pa.; John W. Angstadt, Williamsport, and Gerard L. Garrow, Buffalo, both of N.Y., assignors to Blaw-Knox Company, Pittsburgh, Pa.

Filed Jan. 21, 1971, Ser. No. 108,303

Int. Cl. A47J 37/12

U.S. Cl. 99—403

12 Claims



A new process and apparatus for the continuous deep-fat cooking of a food to produce a processed comestible wherein the food is passed through an elongated cooking zone. Hot cooking oil is introduced and withdrawn from the cooking zone at a plurality of points to produce hydraulic effects which insure proper contact of the food with the cooking oil.

3,754,469

## ALL PURPOSE FLAVOR FOR POULTRY AND MEATS

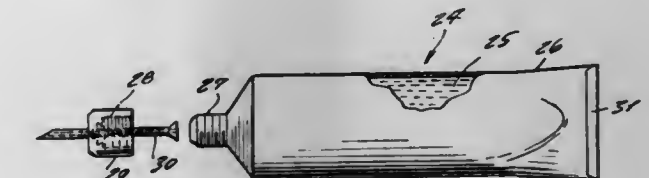
Bernard Gasior, 3434 E. Grange Ave., Cudahy, Wis.

Filed Sept. 27, 1971, Ser. No. 183,820

Int. Cl. A23b 1/16; A47J 43/00; A22c 17/00

U.S. Cl. 99—532

1 Claim



An injection syringe for injecting a prepared flavoring into poultry or meat prior to a cooking operation, the device comprising a cylinder containing a slideable piston, the piston being attached to one end of a piston rod extending outward of one end of the cylinder, the outer end of the piston rod having a convenient handle for purpose of being depressed, and the opposite end of the cylinder having a hollow needle secured there to for insertion into the poultry or meat interior.

3,754,470

## CAULIFLOWER CORING AND FLORETING APPARATUS

Edward E. Console, deceased, late of Watsonville, Calif. (by Edward T. Console, Executor), assignor to Watsonville Canning & Frozen Food Co., Watsonville, Calif.

Filed June 15, 1971, Ser. No. 153,378

Int. Cl. A23n 3/12

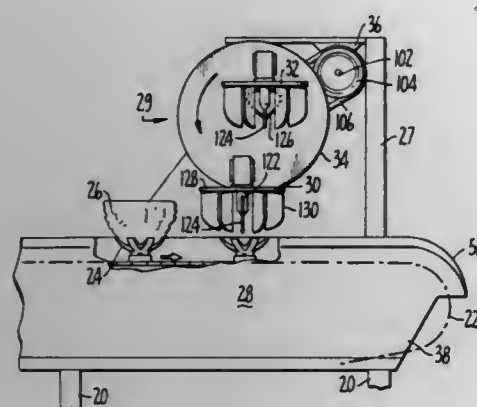
U.S. Cl. 99—538

7 Claims

Apparatus for simultaneously coring and floretting produce such as cauliflower. Cauliflower being conveyed is engaged al-



ternately by a pair of overhead supported cutting and floretting assemblies disposed on the periphery of a rotating turntable. delays and means for establishing the sum of said elementary signals.



Each assembly includes a rotating shaft having a coring blade and beaters for breaking the cauliflower into florets.

3,754,471

## PNEUMATIC SHAFT SPEED SENSOR

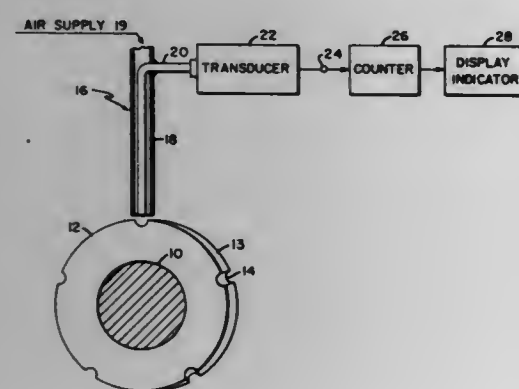
Rudolph Hohenberg, Trumbull, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Feb. 23, 1972, Ser. No. 228,660

Int. Cl. G01p 3/26

U.S. Cl. 73—506

6 Claims



A cylindrical disk having a plurality of evenly spaced peripheral notches is mounted on a rotating shaft. The speed of the shaft is measured by radially directing air under pressure to the peripheral surface of the disk and by sensing the pressure changes each time the supply of air impinges on a notched portion. In a second embodiment air is axially directed onto the planar surface of a rotating disk provided with apertures or indentations. In a third embodiment air is directed onto a planar surface which is moving linearly.

3,754,472

## APPARATUS FOR ANALYSING BY MEANS OF ULTRASONIC PULSES, EMPLOYING THE REFLECTING PROFILE CHARACTERISTIC OF EACH OBSTACLE

Jacques Dory, 91, rue des Molvaux, 77 Coupvray, France, assignor to Realisations Ultrasoniques, Paris, France

Filed Mar. 4, 1971, Ser. No. 120,851

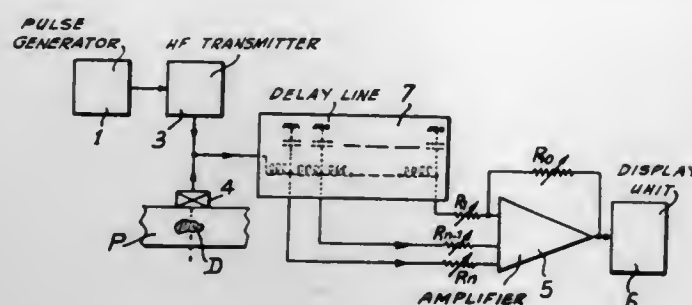
Claims priority, application Great Britain, July 24, 1969, 25,337/69

Int. Cl. G01n 21/00

U.S. Cl. 73—67.9

5 Claims

For analyzing discontinuities which perturb the propagation of acoustical waves in a given medium, in particular for detecting flaws in a mechanical piece, there is provided an apparatus comprising means for dividing each of the echo signals reflected from the discontinuity into a plurality of elementary signals having predetermined relative amplitude and time



The position, shape and dimensions of the discontinuity are determined with better precision than in conventional devices.

3,754,473

## CAM FOLLOWER ASSEMBLIES

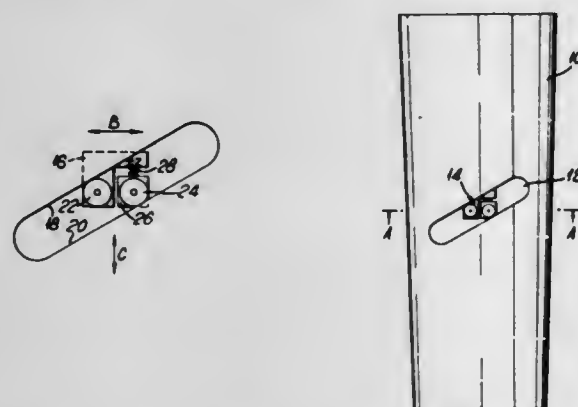
Richard Anthony Massey, Sheffield, England, assignor to The Rank Organisation Limited, London, England

Filed Dec. 22, 1971, Ser. No. 210,934

Int. Cl. F16h 21/44

U.S. Cl. 74—99

5 Claims



A cam follower assembly comprises two followers biased apart, in a direction transverse to the movement controlled by the cam, against two cam faces. By attaching the element moved to one follower, movement in either direction is controlled by one cam face, and accurate control can be achieved with a small assembly.

3,754,474

## GRIPPER PAD

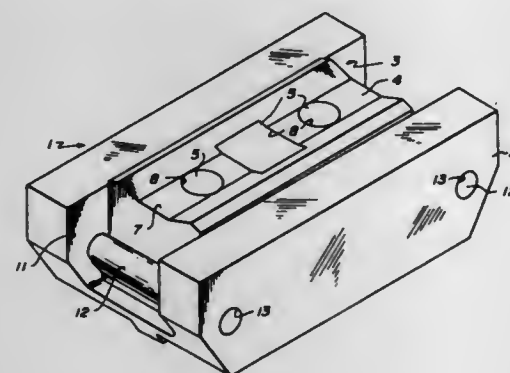
Alexander Palynchuk, Edmonton, Alberta, Canada, assignor to Corod Manufacturing Ltd., Edmonton, Alberta, Canada

Filed Sept. 1, 1971, Ser. No. 176,952

Int. Cl. F16d 41/20

U.S. Cl. 74—162

4 Claims



A gripper pad, for use in a track-type continuous rod service rig, is provided. The pad comprises a deformable elastomer

block having a series of aluminum studs embedded in its upper face. The provision of the studs results in higher pressure being applied to the rod, against which the pad is squeezing, than is applied to the block itself by the rig track.

3,754,475

## CONTROLLABLE PRECESSION GYROSCOPE

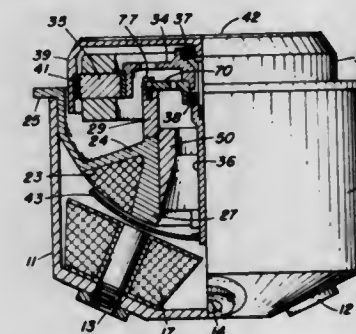
Lloyd A. Iddings, Arlington, Va., assignor to the United States of America as represented by the Secretary of the Navy

Filed Jan. 10, 1972, Ser. No. 216,434

Int. Cl. G01c 19/30

U.S. Cl. 74—5.46

3 Claims



A gyroscope for generating a drift rate for an optical lead computing gun sight including a particular flexure plate for mounting the gyroscope eddy-current disc and a four pole permanent magnet of a particular configuration which provides a fail-safe function in the device.

3,754,476

## MOTION TRANSFORMER

Max Hetzel, Bienne, Switzerland, assignor to Omega Louis Brandt Et Freres, S.A., Bienne, Switzerland

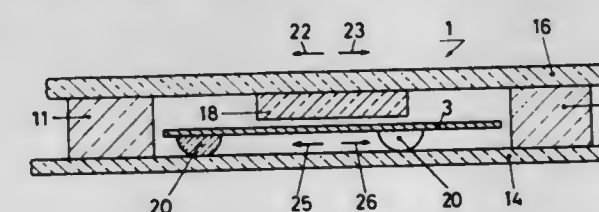
Filed Apr. 17, 1972, Ser. No. 244,772

Claims priority, application Switzerland, May 5, 1971, 6686/71

Int. Cl. F16h 27/02

U.S. Cl. 74—128

5 Claims



In a motion transformer for converting oscillatory to rotary motion, comprising a ratchet wheel mounted for both oscillatory and rotary motion, a pair of stops limiting the amplitude of such oscillatory motion, and a ratchet pawl coacting with the ratchet wheel and a restraining member preventing retrograde rotation thereof to convert oscillatory motion of the ratchet wheel to unidirectional rotary motion, the ratchet pawl comprises a resilient pawl arm fixedly mounted adjacent one end and carrying at the other end a pawl jewel in the form of a wafer having a convexly curved edge which abuts the ratchet wheel teeth.

3,754,477

## CHAIN LINK

James L. Bonifas, Huntington, Ind., assignor to Stellar Industries, Inc., Huntington, Ind.

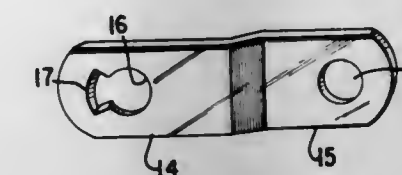
Filed Dec. 28, 1971, Ser. No. 212,964

Int. Cl. F16g 13/02

U.S. Cl. 74—250 R

7 Claims

A chain link comprises a pair of spaced sidebars having opposed pairs of link pin receiving apertures adjacent the ends thereof and a bushing interconnecting one pair of apertures to define a link pin receiving passage. The ends of the bushing



3,754,478

## MAIN SHAFT FOR SEWING MACHINES

Silvano Perlino, 33, Pavia, Italy, assignor to Necchi S.p.A., Pavia, Italy

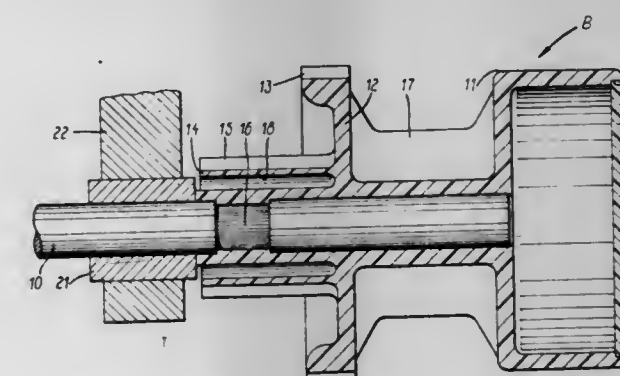
Filed Nov. 12, 1971, Ser. No. 198,121

Claims priority, application Italy, Nov. 17, 1970, 42969 A/70

Int. Cl. F16h 55/00; B29b 3/00; D05b 69/00

U.S. Cl. 74—432

2 Claims



The invention relates to a means whereby a shaft and various normally separately made rotary members may all be assembled in essentially a single step. The shaft is inserted into a mold and the other rotary members are molded therearound as a one piece body.

3,754,479

## SELECTIVE ASSEMBLY POWER STEERING MECHANISM

Dieter Elser, Bobingen, Germany, assignor to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Postfach, Germany

Filed May 23, 1972, Ser. No. 255,974

Claims priority, application Germany, May 26, 1971, P 21 26 090.2

Int. Cl. B62d 1/20

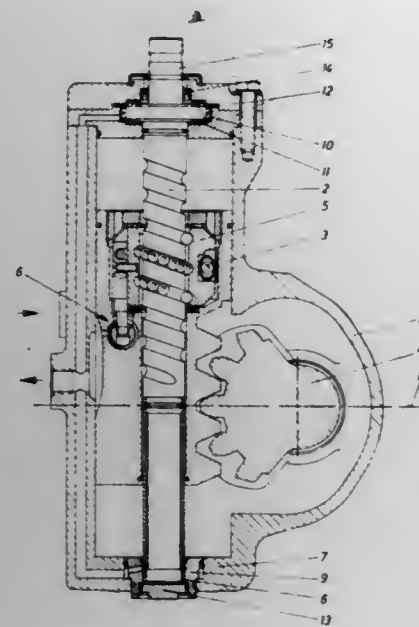
U.S. Cl. 74—499

5 Claims

A power steering mechanism is constructed for selective assembly so that a steering worm spindle may protrude from either end of a housing, the opposite end being sealed. The housing ends are constructed dimensionally so that interchangeable bearings and seals can be applied and either of a pair of steering worm spindles used, depending on the space into which the housing must be fitted in a vehicle. This



minimizes dimensional space requirements. Similarly, either of a pair of housings may be selected, usable with either one of



the aforementioned pair of spindles, thereby effecting choice of four assembly arrangements.

3,754,480

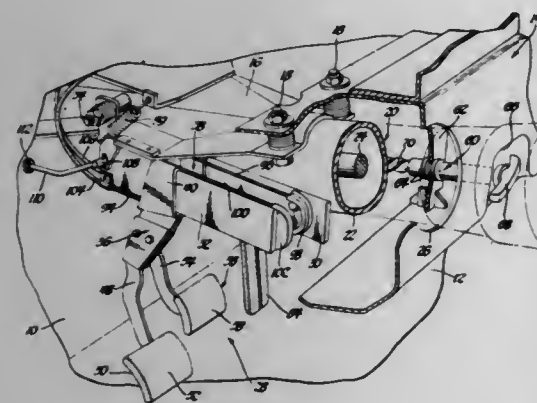
## VEHICLE CONTROL APPARATUS

Alfred D. Bodnar, Pontiac, and Edward J. Rudaitis, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 8, 1972, Ser. No. 251,399  
Int. Cl. G05g 1/14

U.S. Cl. 74—512

3 Claims



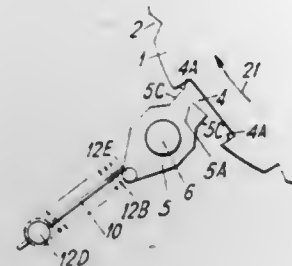
Adjustable control apparatus particularly adapted for control of automobile operating systems normally actuated by the foot of the vehicle operator, the apparatus including a pair of pivot bars supported on the vehicle body for pivotal movement about a common fixed axis, a pair of pedal support members slidably mounted on respective ones of the pivot bars, pedals rigidly connected to each of the pedal support members and defining pressure application surfaces oriented to direct forces applied thereto along lines extending obliquely to the pivot bars so that bodily shiftable movement of the pedal support members alters the lever arms of the applied forces about the fixed axis, an adjusting member supported on the vehicle body for selective bodily shiftable movement and motion transmitting cable assemblies between the adjusting member and the pedal support member adapted to effect movement of the latter synchronously with movement of the former.

3,754,481  
TURNSTILE OR LIKE MECHANISMS  
Terence John Collins, Redhill, Surrey, England, assignor to Tiltman Langley Limited, Surrey, England  
Filed Sept. 17, 1971, Ser. No. 181,314  
Claims priority, application Great Britain, Sept. 3, 1970, 42,262/70

U.S. Cl. 74—527

Int. Cl. G05g 5/06

5 Claims



A reversible pawl particularly applicable to rotary toothed members associated with turnstiles is provided not only with the normal return spring tending to position the pawl neutrally but a secondary spring preferably with high damping characteristics, so arranged that in a rest position the pawl is biased in one sense of operation or the other according to which was the last operational movement of the toothed member.

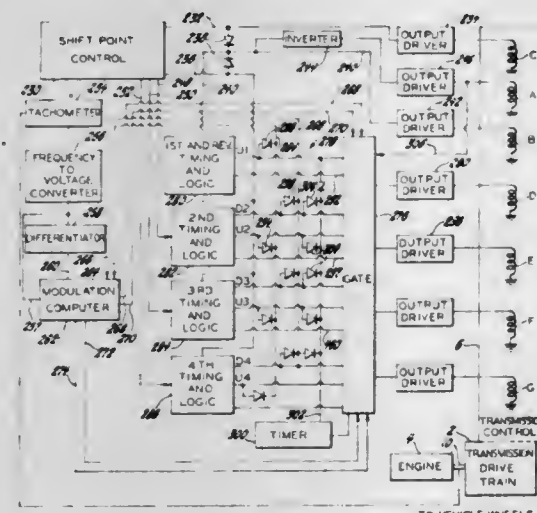
3,754,482  
METHOD AND APPARATUS FOR CONTROLLING TORQUE CAPACITY IN TORQUE TRANSMITTING DEVICES

Robert K. Sanders, Whitestown; Jerry R. Marlow, Greenwood; Kenneth A. Dornfeld, and Robert E. Nelson, both of Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 28, 1971, Ser. No. 147,969  
Int. Cl. F16h 3/74

U.S. Cl. 74—752 A

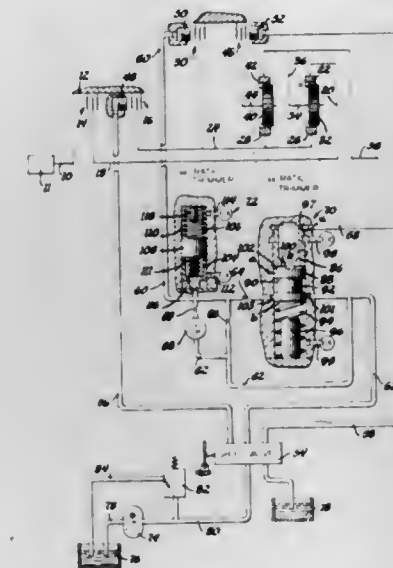
13 Claims



In a power transmission wherein a ratio change is accomplished by engaging one clutch or brake and disengaging another, a smooth shift is effected by modulating the torque capacities of the clutches or brakes during the shift as a function of transmission input speed. Pressure responsive clutches and brakes are controlled by solenoid valves which produce pressures proportional to solenoid current. An electronic control computes the desired pressures according to variation of input speed. A plurality of shift valves each have a differential area portion responsive to engagement pressure to control the engagement of a clutch or brake and a control chamber responsive to the variable control pressure.

3,754,483  
TRANSMISSION AND CONTROL WITH SHIFT ENGAGEMENT TIMING DEVICES  
John O. Edmunds, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.  
Filed Nov. 11, 1971, Ser. No. 197,903  
Int. Cl. F16h 5/18, 5/10; F16d 67/04  
U.S. Cl. 74—753

8 Claims



A transmission and control in which the transmission has three mechanical gear ratios which are selectively established by the control. The control provides through the use of a plurality of fluid restrictions one engagement time of the intermediate ratio control device during an upshift from the first ratio to the second ratio and another engagement time of the intermediate ratio control device during a downshift from the third ratio to second ratio. The control also provides a bypass valve so that the disengagement time of the intermediate ratio control device is not affected by the fluid restrictions during a second to third or second to first ratio change.

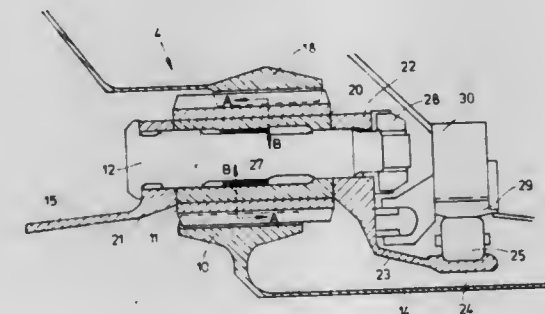
3,754,484  
GEARING

Martyn Grigson Roberts, Bristol, England, assignor to Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jan. 3, 1972, Ser. No. 214,942  
Claims priority, application Great Britain, Jan. 8, 1971, 946/71

Int. Cl. F16h 1/36, 5/108  
U.S. Cl. 74—801

2 Claims

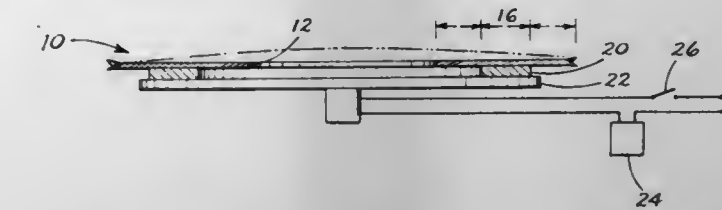


In an epicyclic gear box all the teeth of the various gear wheels are of single helical form. The tipping couple produced on the planet wheels due to the helix angle of the teeth is balanced by displacing the sun and annulus gears in opposite directions along the planet wheel axis so that the radial components of the tooth loads due to the pressure angles of the teeth produce an opposing couple.

3,754,485  
CIRCULAR SAW TENSIONING METHOD AND APPARATUS  
Russell A. Heitzman, 826 Story, McMinnville, Oreg.  
Filed Dec. 30, 1971, Ser. No. 214,020  
Int. Cl. B23d 65/00

U.S. Cl. 76—112

7 Claims

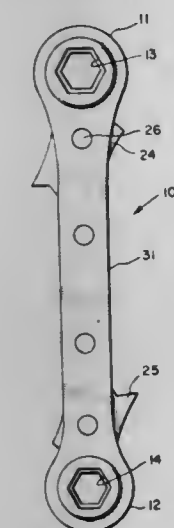


Circular saws having faces of unequal tension and which accordingly will not saw true are tensioned by selectively heating a central area of the saw, thereby causing the saw to dish. Taking advantage of the fact that the more highly tensioned face of the saw is the concave face thereof, the tension then is equalized by hammering the convex face thereof in areas and with an intensity sufficient to equalize the tension in both faces.

3,754,486  
RATCHET WRENCH  
William H. Mariner, South Pack Dr., Ext. Rt. 4, Salisbury, Md.  
Filed July 26, 1971, Ser. No. 165,995  
Int. Cl. B25b 13/46

U.S. Cl. 81—63

5 Claims



An improved box end wrench of double end type, each end having double socket sizes, each being rotatably controlled by a ratchet mechanism having a pivoted latch movable to two positions whereby the socket will rotate only in one direction when the latch is in one position and will rotate only in the opposite direction when the latch is in the other position so that turning torque can be transmitted by the wrench in the same direction of rotation regardless which side of the socket is used.

3,754,487  
METHOD AND APPARATUS FOR CONTROLLING A MACHINE TOOL  
Chester L. Nachtigal, 1310 S. 12th St., Lafayette, Ind.  
Continuation of Ser. No. 885,686, Dec. 17, 1969, abandoned.  
This application Jan. 3, 1972, Ser. No. 215,200  
Int. Cl. B23b 1/00

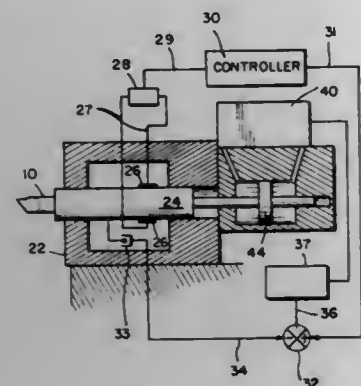
U.S. Cl. 82—1 C

7 Claims

A method and apparatus for controlling the operation of a machine tool on a workpiece in which said workpiece and tool



are mounted in a machine tool assembly in a position to permit said tool to engage the workpiece to perform work operations thereon and in positions such that a pair of reference points on said workpiece and tool are disposed in spaced relationship. One or both of the workpiece and tool are connected to a first driving member for effecting relative movement between them so that said tool will perform the desired work



on the workpiece at their interface. The force exerted on the workpiece by the tool at their interface is detected, and such force is transduced into a response signal. This signal actuates a second driving member, and that second driving member is coupled to one of said workpiece or tool for effecting relative movement therebetween to maintain the reference points on the workpiece and tool at predetermined spaced distances from each other during the performance of the work.

3,754,488

## PIPE GROOVING APPARATUS

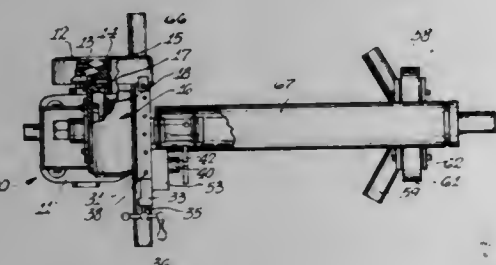
Yrjo Pajari, Willowdale, Ontario, Canada, assignor to Pajari Instruments, Willowdale, Ontario, Canada

Filed Mar. 27, 1972, Ser. No. 238,550

Int. Cl. B23d 5/16

U.S. Cl. 82-4 C

7 Claims



Apparatus is provided for facing the end of a pipe and for grooving the exterior surface of the pipe a fixed predetermined distance from the faced end. A drivable expandable chuck is provided to grip the inner surface of the pipe for rotation thereof and a tool holder micrometrically adjustable axially and transversely of the chuck is adapted to removably receive a facing tool and a grooving tool at a specific separation therebetween.

3,754,489

## SMOKELESS CUT-OFF BLADE FOR PLASTIC WRAPPING FILM

Herbert K. Carver, Jr., Oakford, and Omar Hansen, Jr., Yardley, both of Pa., assignors to J. B. Dove, Inc., Levittown, Pa.

Filed June 2, 1971, Ser. No. 149,255

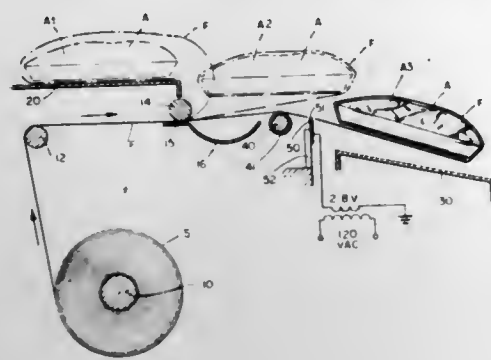
Int. Cl. B26f 3/12

U.S. Cl. 83-16

2 Claims

In wrapping machinery for wrapping articles in heat-sealable plastic film, such as polyvinylchloride (PVC), a web of film is drawn from a supply roll and is severed by pulling the film under tension downwardly onto the narrow edge of an electrically heated blade to melt the film material along a thin

transverse line, and permit severance thereof by pulling, without generating toxic fumes. The blade has sufficient width and sufficient cross-sectional area to store a quantity of heat capable of replenishing instantly the heat lost at the narrow



edge of the blade when the film is contacted and melted, thereby maintaining substantially constant the temperature at the blade edge. The temperature at the blade edge is sufficiently high to melt the film material but not high enough to decompose the film and generate toxic fumes.

3,754,490

## HORIZONTAL BAND SAW MACHINE

Masao Sata, Sagami-hara; Tsuneo Alzawa, Isehara; Kenji Ohnishi, Sagami-hara; Shigeo Kozumi, Hatano; Akio Fukuda, Yokohama; Shinki Kikuchi, Sagami-hara, and Shichiro Kusanagi, Isehara, all of Japan, assignors to Amada Company Limited, Kanagawa-ken, Japan

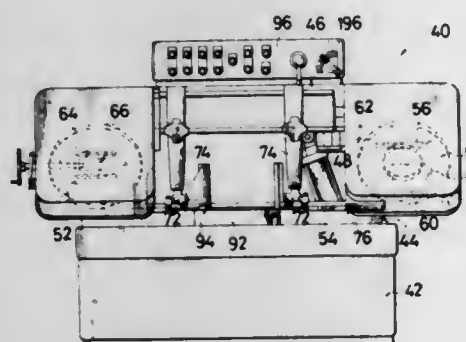
Filed July 6, 1971, Ser. No. 159,625

Claims priority, application Japan, Aug. 26, 1970, 45/74262; Aug. 26, 1970, 45/74260; Aug. 26, 1970, 45/74261; Sept. 22, 1970, 45/82580; Dec. 3, 1970, 45/106336; Nov. 21, 1970, 45/102424; Dec. 30, 1970, 45/122787

Int. Cl. B23d 53/00, 55/104

U.S. Cl. 83-168

6 Claims



Horizontal-type band saw machine which maintains the band saw blade at a travelling speed selected depending upon the property and shape of the material to be machined, introducing operating fluid of a hydraulic mechanism controlling the raising and lowering of a housing, which accommodates said band saw blade, into a plunger pump at a speed in accordance with the effective weight of the housing, and sending out the thus introduced operating fluid by driving the plunger pump periodically in a cycle corresponding to the travelling speed of the band saw blade. The machine has a mechanism for imparting a predetermined tension to the band saw blade, a safety mechanism for detecting slippage of the band saw blade, a guide mechanism comprising a combination of a specially arranged roller-shaped guide member and a plate-like guide member, a mechanism comprising members for supporting the back of the band saw blade, a mechanism for detecting conditions of the feeding material, a feed roller mechanism, and a mechanism for securely clamping the sawed pieces.

3,754,491

## DELIVERY AND CUTTING APPARATUS FOR TAPE

Fumiko Tange, 37-231 Takane, Oaza Okehazama Arimatsu-cho, Midori-ku, Aichi, and Kikichi Isuda, 5-7, 2-chome, Tomigooka, Nara, both of Japan

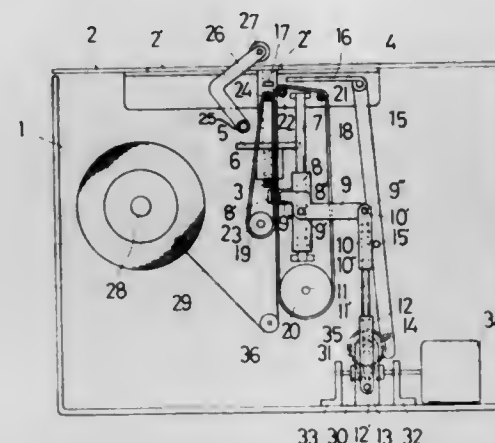
Filed Oct. 6, 1971, Ser. No. 187,106

Claims priority, application Japan, Feb. 24, 1971, 46/9155

Int. Cl. B26d 5/22

U.S. Cl. 83-277

1 Claim



A tape delivery and cutting apparatus for delivering and cutting sealing tape for packaging and the like. The apparatus has a connecting bar movable in a vertical direction by a crank. A swing lever is fulcrumed at its center on a vertically movable cylinder, and has one end connected to the upper end of the connecting bar. A pair of endless tape delivery belts is held between the end of the swing lever and a projection arm on the cylinder for delivering tape. A blade extends from the upper end of a blade arm the lower end of which is actuated by a cam fixed to a crank shaft so that the blade projects horizontally near the space between the upper ends of the delivery belts as the moving cylinder moves upwardly. The pair of delivery belts ceases its delivery action as the moving cylinder is moved downward so that a definite length of tape is automatically delivered.

3,754,492

## SHEET CUTTING APPARATUS

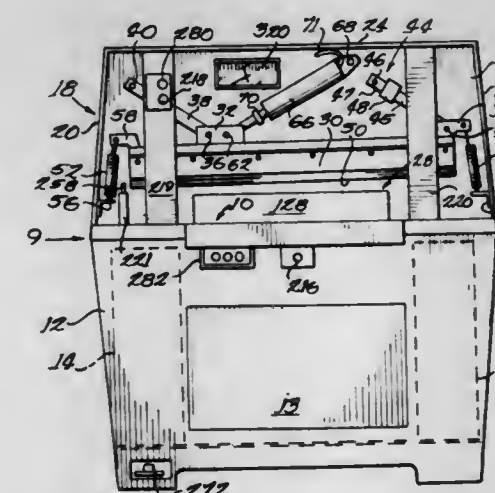
Edward William Krauss, Skokie, Ill., assignor to IPEC, Incorporated, Chicago, Ill.

Filed Oct. 7, 1971, Ser. No. 187,424

Int. Cl. B26d 5/42

U.S. Cl. 83-380

7 Claims



Sheet cutting apparatus powered wholly by hydraulics including a blade for cutting and a hydraulically operated clamping bar for holding the sheet material in place for cutting after clamping has been effected.

3,754,493

## CIRCULAR SAW BLADE GUARD

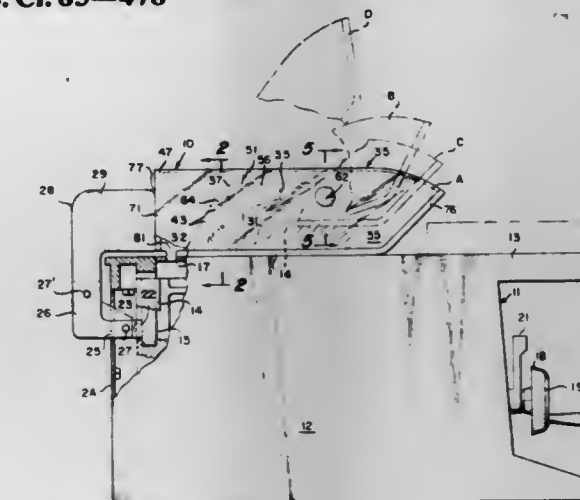
Edward J. Niehaus, and Harry D. Benney, both of Tupelo, Miss., assignors to Rockwell Manufacturing Co., Pittsburgh, Pa.

Filed Dec. 10, 1971, Ser. No. 206,630

Int. Cl. B27g 19/02

U.S. Cl. 83-478

14 Claims



A see through plastic U-shaped circular saw blade guard and kerf splitter assembly wherein the guard is pivotally swingably mounted on the kerf splitter through a relatively short inverted U-shaped link pivoted at one end in straddling relation to the kerf splitter with the web at the one end notched out to dispose the notch end wall to engage the upper edge of the kerf splitter and limit its upward and rearward pivotal movement to maintain the link and guard pivoted at the other end in straddling relation to the link within the upper forward segment of the pivotal path of the link at all times to assure weight biased movement toward the saw table and guarding position. The kerf splitter is a plate of generally C-shaped configuration having attachment bolt passages in the forward and rear ends of the lower arm to provide at least one attachment bolt beneath and forward of the rear end of the table in a relatively inaccessible position when installed to prevent ready removal by the operator. The respective pivot connections include pivot pins fixedly connected to the link and fixedly connected to the guard respectively by end mounted press fitted washers and cap nuts to prevent ready disassembly of the pivot connections and removal of the link or guard. The assembly provides a non-removable safety guard.

3,754,494

## PIANO TUNING PIN LOCK

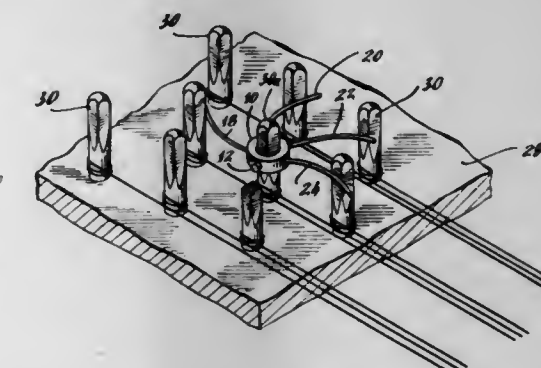
Donald I. Ticehurst, 200 Lake Shore Dr., Brookfield, Conn.

Filed June 20, 1972, Ser. No. 264,537

Int. Cl. G10c 3/10

U.S. Cl. 84-203

8 Claims



A lock for a piano tuning pin comprises a metal collar having a set screw for attachment to a desired pin. A plurality of



heavy spring wire arms extend substantially radially outward from the ring to engage adjacent pins and prevent the selected pin from rotating under the influence of the stressed piano wire.

The foregoing abstract is not to be taken either as a complete exposition or as a limitation of the present invention. In order to understand the full nature and extent of the technical disclosure of this application, reference must be had to the following detailed description and the accompanying drawing as well as to the claims.

3,754,495

**SOUNDING NOTE BOARD FOR MUSIC INSTRUCTION**

Max Honegger, 8143 Sellenburen, Switzerland

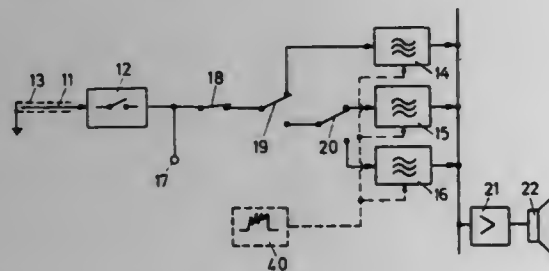
Filed Oct. 18, 1971, Ser. No. 190,160

Claims priority, application Switzerland, Oct. 27, 1970, 15852/70; June 17, 1971, 8838/71; Aug. 11, 1971, 11791/71

Int. Cl. G09b 15/02

U.S. Cl. 84—471

14 Claims



A sounding note board for music instruction is disclosed, comprising conductor bars being arranged below the board surface. The bars are connected with on/off switching means, each of them being arranged to switch a separate sound generator which is assigned to one particular bar. The output terminals of all sound generators are connected with the input of a common amplifier which feeds a speaker. The switching means are designed to form proximity switches, controlled by the respective bars. The proximity switches are operable by a person touching the board surface above the particular bar. The board provided with an ordinary writing layer may comprise an iron or magnetic layer which is arranged at such a distance from the writing surface that attachable magnetic or iron platelets adhere to the writing surface.

3,754,496

**EXPLOSIVE BOLT**

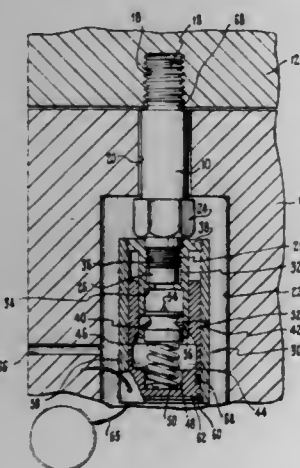
Earl A. Noel, Derwood, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 20, 1971, Ser. No. 173,534

Int. Cl. F42c 3/00

U.S. Cl. 89—1 B

1 Claim



An explosive bolt which is initiated in response to a predetermined hydrostatic pressure including a percussion

sensitive bolt filled with explosive having a hydrostatic pressure responsive detonator attached thereto. The detonator includes a plunger having a firing pin attached thereto, the plunger normally being constrained in a retaining sleeve by a ball detent. A piston is slidably positioned over the retaining sleeve and prevents the detent from releasing the plunger until the piston has moved under sufficient hydrostatic pressure. A spring is provided between the plunger and the piston which becomes compressed as the piston moves under pressure thereby providing a forward biasing to the plunger.

3,754,497

**TRANSPORTING AND FIRING CHEST FOR SELF-PROPELLED PROJECTILES**

Maurice Rusbach, Vernier-Geneva, Switzerland, assignor to Sarmac S.A., Geneva, Switzerland

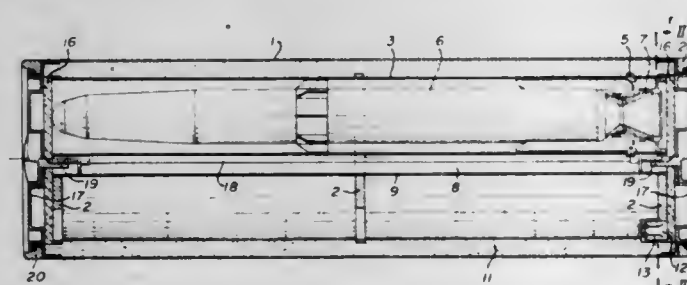
Filed July 26, 1971, Ser. No. 166,110

Claims priority, application Switzerland, Aug. 6, 1970, 11825/70

U.S. Cl. 89—1.814

Int. Cl. F41f 3/04

1 Claim



A transporting and firing chest for self-propelled projectiles comprising guide tubes for the projectiles mounted in a support frame and fuses and firing connections for the projectiles. The said frame is rigidly attached to at least one member for fixing the chest to a support, a filling of light semi-rigid material is disposed in the empty spaces between said tubes and between these latter and a tubular external envelope constituting the lateral walls of the chest, so as to insulate mechanically and thermally the support frame and the guide tubes with respect to the external envelope of the chest.

3,754,498

**APPARATUS FOR SHREDDING AND BALING PAPER**

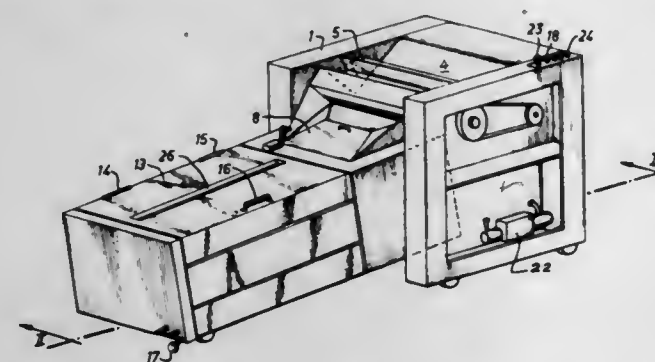
Roland Gil, 16 Allee Gagarine, 92 Levallois, France

Filed Dec. 17, 1971, Ser. No. 209,147

Int. Cl. B30b 15/08

U.S. Cl. 100—53

8 Claims



A paper shredder and baler comprises a pair of rotary shredding members at the bottom of a hopper, and a rotor having resilient flaps in the hopper that both feed paper to the rotors and protect the operator. The shredded paper falls by gravity into an inclined baling compartment where a hydraulic jack forces a plate along a downwardly inclined path to compress the shredded paper. Safety controls prevent the shredder and the press from operating simultaneously, and prevent the press from operating until the baling compartment is closed.

3,754,499

**HIGH TEMPERATURE PLATENS**

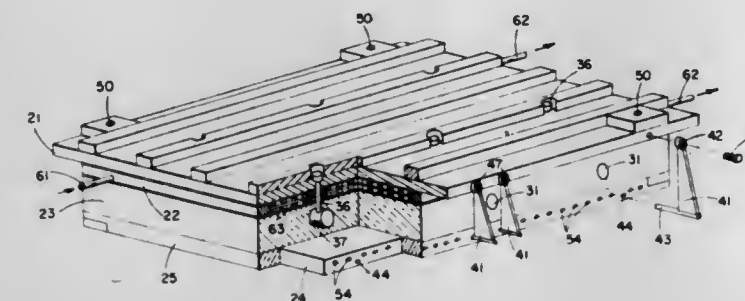
Robert M. Helsen, Palos Verdes Peninsula; Charles R. Chase, Long Beach, and Louis A. Welsenberg, Tustin, all of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Sept. 27, 1971, Ser. No. 183,904

Int. Cl. B30b 15/34, 15/06, 15/28

U.S. Cl. 100—93 P

8 Claims



A relatively large platen for a press is disclosed suitable for use up to temperatures of at least 2,500°F. and up to pressures of at least 3,000 per square inch. The platen includes a pressure plate made of a heat conducting ceramic having internal heaters which ceramic is backed up by a ceramic heat insulator and a heat sink, between the heat insulator and the press, to prevent the press from increasing appreciably in temperature.

3,754,500

**LAWN DEBRIS CHOPPER AND COMPACTOR**

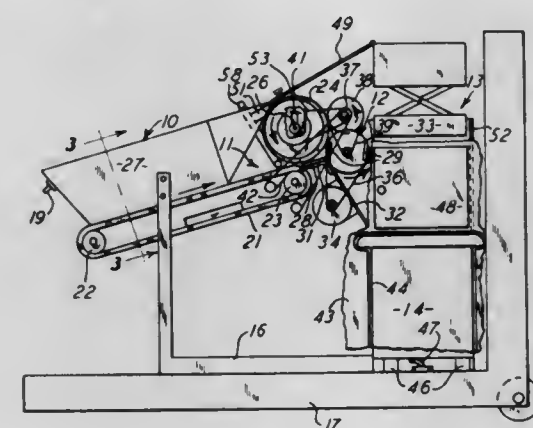
Sherman C. Heth, Sturtevant, Wis., assignor to Jacobsen Manufacturing Company, Racine, Wis.

Filed Feb. 22, 1972, Ser. No. 228,157

Int. Cl. B30b 15/08

U.S. Cl. 100—97

3 Claims



A lawn debris chopper and compactor having a hopper for receiving grass clippings, leaves, tree branches, and the like, and directing the debris onto a feeder in the form of a conveyor and a feeder roller which move the debris to a chopper or cutter. The feeder and the chopper are driven by the motor, and motor controls cut the power to the mechanism when too much debris is being fed in or when the access door to the machine is opened. A compactor is in debris-flow communication with the chopper to receive the cut debris and compress it in a receptacle which is removable from the machine. A motor switch is activated by the presence of the receptacle for operating the entire mechanism, and the entire mechanism is enclosed in a housing and is shown to be supported on a portable chassis.

3,754,501

**AUTOMATIC WASTE DISPOSAL APPARATUS**

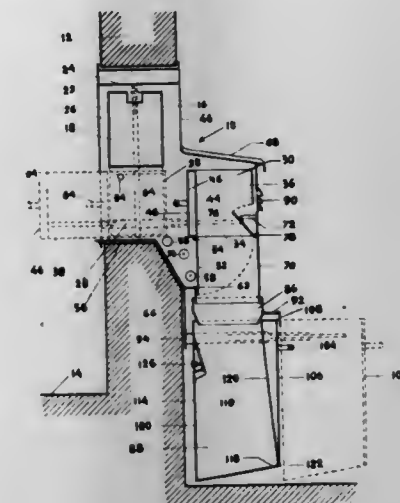
Alexander Horn, 624 Hazelhurst Ave., Merion, Pa.

Filed June 15, 1972, Ser. No. 263,301

Int. Cl. B30b 15/32

U.S. Cl. 100—99

13 Claims



An automatic waste disposal apparatus which includes a compaction unit suitable for mounting within an exterior wall of the building, and having a compactor which is vertically operable within the plane of the wall for trash compaction purposes. A trash receiving container is horizontally slideable beneath the compactor from a loading position wherein the container opens interiorly of the building, to a compaction position which aligns beneath the compactor for trash compaction purposes, to a dumping position wherein the container is moved exteriorly of the building for compacted trash deposit purposes. A closed chute receives the compacted trash from the container and exteriorly leads the waste material to a waste receptacle for disposal purposes.

3,754,502

**LEMON SLICE SQUEEZER**

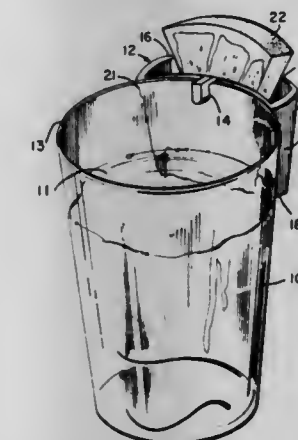
Irving Kaufman, Box 732, Sanford, Fla.

Filed Dec. 1, 1971, Ser. No. 203,563

Int. Cl. B30b 9/02, 5/02

U.S. Cl. 100—133

3 Claims



A one-piece disposable lemon slice squeezer apparatus is provided which can be produced of a moldable plastic, or the like. A lemon slice squeezer has a hollow body with an opening for inserting a lemon slice and has protrusions therein for gripping the lemon while pressing against the sides to squeeze a lemon slice placed therein. Openings at the bottom allow the juice to escape into a glass of iced tea, or the like, and a hook on the exterior conveniently allows the lemon slice to be served in the squeezer hooked to the side of the glass.



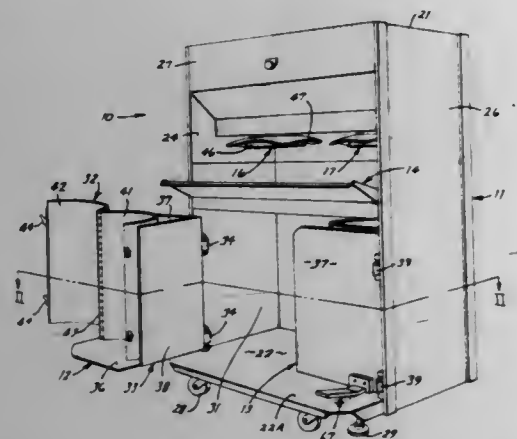
3,754,503

**WASTE COMPACTOR WITH FOOT ACTUATED RELEASE MECHANISM**

Ransom J. Hennells, 614 S. Evergreen, Plymouth, Mich.  
Filed Mar. 7, 1972, Ser. No. 232,471  
Int. Cl. B30b 15/30

U.S. Cl. 100-229 A

9 Claims



A waste compactor comprising a cabinet having an extendible ram mounted adjacent the upper end thereof and a swingable receptacle positionable below the ram assembly. The receptacle is hingedly mounted on the cabinet for horizontal swinging movement between a filling position directly under the ram, and an emptying position spaced outwardly from the cabinet. The hinges connecting the receptacle to the cabinet permit the receptacle, when in the filling position, to rest directly on the cabinet floor to thus transfer the compacting forces directly onto the cabinet. The hinges also prevent the receptacle from being swingably moved away from its filling position. A foot-actuated release device permits the receptacle, when in the filling position, to be lifted upwardly from the cabinet floor, and also releases the hinges to enable the receptacle to be swingably moved into its emptying position.

3,754,504

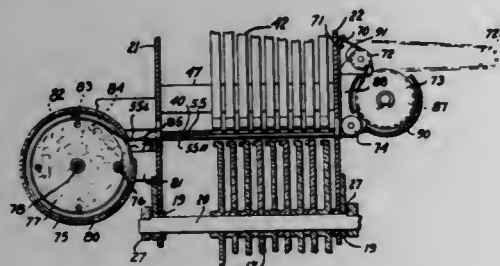
**MULTI-COLOR RIBBON AND MECHANISM**

John G. Clary, Pasadena, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.

Filed May 6, 1971, Ser. No. 140,872  
Int. Cl. B41k 1/48

U.S. Cl. 101-336

8 Claims



A two color printing ribbon mechanism for adding, calculating or the like machines in which the ribbon has two differently colored sections arranged end-to-end. Normally, a first and most frequently used ribbon section is held in contact with an inking device and the second less frequently used ribbon section is located at the printing line. During a cycle of the machine in which the first section is to be used for imprinting, and prior to the printing operation, the ribbon is moved endwise to locate the first section at the printing line and to move the second section into contact with a second and appropriately colored inking device. During a cycle in which the second section is to be used for imprinting, the ribbon moving mechanism is merely disabled, leaving the second ribbon section at the printing line during the printing operation.

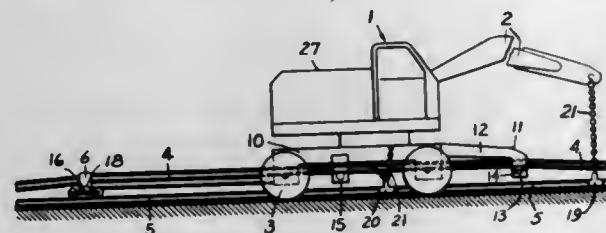
3,754,505  
**METHOD AND APPARATUS FOR REPLACING A PAIR OF RAILS**

Helmut Dyballa, 4713 Bockum-Hovel, Goorweg, Germany  
Filed Nov. 19, 1971, Ser. No. 200,390  
Claims priority, application Germany, Nov. 23, 1970, P 20 57 487.2

U.S. Cl. 104-5

Int. Cl. E01b 29/16

10 Claims



A method and apparatus for continuously replacing rails is provided in which the old rails are raised by guides on an advancing vehicle passed along the vehicle and laid in the bed within the railway gauge. Simultaneously new rails previously placed within the gauge are guided into position.

3,754,506

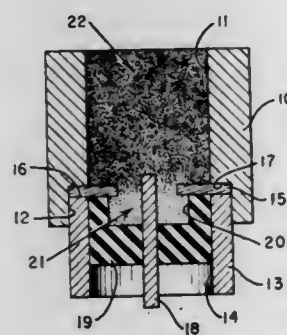
**SPARK GAP DETONATOR**

Robert Parker, Danville, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 7, 1971, Ser. No. 141,122  
Int. Cl. F42b 3/14

U.S. Cl. 102-28 R

7 Claims



An improved spark gap detonator having a central electrode and surrounding annular electrode which project into a recess formed in one end of the detonator cavity. When explosive powder is pressed into the cavity, the powder flowing past the projecting annular electrode experiences an abrupt pressure drop such that the powder filling the recess packs at a lower density than the powder in the rest of the detonator cavity. This allows the detonator to be filled with only a single powder pressing, while providing a relatively low density powder, which is easier to detonate, adjacent the electrodes, and whereby the electrode configuration has a lower inductance, resulting in a shorter rise time of the firing voltage and hence improved timing of detonation.

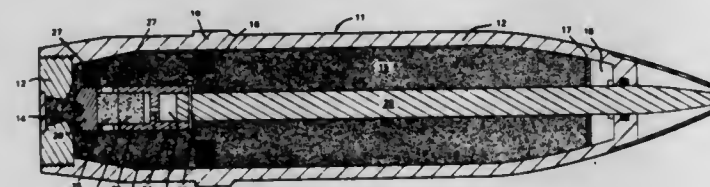
3,754,507

**PENETRATOR PROJECTILE**

Robert B. Dillinger, and Howard H. Payne, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.  
Filed May 30, 1972, Ser. No. 257,559  
Int. Cl. F42b 11/14, 13/04

U.S. Cl. 102-52

3 Claims



A projectile in which a combination of interior elements, including a penetrator, a pyrotechnic delay column and an ignition charge are utilized to ignite a viscous uncured propellant after the projectile has been fired. The thus ignited propellant increases the velocity and effectiveness of the projectile.

3,754,508

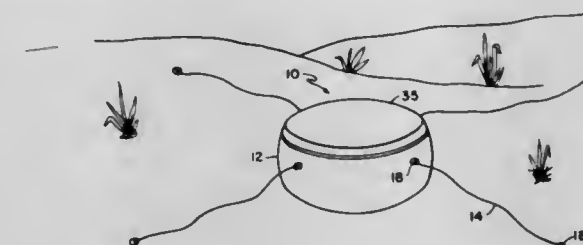
**SENSOR EMPLOYING A RESISTANCE VARIATION DETECTING SYSTEM**

Michael S. Dalton, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.

Filed Apr. 5, 1971, Ser. No. 131,219  
Int. Cl. F42b 73/00; F42c 7/02, 11/00

U.S. Cl. 102-70.2 R

22 Claims



A sensor employing a resistance variation detecting system for detecting rapid changes in the resistance between two or more electrodes placed upon the surface of the earth is disclosed. Ground engaging sense electrodes establish an initial condition having an ohmic resistance relative to the ground. The value of this ohmic resistance changes when the sense electrodes are moved to make better contact with the surface of the earth. Means are provided to detect the rapid change in the ohmic resistance and enable suitable utilization means.

3,754,509

**ANTI-PERSONNEL BULLET FOR RIOT CONTROL**

Ridvan I. Gogen, 229 Cathedral Ave., Hempstead, N.Y.

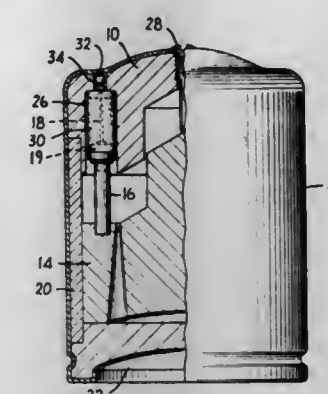
Filed June 19, 1972, Ser. No. 263,875  
Int. Cl. F42b 11/30

U.S. Cl. 102-92

10 Claims

A hard-nosed bullet for mounting on a charged cartridge for use in a firearm is provided having a housing into which an injection plunger is slidably mounted. A plurality of injection pistons are mounted on the plunger, each of which is adapted to slide into one of a plurality of passages within the bullet head. Into each of the passages a sterile capsule containing a flexible injection needle and a fluid is inserted. Upon impact

with a target the plunger moves forward, pushing the pistons through the passages, thereby rupturing the capsule and forcing



ing the needles to penetrate the outer surface of the bullet, thus injecting the fluid into the target.

3,754,510

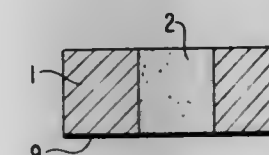
**PROPELLANT CHARGE FOR DEVICES USED INDUSTRIALLY**

Gunther Marondel, Erlangen; Heinz Gawlick, Furth, and Werner Siegelin, Stein, all of Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed Oct. 31, 1969, Ser. No. 872,809  
Claims priority, application Germany, Oct. 26, 1968, P 18 05 359.3

Int. Cl. F42b 1/00  
U.S. Cl. 102-101

9 Claims



The present disclosure is directed to a propellant charge for industrial use which comprises a body of a propellant powder having a centrally disposed recess extending therethrough, said recess containing a percussion sensitive primer substance, said primer substance being housed in the recess in such a manner that the compacting of the primer substance remains below the value required for the ignition thereof upon a sudden unexpected compression of the propellant charge in the direction of the axis of the recess.

3,754,511

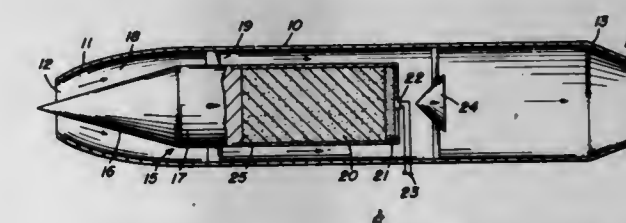
**FUEL AND FUEL IGNITER FOR RAM JET AND ROCKET**

Glenn H. Damon, Pittsburgh; John Ribovich, McKeesport, and Joseph A. Herickes, Pittsburgh, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 478,949, Dec. 30, 1954, Pat. No. 2,895,788. This application Mar. 26, 1959, Ser. No. 802,260  
Int. Cl. F42b 1/00; F02k 7/08

U.S. Cl. 102-102

2 Claims



1. A fuel unit for forced air flow ram jet combustion chambers comprising a briquet of compressed mixed powdered oxidants and reductants, a magnesium shell encasing said briquet, and a film of plasticized nitrocellulose consisting of 25 percent



by weight of alcohol-wet nitrocellulose in 75 percent by weight of Dibutyl-phthalate between the briquet and shell.

3,754,512

## MACHINE SPOTTING DEVICE

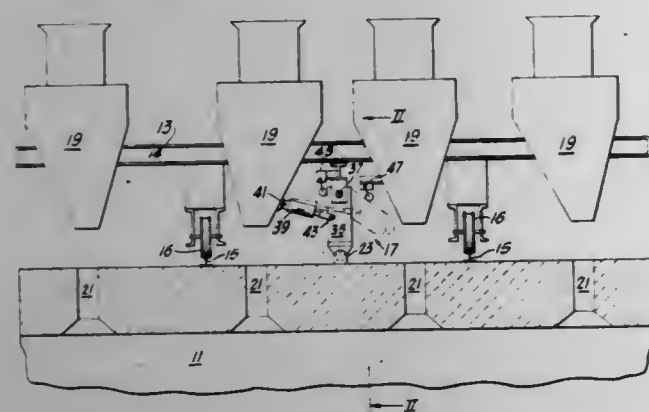
Andrew Kmety, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Sept. 22, 1971, Ser. No. 182,663

Int. Cl. C10b 31/04; B61k 7/00

U.S. Cl. 104—249

5 Claims



A machine spotting device for accurately positioning a machine traveling over rails with respect to a preselected position along the rails comprises a plurality of indexing surfaces that are remote from and run along the length of the rails with an indexing surface corresponding to each position to which the machine is to be spotted, a conventional indexing cylinder for moving the machine a predetermined spaced distance from the indexing surface to the preselected position, an arm having one end pivotally mounted to the machine and having the indexing cylinder mounted to its other end, and another cylinder for moving the arm into operative association with the indexing surfaces.

3,754,513

## SHOCK ABSORBING STOP FOR FIXED PATH VEHICLE

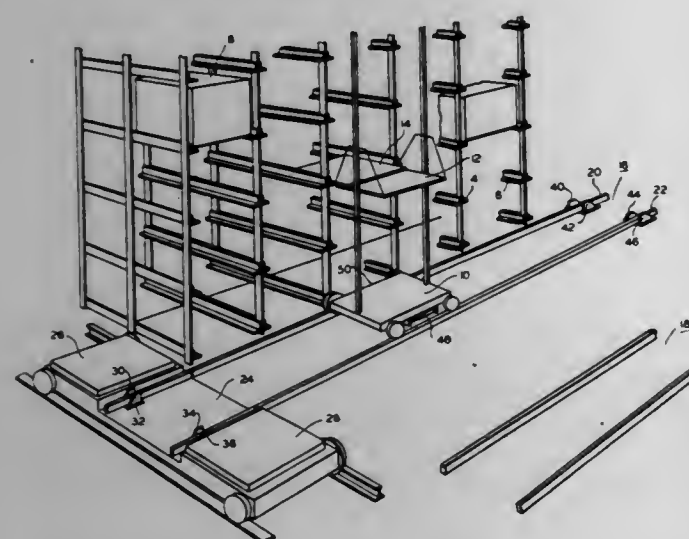
James H. Snyder, and William E. Riedner, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 8, 1971, Ser. No. 206,223

Int. Cl. B61k 7/18; B61g 11/12

U.S. Cl. 104—256

8 Claims



This is apparatus for positive stopping of a fixed path vehicle with a minimum of shock. The fixed path vehicle carries a pair of floating fluid type shock absorbers which are so located as to engage pairs of positive stops at each limit of travel of the vehicle to transmit a stopping force to the vehicle which is a

function of vehicle velocity. The fluid shock absorbers are of the cylinder double-ended piston type in which restricted flow of fluid is permitted between the cavities on each side of the piston. The shock absorbing mechanism has a spring between the piston and cylinder biasing the piston into the extended position against fixed brackets on the vehicle. Fixed stops are mounted in the floor to limit the travel of the vehicle in each direction. When the vehicle travels in one direction into the stops, the piston end of the shock absorbing mechanism engages the stops while the cylinder end engages a bracket on the vehicle thereby transmitting force from the stop to the bracket, which force is a function of velocity. When the vehicle travels in the opposite direction against the stop at the other limit of travel, the cylinder engages the stop while the piston rod engages the opposite bracket on the vehicle thus transmitting force from the stop to the bracket which is a function of velocity of the vehicle. In this way, the same shock absorber is used for stopping the vehicle in both directions at the limit of travel. A pair of the shock absorbers may be mounted equidistant from the center of mass of the vehicle to exert the stopping force without excessive torque about an axis normal to the direction of travel of the vehicle.

## ERRATUM

For Class 104—5 see:  
Patent No. 3,754,505

3,754,514

## LATERAL MOTION RAILWAY CAR TRUCK

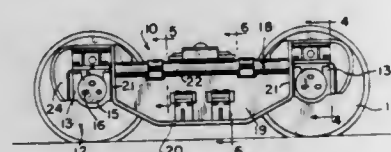
William H. Peterson, Homewood, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Oct. 19, 1971, Ser. No. 190,505

Int. Cl. B61f 5/06, 5/14, 5/30

U.S. Cl. 105—171

2 Claims



A railway car truck includes a bolster assembly having a transverse beam structure on which side bearings are mounted. The assembly further includes a pair of leaf springs which extend transversely with the beam and have their ends connected to the side frames of the truck. The side frames include means for permitting pivotal movement of the leaf spring assemblies during lateral swinging movement of the side frames. The side frames include depending webs and upwardly extending flanges at opposite ends of the web which support outwardly longitudinally projecting hinge plates which support the side frame on journal boxes carried at the ends of wheel axles. The journal boxes include a pivot saddle within which the pivot plates are supported. Upwardly extending stop plates connected to the journal boxes include rubber type biscuits which engage the pivot plates and resiliently bias the same against lateral swinging movement.

3,754,515

## CONNECTION PASSAGE BETWEEN RAILWAY PASSENGER CARS

William Van Der Sluys, Crown Point, Ind., and Thomas J. O'Neill, Evergreen Park, Ill., assignors to Pullman Corporation, Chicago, Ill.

Filed Dec. 27, 1971, Ser. No. 212,099

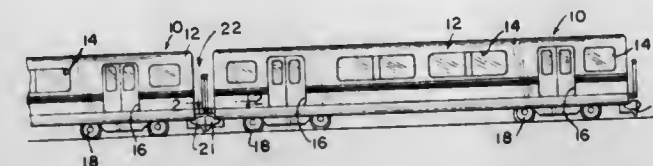
Int. Cl. B60d 5/00; B61d 17/20, 49/00

U.S. Cl. 105—8

4 Claims

A safety gate connecting passage structure positioned at the end sill area of a railway passenger commuter vehicle and in-

cluding a pair of spaced vertically extending face plate members aligned with a pair of similarly disposed face plate mem-



3,754,516

## PARALLEL MOTION MECHANISM

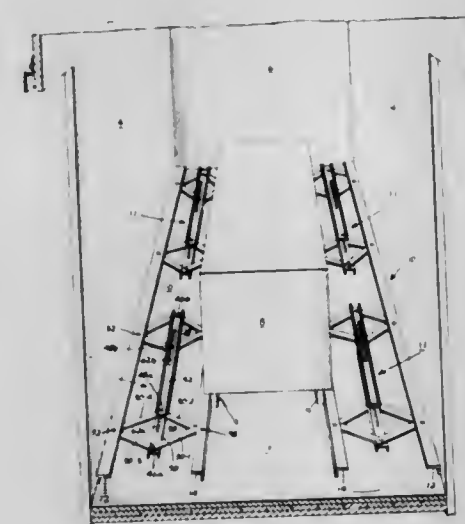
James J. Van Gompel, Fremont, Ind., assignor to Brammall, Inc., Angola, Ind.

Filed Dec. 23, 1970, Ser. No. 100,865

Int. Cl. B61d 45/00; B60p 7/14

U.S. Cl. 105—369 B

26 Claims



A parallel motion mechanism particularly suited for use as an adjustable retainer for blocking and bracing loads in cargo-carrying vehicles, such as railroad cars, semi-trailers, ships, airplanes and containers. The mechanism in its basic form comprises a pair of elongated, rigid members which are relatively laterally movable between a collapsed position and an extended position, and a connecting linkage which at all times maintains the members in parallel relationship. The connecting linkage comprises a pair of longitudinally spaced-apart toggle linkages each comprising four equal-length links having their ends pivotally connected to form a parallelogram, two opposite pivot points of the parallelogram being respectively pivotally connected to the two members. A guiding linkage is provided comprising a pair of elongated guide elements respectively extending between and pivotally connected to corresponding ones of the remaining pivot points of the two toggle linkages and being guided for relative collinear extension and retraction in response to movement of the toggle linkages between collapsed and the extended positions thereby maintaining the two members in parallel relationship. In one embodiment, the two guide elements may be clamped together in any position of the mechanism between fully collapsed and fully expanded thereby locking the mechanism so as rigidly to block and brace a load within a vehicle. In another embodiment, the two members may be resiliently urged toward their expanded position thereby resiliently to brace a load within a vehicle.

913 O.G.—43

3,754,517  
SHELVING

Ernst Hassel, Neunkirchen Salchendorf, and Adolf Schmenn, Burbach-Niederdresselndorf, both of Germany, assignors to Fritz Schafer, GmbH, Neunkirchen Kreis Slegen, Germany

Filed July 19, 1971, Ser. No. 163,625

Claims priority, application Germany, July 22, 1970, P 70 27 532.0

Int. Cl. A47b 57/00

U.S. Cl. 108—61

7 Claims



Shelving consists of at least two juxtaposed shelf units which include frame members, such as vertical posts, of metal profiled sections, together with floor and/or roof members. The shelf units are connected by sheet metal clips whose ends are bent over to engage wedge-shaped converging edges on the sections or floors or roofs, each clip being formed with a bead extending transversely across the clip and projecting on the opposite side to the bent-over ends. The bead is offset from the center of the clip so that it lies wholly within one of the two shelf units connected by the clip, leaving the other unit clear for accommodating a common side wall extending to the frame members and the roof of the unit. Identical clips are used to connect the posts, which have a G-shaped cross-section, with vertical walls having U-section flanged edges. A rear wall with cranked edges can also be slotted into the apertures in the G-section posts.

3,754,518

## RAPID MOUNTING SHELF

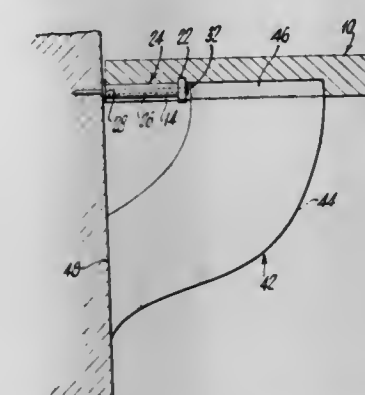
Samuel Joseph Wachtel, 27 Valley Ln. West, N. Woodmere, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,070

Int. Cl. A47b 5/00

U.S. Cl. 108—152

5 Claims



A shelf is adapted for rapid and easy mounting. The shelf platform has a contoured opening formed in its underside, into which is fit a member securable to a wall. After the member is



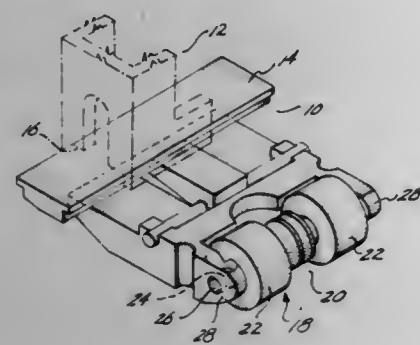
secured to the wall, it is inserted into that contoured opening securing the shelf to the wall. A bracket can be attached to the underside of the shelf platform to more evenly distribute the shelf load.

3,754,519

**PRESSER FOOT ROLLER WITH ALIGNMENT FEATURE**  
Robert B. Howell, 3132 Rocky Point Rd., Bremerton, Wash.  
Filed Aug. 25, 1971, Ser. No. 174,882  
Int. Cl. D05b 29/00

U.S. Cl. 112—235

10 Claims



A pair of girth grooves are formed in the central portion of a presser foot roller. One groove is designed to guide and properly orient one row of teeth of a zipper. The other guide groove is for guiding and orienting the other row of teeth. A cylindrical presser surface is located endwise outwardly of each guide groove and a live axle is located endwise outwardly of each presser surface. A third girth groove is formed between the two guide grooves. This third girth groove has a transverse curvature closely matching the transverse curvature of a needle. The spacing between this needle groove and each zipper tooth guide groove axially of the roller is such that the sewing path established by the needle is properly spaced with respect to either row of zipper teeth passing through its guide groove during the sewing operation.

3,754,520

**MATERIAL STITCHING APPARATUS**

Michael Newstead Bennison, Leeds, England, assignor to W. J. Clarkson Limited, Yorkshire, England

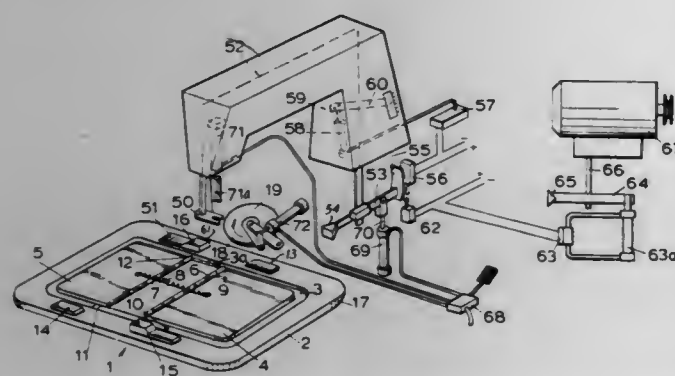
Filed Oct. 26, 1971, Ser. No. 192,668

Claims priority, application Great Britain, Oct. 29, 1970, 51,443/70

Int. Cl. D05b 21/00

U.S. Cl. 112—121.12

10 Claims



Apparatus for facilitating the stitching together of layers of material comprising in combination a sewing machine, the sewing machine including a presser foot, a needle, a drive mechanism for the needle, a control mechanism for starting and stopping the drive mechanism, and a guide; a template, the template comprising a lower plate having a continuous guide track engageable by the guide, first and second top plates, an element pivotally mounting the first and second top plates to the lower plate to be closable over a respective part of the lower plate to hold material to be stitched, the guide

track having first starting and finishing points for a stitching operation on material held by the first top plate and second starting and finishing points for a stitching operation on material held by the second top plate, the first and second finishing points being spaced respectively from the second and first starting points, and first operating elements on the template at each of the finishing points; and another drive mechanism for driving the template from the sewing machine so that the guide track follows the guide until one of the operating elements operates the control mechanism to stop the drive mechanism with the needle of the sewing machine at the respective one of the finishing points.

3,754,521

**TWO-STEP BUTTONHOLE MECHANISM SELECTIONS SYSTEM**

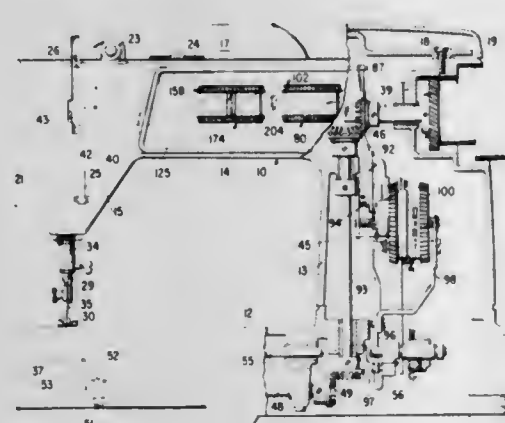
Norbert Thuring, Grotzingen, Germany, assignor to The Singer Co., New York, N.Y.

Filed July 21, 1972, Ser. No. 273,894

Int. Cl. D05b 3/02

U.S. Cl. 112—158 B

3 Claims



A selection system for a two-step buttonholing mechanism in which the selection is made by depressing a knob into one of two selectable positions. An intricate track defining a closed loop is affixed to the knob, and a cam follower on the end of a resilient member substantially rigid in the direction of knob movement but flexible transversely thereof is deflected by the intricate track. The two selectable positions of the knob are defined by detent positions in the closed loop intricate track, the knob being held in a selected position by the resilient member in one of the detent positions. An indication flag, having two indicia thereon spaced from each other, the indicia being representative of the steps of the buttonhole, is connected with the knob so as to present that indicia to view corresponding to the step of the buttonhole selected.

3,754,522

**WORK PIECE SENSOR AND TAPE CUTOFF FOR SEWING MACHINES**

Roy E. Miller, 1301 Stuart Dr., Mechanicsburg, Pa., and Robert F. Miller, 128 W. Clearview Dr., Camp Hill, Pa.

Division of Ser. No. 695,812, Oct. 31, 1967, Pat. No.

3,425,373, which is a continuation-in-part of Ser. No. 504,396, Oct. 24, 1965, abandoned. This application Oct. 22, 1968, Ser. No. 769,512

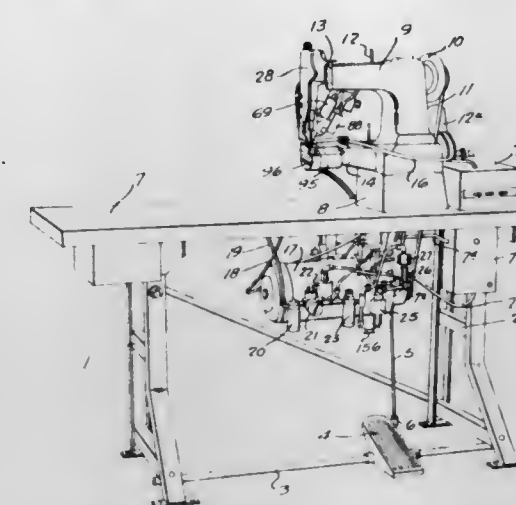
Int. Cl. D05b 69/22

U.S. Cl. 112—219 B

1 Claim

The present machine is for affixing binding tapes to articles and including attachments for such machines which allow the machine to be run either manually or automatically. In the automatic position of the attachments, they start the machine, upon presentation of a work piece to the machine, cut the tape

at the start and finish of the work and stop the machine automatically. Also the operator can run the machine manually



and stop the machine at any time when running the machine in said automatic position of the attachments.

3,754,523

**ICEBREAKING TANK SHIP**

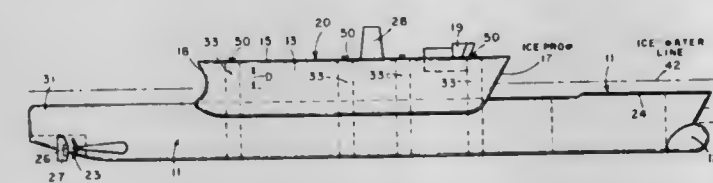
Walter B. Devine, Houston, Tex., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Nov. 19, 1971, Ser. No. 200,307

Int. Cl. B63b 35/08

U.S. Cl. 114—40

1 Claim



An icebreaking tank ship has an elongated hull with a bow and stern and a catamaran arranged above and connected to the hull, the elongated hull moving substantially under the icepack while the twin hulls of the catamaran are arranged to cut through the icepack, the bridge of the catamaran being spaced above the icepack.

3,754,524

**BOAT ANCHOR**

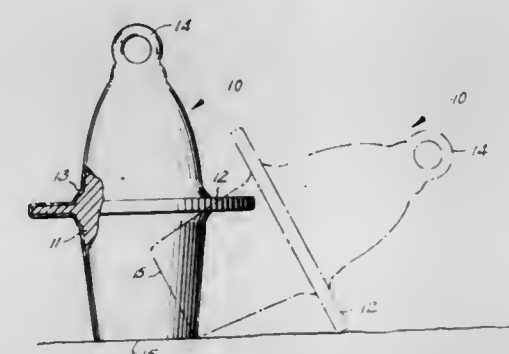
Clarence T. Locks, 259 E. Arion St., West Saint Paul, Minn.

Filed Jan. 5, 1972, Ser. No. 215,473

Int. Cl. B63b 21/30

U.S. Cl. 114—206 R

2 Claims



An anchor device for small boats. This device consists primarily of a plastic dipped cast iron body which includes a flange that will grip on the bottom immediately following the dropping of the main body.

3,754,525

**PORTABLE ANCHOR UNIT**

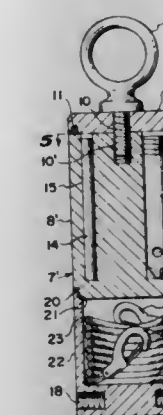
Allen J. Leighty, 634 Rome Ave., Rockford, Ill.

Filed Jan. 20, 1972, Ser. No. 219,446

Int. Cl. B63b 21/30

U.S. Cl. 114—206 R

9 Claims



In both forms, the generally cylindrical body of the anchor has a removable cap on one end, which, when fastened securely in place, seals a plurality of longitudinally extending bores in which are placed the unscrewed four pins serving as ground gripping legs for the anchor, all four pins being threaded at one end and provided with a diametrically extending hole in the other end to receive a smaller size pin to be used as a cross-bar in threading the larger pins one after another in four radial holes provided in the bottom end of the body at 90° intervals, the cross-pin when not in use being stored in a fifth hole provided in the body. In another form, a hollow cylindrical container is threaded for connection with the externally threaded reduced lower end of the body and is adapted to form a smooth extension of the body when in use and serves to house a coiled length of rope used for connecting the anchor to the boat, a snap fastener on one end of the rope attaching to the eye on the eyebolt that fastens the cap onto the body of the anchor, and the other snap fastener on the other end of the rope attaching to a suitable eye provided on the boat. In this latter form, the pins forming the legs thread into radial holes provided in the lower end of the container and hence they are adapted to serve in the tightening and loosening of the container.

**ERRATUM**

For Class 117—51.14 see:  
Patent No. 3,754,527

3,754,526

**ELECTROPHOTOGRAPHIC DEVELOPMENT APPARATUS**

Allison Holland Caudill, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,039

Int. Cl. G03g 1/300

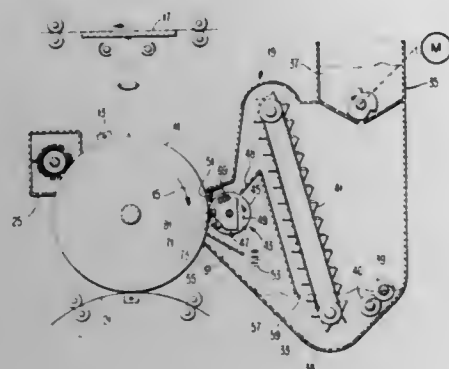
U.S. Cl. 118—637

5 Claims

A developing apparatus for an electrostatic reproduction machine includes a nonmagnetic cylinder rotatably mounted relative to a fixed magnetic field generating means. A multicomponent magnetic developer material is fed to the cylinder forming magnetic bristles of developer material thereon for brushing contact with a photosensitive electrostatic plate bearing an electrostatic latent image thereon. A portion of the developer material transfers to the plate developing the image, and the remainder is slung from the rotating cylinder onto a guide member thereby providing marked agitation and recombination of the developer material resulting in an increased triboelectric charge level of the developer material. The magnetic field is oriented to facilitate



the slinging of the developer material against the guide. It further provides a directional field following the delivery point of the developer material to the cylinder which prevents developer material from flowing over the outer edges of the magnetic field existing at the development zone and post



development zone. The developer material is thus prevented from being attracted to the cylinder at the development zone and thereafter prematurely slung from the rotating cylinder thereby keeping unwanted developer material from being carried away from the developer unit by the plate.

3,754,527

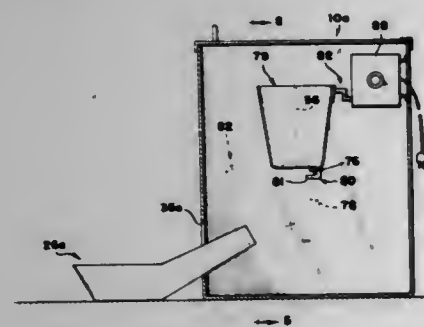
## ANIMAL FEEDER

Chester W. Jenkins, Ten Southfield Dr., Rolling Hills, Calif.  
Continuation-in-part of Ser. No. 856,972, Sept. 11, 1969. This application Sept. 13, 1971, Ser. No. 179,868

Int. Cl. A01k 5/02

U.S. Cl. 119—51.14

7 Claims



An apparatus for automatically feeding animals at a predetermined time is provided and includes at least one container for holding animal food and means for dumping the container at a predetermined time to cause the contents thereof to be discharged by gravity at a location accessible to the animal.

3,754,528

## DEVICE FOR FEEDING ANIMALS

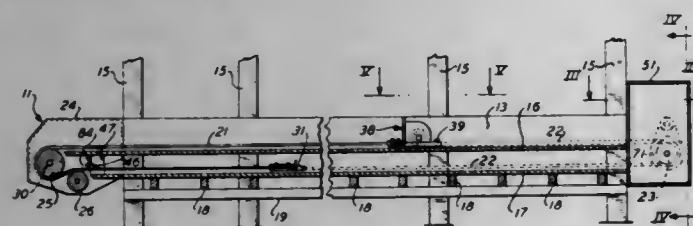
James H. Downing, Mineral, Va., assignor to Harris Company, Inc., Mineral, Va.

Filed Jan. 28, 1971, Ser. No. 110,538

Int. Cl. A01k 05/02

U.S. Cl. 119—52 AF

2 Claims



An apparatus for feeding animals including a positive simple chain drive unit, to move a belt or carpet to carry animal feed forward in a feed bunk, or backward to clean and reload, unlimited take-up means being provided to tighten or take up

slack in the drive chain, eliminating all cables, winch drums, clutches, solenoids and some other parts formerly used. The take-up means includes a sprocket wheel secured to a shaft rotatably mounted on rigid means secured to one end of the moving belt. The sprocket wheel meshes with one end of the drive chain, whereby turning of the wheel adjusts the chain tension. A pin is provided for insertion through aligned apertures in the rigid means and through a link in the chain to hold the tightness thereof as desired.

3,754,529

## APPARATUS FOR CONTINUOUSLY DEPOSITING BERYLLIA THROUGH VAPORIZATION OF A BASIC FORMATE

Peter L. Fleischner, New York, N.Y., assignor to National Beryllia Corporation, Haskell, N.J.

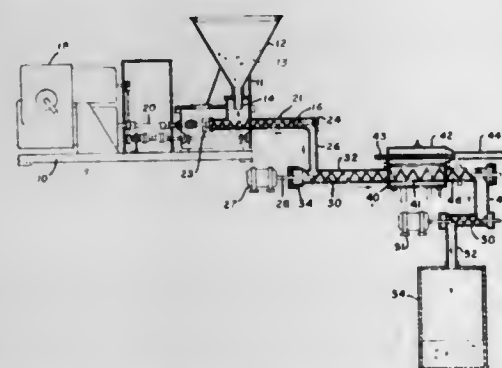
Division of Ser. No. 44,344, June 8, 1970, Pat. No. 3,679,463.

This application May 1, 1972, Ser. No. 249,054

Int. Cl. C23c 13/12

U.S. Cl. 118—48

7 Claims



An apparatus for vaporizing a basic formate of beryllium by continuous means in which the beryllium basic formate is mixed with a granular inert carrier material such as sand and as an aggregate is fed from a storage hopper through a closed screw conveyor system through a heating zone whereat the basic formate of beryllium is vaporized and in a vaporized condition is delivered to a chamber in which the beryllium basic formate is thermally decomposed into beryllia and is deposited on a substrate. The granular inert material and unvaporized basic formate is discharged to a closed receiving hopper for reprocessing and the like.

3,754,530

## FINISH APPLICATOR FOR FILAMENT BUNDLES

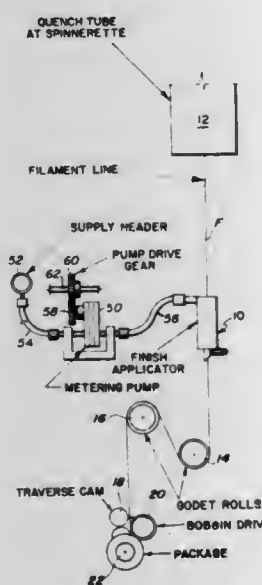
John H. Pierce, Charlotte, N.C., assignor to R. H. Boulligny, Inc., Charlotte, N.C.

Filed May 4, 1972, Ser. No. 250,234

Int. Cl. B05c 3/12

U.S. Cl. 118—420

6 Claims



Apparatus for applying liquid finish to a traveling filament bundle is provided in which the filament bundle is surrounded

during finish application for better control and uniformity of application, while threading of the apparatus is readily allowed as well as disassembly of the components for cleaning.

3,754,531

## FLUIDIZED DEVELOPMENT APPARATUS

Daniel J. Donalles, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

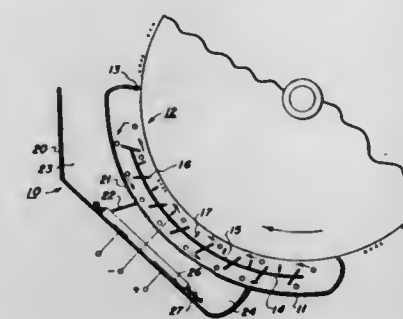
Division of Ser. No. 867,618, Oct. 20, 1969. This application

July 14, 1971, Ser. No. 162,362

Int. Cl. G03g 13/00

U.S. Cl. 118—637

1 Claim



An apparatus for developing a latent electrostatic image wherein the developer material is circulated in a fluidized state past the image. The developer is fluidized by an orbiting member which further acts as a biased development electrode to better develop the electrostatic image. The fluidized developer flow moves in the direction of movement of the surface bearing the electrostatic image to be developed whereby the combined motion of the orbiting electrode and the movement of the image bearing surface results in the developer being propelled at an average velocity equal to the velocity of movement of the image for effective development of the leading edge thereof. Further, means are included to optimally tonerize the carrier particles in the developer while being circulated for development.

3,754,532

## MILKING MACHINE

Bengt Erik-Mikael Troberg, Tumba, and Carl Olof Claesson, Uppsala, both of Sweden, assignors to Alfa-Laval AB, Tumba, Sweden

Continuation-in-part of Ser. No. 878,294, Nov. 20, 1969,

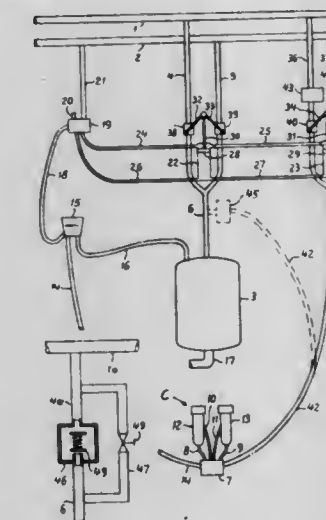
abandoned. This application June 9, 1971, Ser. No. 151,371

Int. Cl. A01j 05/04

U.S. Cl. 119—14.08

6 Claims

U.S. Cl. 123—8.09



A milk flow indicator is inserted in the pipeline through which the liners of the teat cups deliver milk to a vessel maintained under vacuum; and control means are operatively connected to this indicator for varying the vacuum in the vessel in response to changes in the milk flow in the pipeline, the control means acting to reduce the vacuum in response to sub-

stantial cessation of the milk flow. Preferably, the flow indicator is also arranged to vary a characteristic of the pulsations to which the teat cups are subjected by the pulsator means, such as the frequency of the pulsations and/or the ratio between the massage and suction periods of the pulsations.

## ERRATUM

For Class 119—52 AF see:  
Patent No. 3,754,528

3,754,533

## TUBE SUPPORT SYSTEM

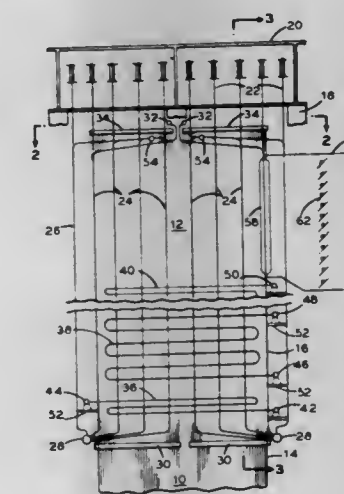
Karl Franzmann, and Paul Schleuter, both of Oberhausen, Germany, assignors to Babcock & Wilcox Limited, London, England

Filed Nov. 24, 1971, Ser. No. 201,905

Int. Cl. F22b 37/24

U.S. Cl. 122—510

2 Claims



A vapor generating apparatus having an evaporator section, a portion thereof including the wall tubes forming an upright gas passage and the support tubes supporting the heat exchanger surface suspended within said gas passage.

3,754,534

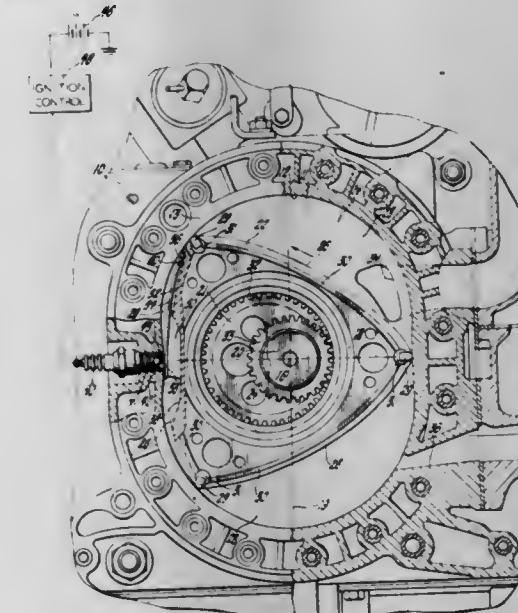
## ROTARY COMBUSTION ENGINE IGNITION

Harvey A. Burley, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1971, Ser. No. 211,429

Int. Cl. F02b 53/12

29 Claims



A rotary combustion engine having a spark plug cooperating with a plurality of series arranged electrodes to provide a



plurality of sparks in each of a plurality of variable volume working chambers for fuel ignition.

3,754,535

# COMBUSTION ENGINE WITH ROTARY PISTON ARRANGEMENT

Peter Hofbauer, Wolfsburg, Germany, assignor to Volkswagenwerk AG, Wolfsburg, Germany

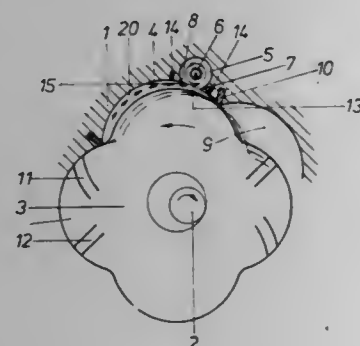
Filed Oct. 6, 1971, Ser. No. 186,914

Claims priority, application Germany, Oct. 10, 1970, P 20 49 882.2

Int. Cl. F02b 53/08

U.S. Cl. 123—8.13

14 Claims



In a combustion engine having a rotary-type piston mounted for rotation and having a cross sectional area defining a trochoid, an outer housing receiving the piston and being in meshing engagement therewith, the housing having an inner surface which has a cross sectional shape representing the envelope of a trochoid curve and forms a plurality of housing arches which include the combustion chambers in the form of recesses, each chamber being arranged to fall in the half of a housing arch which is first swept by the piston during the relative movement between the housing and the piston.

3,754,536

# ROTARY COMBUSTION ENGINE

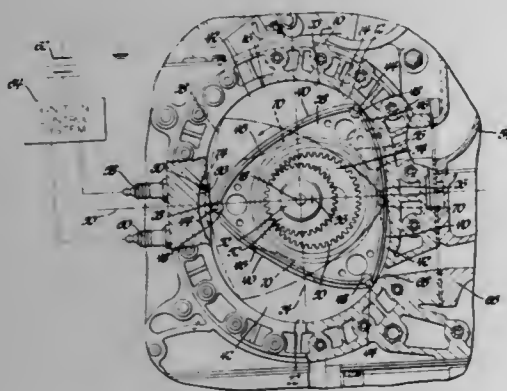
James D. Fleming, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 4, 1972, Ser. No. 250,317

Int. Cl. F02b 55/14

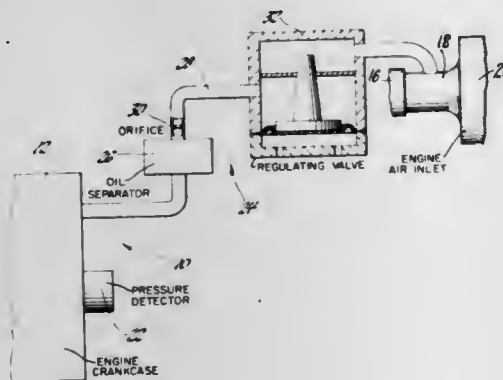
U.S. Cl. 123—8.45

3 Claims



A rotary combustion engine having an internal gas flow control providing gas flow from a trailing to a leading portion of each working chamber during the latter portion of a compression phase when communication between such portions becomes substantially limited between the stator housing's peripheral wall and the rotor face and the gas flow control in addition preventing back flow from a leading chamber to a trailing chamber.

In a preferred embodiment, a crankcase ventilation system utilizes the combination of a fixed orifice and a pressure actuated regulating valve downstream of the orifice to control vapor flow from the engine crankcase into its induction system. The arrangement provides controlled vacuum in the engine crankcase during normal operation but permits the development of pressure during abnormal conditions of excessive blowby or the like so as to permit actuation of a crankcase pressure actuated shutdown device associated with the engine.



3,754,537

# FUEL INJECTION SYSTEM ESPECIALLY FOR MULTI-CYLINDER INTERNAL COMBUSTION ENGINES

Wolf Wessel, Schwieberdingen, and Josef Wahl, Stuttgart, both of Germany, assignors to Robert Bosch, GmbH, Gerlingen-Schillerhane, Germany

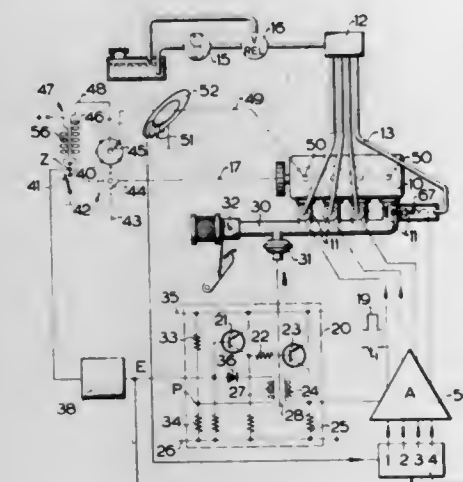
Filed Mar. 3, 1972, Ser. No. 231,500

Claims priority, application Germany, Mar. 12, 1971, P 21 11 814.9

Int. Cl. F02b 3/00

U.S. Cl. 123—32 EA

7 Claims



To provide proper allocation of fuel injected under electronic control, a sequence of electrical pulses, controlled by rotation of the engine are provided, the passage opening electromagnetic valves through which fuel can be injected. A signalling circuit which is inductively or capacitively coupled to an ignition wire provides a signal synchronized with ignition pulses, this signal being coupled to an electronic counter which steps in synchronism with the ignition pulses and the output counts of which control application of the valve pulses to the respective fuel injection valve associated with the cylinders of the internal combustion engine.

3,754,538

# ENGINE CRANKCASE VENTILATION

Max Ephraim, Jr., Evergreen Park, and Ludvik F. Koci, LaGrange Park, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 2, 1971, Ser. No. 194,930

Int. Cl. F02f 9/02

U.S. Cl. 123—41.86

4 Claims

3,754,539

# ENGINE ROCKER ARM STABILIZER

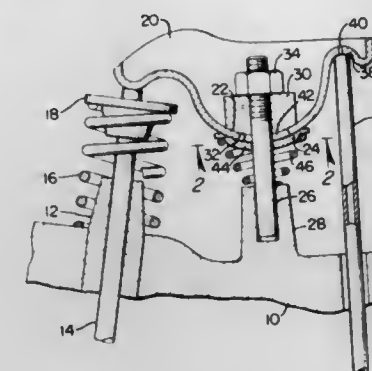
John C. Bandimere, 3276 Benton, Denver, Colo.

Filed June 29, 1972, Ser. No. 267,583

Int. Cl. F01l 1/16, 1/18

U.S. Cl. 123—90.41

7 Claims



Device for use with a conventional engine rocker arm of the type pivoted between its ends by a spherical wall on the rocker arm, supported by a ball support on the engine, characterized by a spring urged member engaging the spherical wall, and maintaining it in stabilized engagement with the ball support.

3,754,540

# SPEED LIMITING MEANS FOR AN AIR VALVE CARBURETOR

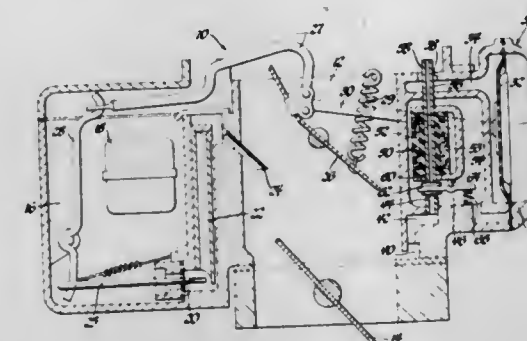
Francis L. Bedard, Troy, and Robert T. Price, Berkley, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 30, 1971, Ser. No. 185,283

Int. Cl. F02d 11/08

U.S. Cl. 123—103

3 Claims



An air valve upstream of a manually-controlled throttle valve, both pivotally disposed in a mixing conduit of an air valve carburetor, is linked to fuel metering means and also to a spring that biases the air valve to a normally closed position. The air valve is opened by a diaphragm-type fluid motor having a first pressure chamber communicating with a vacuum port intermediate the air valve and throttle valve through a vacuum passage and a second pressure chamber communicating with atmospheric pressure through an atmospheric passage. Below a predetermined vehicle speed, both chambers communicate continuously with their respective pressures with the result that the fluid motor positions the air valve in relation to the inducted air flow. Above this predetermined speed, the spring is allowed to close the air valve to a position where the air flow is limited to that required to maintain the predetermined speed. The rate of air valve closure is controlled by cooperation between the fluid motor and a solenoid valve intermittently operated by a vehicle speed sensor for duty cycles increasing as the actual vehicle speed exceeds the predetermined speed. The solenoid valve connects the first pressure chamber alternately between the atmospheric and vacuum passages for durations sufficient to effect a pressure increase in the pressure chamber that allows closure of the air valve at a rate to limit the vehicle speed.

3,754,541

# IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Takao Sasayama, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

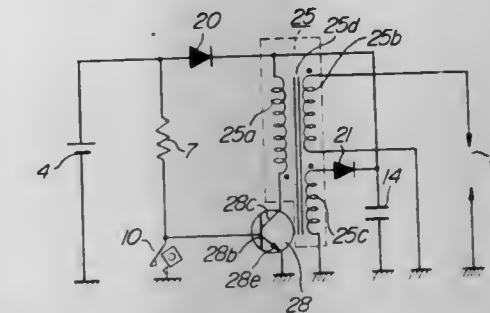
Filed Oct. 30, 1970, Ser. No. 85,554

Claims priority, application Japan, Nov. 4, 1969, 44/87568; Jan. 26, 1970, 45/6295

Int. Cl. F02p 3/06

U.S. Cl. 123—148 E

2 Claims



An ignition system for internal combustion engines wherein an ignition coil is provided, in addition to a first winding having a switching element in series and a second winding provided a discharging gap in series, with a third winding magnetically coupled with the first and second windings, a capacitor which is connected across the terminals of the third winding by way of a rectifier has the relation of a parallel connection with a series circuit of the first winding and the switching element, and the series circuit is energized by a power source having a reverse current blocking element, whereby the capacitor is charged by the power source by way of the first and third windings and at the same time the capacitor is discharged, when desired, through the first winding to produce a high voltage across the terminals of the second winding.

3,754,542

# ENGINE IGNITION CIRCUIT WITH UNIFORM LEADS

Kenneth A. Allen, 3912 Douglas Ave., Racine, Wis.

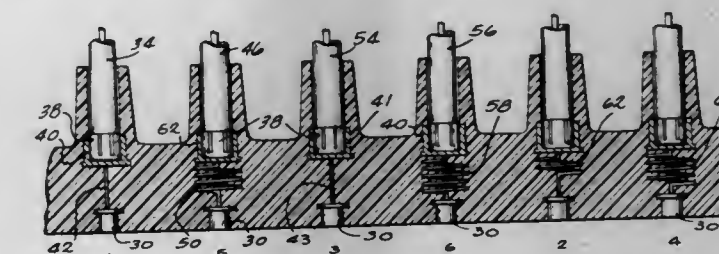
Continuation-in-part of Ser. No. 1,618, Jan. 9, 1970,

abandoned. This application Dec. 15, 1971, Ser. No. 208,369

Int. Cl. F02p 9/00

U.S. Cl. 123—148 A

1 Claim



In an internal combustion engine having cylinders in line, the leads from the distributor to the spark plugs of all cylinders are measured and equalized in length of current travel by means of compensating coils preferably embedded in the distributor cap.

3,754,543

# ROPE STARTER FOR SMALL ENGINES

Joseph R. Harkness, Germantown, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed Mar. 10, 1972, Ser. No. 233,544

Int. Cl. F02n 3/02

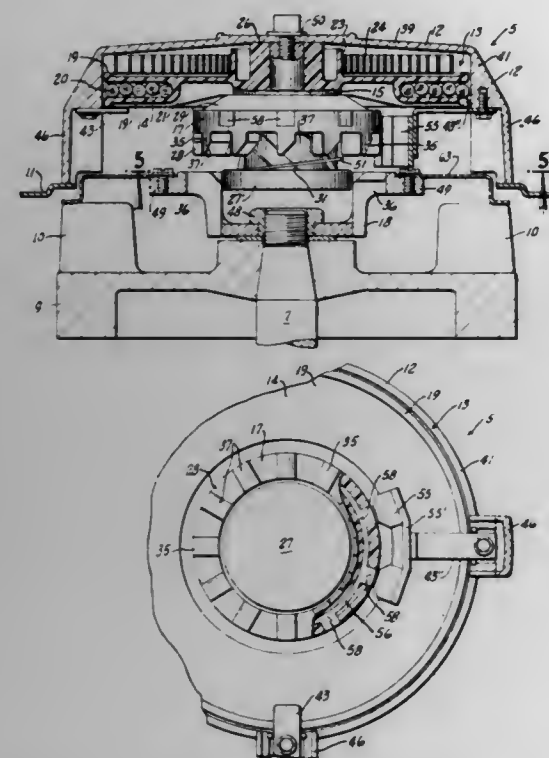
U.S. Cl. 123—185 B

3 Claims

A rope rewind pulley, concentric with an engine crankshaft, has a hub portion comprising a male helical spline member. A driving clutch element comprising a female helical spline is



mounted on said hub portion for limited axial motion therealong upon relative rotation, and then, upon engaging a driven clutch element concentrically fixed to the crankshaft, for rotation with the pulley part. The pulley part and driving



clutch element are of plastic and are carried either on the crankshaft or on a stub shaft fixed to a recoil spring housing. Cooperating fixed and movable magnet members are provided to inhibit rotation of the driving clutch element to cause it to move axially upon initial rotation of the hub portion.

3,754,544

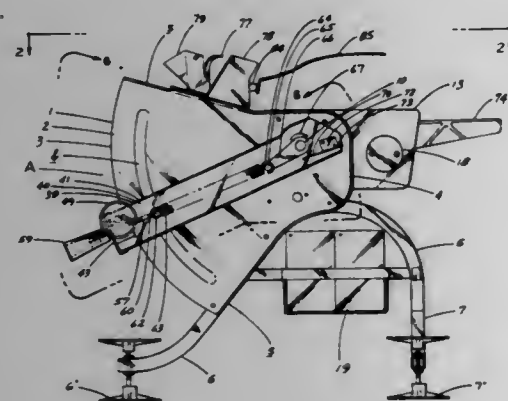
**SPRING OPERATED BALL PITCHING DEVICE**  
Harold Glaser, St. Louis County, Mo., assignor to The Glaser Organization, St. Louis County, Mo.

Filed June 23, 1971, Ser. No. 155,947

Int. Cl. F41b 3/04

U.S. Cl. 124-7

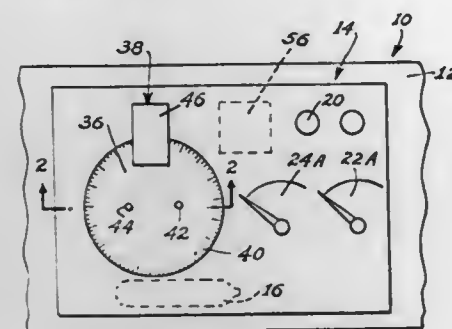
19 Claims



A ball pitching machine comprising a mounting plate, a shaft extending through said mounting plate, a ball throwing arm fixed on one end of said shaft, a ramp for feeding a ball to said ball throwing arm, there being a tension spring engageable with the other end of said shaft to be stressed when a ball is fed to said throwing arm so that upon release of said spring said throwing arm will be forcefully swung to pitch the ball. An adjustment arm is swingably mounted upon said shaft and engaged to said spring for altering the angle of the axis of the spring to the vertical for providing selected trajectory of the pitched ball. The ball pitching machine is motor driven and has a circuitry for maintaining the motor energized during throwing responsive to spring release.

3,754,545  
**BLOOD PRESSURE RECORDING DEVICE WITH IMPROVED RECORD**  
Berel Weinstein, New York, N.Y., assignor to Bio-Medical Sciences, Inc., Fairfield, N.J.  
Division of Ser. No. 749,518, Aug. 1, 1968, Pat. No. 3,557,779.  
This application June 22, 1970, Ser. No. 47,938  
Int. Cl. A61b 5/02  
U.S. Cl. 128-2.05 Q

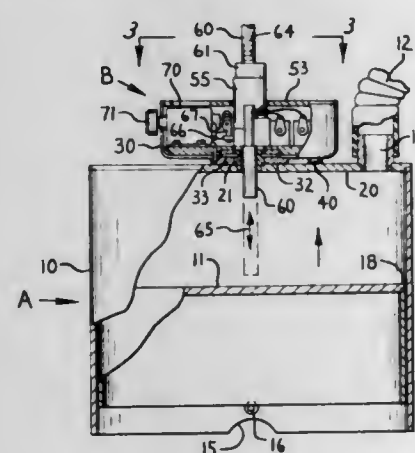
1 Claim



A device for recording the blood pressure of a person comprising a cuff adapted to encircle a limb such as an arm of a person. Pressure regulating means is provided to inflate the cuff to a predetermined pressure and to deflate the cuff when the pressure reaches a preselected value. A record is mounted on a movable support, both of which are mounted on the cuff. The support is adapted to move in response to the pressure of said cuff. Writing means is provided for indicating blood pressures on the record. Actuating means responsive to the pulse beats of a person operates the writing means so that the device produces a graphic record of the blood pressure of the person undergoing examination.

3,754,546  
**INCENTIVE SPIROMETER**  
Robert P. Cooper, La Puente, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.  
Filed June 10, 1971, Ser. No. 151,756  
Int. Cl. A61b 5/08  
U.S. Cl. 128-2.08

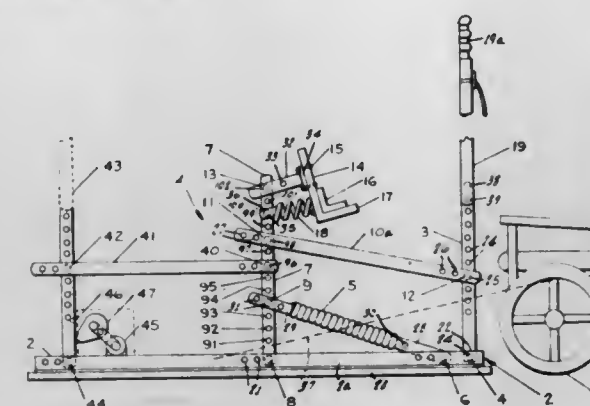
12 Claims



The device has a disposable unit and a re-usable unit. The disposable unit comprises a piston and vertical cylinder, a flexible tube connected with the top of the cylinder and a mouthpiece on the tube. The tube enables a patient to inhale air from the cylinder causing the piston to rise. A controlled leakage is provided between the piston and cylinder making it necessary for the patient to continue inhaling through the tube in order to hold the piston at the top of its upward stroke. The re-usable unit is an indicator unit containing a battery, a signal light and a switch which is held closed as long as the piston remains at the top of its stroke. The light provides incentive for the patient to continue inhalation as long as possible. A counter in the indicator unit records the number of inhalations made in a day or other given period of time.

3,754,547  
**THERAPEUTIC EXERCISE DEVICE**  
William H. Walker, Alhambra, Calif., assignor to V. J. Industries, Los Angeles, Calif.  
Continuation-in-part of Ser. No. 85,200, Oct. 29, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 227,987  
Int. Cl. A61h 1/02  
U.S. Cl. 128-25 R

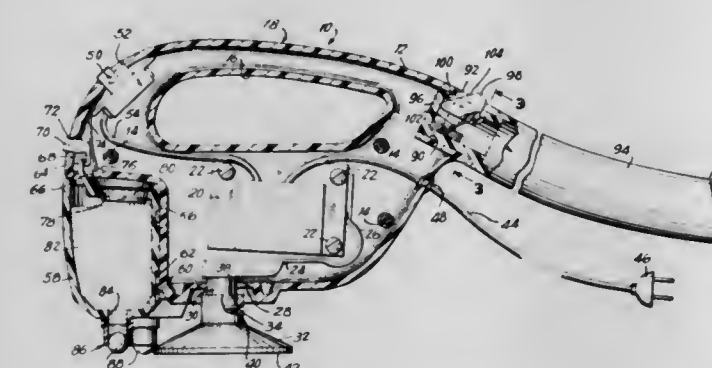
10 Claims



A therapeutic exercise device for flexing various body limbs either singly or in combination, and including apparatus for positioning the hands and feet of a user for simultaneous directional movement, and yieldable resistance means adapted to be overcome by said directional movement.

3,754,548  
**FLUID DISPENSING VIBRATOR**  
Marie McGrath, 100 W. 57th St., New York, N.Y.  
Filed July 3, 1972, Ser. No. 268,324  
Int. Cl. A61h 9/00  
U.S. Cl. 128-65

9 Claims



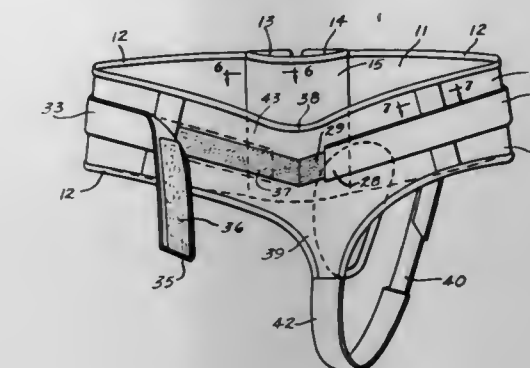
A fluid dispensing vibrator having a hand-held housing containing a vibrator motor operatively coupled to a skin vibrating element extending out of the housing. A fluid reservoir having a plurality of dispensing ball valves is releasably mounted on said housing with the ball valves positioned adjacent said skin vibrating element so that said ball valves and skin vibrating element may simultaneously engage the user's skin.

3,754,549  
**TRUSS**  
Henry G. Nelkin, Kansas City, Mo., assignor to H. G. Enterprises, Kansas City, Mo.  
Filed June 29, 1971, Ser. No. 157,974  
Int. Cl. A61f 5/28  
U.S. Cl. 128-100

9 Claims

A truss that has a pair of spaced folds at the back of the body portion with flexible fabric extending across the space between the folds and adjusting means that are each connected with the body portion at one of the folds and extends across the other fold. Adjusting straps are each fastened at one

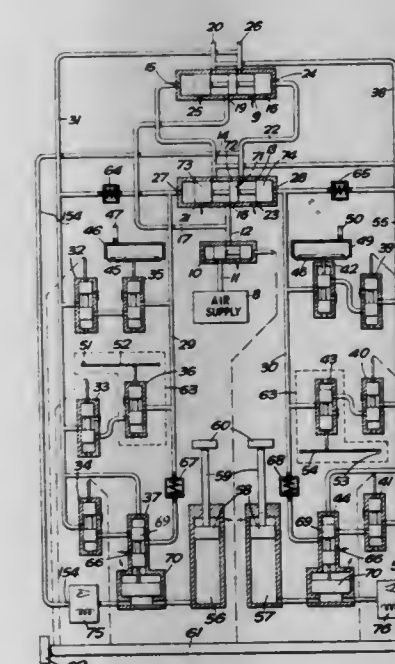
end permanently to the body portion and each extends through a loop that is part of the connection for the strap with the back of the body portion. The adjusting straps and the front of the body portion have Velcro fasteners that detachably fasten each strap independently in adjusted position at the front of the truss. The rupture pad is slidably



mounted on a strap that runs up and down on the front side of the body portion and has one end fastened in fixed position to the front of the body portion. A Velcro fastener strip runs lengthwise of the strap and cooperates with a Velcro fastener strip that runs lengthwise of the front of the body portion and thus crosswise of the strap. The pad has a ply on the back side having spaced slots through which the strap slidably extends.

3,754,550  
**CYCLICALLY OPERATED MEDICAL RESPIRATORS**  
Barry John Kipling, Cambridge, England, assignor to Pye Limited, Cambridge, Cambridgeshire, England  
Filed Sept. 15, 1970, Ser. No. 72,349  
Claims priority, application Great Britain, Sept. 15, 1969, 45,424/69  
Int. Cl. A62b 7/04  
U.S. Cl. 128-145.8

6 Claims



For a medical respirator, a pneumatic drive circuit is provided which operates the respirator inspiratory and expiratory control valves in accordance with any one or more of the three modes of cycling, viz. time cycling, volume cycling or pressure cycling. Separate mode selection is provided for terminating the inspiratory and expiratory periods, each period being terminated at an instant determined by the selected parameter or the first one of the selected parameters.



### 3,754,551 PORTABLE COLLAPSIBLE RECOMPRESSION CHAMBER

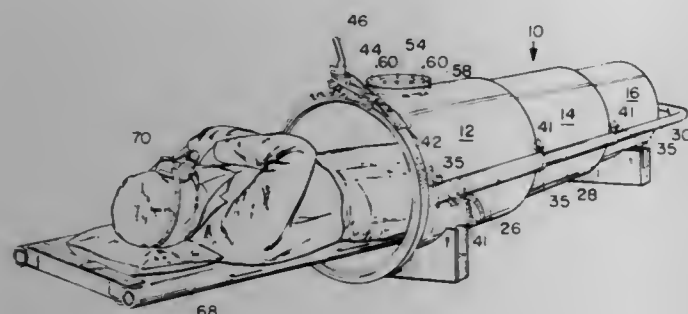
Peter A. Nielsen, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 20, 1971, Ser. No. 181,678

Int. Cl. A61m 16/02

U.S. Cl. 128—204

4 Claims



A portable recompression chamber for emergency treatment of and transportation of divers stricken with the "bends." It is in the form of an elongate pressure chamber of circular cross section capable of receiving a patient on a stretcher. It is collapsible into a small space and has an end closure means which is reversible in order to protect the instruments located thereon during storage.

### 3,754,552 FLEXIBLE NASAL CANNULA

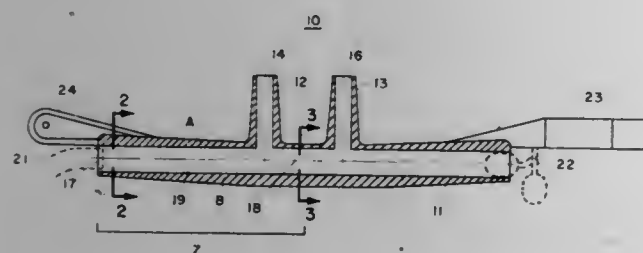
William R. King, Denver, Colo., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed June 8, 1971, Ser. No. 151,120

Int. Cl. A61m 15/08

U.S. Cl. 128—206

2 Claims



A flexible nasal cannula adapted for the intake of therapeutic gas from either the right or left side of a patient, wherein the top and bottom wall sections of the cross tube are tapered from the ends to the mid point of the cross tube.

### 3,754,553 DISPOSABLE DOUCHING APPARATUS

Shirley M. Hewitt, Fullerton, Calif., and Sal Masullo, Las Vegas, Nev., assignors to Arsal, Inc., Fullerton, Calif.

Filed Jan. 7, 1972, Ser. No. 216,179

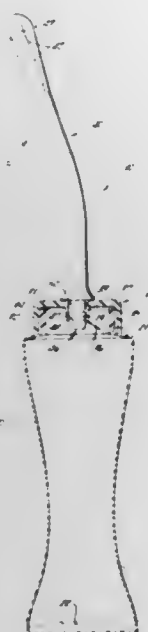
Int. Cl. A61m 1/00

U.S. Cl. 128—232

3 Claims

Disposable douching apparatus comprising a flexible squeeze bottle, a cap removably connected to the bottle, the cap having a hole therein and a thin disc-shaped member connected to the perimeter of the hole thereby completely sealing the hole, and a nozzle, one end of the nozzle including a circumferential lip at the end thereof and being extendable

through said hole in said cap to break at least a portion of the circumferential connection between the disc-shaped member



and the cap, the lip at the end of the nozzle engaging the inside of the cap for preventing removal thereof.

### 3,754,554 ENDOTRACHEAL TUBE MEANS

Hector Felbarg, 12 Kingsley Rd., Huntington, N.Y.

Filed Feb. 22, 1972, Ser. No. 227,734

Int. Cl. A61m 25/00

U.S. Cl. 128—351

2 Claims



An endotracheal tube having a protrusion with small orifice at its forward end. An introducer or guide rod extends through the orifice to guide the tube between the vocal cords. The rod has a stop to limit its protrusion from the tube. A handle is provided on the rod to operate it.

### 3,754,555 CONTROLLABLE BARBED INTRACARDIAL ELECTRODE

German Schmitt, Vredenweg 8, 44 Munster, Germany

Filed Oct. 5, 1971, Ser. No. 186,654

Int. Cl. A61n 1/04

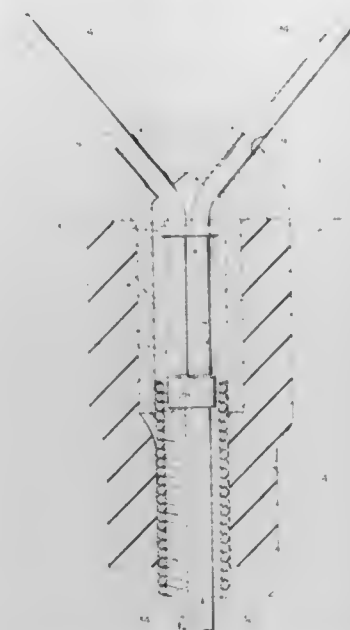
U.S. Cl. 128—418

2 Claims

A repeatedly implantable intracardial electrode for use with a heart stimulation device provides a piston movable axially within a cavity in the electrode body. The piston carries

resilient prongs which move through channels in the electrode body to engage the heart tissue for implantation of the elec-

comb. The conduit opens on an aperture which threadedly receives threaded necks of shampoo containers, and the like, or, selectively, a threaded coupling end of a flexible hose.



### 3,754,558 COIN PROCESSING APPARATUS WITH JAM DETECTION SYSTEM

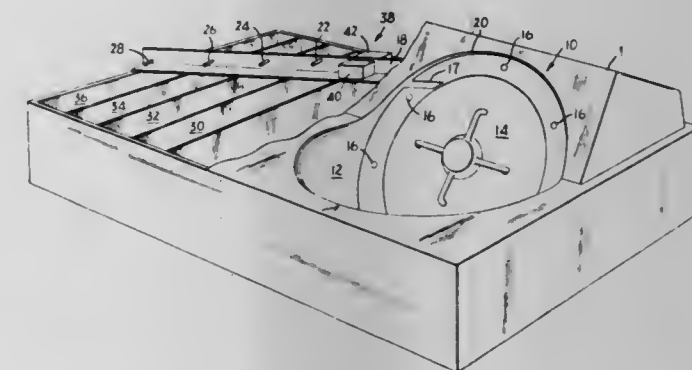
Barton C. Conant, Westport, and Sze Ming Yao, Norwalk, both of Conn., assignors to Abbott Coin Counter Co., Inc., Greenwich, Conn.

Filed Mar. 13, 1972, Ser. No. 233,987

Int. Cl. G07d 9/00

U.S. Cl. 133—3 R

9 Claims



trode. The prongs are retracted when tension is exerted on the piston, and are advanced by force on the piston.

### 3,754,556 AUTOMATIC NAIL FILE

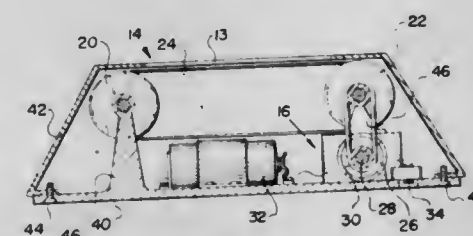
Jasper J. Watkins, P. O. Box 94, Clifton, N.J.

Filed May 4, 1972, Ser. No. 250,422

Int. Cl. A45d 29/06

U.S. Cl. 132—73.6

9 Claims



An automatic manicuring device is disclosed which includes a housing, with said housing having at least one fingernail receiving slot therethrough;

flexible nail filing means mounted within said housing for movement in a plane located beneath said fingernail receiving slot; and means for moving said filing means in said plane.

### 3,754,557 LIQUIDS AND FLUIDS DISPENSING APPLICATOR ASSEMBLY

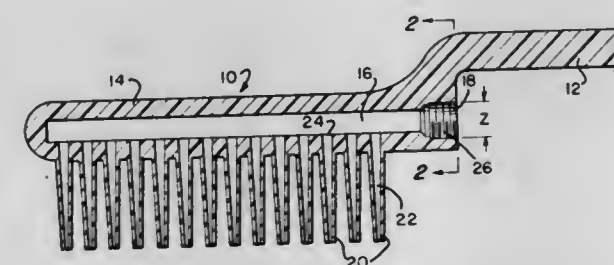
Paul J. Moore, 9 Mack St., Plains, Pa.

Filed Jan. 12, 1972, Ser. No. 217,352

Int. Cl. A45d 24/22

U.S. Cl. 132—114

3 Claims



The assembly comprises a comb having hollow teeth in fluid communication with a fluid conduit formed in the spine of the

Apparatus for high speed, high volume coin processing comprising sensor elements adapted for sensing coins in continuous non-selective transit therethrough incorporates a coin jam detection system responsive to output signals of the sensor elements.

### 3,754,559 DRUM TYPE WASHER FOR METAL BORINGS AND THE LIKE

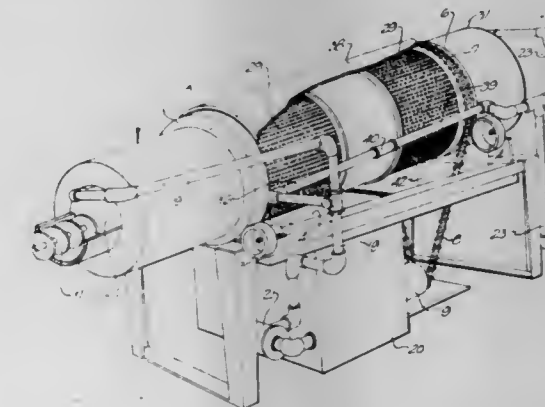
Paul J. Seiwert, Cincinnati, Ohio, assignor to The Macleod Company, Cincinnati, Ohio

Filed Jan. 31, 1972, Ser. No. 222,109

Int. Cl. B08b 3/02, 3/06

U.S. Cl. 134—65

18 Claims



An elongated drum type washer for metal borings, cuttings and fines having a continuous helical vane for advancing the materials to be cleaned from one end of the drum to the other, the drum being divided longitudinally into a plurality of zones for selectively spraying the materials being cleaned with a liquid and then draining them, the draining zones being provided with spaced apart perforated openings in the periphery of the drum for discharging liquid therefrom, the openings lying between contiguous convolutions of the helical vane with laterally disposed baffles overlying the openings, the baffles being arranged to direct the materials being cleaned away from the openings as the drum is rotated while permitting the liquid to be discharged through the openings.



## ERRATUM

For Class 133—3 R see:  
Patent No. 3,754,558

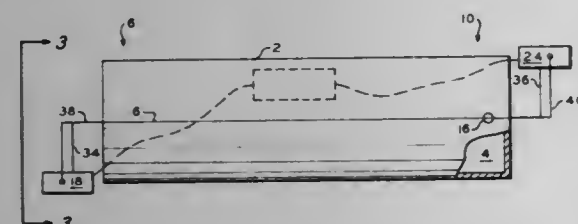
3,754,560

**METHOD AND APPARATUS FOR MEASURING AND CONTROLLING THE VOLUME OF LIQUID IN A VESSEL**  
Hadwen A. Clayton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 18, 1971, Ser. No. 189,990  
Int. Cl. F16k 31/02; G05d 9/12

U.S. Cl. 137—2

12 Claims



A method and apparatus of a movable vessel discharging fluid for measuring the liquid level in the vessel at spaced locations, delivering a signal in response to the measurements and representative of the volume of liquid in the vessel and maintaining the volume of liquid in the vessel in response to the signal.

3,754,561

## FOAM CIRCULATION FLUIDS

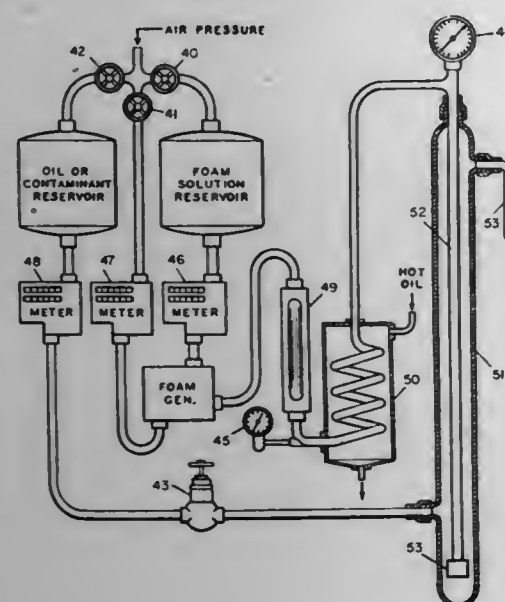
Samuel H. Sharman, Berkeley; Ralph House, San Pablo, and Glen W. Anderson, Oildale, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 779,519, Nov. 27, 1968, abandoned. This application Feb. 4, 1972, Ser. No. 223,536

Int. Cl. E21b 21/04

U.S. Cl. 137—13

4 Claims



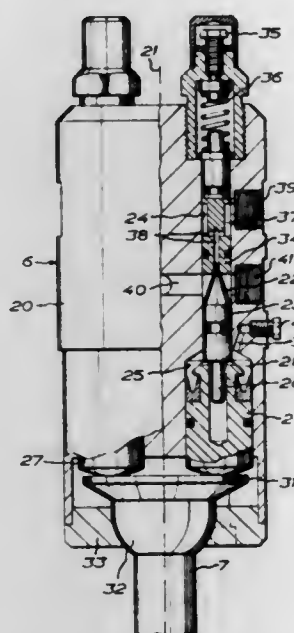
Detergent-range olefin sulfonates containing a minor amount of  $C_8$ - $C_{15}$  substantially linear primary alcohols yield aqueous gas-in-liquid foams having exceptionally low resistance to flow. These foams are especially effective circulation fluids in oil wells when for each 100 parts of the sulfonate from 10 to 25 parts of the alcohol is present in the foaming agent mixture.

**THROTTLE VALVE MECHANISMS**  
Nils Gustaf Bonde Gustafsson, Knared, Sweden, assignor to Hyco Hydraulic AB, Knared, Sweden  
Filed Apr. 21, 1972, Ser. No. 246,304  
Claims priority, application Sweden, Apr. 22, 1971, 5218/71

Int. Cl. F16k 17/36

U.S. Cl. 137—45

3 Claims



In a throttle valve mechanism having a housing in which a pendulum depending from the housing is universally swingable around a geometrical axis of the housing and in which a plurality of throttle valves are arranged and each have one displaceable throttling valve member for varying the throttling effect of the respective throttle valve, the throttling valve member is displaceable by means of an actuating piston movable in an actuating cylinder connected with a control cylinder in which a control piston is displaceable, a liquid body being enclosed and filling the space between the actuating piston and the control piston, the control pistons for the throttle valves being spaced around said geometrical axis adjacent the upper end of the pendulum which has means engaging the control pistons for displacing them in the control cylinders as a result of swinging movement of the pendulum, the effective cross-sectional area of the actuating pistons being smaller than that of the control pistons so that the actuating pistons will be displaced a greater distance than the distance through which the control pistons are displaced by the pendulum.

3,754,563

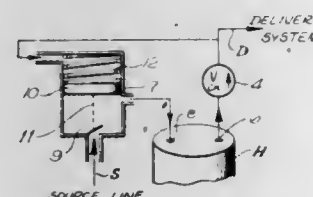
## AUTOMATIC CONTROL SYSTEM FOR WATER HEATERS

Wayne S. Boals, 32046 Kingspark Ct., Westlake Village, Calif.  
Filed Aug. 19, 1971, Ser. No. 173,204

Int. Cl. F16k 17/22

U.S. Cl. 137—94

12 Claims



A control system for domestic water heaters is disclosed, incorporating a check valve between the water heater and the delivery system; the pressure differential observed between the water heater and the delivery system is then sensed to control another valve at the inlet to the water heater. Accordingly, in the event of a leak in the water heater, it is isolated from the supply line so that the pressure in the tank

drops to ambient. As disclosed, the pressure drop in the tank is also sensed to isolate the tank from the source of energy, e.g., a gas valve is closed.

3,754,564

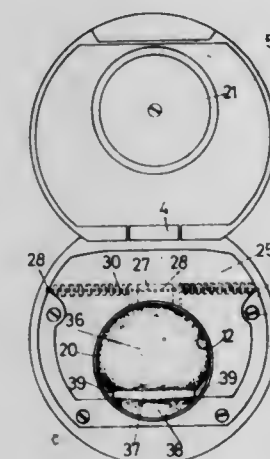
## VALVE FOR A CENTRAL SUCTION SYSTEM

Per Naumburg, Djursholm, and Jan Norrman, Solna, both of Sweden, assignors to AB Centralsug, Solna, Sweden  
Filed Jan. 3, 1972, Ser. No. 215,526

Claims priority, application Sweden, Feb. 26, 1971, 2520/71  
Int. Cl. F16l 29/00, 5/00

U.S. Cl. 137—360

11 Claims



In a system of the type of a central vacuum cleaner system having a plurality of connection boxes for selective connection of suction implements by insertion of a connector in one such box, a normally closed valve disposed within the box. This valve has a valve flap adapted to be swung into opening position within the box by engagement with the connector during insertion thereof. The valve flap has a concave outer surface and at least one shoulder contacting the forward end of the connector at a position spaced from the pivotal point of the flap.

3,754,565

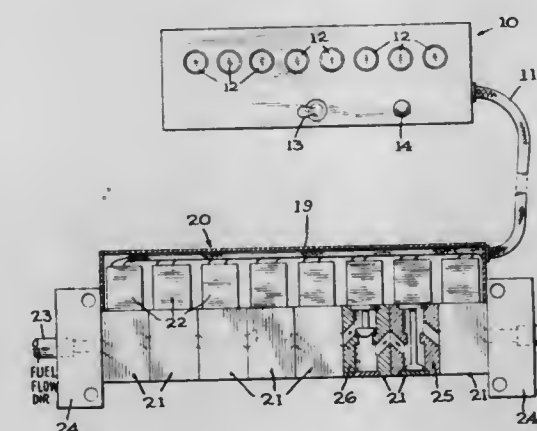
## ANTI-THEFT OR USE DEVICE FOR SELF PROPELLED OR STATIONARY ENGINES

Delbert Gennetten, 672 E. Amherst Pl., Englewood, Colo.  
Filed Feb. 23, 1971, Ser. No. 117,914

Int. Cl. F16k 35/08

U.S. Cl. 137—384.4

6 Claims



A series of switches are used to operate a series of electrically operated valves. Some of the valves are normally open and some are normally closed and if the incorrect switches are operated a valve will be moved to its opposite state and thus prevent the flow of fuel to the engine.

3,754,566

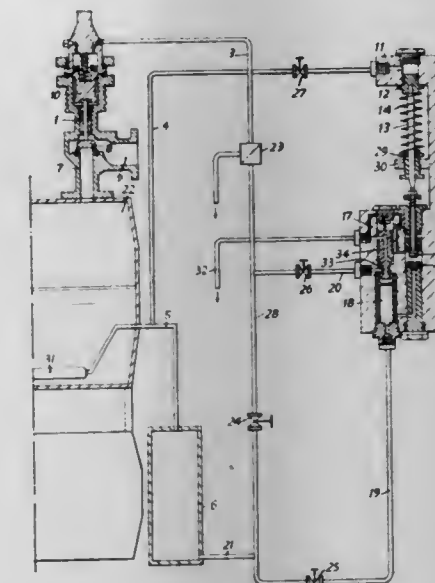
## SAFETY VALVE

Francois Gemignani, Martigues, France, assignor to Societe D'Exploitation De Brevets Pour L'Industrie & La Marine Societe Anonyme, Martigues, France  
Continuation-in-part of Ser. No. 807,640, March 17, 1969, abandoned. This application Apr. 12, 1971, Ser. No. 133,083

Int. Cl. F16k 31/12

U.S. Cl. 137—488

3 Claims



A safety system for a pressure fluid container has a blow-off valve to provide communication between the interior of the container and the atmosphere, a hydraulic ram controlling the blow-off valve, a hydraulic pressure feed circuit for the ram which is connected to the interior of the container through a buffer capacity, and pressure sensing means in which the pressure in the container acts in opposition to spring loading to control pilot valve means, so that when the container pressure rises above a predetermined value, pressure is reduced in the hydraulic pressure feed circuit to the ram, allowing the blow-off valve to open.

3,754,567

## BALL LOCK CONTROL VALVE

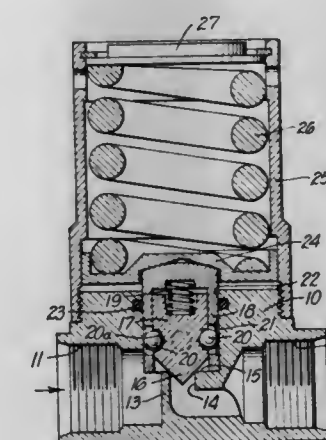
David E. Whitten, Northridge, Calif., assignor to Air-Dry Corporation of America, Northridge, Calif.

Filed May 30, 1972, Ser. No. 257,700

Int. Cl. F16k 31/12

U.S. Cl. 137—509

8 Claims



A control valve in which a valve seat is engaged by a closure member carried by a poppet. The poppet is mounted within a surrounding piston. A plurality of balls disposed around the periphery of the poppet engage larger circular openings in the piston to provide a limited amount of longitudinal movement of the poppet within the piston. A poppet return spring urges the closure member toward the valve seat. A strong pressure



reference spring engages the piston, but its pressure is exerted against the valve body and not against the valve seat. Since the valve seat is not subjected to high pressure, it may be made narrow and sharp and only a small pressure differential is required to move the closure member from seating to sealing position.

### 3,754,568 CHECK VALVE

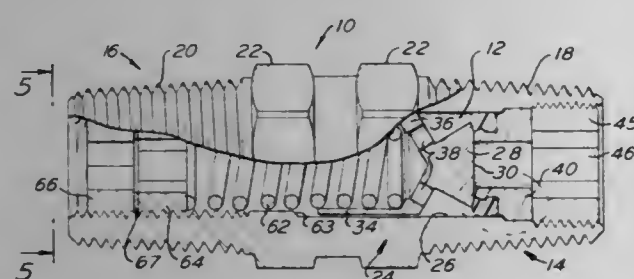
Bernard J. Gallagher; Earl D. Shuffelbarger, both of Mentor; David M. Simko, Parma Heights, and Richard J. Medvick, Cleveland, all of Ohio, assignors to Nupro Company, Cleveland, Ohio

Filed Oct. 14, 1971, Ser. No. 189,208

Int. Cl. F16k 15/02

U.S. Cl. 137—516.29

12 Claims



The specification and drawings disclose poppet-type check valves each comprising a body with a through flow passage and a valve member with a generally circular sealing surface positioned within the passage. The valve member is continually biased toward a seat by a coil spring mounted in the passage. An O-ring positioned in a circumferential groove formed about the passage defines the seat. The groove is open only about the axial side facing the valve member. The inner circumference of the groove is of a lesser diameter than the sealing surface of the valve member. The O-ring is positioned within the groove and has a radial thickness sufficiently greater than the radial width of the groove such that when compressed in the groove, a portion extends out of the open side for engagement with the end face of the valve member. The radially inner wall of the groove is provided with a continuous edge surface which is adapted to engage the end face of the valve member to provide a fixed stop for the valve member. Means for varying the compression on the spring are provided and includes two members threaded axially in the passageway. Each of the members is shown as having a non-circular flow passageway formed through its center. The passageways align in certain positions of relative rotation for adjustment purposes. Thus, adjustment can be accomplished by insertion of an adjusting tool into the flow passage and no external adjustment members are required.

### 3,754,569

#### RESERVE FUEL SYSTEM FOR AN AUTOMOTIVE VEHICLE

John P. Fallotico, Lyndhurst, N.J., assignor to The Raymond Lee Organization Inc., New York, N.Y.

Filed May 11, 1972, Ser. No. 252,196

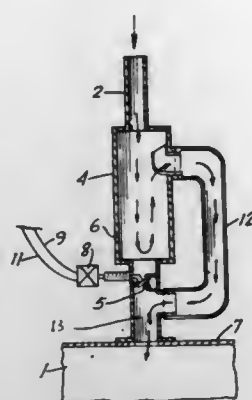
Int. Cl. B60k 15/06

U.S. Cl. 137—572

2 Claims

A reserve fuel tank is connected between the fuel filling inlet and the main fuel tank. Fuel enters the main fuel tank via a bypass conduit extending from upper side of reserve fuel tank to the main tank inlet by overflow after filling of the

reserve fuel tank. A controllable valve is located in the main tank inlet between the bottom of the reserve fuel tank and the



top of the main fuel tank for the release of fuel stored in the reserve fuel tank, when needed.

### 3,754,570

#### SAFETY CONTROL FOR FLUID PRESSURE REGULATORS

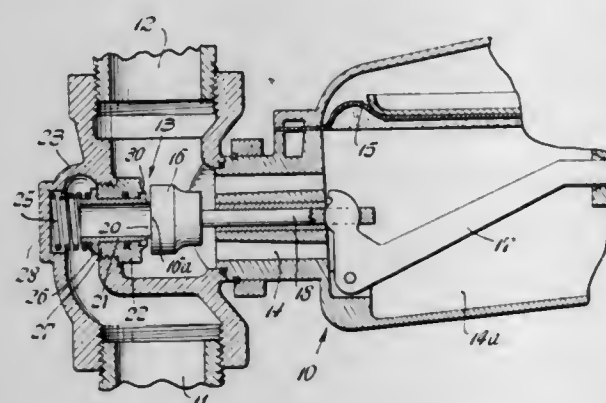
George C. Hughes, Anderson, Inc., assignor to Textron Inc., Providence, R.I.

Filed June 20, 1972, Ser. No. 264,535

Int. Cl. F16k 15/02

U.S. Cl. 137—613

6 Claims



A safety control for fluid pressure regulators having primary valve means for normally controlling the flow of high pressure fluid downstream and an auxiliary flow control means for restricting downstream fluid flow in the event that foreign matter or structural defects in the orifice or valve seat of the primary valve means prevents the valve from completely sealing off the flow of fluid or locking up under the action of the regulator, the primary orifice yielding to permit the auxiliary valve seat means to function and eliminate the need to discharge into the surrounding air a large volume of fluid, such as gas, through the usual vent in the regulator.

### 3,754,571

#### FLUID CONTROL VALVE ASSEMBLY

William E. Bell, Berkley, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1971, Ser. No. 202,918

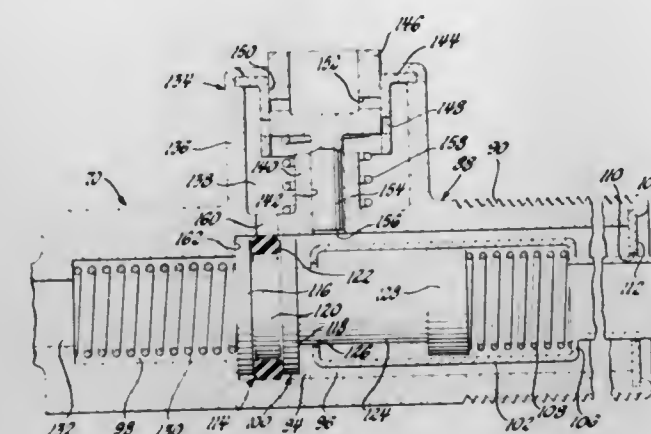
Int. Cl. F15b 15/26

U.S. Cl. 137—614.19

2 Claims

A fluid control valve assembly in which the valve is normally held closed by suitable holding means controlled by a control member such as a brake pedal or the like, the holding means being movable, upon release, by releasing movement of the control member, through a range of movement away from the valve. The valve is urged open in opposition to the holding means by a fluid pressure differential generated by the presence of a fluid pressure to be vented through the valve when the valve is open, and if the fluid pressure differential is present when the holding means is moved away from the

valve, the valve opens, and upon return movement of the holding means is held by the holding means against closure. When the fluid pressure differential is no longer generated and the



holding means is again moved away from the valve, the valve is closed by valve closing means. Upon subsequent return movement of the holding means the valve is again held closed by the holding means.

### 3,754,572

#### PNEUMATIC CONTROL SYSTEM FOR A FUEL BURNING APPARATUS OR THE LIKE

Douglas R. Scott, Elkhart, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

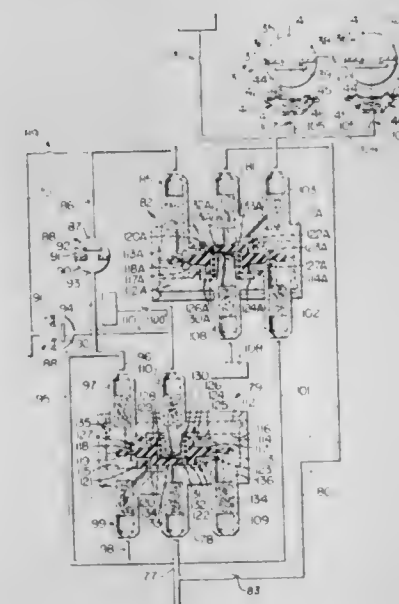
Division of Ser. No. 5,709, Jan. 26, 1970, Pat. No. 3,635,645.

This application Nov. 10, 1971, Ser. No. 197,538

Int. Cl. F15b 5/00; G05d 16/00

U.S. Cl. 137—625.66

10 Claims



This disclosure relates to a pneumatic control system for a clothes dryer wherein the flow of fuel to the main burner means is pneumatically controlled in such a manner that the ignition means for the main burner means must be first pneumatically actuated before the pneumatic control system will pneumatically open the fuel supply means to the main burner means, the control system including a pneumatically operated logic "memory" unit to assure that the ignition means is always pneumatically operated before the main burner means can be pneumatically operated to its on condition by a pneumatically operated "and" unit each time there is a requirement to turn on the main burner means. The "memory" unit is prevented from transmitting atmosphere therethrough when being switched by its setting signal.

### 3,754,573

#### MULTIPURPOSE GAS METER CHANGE VALVE

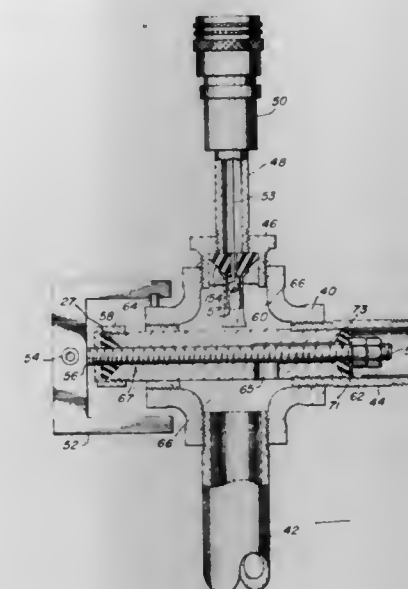
John K. Bales, 1814 N. 52 St., Phoenix, Ariz.

Filed Aug. 16, 1971, Ser. No. 172,011

Int. Cl. F17d 1/00

U.S. Cl. 137—608

1 Claim



A device to be used when it is desired periodically to change gas meters for inspection (as is required by most State laws) or gas pressure regulators without causing any interruption of the flow of gas to the customer. While the meter and regulator are being changed, a pair of the devices of the invention are connected, one into the semi high pressure line, and the other into the low pressure customer's house piping. The device may also be used by gas service companies etc. as a means for shutting off meters during vacancies of apartments or houses.

### 3,754,574

#### HYDRAULICALLY-ACTUATED OMNI-DIRECTIONAL FLUID VALVE

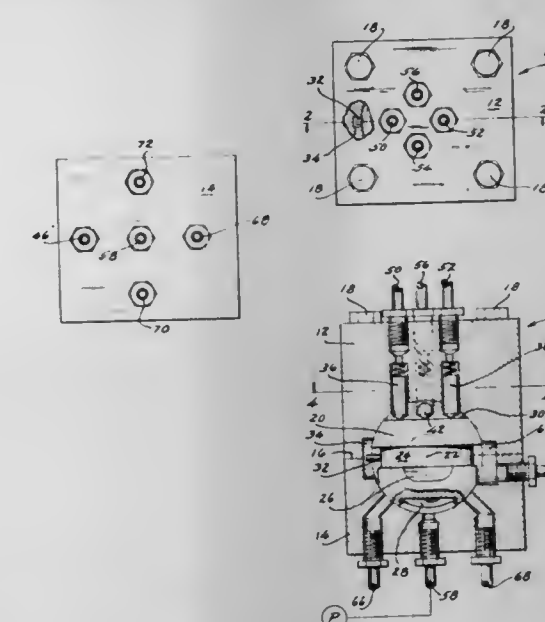
Allen Richard Andis, 3209 Elwood Dr., Racine, Wis.

Filed June 19, 1972, Ser. No. 264,238

Int. Cl. F16k 11/02

U.S. Cl. 137—625.66

3 Claims



A valve comprising two discrete hydraulic systems in one body; the first system being employed to actuate the valve, the second system being employed to perform the work function. A spherical control member, having passageways and a truncation, is nutated in the body by hydraulically-actuated plungers that engage the truncation to rotate the control member and to selectively direct fluid through the passageways and perform the work.



3,754,575

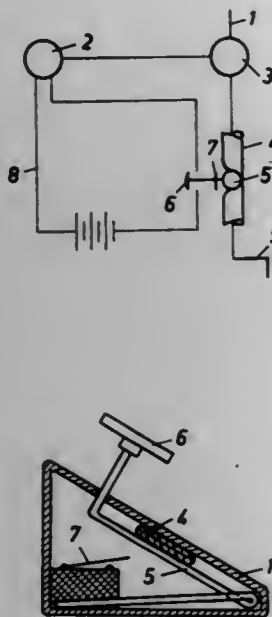
## DEVICE FOR FLUID SUPPLY

Veikko Olavi Korhonen-Wesala, Box 217, 450 60 Fargelanda, Sweden

Filed May 16, 1972, Ser. No. 253,870

Int. Cl. F16g 51/00

U.S. Cl. 137-802



In a fluid supply system of the type having an electric motor actuating either a pump or a valve controlling the flow of fluid, there is provided a flexible conduit portion cooperating with a preloaded lever, which at occurrence of a pressure-alteration, brought about at the opening of one or more draw-off valves in the system, will energize the motor to actuate said pump or valve. Hereby the manual activity at drawing off fluid is considerably reduced and the operating time for the motor can be kept substantially to correspond to the time for drawing off.

3,754,576

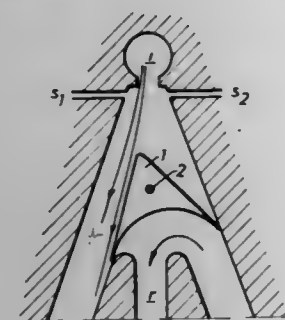
## FLAP-EQUIPPED POWER FLUID AMPLIFIER

Karl Axel Zetterstrom, Trollhattan; Tage Lennart Wetterstad, Ljungby, and Per-Olov Abrahamsson, Opalgatan, all of Sweden, assignors to Volvo Flygmotor AB, Trollhattan, Sweden

Filed May 21, 1971, Ser. No. 145,781

Claims priority, application Sweden, Dec. 3, 1970, 16401/70  
Int. Cl. F15c 3/00

U.S. Cl. 137-829



A fluid amplifier having a fluid flow inlet, a pair of fluid flow outlets, a control fluid flow inlet and a pivotable triangular flap member located in the branching point of the fluid flow outlets, said member being located downstream of the control fluid inlet and adapted to open either of said fluid flow outlets. The flap member is free from direct actuation by the control fluid but is actuated by the fluid flow guided into either outlet and is pivotally journaled about an axis located within the triangular contour, whereby the flap member is automatically switched over to a position with the selected active outlet opened and the other passive outlet completely closed.

3,754,577

## HARNESS FRAME SUPPORT ROD POSSESSING INCREASED BENDING STRENGTH

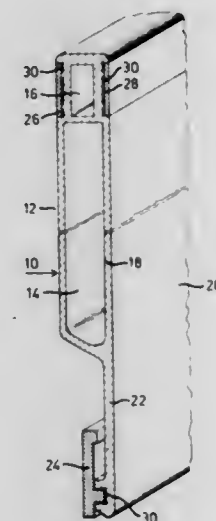
Rudolf Heller, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Continuation-in-part of Ser. No. 854,146, Aug. 29, 1969, abandoned. This application Nov. 10, 1971, Ser. No. 197,202  
Claims priority, application Switzerland, Sept. 13, 1968, 14224/68

Int. Cl. D03d 9/00

U.S. Cl. 139-92

31 Claims



A support rod for a harness frame of a loom and method for the fabrication of such support rod wherein at least one edge reinforcement means is mounted at the region of at least one of the extremities of a lightweight support rod body member, with a thermally hardenable adhesive material interposed at the interface between the edge reinforcement means and the body member. A force is applied to said edge reinforcement means and said body member sufficient to firmly clamp such edge reinforcement means and body member to one another while preventing relative shifting of said edge reinforcement means and body member. The body member and edge reinforcement means are then heated to a temperature sufficient to set the adhesive material while maintaining the clamping force to prevent relative shifting of said edge reinforcement means and body member. The body member and edge reinforcement means are then cooled down to room temperature while still maintaining the clamping force to further prevent shifting of the edge reinforcement means and body member relative to one another, in order to provide a substantially stress-free bond between said edge reinforcement means and body member by virtue of the set adhesive material.

3,754,578

## WEFT YARN MIXING DEVICE FOR SHUTTLELESS LOOMS

Pierre Remond, Bourgoin-Jallieu, France, assignor to Ateliers Diederichs, Bourgoin-Jallieu, France

Filed Nov. 17, 1971, Ser. No. 199,630

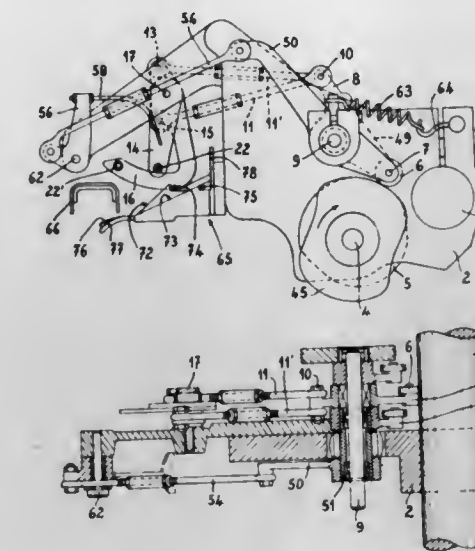
Claims priority, application France, Dec. 21, 1970, 7047157  
Int. Cl. D03d 47/38

U.S. Cl. 139-122 W

3 Claims

In a shuttleless weaving loom wherein the weft yarn transfer is effected according to the so-called "Gabler" system, a device for mixing two weft yarns under the control of a pair of cams acting upon respective yarn guides through the medium of a lever pivotally connected to a pair of adjustable links, one pivoted to an arm above the pivot axis thereof, the other to another arm but beneath the pivot axis thereof, one arm being movable from its operative position to its inoperative position, and vice versa, a positioning bent fork controlled by another

cam being provided for engaging the weft yarn moving past said fork and to lower same to an operative position in which it



can be picked up by an insertion member, with a very smooth movement precluding any damage to the yarns.

3,754,579

## LOOM PICKER

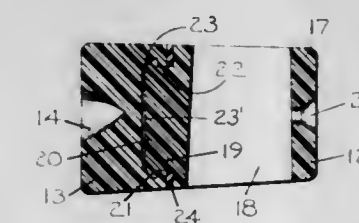
Joseph M. Budzyna, East Douglas, Mass., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1972, Ser. No. 238,251

Int. Cl. D03d 49/36

U.S. Cl. 139-159

2 Claims



A picker for the picker stick of a loom which includes a body portion, a shuttle engaging member removably and operatively associated with said body portion having a shock absorbing element interposed therebetween for cushioning the forces of impact created by a loom shuttle upon the shuttle engaging member.

3,754,580

## SUCTION DEVICE

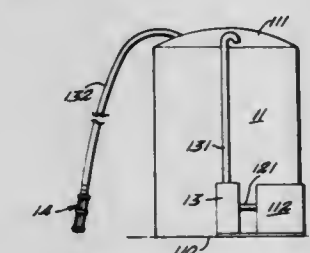
Elbert J. Perry, 2929 N.E. 49th St., Fort Lauderdale, Fla.

Filed Dec. 2, 1971, Ser. No. 203,954

Int. Cl. B65b 31/04

U.S. Cl. 141-65

1 Claim



The invention is directed to a suction device for removing powdered ballast from a deflated vehicle tire, comprising a tube insertable in the ballast for removal thereof by suction and a series of draft tubes on the periphery of the suction tube and terminating below the mouth of the suction tube to agitate the powdered ballast and deliver a draft of air to effect complete removal of the ballast from a tire carcass.

3,754,581

## METHOD AND APPARATUS FOR CARGO TRANSFER SYSTEM

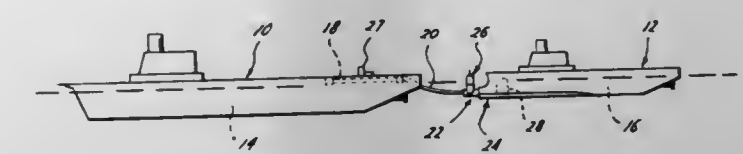
Robert Taggart, 3930 Walnut, Fairfax, Va.

Filed June 1, 1971, Ser. No. 148,719

Int. Cl. B67c 3/34

U.S. Cl. 141-279

26 Claims



The present invention is directed to method and apparatus for the transfer of flowable cargo from ship to ship without the necessity of docking. It utilizes on one ship a transfer hose that, in the preferred embodiment, is trailed out behind the first ship as it moves through the water. The hose is equipped with a probe end that is received in an opening in the bow of the second ship moving along behind the first ship. Locking means secures the hose in the second ship while the transfer takes place. The probe end is provided with sealing means that may be opened and closed, depending upon the direction of the pumping action. Pumps are provided on both ships, and in the second ship the pump is in the chamber that receives the transferred cargo. The probe end is provided with float, ballast and trim means to maintain it properly in the water as it is received and held by the second ship.

3,754,582

## TREE FELLING DEVICE

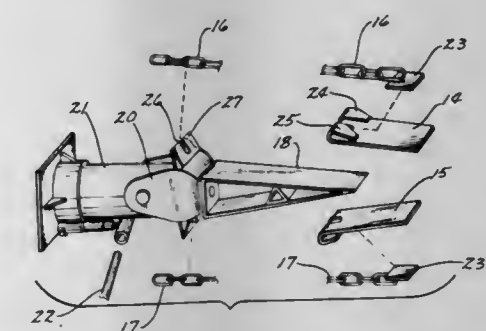
Christopher P. Emerson, Lamoni, Iowa

Filed Oct. 12, 1971, Ser. No. 188,277

Int. Cl. A01g 23/08

U.S. Cl. 144-34 F

6 Claims



A tree-felling device having a pair of shims adapted to be inserted in a saw cut in a tree trunk and spread by a wedge inserted between the shims. The wedge is actuated by a jacking means to which chains attached to the shims are fastened such that actuation of the jacking means causes the wedge to enter the saw cut between the shims, thereby felling the tree.

3,754,583

## INDEXING MECHANISM FOR DENTAL BLOCK WOOD MOLDING

Harry T. Ingram, 1800 Rankin St., Raleigh, N.C.

Filed May 31, 1972, Ser. No. 258,323

Int. Cl. B27c 5/02; B27f 1/08; B27m 3/08

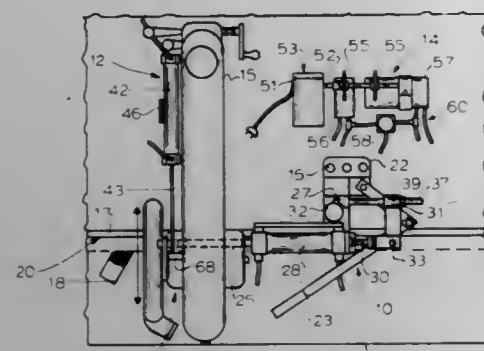
U.S. Cl. 144-133 R

7 Claims

In a conventional radial arm type power saw adapted for dado cutting operations, an indexing mechanism is adapted to draw stock lumber past the sawing blades at predetermined



evenly spaced intervals, and simultaneous with each spaced interval, is adapted to cause the saw to cut a notch of predetermined



mined dimension in the stock lumber thereby continuously forming dental block wood molding.

3,754,584

### ELECTRODE FOR BARKING OF TIMBER BY ELECTRIC CURRENT

Milan Bumerl, Bechyne, Czechoslovakia, assignor to Vedecky lesnický ústav Vysoké školy zemědělské v Praze, Kostelec nad Černými lesy, Czechoslovakia

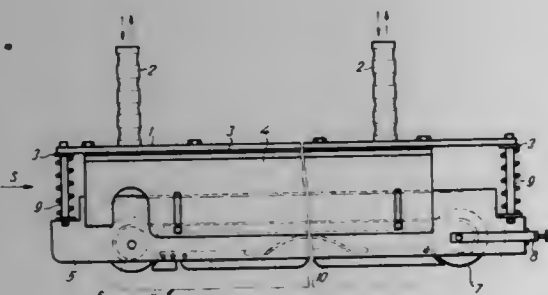
Filed Jan. 20, 1972, Ser. No. 219,430

Claims priority, application Czechoslovakia, Feb. 15, 1971, 1104/71

Int. Cl. B27I 1/00

U.S. Cl. 144—208 R

4 Claims



An electrode for barking of timber by electric current, introduced into the border layers between the wood and the bark, consisting of partial electrodes linked to an endless band, adapted for penetrating into the bark, which partial electrodes remain in the course of passage of the timber through the barking device stationary in the bark for their whole operating period.

3,754,585

### METHOD OF CONSTRUCTING AN ARTICLE OF FURNITURE

Edward L. Clark, Raleigh, N.C., assignor to Research Corporation, New York, N.Y.

Filed Oct. 27, 1971, Ser. No. 193,071

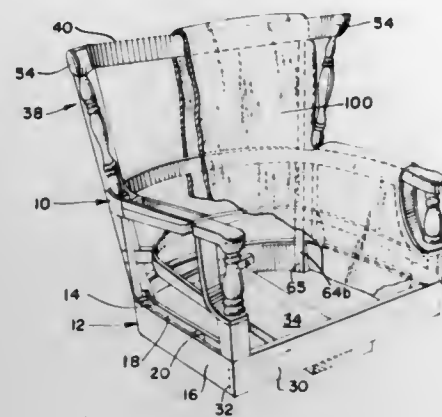
Int. Cl. B27I 7/00

U.S. Cl. 144—314 B

10 Claims

A method of constructing an article of furniture having at least a basic substantially horizontal frame comprises forming of a pair of strip-like members into a nested inner and outer spaced apart relation so as to produce a gap therebetween, inserting bridging spacers into the gap and sub-

sequently securing the spacers to the members so as to permanently maintain the members in their relationship and



thereby provide the basic frame, and attaching of a supporting leg assembly to the basic frame.

3,754,586

### PROCESS AND APPARATUS FOR MAKING SHAKES

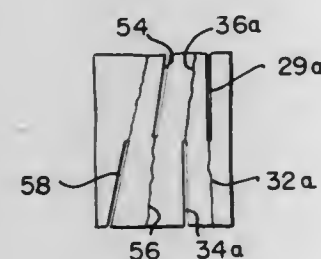
David H. Daniels, 1506 Laura St., Aberdeen, Wash.

Filed May 10, 1971, Ser. No. 141,903

Int. Cl. B27c 9/00

U.S. Cl. 144—326

17 Claims



A method and apparatus for making shakes especially adapted for wood blocks having angular deviations of the grain.

A kerf is made part way into one end of the shake block generally parallel to the grain, and the block is then split as a general continuation of the kerf. If, because of irregularities in the grain of the wood, the cleavage plane along which the block is split deviates angularly from the kerf plane, when a second kerf is made into the other end of the block, the plane of the second kerf is made to deviate from the plane of the first kerf in the same manner that the first cleavage plane deviates from the first kerf plane. A second split is then made as a continuation of the second kerf. Subsequent kerfs and splits are made along generally parallel planes until another planar deviation of the split plane is noted, and subsequent kerfs are angularly adjusted to make up for such deviation.

In the apparatus, there is a block carrying frame rotatably mounted to a laterally movable carriage frame, so that the block is moved laterally into the saw as it is rotated 180° to form a kerf in one half of the block. Then a splitter descends into the upwardly facing kerf to form a shake blank. Upper and lower jaws grasp the block by the ends thereof. These jaws have independently operable teeth sets to advance the block into the cutting and splitting area at the proper angular relationship with respect to the saw.

In the process of a second embodiment, between each of the partial saw cuts mentioned above, a complete end-to-end diagonal cut is made between adjacent kerf beginning portions so that shakes are formed as the block is being split.

3,754,587

### GOLF CLUB COVER

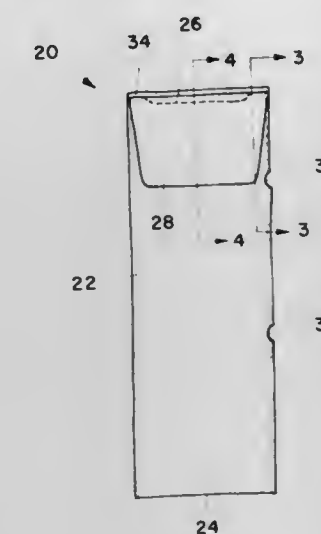
Joseph V. Rainieri, 3404 State St., North Canton, Ohio

Filed Nov. 18, 1971, Ser. No. 199,931

Int. Cl. A63b 55/00

U.S. Cl. 150—52 G

11 Claims



A flexible plastic cover for a golf bag and clubs to protect the same from the weather. The cover is a tube formed of a flexible plastic film that has an open lower end, a pair of notches on one side, and an opening at its top end which is covered by a flap.

3,754,588

### PNEUMATIC TIRE WITH FOLDED BELT PLIES

Heinz-Dieter Rach, Garbsen, and Ekkehard Grollich, Hannover, both of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

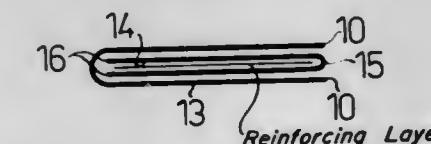
Filed Apr. 26, 1971, Ser. No. 137,423

Claims priority, application Germany, Apr. 30, 1970, P 20 21 267.3

Int. Cl. B60c 9/20

U.S. Cl. 152—361 FP

2 Claims



A pneumatic vehicle tire with a folded belt having one or more layers of U-shaped cross section, in which with a positive camber of a vehicle wheel having the said tire mounted thereon, the free ends of the belt legs are located within the shoulder area of the tire and on that side of the tire which faces toward the vehicle on which the wheel is mounted and with a negative camber of the vehicle wheel are located within the shoulder area of that side of the tire which faces away from the vehicle.

3,754,589

### CURTAIN HAVING A SELF-CONTAINED SHIRRING ARRANGEMENT

Eli Heimberg, North Dartmouth, Mass., and Marvin Rosenberg, New York, N.Y., assignors to Cameo Curtains, Inc., New York, N.Y.

Filed May 12, 1972, Ser. No. 252,681

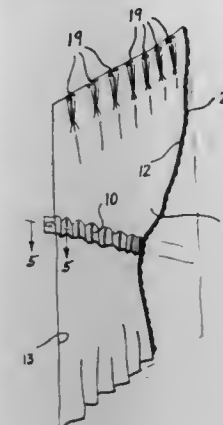
Int. Cl. A47h 1/00

U.S. Cl. 160—349

9 Claims

A curtain having an integral tie-back arrangement includes a piece of flexible material, part of which is fixed to the curtain for providing a channel from one of its vertical edges to the other of its vertical edges. An elongated flexible member

which extends through the channel is fixed at one end to one of the vertical edges. As a result, if the free end of the elongated flexible member is pulled, the curtain is shirred along its width. The flexible material supports a device having a circu-



lar loop and an S-shaped section to which the elongated flexible member may be frictionally tied so as to support the shirred curtain. After the curtain is hung, the loop may be coupled to a nail on its window, thereby supporting the tie-back arrangement.

3,754,590

### METHOD OF MAKING AND USING A CONTINUOUS CASTING CHILL BASKET

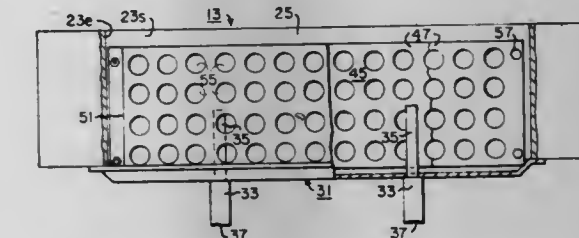
Robert E. Cashdollar, Sr., Butler, Pa.

Filed Apr. 18, 1972, Ser. No. 245,230

Int. Cl. B22d 11/08

U.S. Cl. 164—1

4 Claims



There is disclosed a chill basket for the chill mold of a continuous casting line and a method of making a chill basket. The chill basket is formed of like L-shaped perforated sheets, each sheet having a lip at the end of its foot. The chill basket is formed at the site of the line, or partly or wholly in the mold, by securing the lip of each sheet with a nut and bolt or Dzus fastener or kindred fasteners to the end of the leg of the other sheet. The fasteners are inserted through the end of the leg of each sheet in the direction towards the lip of the other sheet and away from the wall of the chill mold so that the end of the fastener does not protrude towards the mold wall presenting the hazard that it may perforate the wall and permit the cooling water to penetrate into the molten steel.

3,754,591

### METHOD OF MAKING RIM-STABILIZED STEEL INGOTS

John W. Bales, Jr., North Huntingdon Twsp., Westmoreland County, and Michael A. Orfloski, Duquesne, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 118,498, Feb. 24, 1971, abandoned, which is a continuation-in-part of Ser. No. 49,189, June 23, 1970, abandoned.

Filed Aug. 31, 1972, Ser. No. 285,401

Int. Cl. B22d 27/18, 27/20

U.S. Cl. 164—57

8 Claims

Rim-stabilized steel ingots are produced by teeming a rimming-type steel into an ingot mold until the ingot is about 80-95 percent full, whereupon teeming is interrupted to allow a rimming action in the mold for a period of from 1/2 to 15



minutes. Thereafter, teeming is continued until the mold is full. After teeming is commenced following the rimming action, sufficient molten aluminum is added to the mold to produce an SK steel within the rim, all of said aluminum being added prior to completion of the steel teeming.

3,754,592

# METHOD FOR PRODUCING DIRECTIONALLY SOLIDIFIED CAST ALLOY ARTICLES

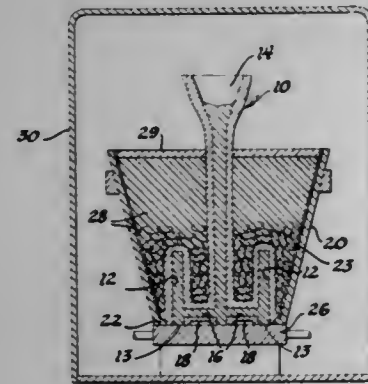
Richard M. Mullen, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 15, 1972, Ser. No. 226,491

Int. Cl. B22d 27/06

U.S. Cl. 164—60

5 Claims



A method of producing directionally solidified cast alloy articles is disclosed wherein a porous, shell mold having open-ended mold cavities is filled with molten alloy while seated on a low heat conductive surface and is allowed to cool. The filled mold is then moved to a highly heat conductive surface and is reheated to a temperature above the melting range of the alloy where a unidirectional temperature gradient is established along the length of the alloy within the mold to cause directional solidification of the alloy.

3,754,593

# CENTRIFUGAL CASTING OF BI-METAL ROLLS

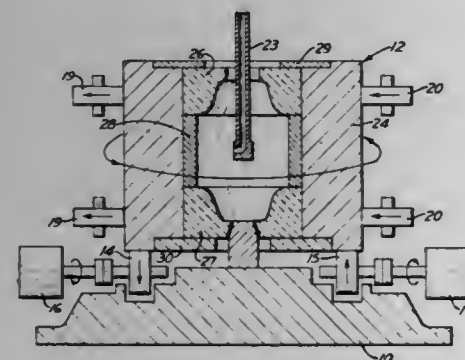
Morris Denor Stone, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Dec. 6, 1971, Ser. No. 205,259

Int. Cl. B22d 13/02, 25/06

U.S. Cl. 164—95

3 Claims



A method for centrifugally casting bi-metal or composite iron and steel rolling mill rolls. The shell of the roll is centrifugally cast by rotating a mold with its major axis arranged vertically, in which, immediately before the shell metal is completely solidified, the rotation of the mold is greatly reduced or stopped and unsolidified shell metal is drained. Immediately after this, the mold is filled with a second metal that makes up the core portion of the roll as well as the neck portions, during which period the mold is static or rotated at a low r.p.m. around its vertical axis as the second metal is fed to the mold from the top thereof.

3,754,594

# UNILATERAL HEAT TRANSFER APPARATUS

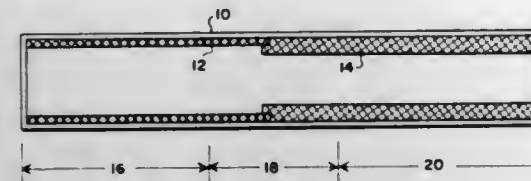
James K. Ferrell, Raleigh, N.C., assignor to Sanders Associates, Inc., South Nashua, N.H.

Filed Jan. 24, 1972, Ser. No. 220,216

Int. Cl. F28d 15/00

U.S. Cl. 165—32

9 Claims



Unilateral heat transfer apparatus comprises an evacuated heat transfer chamber having a variable pore size capillary structure therein with the pore size of the capillary structure in the evaporator portion of the heat transfer device being smaller than the pore size of the capillary structure in the condenser portion thereof. Further, the working fluid within the heat transfer device is limited to that amount which will saturate the capillary structure in the evaporator section only.

3,754,595

# DEVICE FOR THE AUTOMATIC PROPORTIONAL CONTROL OF PHYSICAL QUANTITIES IN A HYDRAULIC CIRCUIT

Angelo Serratto, Piazza Novelli 10, Milan, Italy

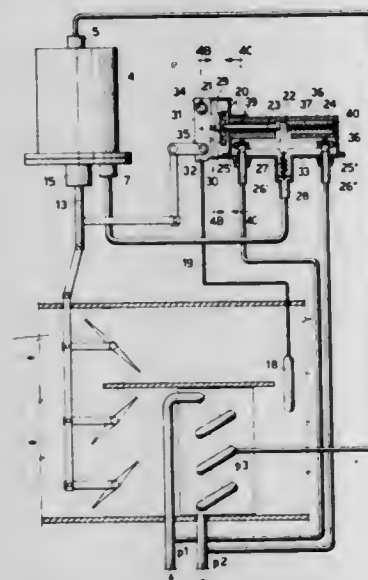
Filed Mar. 17, 1971, Ser. No. 125,241

Claims priority, application Italy, Mar. 23, 1970, 22290 A/70

Int. Cl. G05d 23/12

U.S. Cl. 165—36

6 Claims



A device for the automatic proportional control of physical quantities in a hydraulic circuit which is hydraulically operated by the same water flowing in the circuit or system to be controlled, particularly for the peripheral units of large centralized air conditioning plants. A hydraulic motor of a control unit is actuated by the difference in hydraulic pressure between the inlet and the outlet of each of the heat exchangers and this actuation is controlled in a proportional mode by a regulation member. One of a two chambers defined by a piston of the hydraulic motor is connected to a section of the heat exchanger which is in between the inlet and outlet thereof and has an intermediate value of pressure. The other chamber is connected to a port of the regulation member which is coupled alternately with the inlet or the outlet of the heat exchangers depending on the type of variation, i.e., increase or decrease with respect to the value taken as reference of a selected physical quantity, such as temperature. A cam shaft linked to a piston rod of the hydraulic motor provides a feedback effect, whereby the regulation is made proportional.

3,754,596

# COOLING SYSTEM FOR MULTIPLE ELECTRICAL EQUIPMENTS

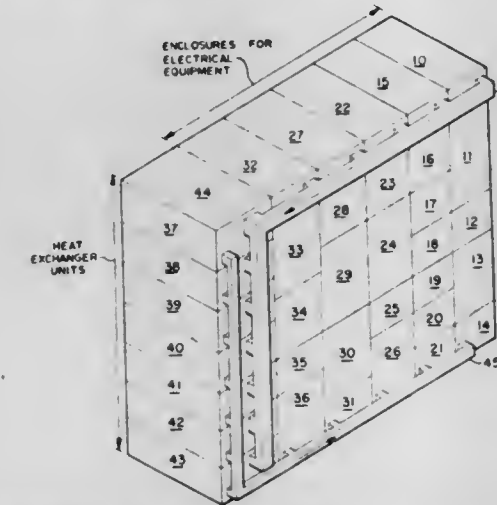
Clyde L. Ward, Jr., El Cajon, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 3, 1971, Ser. No. 204,435

Int. Cl. F28d 15/00; F25d 17/04; H01l 1/12

U.S. Cl. 165—107

6 Claims



A plurality of electrical equipments mounted in separate enclosures is cooled by multiple heat exchanger units connected to a common path directing coolant from the heat exchanger units to each of the enclosures in which the electrical equipments are mounted. A separate path connected to each of the enclosures housing the electrical equipments provides a common return for directing the coolant from the electrical equipments to each of the heat exchangers after it has performed its cooling function. The multiple heat exchanger units thus connected in common paths for both directing the coolant to the electrical equipments and returning it from the electrical equipments provides all electrical equipments with sufficient coolant to maintain minimum operation even though one of the heat exchanger units malfunctions or is inoperative. Continuity of the functions performed by the plurality of electrical equipments connected in the cooling system is thus insured.

3,754,597

# SAFETY VALVE ASSEMBLY

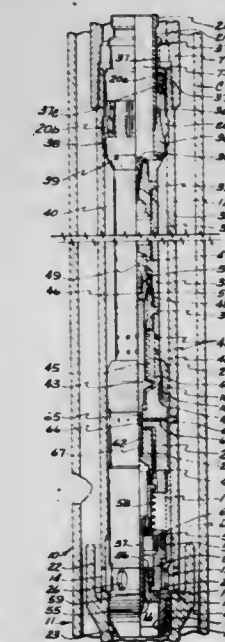
Henry U. Garrett, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 173,360, Aug. 20, 1971. This application Oct. 14, 1971, Ser. No. 189,079

Int. Cl. E21b 33/03

U.S. Cl. 166—72

9 Claims



Opening and closing of a subsurface safety valve is regulated by the pressure communicated to the valve through a

tubing string which extends to the well's surface. The valve is retrievable through the tubing string and well production is through a casing string which surrounds the tubing. Control fluid in the tubing string is maintained at or above a predetermined pressure and a drop to a lower pressure due to wellhead damage or the like causes the valve to automatically close. The control fluid may be injection gas used to artificially produce the well. In the latter modification, the valve remains open so long as a predetermined injection gas pressure is maintained.

3,754,598

# METHOD FOR PRODUCING A HYDROCARBON-CONTAINING FORMATION

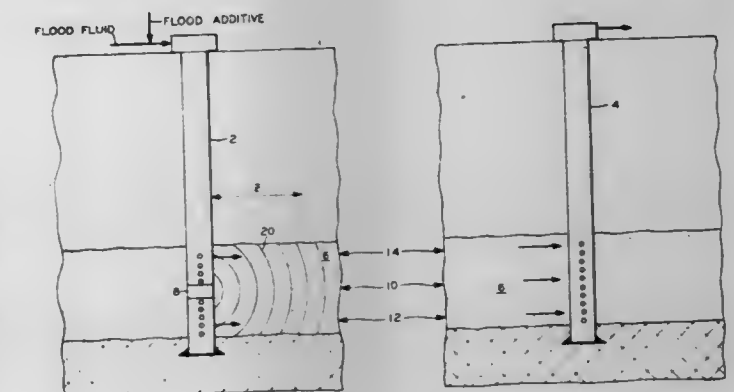
Carl C. Holloway, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 8, 1971, Ser. No. 196,673

Int. Cl. E21b 43/22

U.S. Cl. 166—249

6 Claims



A hydrocarbon-containing formation penetrated by at least one injection well and at least one producing well is produced by passing flooding fluid at a preselected rate into the formation via the injection well while transmitting oscillatory pressure waves from the injection well outwardly through the formation for forming a wave zone in the formation and moving the wave zone outwardly through the formation by altering at least one of the frequency or amplitude of the oscillatory pressure wave transmissions.

3,754,599

# USE OF MICELLAR SOLUTIONS TO IMPROVE PERFORATING PROCESS

Jack L. Hummel, Littleton, and Marvin A. Svaldi, Morrison, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Int. Cl. E21b 43/26, 43/27, 32/119

U.S. Cl. 166—297

13 Claims

A process of perforating an oil-bearing subterranean formation wherein the perforations in the reservoir are caused by a hole-producing apparatus, the improvement comprising perforating the reservoir in the presence of a micellar dispersion. The micellar dispersion can be at a pressure sufficient to cause the dispersion to displace out into the reservoir after the perforations are effected. Cleaning of the perforations, removing mud filtrates, etc., are effected with the dispersion. Where water sensitive reservoirs are perforated, an oil-external dispersion is used since it is compatible with such reservoirs.

3,754,600

# METHOD OF PREVENTING THE SPREAD OF AND EXTINGUISHING FIRES

Norman C. Miller, Rt. 1, Box 105 N, Oklahoma City, Okla.

Filed Dec. 3, 1971, Ser. No. 204,638

Int. Cl. A62c

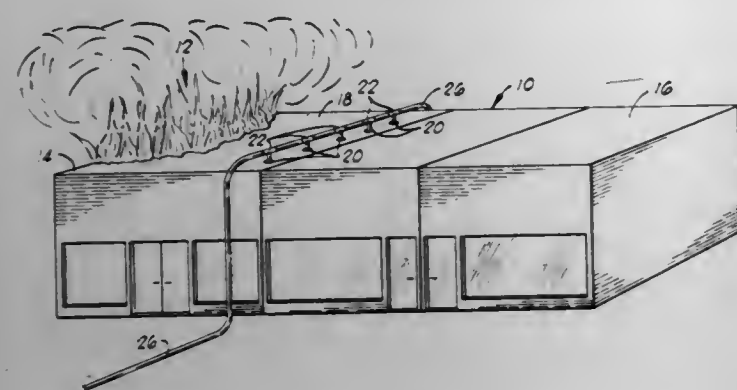
U.S. Cl. 169—1 A

5 Claims

The present invention relates to a method of preventing the spread of and extinguishing a fire in a building structure. By



the present invention a plurality of holes are formed in the roof of the building structure transversely to the path of the fire and a sprinkler nozzle apparatus is placed within each of said holes so that water flowing through the



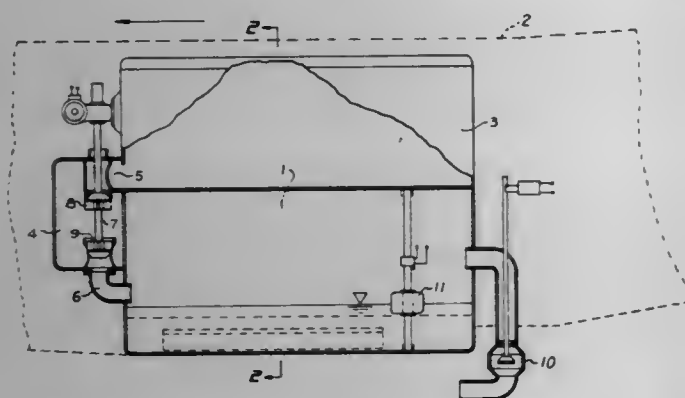
sprinkler nozzles is directed into the building structure. Each of the sprinkler nozzles is connected to a source of water, and water is caused to flow from the source through the sprinkler nozzles into the building at a rate sufficient to prevent the fire from spreading while the fire is extinguished.

3,754,601

**FIRE BOMBING METHOD AND APPARATUS**

Alexander Linkewich, Box 857, Red Deer, Alberta, Canada  
Filed June 26, 1972, Ser. No. 266,266  
Int. Cl. A62c 3/02, 27/30; B05b 17/02  
U.S. Cl. 169-1 A

5 Claims



A fire bomber is fitted with a large container for storing long-term retardant. A measuring tank is connected between the container and the drop tank of the aircraft; a small measured charge of retardant can thus be introduced into the drop tank when required. In use, the bomber, almost fully loaded with retardant, is flown to a lake close to a fire to be controlled. A small amount of water is taken on and mixed with the charge of retardant in the drop tank to produce a minimum effective load of retardant slurry. The bomber flies to the fire and drops the slurry thereon. It then returns to the lake to mix a new batch of slurry. This procedure is repeated until the supply of retardant is exhausted. The technique is useful in that its use enables a relatively slow amphibious bomber such as a Canso PBY, to drop as much long-term retardant on a fire as relatively high-speed bombers, such as an A-26 or TBM, operating from an airport.

3,754,602

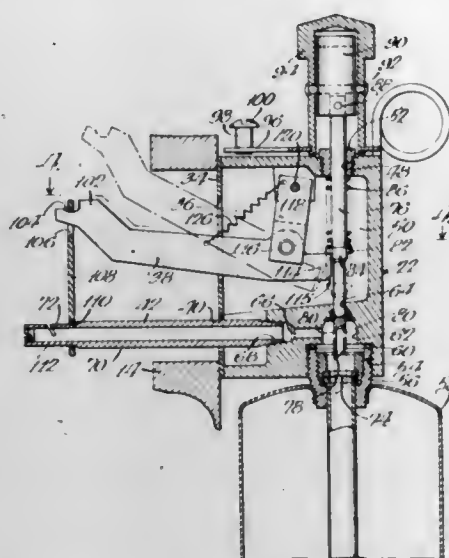
**FIRE EXTINGUISHING SYSTEM**

John T. Magdars, Northbrook, Ill., assignor to General Fire Extinguisher Corporation, Northbrook, Ill.  
Filed July 16, 1971, Ser. No. 163,289  
Int. Cl. A62c 3/10, 13/40, 35/12  
U.S. Cl. 169-2 A

10 Claims

A fire extinguisher particularly suited for use in conjunction with the engine compartments of boats or the like which is operable automatically in response to the detection of a fire or

which may be manually operated from a remote location. The extinguisher includes a container for a fire extinguishing material which may be mounted by means of a housing on the exterior wall of an engine compartment or the like and includes a nozzle extending through an opening into the compartment. A piercing type actuator is normally held in a posi-



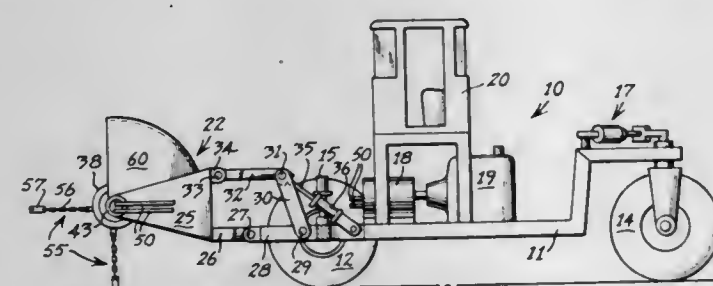
tion away from a diaphragm sealing the container by a lever extending through the opening into the engine compartment which, in turn, is held in place by a fusible link extending between the lever and the nozzle. The invention also contemplates the provision of a unique cocking mechanism for the actuator.

3,754,603

**LAND CLEARING MACHINE**

Nelson H. Bogle, Rt. 1, Sledd Creek Rd., Gilbertsville, Ky.  
Filed Oct. 12, 1971, Ser. No. 188,120  
Int. Cl. A01b 33/02; A01d 55/18  
U.S. Cl. 172-45

6 Claims



A mobile frame, preferably self-propelled, supporting for adjustable vertical pivotal movement a transverse rotary drum carrying a plurality of circumferentially and axially spaced flails. The drum is driven internally by a fluid motor supplied with a source of fluid power from the mobile frame.

3,754,604

**TRUCK-MOUNTED HOLE DIGGER AND PILE DRIVER**

Kohsaku Inaba; Toshiro Ohga; Teturo Ozono, and Seisaku Yoshida, all of Tokyo-to, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan  
Filed Nov. 18, 1971, Ser. No. 200,087  
Claims priority, application Japan, Nov. 18, 1970, 45/114606

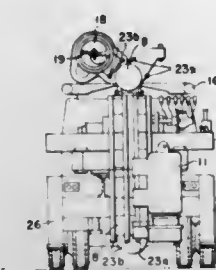
Int. Cl. E21c 11/02

U.S. Cl. 173-28

1 Claim

In a truck-mounted hole digger and pile driver a mast comprises an upper and a lower section, and the upper section is mounted on a rotary table or frame so that it may be raised upright in hole digging or pile driving operation while the

lower section is held upright at the rear of the table or frame and is adapted to be removably joined to the upper section when it is raised upright through a ball-and-socket joint or the



like. A hole digger and a pile driver which are mounted on the mast describe the same circle about a common center when the rotary table is rotated so that the pile driver may be easily and precisely aligned with the hole dug by the hole digger.

3,754,605

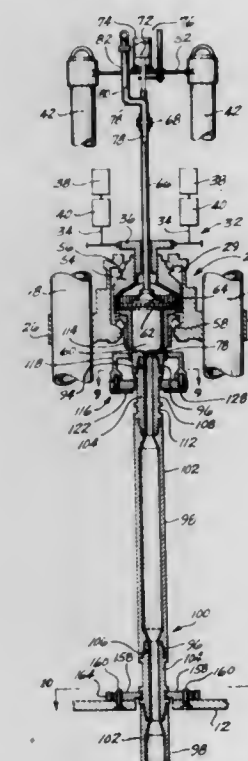
**EARTH DRILLING MACHINE**

Wilson B. Porter, Seattle, and Harold T. Klein, Bellevue, Wash., assignors to The Robbin Company, Seattle, Wash.

Division of Ser. No. 75,020, Sept. 24, 1970, Pat. No. 3,695,364. This application Mar. 30, 1972, Ser. No. 239,467  
Int. Cl. E21b 3/02

U.S. Cl. 173-57

5 Claims



A traveling support frame is mounted for up and down travel by two parallel guide columns secured at their lower ends to a base frame. A portion of the traveling frame projects laterally of the drive columns and supports two drive motors, two reducing gearing assemblies, a collector gearing assembly and drive head means. The traveling frame and equipment carried thereby are moved up and down by triangularly arranged thrust ram means, each comprising a downwardly opening, upwardly projecting, piston chamber having a lower mounting portion originally secured to the traveling frame and a downwardly directed piston having a lower mounting portion secured to the base frame.

The drive head includes a breakout wrench having a plurality of laterally swinging wrench jaws moved in and out by linear fluid motors. The wrench jaws have radially inwardly directed wrench portions which are like spanner wrenches. The free

end of each wrench jaw makes abutting contact with a shank portion of the adjacent wrench jaw, so that in use the wrench jaws brace each other and form a compression ring surrounding the engaged drill pipe.

The drill head includes a tool joint component which is movable axially a limited amount relative to the traveling cross frame. A connector rod connects this tool joint component to the piston of a linear fluid motor supported axially above the drill head. Fluid is introduced into the motor below the piston for the purpose of counterbalancing the weight of the drill head and any drill pipe connected thereto.

A holding wrench is located below the turning wrench. It comprises a plurality of wrench jaws pivotally mounted for lateral swinging movement, a surrounding control ring, and individual links interconnected between each wrench jaw and the control ring. The control ring is rotated by linear fluid motors. Rotation in one direction causes the links to move the wrench jaws radially inwardly into a position of engagement with holding wrench receiving portions on drill pipe, and movement in the opposite direction causes the links to move the wrench jaws radially outwardly in space relationship from the drill pipe.

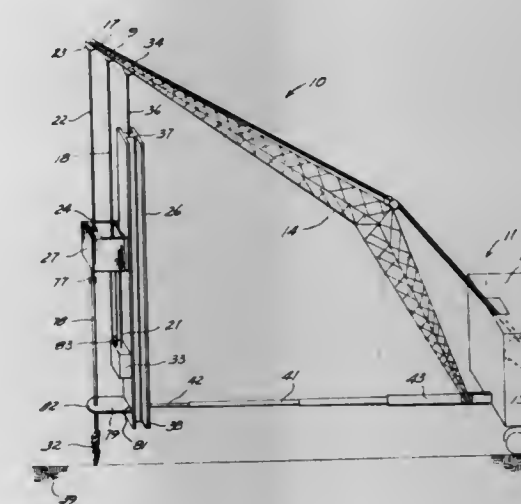
3,754,606

**EARTH DRILLING APPARATUS WITH CABLE OPERATED DRIVE**

James S. Ward, 963 Crestridge Rd., Omaha, Nebr.  
Filed Oct. 20, 1971, Ser. No. 190,910  
Int. Cl. E21b 3/02

U.S. Cl. 173-145

10 Claims



An earth drilling apparatus for use with a basic hoisting machine, the apparatus having a carriage slidably mounted on a guide member, a drum rotatably mounted in the carriage and operably connected through a gear and clutch unit to an auger, and a weight connected to a cable frictionally engaging the drum and secured to the powered drum mounted on the hoisting machine, wherein upon the reeling of the cable onto the powered drum the frictional engagement of the cable with the drum causes the drum to rotate which in turn causes the auger to rotate.

3,754,607

**EQUIPMENT FOR USE IN OFFSHORE WELLS**

Francols Van Daalen, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.  
Filed June 14, 1971, Ser. No. 152,843

Claims priority, application Great Britain, June 18, 1970, 29,651/70

Int. Cl. E21b 33/13, 15/02

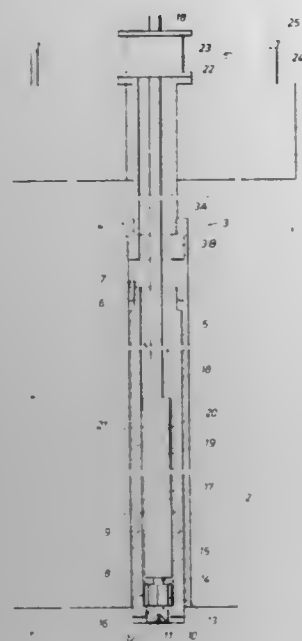
U.S. Cl. 175-7

14 Claims

A conductor string, suitable to be lowered into an offshore borehole during drilling, is telescopically arranged in a



pedestal conductor extending between a buoyancy member and a weighted base. The diameter of the string is preferably



equal to the diameter of the upper part of the pedestal conductor.

3,754,608

## CUTTER KNIFE FOR EARTH CORING

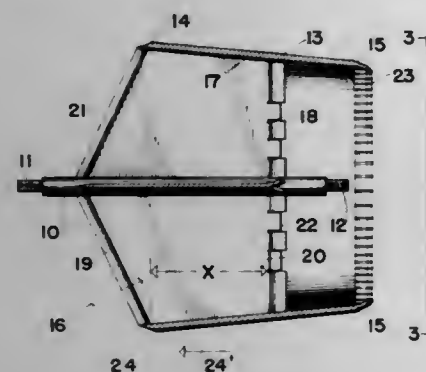
Stanley B. Baille, and Stanley G. Atkins, both of Winnipeg, Manitoba, Canada, assignors to Armadillo Holdings Ltd., Winnipeg, Manitoba, Canada, by said Baille

Filed Nov. 22, 1971, Ser. No. 200,895

Int. Cl. G21c 15/00

U.S. Cl. 175-53

6 Claims



A knife component for push-pull type earth coring includes a central shaft and a surrounding shroud or shell held concentrically to the shaft by a plurality of cutter blades or webs. The shroud or shell tapers from the front to the back to compress the cut core slightly and the rear side of the cutter blades are provided with offset teeth to thrustably engage the core during the core pushing or extruding phase.

3,754,609

## DRILL STRING TORQUE TRANSMISSION SLEEVE

William R. Garrett, Midland, Tex., assignor to Smith International, Inc., Midland, Tex.

Filed Sept. 21, 1970, Ser. No. 73,959

Int. Cl. E21b 17/043, 17/10; E21c 9/00

U.S. Cl. 175-323

42 Claims

A lower drill string assembly useful in the rotary system of drilling oil wells wherein a tubular drill string is rotated while fluid is circulated down the string and up the earth bore includes tubular lower drill string members, such as adjacent drill collars or two parts of a stabilizer body, interconnectable by a modified rotary shouldered connection including a mandrel between the pin shoulder and the screw, i.e., the box en-

gaging part of the pin, and a fluid sealing, torque transmission sleeve around the mandrel between the pin shoulder and the shoulder formed by the box mouth. For safety, to avoid junking the well, means is provided to retain the sleeve on the mandrel, and the retention means, e.g. a peg and slot or loose fitting threads, allows relative axial movement of the sleeve and mandrel as required for stressing the sleeve and pin axially sufficiently to transmit axial torque through the sleeve from



pin shoulder to box shoulder, thereby reducing the torque load on the pin, as well as effecting a fluid tight seal. The sleeve performs an additional function of contacting the side of the well bore, e.g., as a replaceable wear resistant unit or as a replaceable centralizer and wear protector or fixed blade reamer-stabilizer, and the safety retention means can transmit torque to the sleeve from the mandrel. A special combination of hard facings is provided on the blades of the reamer-stabilizer at the sides and ends thereof.

3,754,610

## LOAD CELL

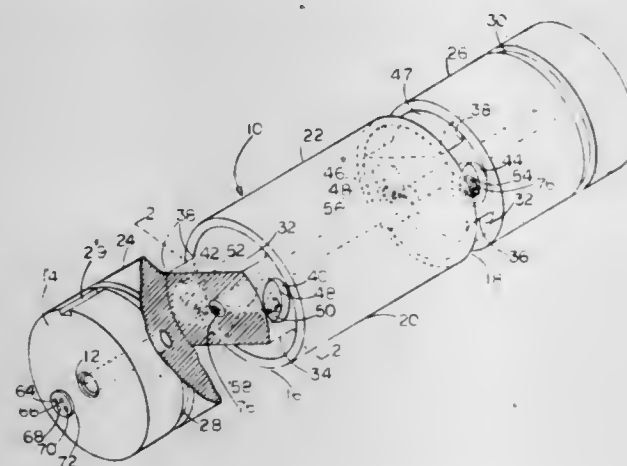
Owen Paellian, and Richard L. Kellar, both of Huntsville, Ala., assignors to Torrid Corporation, Huntsville, Ala.

Filed July 29, 1971, Ser. No. 167,104

Int. Cl. G01g 3/14

U.S. Cl. 177-211

15 Claims



This invention relates to load measurement devices of the type generally referred to as load cells in which the deformation of a material subjected to a stress is electrically measured, and particularly to a load cell in the form of a pin adapted to be employed in a clevis assembly to support a load to be measured.

3,754,611

## COUNTERWEIGHT ADDITION AND REMOVAL DEVICES FOR USE WITH BALANCES

Erich Emil Karl Knothe, Gottingen-Geismar, and Franz-Josef Melcher, Gottingen-Nikolausberg, both of Germany, assignors to Sartorius-Werke GmbH, Gottingen, Germany

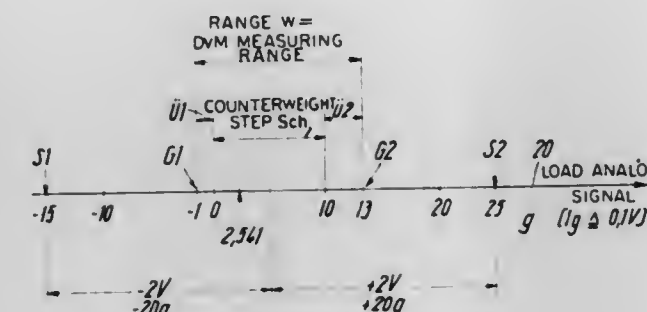
Filed June 22, 1972, Ser. No. 265,285

Claims priority, application Germany, June 23, 1971, P 21 31 058.7

Int. Cl. G01g 1/28

U.S. Cl. 177-235

5 Claims



A counterbalance weight addition or removal device for automatic use with a balance, a control circuit being provided to control the device, which device is arranged to deposit and lift from the balance, a plurality of counter weights in equal weight steps. The balance produces an electrical signal (load analog signal) proportional to the portion of a load on the balance not counterbalanced by counterweights. A digital indicator and four signal generators to receive said electrical signal, two of which signal generators are arranged to produce a signal for actuating the device, to deposit and lift a counterweight when said electrical signal exceeds the limits of a specified range, while the other two signal generators are arranged to produce a control signal when said electrical signal has exceeded the range of a signal equivalent to a counterweight step just completed, by more than the magnitude of that range. First and second delay members are provided whose delay times are longer than the oscillation time of the balance. The first delay member is permanently connected to the input side of the signal generators defining the said specified range, and the second delay member is arranged in the control circuit so as to be operable by the device at the end of each counter weight addition or removal operation to render said device inoperative for the duration of its delay time. The second delay member is also arranged to be rendered inoperative under the influence of a control signal from one of said other signal generators, to thus enable said device to then remain continuously operable.

3,754,612

## POWER TRANSMISSION APPARATUS IN A MOTORIZED TWO-WHEEL VEHICLE

Yoshinori Watanabe, Tokyo, and Kelgo Yoshida, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 3, 1971, Ser. No. 195,180

Claims priority, application Japan, Nov. 6, 1970, 45/97118

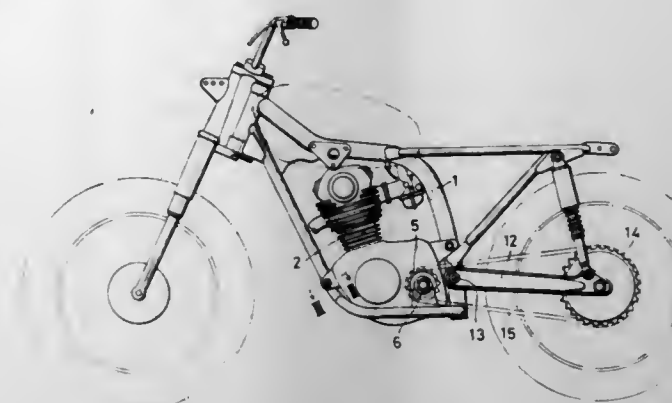
Int. Cl. B62m 17/00

U.S. Cl. 180-33 B

5 Claims

A motorized two-wheel vehicle has an engine supported from the frame via resilient damping members and the vehicle is provided with a power transmission from the engine to a rear wheel driven member such that the drive of the rear wheel is substantially unaffected by engine vibration. The power transmission comprises a drive member driven from the output shaft of the engine by a universal joint, the drive

member being coupled to the driven member by a transmission member such as a chain, the driven member being con-



nected at the free end of a fork having its other end pivotally connected to the frame.

3,754,613

## TILT HOOD ASSIST SPRING

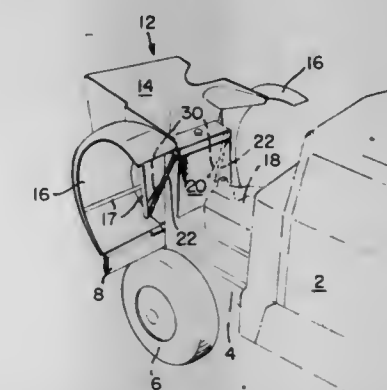
Donald L. Stephens, Los Gatos, and Roger Paul Penzotti, Fremont, both of Calif., assignors to Pacific Car and Foundry Company, Bellevue, Wash.

Filed Oct. 28, 1971, Ser. No. 193,500

Int. Cl. B62d 25/10

U.S. Cl. 180-69 C

6 Claims



A spring mounted to assist in the movement of a tilt hood for a motor vehicle. The spring is attached to a vertical, relatively fixed element at a point vertically spaced above the pivot point of the tilt hood and applies a constant upward force on the tilt hood. The spring thus lifts the weight off the pivot pin and further is located such that it will assist in movement of the hood from both the fully closed and the fully open position.

3,754,614

## VEHICLE BODY COMPARTMENT PANEL MOUNTING ARRANGEMENT

Ted C. Habas, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 2, 1971, Ser. No. 204,157

Int. Cl. B62d 25/10

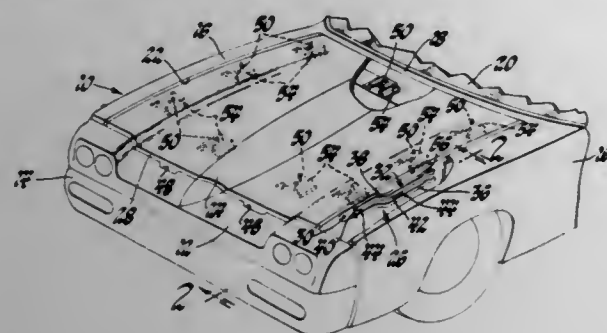
U.S. Cl. 180-69 C

5 Claims

A mounting arrangement for a vehicle body compartment panel includes suitable panel and vehicle body mounted members slidably mounting the rear end of the panel adjacent the rear ends of a generally upwardly oriented compartment opening of the vehicle body. The front end of the panel is pivoted transversely of the vehicle body to the front ends of a pair of channel members extending generally longitudinally of the vehicle body and including forward and rearward generally horizontal portions connected by intermediate portions extending downwardly to the rear. Front and rear vehicle body mounted rollers are respectively received within the forward and rearward portions of the channel members to support the front end of the panel during forward translational



movement from a closed position as locking elements that prevent upward opening panel movement from closed position are slidingly disengaged. The front rollers are received within the intermediate portions of the channel members and lift the front ends of the channel members and panel as they continue to bodily shift forwardly, while the rear rollers pass through abruptly curved portions of the channel members to



selectively prevent rearward channel member movement when the panel reaches a partially open position. The pivotal connection of the panel to the front ends of the channel members is located above the adjacent confines of the vehicle body when the panel is in the partially open position and the panel is pivotally movable about this connection between the partially open position and a fully open position allowing access to the compartment opening.

3,754,615

## VEHICLE FRAME STRUCTURE

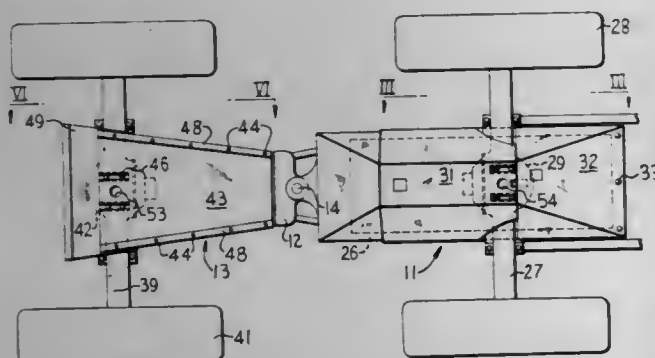
Robert G. McIndoo, Aurora, and Peter Sidles, Jr., North Aurora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 14, 1971, Ser. No. 152,513

Int. Cl. B62d 25/20

U.S. Cl. 180—69.1

4 Claims



The front and rear frame sections of an articulated vehicle each comprise a frame attached to the top of an axle and differential housing. A multi-part guard assembly is removably attached to each frame and housing to protect drive train and related components.

3,754,616

## DRIVE MECHANISM FOR MOWERS

Frank C. Watland, Saukeville, Wis., assignor to Ataco Steel Products Co., Grafton, Wis.

Filed Dec. 17, 1971, Ser. No. 209,245

Int. Cl. B62d 51/04

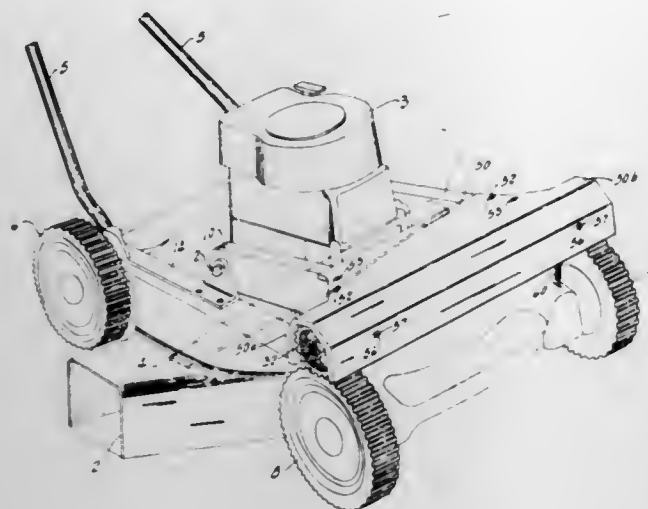
U.S. Cl. 180—74

9 Claims

A lawn mower having a drive mechanism for the wheels of the mower, which mechanism includes a drive shaft and drive cog wheels for engagement with the ground wheels, the drive shaft and drive cog wheels being mounted on a pair of swingable arms whereby the drive cog wheels maintain driving mesh with the ground wheels at all times. The drive mechanism can accommodate ground wheels of different sizes.

The drive cog wheels themselves have a bearing formed integrally therewith at one side, and which bearing is journaled

in a bearing seat formed in each of the arms. The arms themselves are held in properly spaced relationship so that their



bearing seats properly engage and journal the bearings on the drive cog wheels.

3,754,617

## DEVICE FOR PARTITIONING A SPACE BETWEEN TWO BODIES IN RELATIVE MOTION TO EACH OTHER

Louis Duthion, Paris; Michel Jules Jacquot, Suresnes; Charles Gustave Amicel, Carrieres sur Seine; Robert Augustin Chaube, Jumeauville sur Maule, and Francis Marie Jean Croix-Marie, Viry Chatillon, all of France, assignors to Bertin & Cie, Plaisir, France

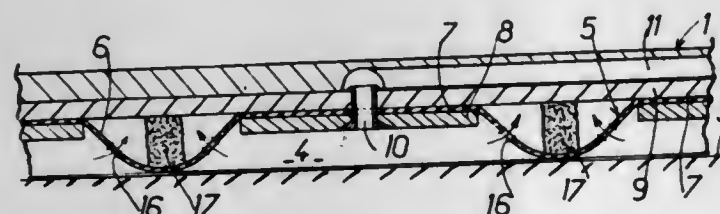
Filed Feb. 23, 1971, Ser. No. 117,891

Claims priority, application France, Mar. 27, 1970, 11215

Int. Cl. B60v 1/16

U.S. Cl. 180—121

10 Claims



The space between two bodies moving relatively to each other is partitioned in order to form a plurality of overpressured or underpressured fluid cushions. The partitioning is provided by a waffled flexible sheet fixed to one of the two bodies whereby to confine, jointly with the other body, the space therebetween, while at the same time subdividing the same into a plurality of contiguous cells separated from one another by the upstanding waffles on said waffled sheet. The cells are nested into one another, with central cells surrounded by peripheral cells.

3,754,618

## SPEAKER SYSTEM

Kizo Sasaki, Kakegawa, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 30, 1971, Ser. No. 203,303

Claims priority, application Japan, Nov. 30, 1970, 45/118225

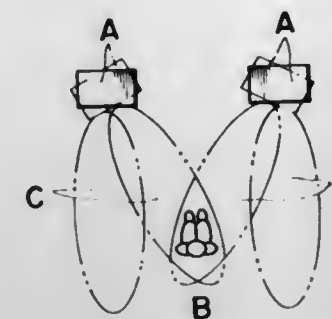
Int. Cl. G10k 13/00; H04r 1/28

U.S. Cl. 181—31 B

4 Claims

A speaker system employs a baffle board in the front part of the cabinet with a woofer mounted on said baffle board. A

self-contained auxiliary speaker device covering middle and high-pitch tone ranges is further mounted on the baffle board



in such a manner that the angle between the auxiliary speaker device and the baffle board can be varied as desired.

3,754,619

## LOW BACKPRESSURE STRAIGHT THROUGH MUFFLER

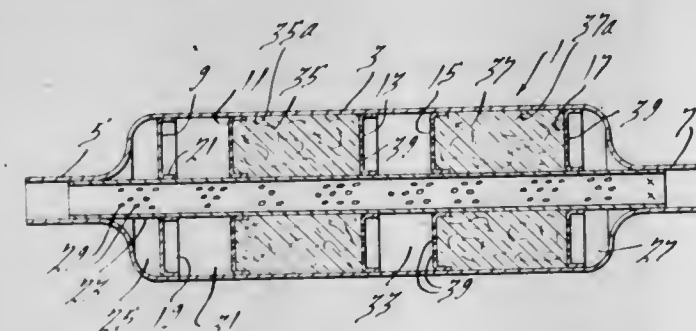
James McCormick, Jackson, Mich., assignor to Tenneco, Inc., Racine, Wis.

Filed June 11, 1971, Ser. No. 152,224

Int. Cl. F01n 1/04

U.S. Cl. 181—50

6 Claims



A low backpressure, straight through type sound attenuating muffler, adapted particularly for use with internal combustion engines, comprises a series of spaced annular bodies of sound deadening material, the inner diameters of which define a gas flow path and the side faces of which define chambers within the muffler housing.

3,754,620

## MUFFLER

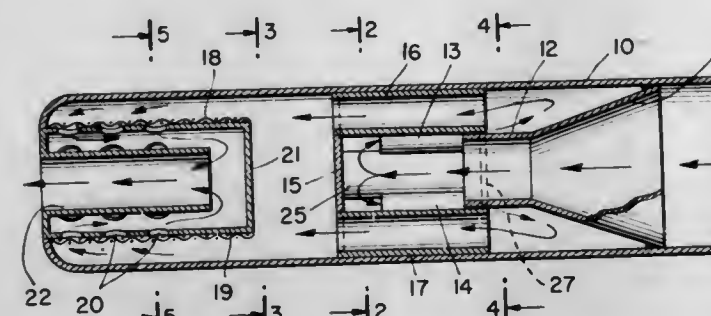
Silvers A. Foster, 20735 Bryant St., Canoga Park, Calif., and Charles F. Smith, 19515 Welby Way, Reseda, Calif.

Filed Aug. 21, 1972, Ser. No. 282,493

Int. Cl. F01n 1/08

U.S. Cl. 181—53

6 Claims



A muffler particularly suited to motorcycles includes a cylindrical casing incorporating a tube assembly comprised of long and short tubes circumferentially spaced about an inner wall portion of the casing. A deflector plate is positioned in the casing to receive and deflect backwardly gases passing

through the short tubes. The gases are then caused to reverse again and pass through the long tubes which communicate with the other side of the deflector pipe. A closed end cylindrical pipe is coaxially positioned in the outlet and is of smaller diameter than the casing, the closed end facing the outlets of the long tubes. The open end of the cylindrical pipe turns inwardly to define a short pipe. The wall of the cylindrical pipe has openings so that a baffle is defined for gases passing from the long tubes, through the wall openings to reverse back and thence pass out the short pipe. The design results in substantial muffling of noise carried along the route of the gases through the muffler.

3,754,621

## FIRE ESCAPE APPARATUS

Shu-Lien Liou, Taiwan, China, assignor to Chin-Chih Chuang, Taiwan, China

Filed Mar. 17, 1972, Ser. No. 235,559

Int. Cl. A62b 3/00

U.S. Cl. 182—49

7 Claims



Fire escape apparatus comprising a tightly sealed shaft attached to a building wherein self-closing escape channels are provided to connect each floor of the building downwardly with the shaft, and a main exit is located at the bottom of the shaft with forced draft fan or natural up-draft opening being provided to maintain a higher pressure head in the shaft than that of the building to prevent fire from traveling through the escape channel and thus ensure safety of the escaper.

3,754,622

## METHOD AND APPARATUS FOR LUBRICATING ROTATING BEARINGS

Franz Brichta, Weilmorhof, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Ernst-Sachs-Str., Germany

Filed Mar. 23, 1971, Ser. No. 127,141

Claims priority, application Japan, Mar. 24, 1970, 45/27526

Int. Cl. F16n 3/00

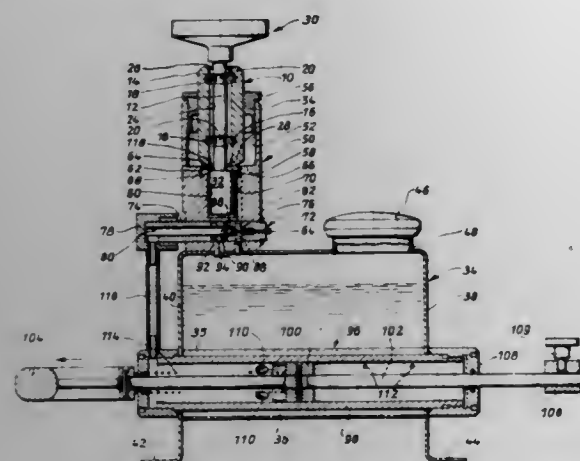
U.S. Cl. 184—1 D

14 Claims

Method and apparatus for lubricating rotating bearing shafts. The lubricant is pumped under pressure into a first



opening in the bearing housing located in front of the shaft bearing, until the lubricant reaches a second opening located



behind the shaft bearing. Subsequently the lubricant is removed under suction.

3,754,623

### TRAILER BACK-UP BRAKE RELEASE FOR SURGE OPERATED BRAKES

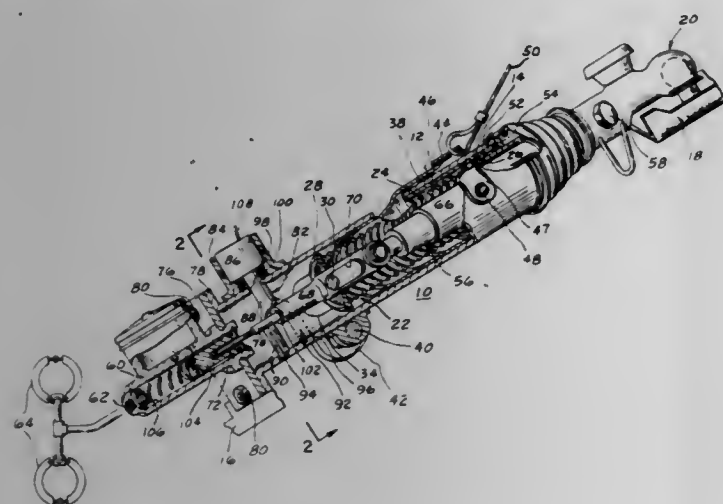
Michael Earl Gatt, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Feb. 24, 1972, Ser. No. 228,936

Int. Cl. B60t 7/20

U.S. Cl. 188-112

1 Claim



A surge brake actuator which includes two relatively movable members, one connected to a towing vehicle and the other connected to a trailer, is held in an extended position by spring means which is collapsible upon relative movement between the vehicle and trailer. Trailer brake applying means, including a hydraulic brake master cylinder, is operatively connected to one of said members to respond to relative movement between said members for applying the trailer brakes. A mechanism responsive to a backing maneuver of the vehicle and trailer is operatively connected to said brake applying means for rendering said brake applying means ineffective to apply said trailer brakes.

3,754,624

### FLEXIBLE KEY FOR DISC BRAKE

Wendell E. Eldred, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Sept. 17, 1971, Ser. No. 181,396

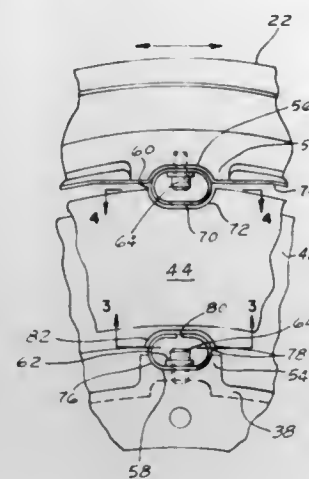
Int. Cl. F16d 55/36

U.S. Cl. 188-71.5

6 Claims

A disc brake having a plurality of force transmitting flexible key members interposed in circumferentially spaced-apart

relationship between a wheel and rotor disc and/or stator disc and fixed support wherein the key members are adapted to



flex under force load to thereby distribute the force load substantially equally between the plurality of key members.

3,754,625

### VEHICLE FINAL DRIVE WITH PLANETARY GEARING AND FRICTION BRAKE

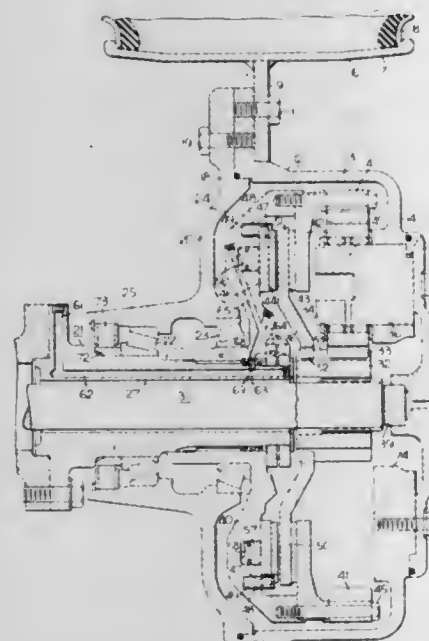
James W. Voth, and Albert J. Speck, both of Springfield, Ill., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed June 7, 1972, Ser. No. 260,630

Int. Cl. F16h 57/10, 35/00, 1/28

U.S. Cl. 192-4 A

11 Claims



A planetary final drive and brake are incorporated within a wheel hub of a land vehicle with the ring gear structure non-rotatably connected to the end of a stationary hollow axle through which a drive shaft extends and carries a sun gear and brake disc. The ring gear structure carries friction pads and a hydraulic actuator for the friction brake and fluid is routed to the hydraulic actuator by way of passages in the stationary hollow axle and the ring gear structure.

3,754,626

### VACUUM ACTUATED CLUTCH

John H. Heldorn, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 22, 1972, Ser. No. 282,834

Int. Cl. F16d 15/00, 25/12

U.S. Cl. 192-38

3 Claims

A vacuum actuated clutch including a housing defining a closed space having a movable wall, the wall moving in response to the application of vacuum to the closed space.

3,754,628

### LOCK STRAP MOUNTING ADJUSTMENT FOR CLUTCH ADJUSTING RING

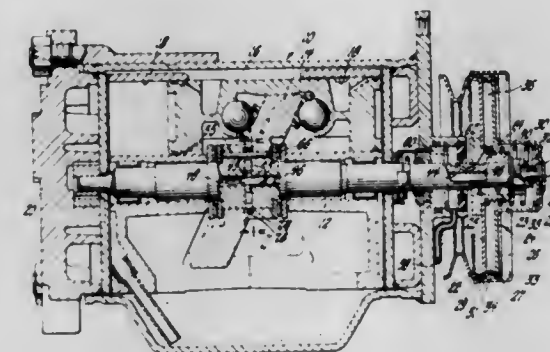
William Gene Hildebrand, Fort Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed June 22, 1972, Ser. No. 265,408

Int. Cl. F16d 13/75

U.S. Cl. 192-111 B

8 Claims



The movable wall is connected to a stationary wall by an annular flexible member permitting movement of the wall in response to the vacuum. A continuously driven pulley is keyed to a shaft which contains an axially extending aperture slidably receiving a clutch actuating pin having a tapered end while its other end is connected to the movable wall. A one-way clutch assembly including an expandable inner race ring is concentrically disposed about the shaft for selective engagement with a

### 3,754,627 SEGMENTED DISC ELEMENT

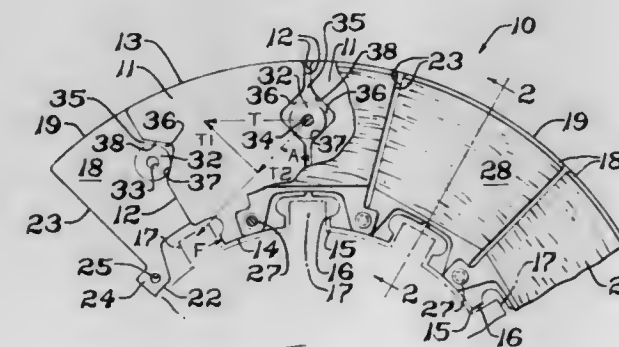
Marvin E. Hotchkiss, Troy, Ohio, assignor to The B.F. Goodrich Company, New York, N.Y.

Filed June 5, 1972, Ser. No. 259,981

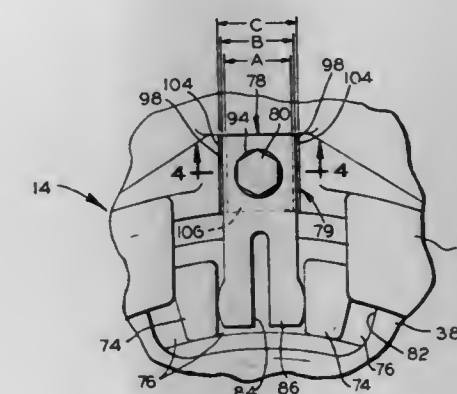
Int. Cl. F16d 13/64

U.S. Cl. 192-107 R

8 Claims



A segmented friction member assembly for a disc-type brake or clutch in which segmental facing members overlap heat-absorbing segments keyed to the rotating or nonrotating structure at a configured peripheral edge. Torque is transmitted from the facing members to the segments by interlocking members extending between opposing facing members and engaging recesses in the side edges of the heat-absorbing segments. Slanted surfaces of the recesses direct the components of the torque force being transmitted in predetermined directions so as to minimize the forces on the heat-absorbing segments tending to rotate the segments in the friction member assembly.



An improved arrangement is provided for mounting an adjusting ring lock strap with respect to a clutch cover to preclude premature failure of the lock strap after it has been properly secured to the cover by means of a threaded bolt. The improvement consists of a mounting slot formed in the clutch cover having tapered side walls engageable with the inner edges of the lock strap so that, in response to application of torque to the bolt, the lock strap reacts on the tapered side walls in such a manner as to provide positive frictional engagement which will prevent backing-out of the bolt.

3,754,629

### COIN CONTROLLED MEANS FOR VENDING MACHINES AND THE LIKE

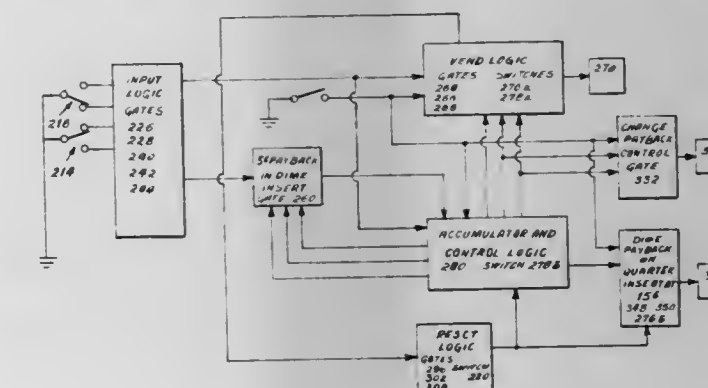
James C. Douglass, Crestwood, Mo., assignor to H. R. Electronics Company, High Ridge, Mo.

Filed Dec. 6, 1971, Ser. No. 204,988

Int. Cl. G07t 9/04

U.S. Cl. 194-1 N

21 Claims



A versatile coin controlled circuit for use in vending and other coin operated machines, said circuit including relatively simple means for establishing a vend price and for simultaneously controlling the amount refunded for each deposit in excess of the vend price. The subject improved control circuit also includes novel logic circuitry operable under control of coin actuated switches, novel means for accumulating amounts deposited including use of integrated circuits, novel means for timing certain circuit and machine operations, and novel circuitry in the input, vending, and change pay-out portions of the circuit. The subject circuit represents a new generation of coin controlled circuits and is simpler and more compact than known circuits used for the same or similar purposes, and it contains far fewer parts and components.



3,754,630

## SHOPPING CART RECEIVING MEANS

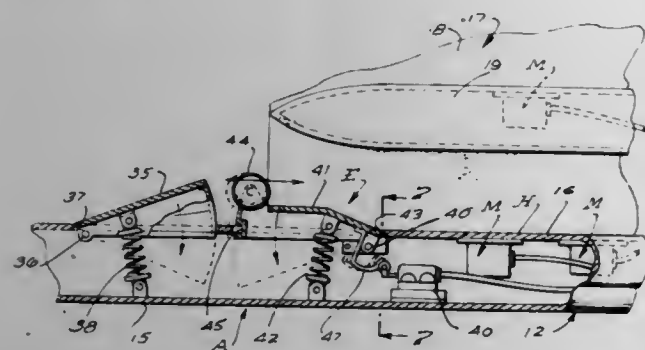
Donald J. Gilker, 3301 N. Lowry Rd., Los Angeles, Calif.

Filed Mar. 13, 1972, Ser. No. 234,236

Int. Cl. G071 1/06

U.S. Cl. 194-4

9 Claims



A unitary shopping cart receiver to be arranged in predetermined proximity to a store or the like providing a plurality of carts for shoppers and adapted to induce shoppers to deposit shopping carts in the receiver when their use thereof is terminated. The receiver involves an elongate chute with parallel sides, open front and rear ends and into which shopping carts can be manually engaged for longitudinal movement and storage therein. The receiver has a gate means at its rear end to releasably return carts deposited therein. The receiver next has a dispenser operable to dispense a prize or reward each time a cart is advanced into engagement in the receiver at the front end thereof. Finally, the receiver has receiving means at its front end to permit the advance of a cart into engagement in and to prevent the withdrawal of a cart or carts from the front end of the receiver and related to the dispenser to operate the dispenser each time a cart is advanced into engagement in the receiver.

3,754,631

## POSITIONING TYPEWRITER

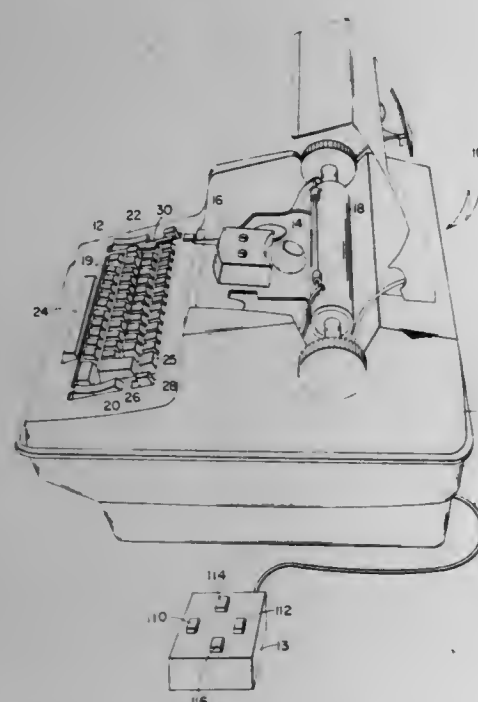
An Wang; Ge Yao Chu, both of Lincoln, and Edward S. Wu, Chelmsford, all of Mass., assignors to Wang Laboratories, Inc., Tewksbury, Mass.

Filed Apr. 1, 1971, Ser. No. 130,281

Int. Cl. B41j 3/50

U.S. Cl. 197-1 R

4 Claims



A writer selectively operable in an alpha-numeric symbol printing mode and a positioning mode. The writer includes a horizontally movable type head having a plurality of cor-

responding alpha-numeric printing symbols, operable in response to printing signals to print the symbols and horizontally movable in response to horizontal spacing function signals; and a platen rotatable in response to vertical spacing function signals. Type head drive means are provided for incrementally horizontally moving the type head in fine increments, the alpha-numeric spacing increments being an integral multiple thereof, and platen drive means are provided for incrementally rotating the platen in fine increments. In general, this is done by control means for operating the type head comprising horizontal function signal generating means for incrementally horizontally moving the type head in fine increments, and platen drive means comprising vertical function signal generating means for incrementally rotating the platen in fine increments, the function keys providing function signals being connected to the function signal generating means for generating a plurality of fine increment signals equal to an alpha-numeric increment.

3,754,632

## PALLET STORAGE SYSTEM

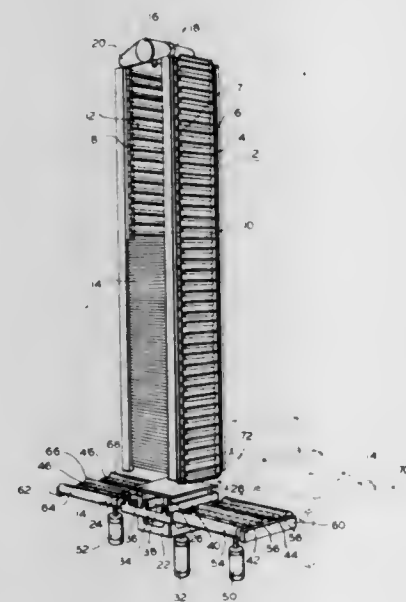
Richard C. Kreutter, Battle Creek, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Nov. 9, 1970, Ser. No. 87,721

Int. Cl. B65g 47/00, 15/00

U.S. Cl. 198-20

1 Claim



Pallet storage apparatus for storing pallets in a horizontal position vertically disposed with respect to each other utilizing two endless chains for supporting the edges of the pallets with means for lowering pallets on a conveyor system by the simultaneous actuation of the supporting chains and the pallet transfer mechanism.

3,754,633

## GANTRY SCRAPER

Rene Bluntzer, Thann, France, assignor to Ameco S.A., Kingersheim, France

Filed Mar. 31, 1971, Ser. No. 129,770

Claims priority, application France, Mar. 31, 1970, 7011804

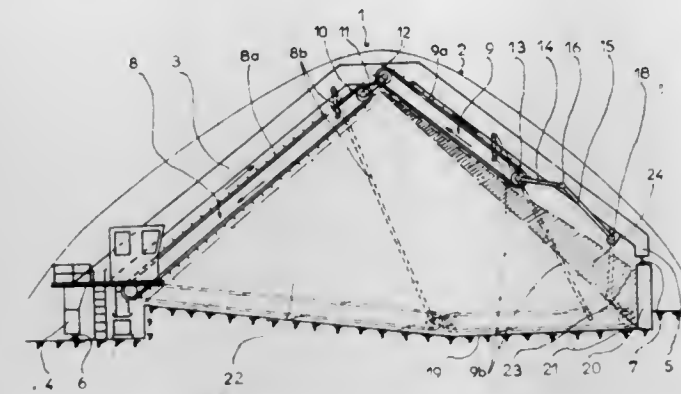
Int. Cl. B65g 59/00

U.S. Cl. 198-36

2 Claims

This gantry scraper adapted to transfer or pick up material from a heap or hook in a silo or like enclosure is mounted above a pit of said silo or the like and adapted to travel therealong; it comprises a pair of scraper arms, namely a primary arm and a secondary arm, mounted to the gantry structure and each provided with an endless conveyor chain, the upper ends of said arms being hingedly interconnected; pen-

dular-motion means are provided for connecting the lower end of the secondary arm to the gantry structure and enable off from the conveying path and rotated about the transfer wheel and then removed by means of a stripper bar or blade so it can be deposited onto a second predetermined conveying



said secondary arm to move to a position in which it is substantially co-extensive with said primary arm.

3,754,634

## ELECTROMAGNETIC CONVEYOR FOR MOLTEN METAL

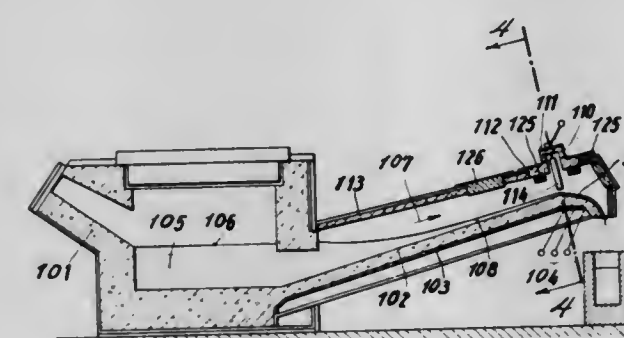
Hans-Erwin Gerbig, Hückeswagen, and Axel Von Starck, Remscheid, both of Germany, assignors to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Continuation-in-part of Ser. No. 821,341, May 2, 1970, abandoned. This application Oct. 1, 1970, Ser. No. 77,061 Claims priority, application Germany, Sept. 14, 1968, P 17 28 231.4; Oct. 3, 1969, P 19 49 982.2

Int. Cl. B65g 49/00

U.S. Cl. 198-41

15 Claims



An electromagnetic conveyor for drawing molten metal from a melting or holding vessel of the type having an inclined trough along which the metal moves and an inductor for generating a travelling electromagnetic field which draws the metal up the trough against gravity. Near the higher end of the trough a gate preferably having an adjustable position is mounted in the trough for controlling the depth of molten metal passing the gate. In a first embodiment, the gate comprises an insulating rail and in a second embodiment the gate is a physical barrier. Preferably heaters are mounted on both sides of the gate and the gate can be positioned at any of a plurality of positions along the trough.

3,754,635

## CAN HANDLING APPARATUS

Wallace W. Mojden, Hinsdale, Ill., assignor to Fleetwood Systems, Inc., Countryside, Ill.

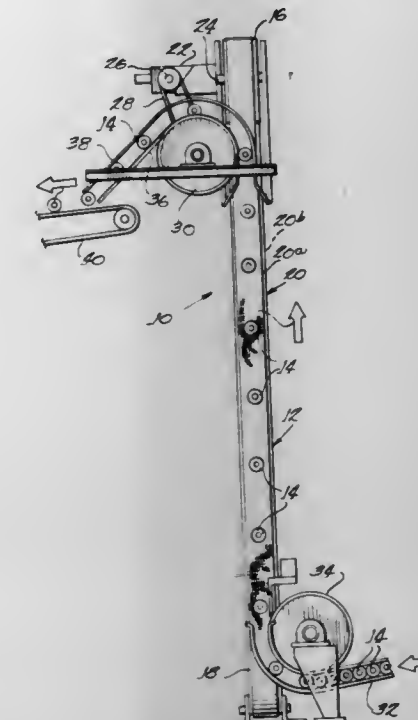
Filed Jan. 7, 1972, Ser. No. 216,122

Int. Cl. B65g 17/46

U.S. Cl. 198-41

11 Claims

Disclosed is a can handling apparatus which has a first station for handling can bodies and which may include means for advancing the can bodies along a predetermined conveying path with the axis of the can bodies transverse to such conveying path. The cans are removed from the first conveying path by a rotating transfer wheel which has magnetic means at circumferentially spaced locations thereon. Each can is picked



path for further conveying of the can. Two or more of such transfer wheels may be utilized in any given can handling apparatus.

3,754,636

## CONVEYOR BELT CLIP

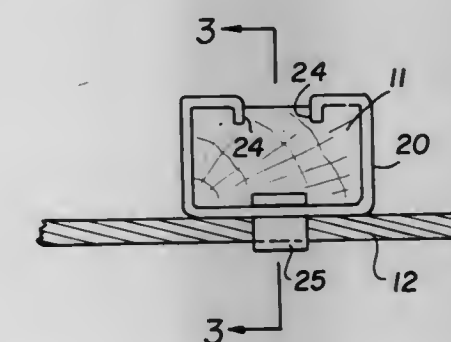
Max W. Boy, Byram, Conn., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Feb. 7, 1972, Ser. No. 223,958

Int. Cl. B65g 15/30, 19/10; F16l 3/24

U.S. Cl. 198-175

3 Claims



A metal clip, with means to grip a rope or wire rope, and means to grip slabs of metal, wood or other material. A conveyor belt is constructed by fastening said clips to two parallel wire ropes, and joining together each of a pair of such clips, one on each rope, by means of slabs which are gripped by the said metal clips.

3,754,637

## CLAMPING MEANS FOR CONTAINER LABELING AND STRIP-APPLYING APPARATUS

Sidney T. Carter, Shrewsbury, and Florian J. Jolda, East Douglas, both of Mass., assignors to A-T-O Inc., Cleveland, Ohio

Filed Feb. 12, 1971, Ser. No. 114,952

Int. Cl. B65g 19/00

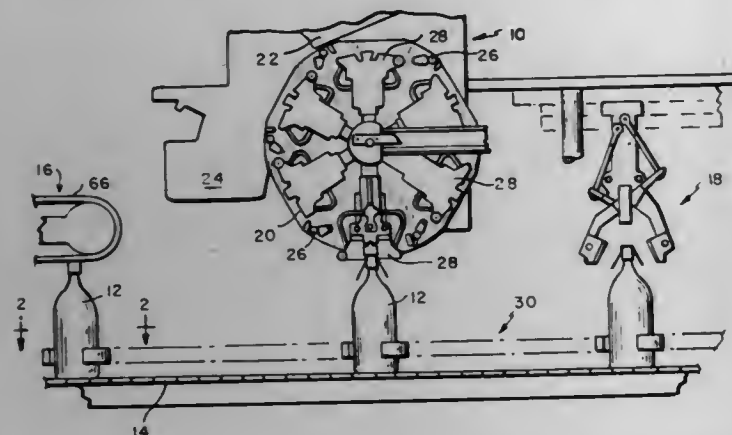
U.S. Cl. 198-179

4 Claims

The combination with apparatus for applying labels to the sides of containers and an apparatus for applying sealing strips to the tops of containers; of a clamp-carrying conveyor supported in parallel relation to an extension of a container-con-



veyor extending from the apparatus for applying labels through the apparatus for applying sealing strips and pivotally mounted, spaced pairs of clamping jaws on the clamp-carrying conveyor adapted to be brought successively into engagement with the containers before they leave the label-applying apparatus and while still held at the spacing and in the orientation imparted thereto by the spacing and spotting mechanism



in the labeling apparatus and to move with the container-conveyor toward the sealing strip-applying apparatus to maintain the spacing and orientation of the containers during their movement from the labeling apparatus to the sealing strip-applying apparatus thereby to eliminate the need for additional spacing and spotting mechanism in conjunction with the sealing strip-applying apparatus and to shorten the overall length of the combined apparatus.

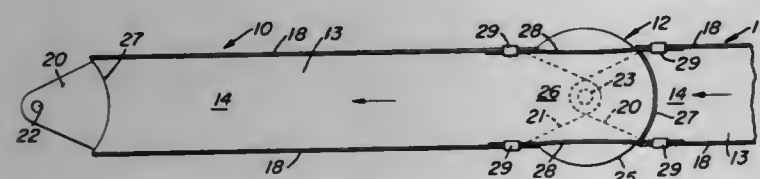
### 3,754,638 CONVEYOR JUNCTION

Dennis E. Mead, Cazenovia, N.Y., assignor to Lipe Rollway Corporation, Liverpool, N.Y.

Filed Apr. 27, 1972, Ser. No. 247,966  
Int. Cl. B65g 27/06

U.S. Cl. 198—220 A

17 Claims



A conveyor junction joins two or more vibrator-powered conveyor modules having feed surfaces covered with pile inclined toward the direction of feed. The modules are pivotally joined with their feed surfaces at approximately the same height and so that each module is free to vibrate. A circular transfer surface is disposed between the feed surfaces of the joined modules concentric with the pivotal joint, and the transfer surface has pile inclined toward the direction of feed of a receiving module.

### 3,754,639 CASSETTE CASE

Jobst Ulrich Gellert, Toronto, Ontario, Canada, assignor to Mold Masters Limited, Downsview, Ontario, Canada  
Filed Apr. 18, 1972, Ser. No. 245,109

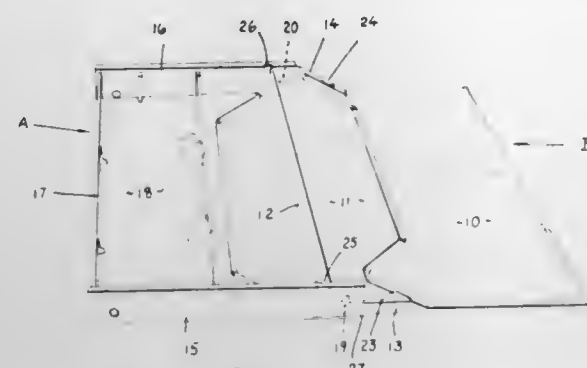
Int. Cl. B65d 43/20, 85/67; A45c 11/00

U.S. Cl. 206—1 R

2 Claims

A storage container for a tape cartridge having a separate bottom section and a separate pouch-like cover hinged to the bottom part and swingable between an open and closed position. The bottom part carries each pivot pin on which the separate pouch-like part swings. Each pivot pin is carried on oppositely disposed side walls and guided, during assembly, by a complementary tapering groove into a pin hole formed in the respective side wall of the cover, spreading the side walls of

the bottom section so that when the pins and pin holes are registered the pins will snap into the respective pin hole. The cover side walls are provided with outwardly projecting ribs adjacent the pin holes which engage in groove in the side wall



when the cover is in the closed position to retain the cover closed and against the end edges of the side wall to support the cover in a substantially horizontal plane when held in a person's hand.

### 3,754,640 INSULATED TRAY AND COVER THEREFOR

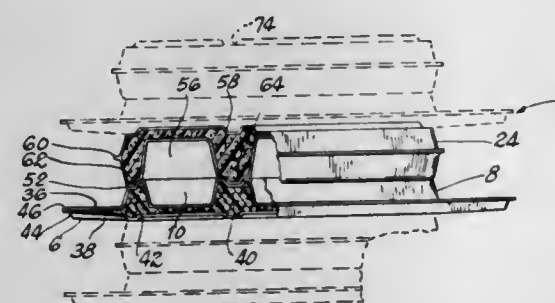
John A. Bridges, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.

Filed July 9, 1970, Ser. No. 53,546

Int. Cl. A45c 11/20

U.S. Cl. 206—4

4 Claims



This application discloses an insulated tray and cover therefor. The tray is provided with food holding receptacles having insulated bottom and side walls while the cover has co-extensive insulated spaces so that when the cover is placed on the lid completely insulated food holding compartments are formed. Interengaging elements are formed on the trays and covers so that seals are formed and alternating trays and covers may be placed on one another to form a stack.

### 3,754,641 WATCH BAND DISPLAY PACKAGE

Harold H. Koch, 474 Warren St., Westbury, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,567

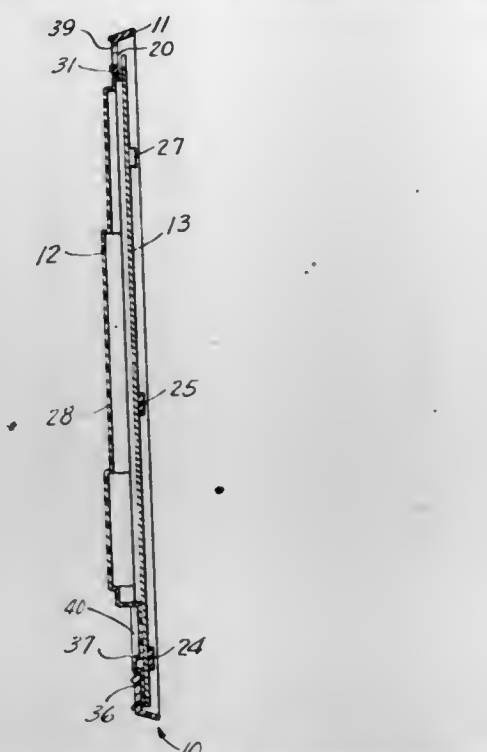
Int. Cl. B65d 25/54, 73/00

U.S. Cl. 206—45.34

4 Claims

A watch band display package consisting of a generally rectangular injection molded frame section completely devoid of undercuts. A pressure molded transparent plastic section interlocks positively to the injection molded frame despite the absence of undercuts. A printed and die cut card member interlocks with the molded frame section and the transparent plastic section to secure and display the package contents. The watch band displayed in the package is secured in the molded transparent plastic section by the card element and can be easily removed and replaced for checking the fit to a watch and for close inspection by the prospective purchaser. A set of spring bars is retained in a portion of the transparent plastic cover which is positioned in contact with a cross bar to

prevent the spring bars from being removed when the card is removed. The spring bars may only be removed from the



transparent cover by forcibly removing the transparent cover from the frame.

### 3,754,642 WATERPROOF CONTAINER FOR PERISHABLE PRODUCTS

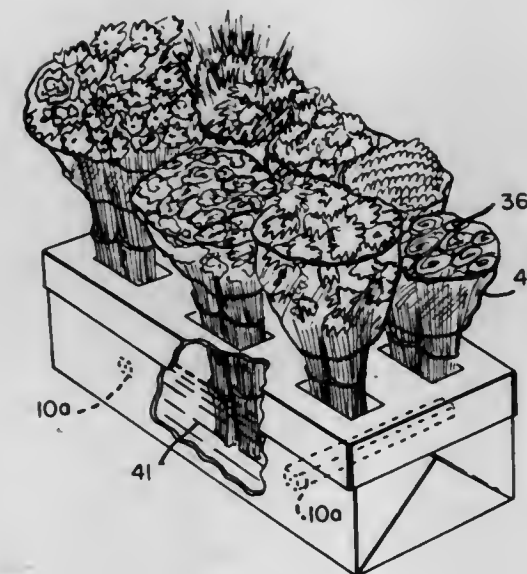
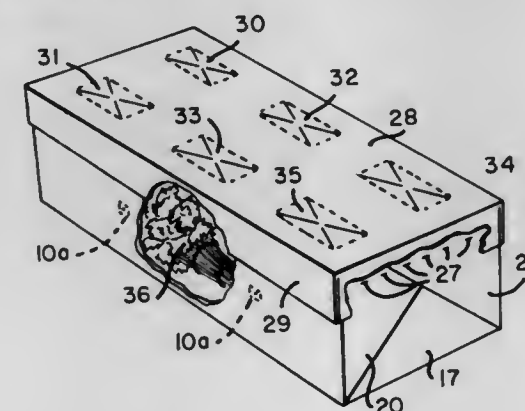
David L. Stidolph, P.O. Box 158, Salinas, Calif.

Filed Aug. 20, 1971, Ser. No. 173,421

Int. Cl. B65d 51/50, 85/00

U.S. Cl. 206—45.14

3 Claims



A waterproof container for shipping perishable products such as cut flowers and for displaying such products for sale or

inspection after they arrive at their destination. The body and cover of this container are each made of one piece of wax impregnated cardboard or corrugated paper stock scored along fold lines so that both body and cover are easily folded into shape. Suitable fastening means are provided to hold these in their folded shapes. The cover is also provided with scoring lines at predetermined areas thereof where holes are to be formed therethrough for receiving the bunches of flowers after they have been delivered to their destination. The cut stems of the flowers are inserted into the cover holes and extend into the body of the container which is provided with a predetermined amount of water of sufficient depth so that the bottom portions of the cut flowers are immersed therein to keep the flowers fresh while they are displayed for sale.

### 3,754,643 SEED TAPE DISPENSER

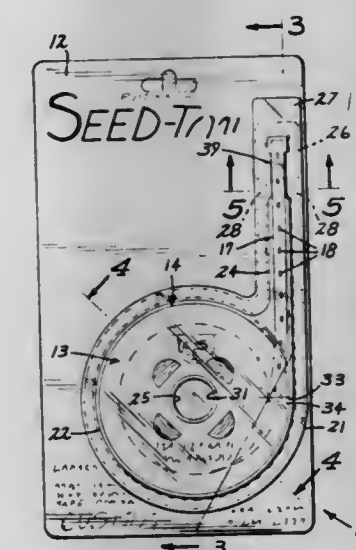
Russell G. Foster, Mankato, Minn., assignor to Northrup King & Co., Minneapolis, Minn.

Filed June 9, 1972, Ser. No. 261,234

Int. Cl. B65d 75/40, 85/67

U.S. Cl. 206—52 R

11 Claims



A dispensing package for a roll of seed tape consisting of a plasticized cardboard backing to which a transparent cover member is hermetically sealed to define a reel cavity. A reel for the seed tape is rotatably carried in the cavity, which includes a tangential outlet through which the tape can be dispensed. The reel consists of a flat circular cardboard member, having suitable printed indicia on one face for viewing through the transparent cover, and a plastic spool which cooperates with the cardboard member to carry the tape. Means are provided for locking the reel in a predetermined position to preclude its rotation due to hygroscopic expansion and contraction of the tape, and to thereby maintain the printed indicia in an upright position.

### 3,754,644 STERILE PACKAGE CONTAINING A SYRINGE CYLINDER OF A DISPOSABLE INJECTION SYRINGE HAVING A PISTON ROD DETACHABLE FROM THE PISTON

Heinz Hampel, Schwabisch Gmund-Lindach, Im-Osterlang, Germany, assignor to B. Braun Melsungen Aktiengesellschaft, Melsungen, Germany

Filed July 19, 1972, Ser. No. 273,163

Claims priority, application Germany, July 26, 1971, P 71 28 705.3

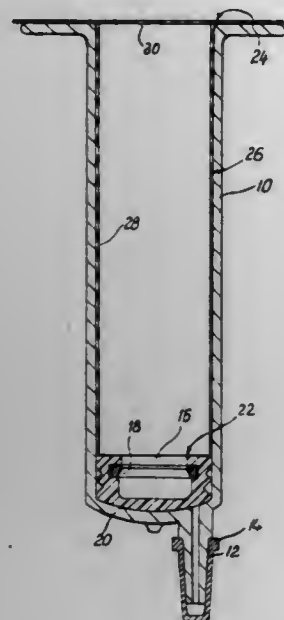
Int. Cl. A45c 11/00; A61m 5/30  
U.S. Cl. 206—63.2 R

3 Claims

A sterile package is disclosed which comprises a disposable injection syringe cylinder which has a nozzle at one end, a piston located at its terminal position within the cylinder at the nozzle end thereof and a liner for the interior wall of the



cylinder behind the piston to maintain the interior of the cylinder in a sterile condition. When the piston is retracted with an attachable piston rod to introduce a fluid into the syringe cylinder, the liner is likewise retracted. The end of the syringe cylinder opposite the nozzle end may be sealed by a removable foil.



inge cylinder, the liner is likewise retracted. The end of the syringe cylinder opposite the nozzle end may be sealed by a removable foil.

3,754,645

# INTERLOCKED PALLET AND CONTAINER SYSTEM

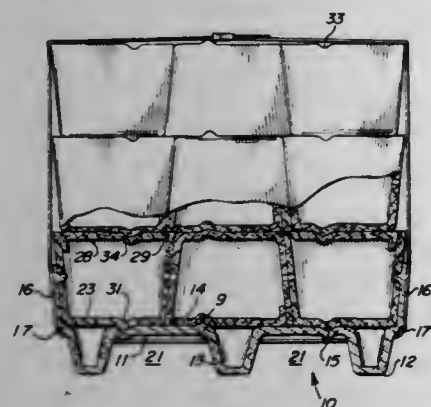
Oliver B. Kilroy, 5 Calle Corta St., Tucson, Ariz.

Filed Jan. 24, 1972, Ser. No. 220,329

Int. Cl. B65d 71/00, 85/62

U.S. Cl. 206—65 B

11 Claims



This specification discloses an interlocked pallet and container system comprising a pallet including a rectangular horizontal platform formed with three rows of legs with three legs in each row. These legs define passages for the entry of the tines of a fork lift in any of four directions. Joined to opposite side edges of the platform by integral hinges are two flaps, each having a plurality of lugs which extend inwardly when the flaps are in an upraised position. Opening onto the upper face of the platform are two grooves which are parallel to the side edges which carry the flaps.

A plurality of containers are assembled on the pallet. Each container is rectangular in shape and comprises a bottom formed with a depending rib, upwardly diverging side walls, two opposed ones of which are formed with a plurality of apertures, and a top hingedly connected to the upper edge of one side wall. The top is formed with an outwardly opening groove that is parallel to the rib on the bottom.

When the containers are assembled on the pallet, the flaps are folded upwardly and the lugs thereon are received in the apertures in the walls of the containers in two of the outer sides of the lower tier. The ribs on these containers are fitted in the grooves in the pallet platform. Additional tiers of containers are superimposed on the lower tier with the ribs on the

bottoms of the containers in one tier being received in the grooves in the tops of the containers in the tier therebelow. A pair of straps are passed around the assembled containers and pallet passing over the flaps and through the passages on the underside of the pallet.

3,754,646

# RECEPTACLE FOR SORTING AND HANDLING FLAT ARTICLES SUCH AS LETTERS

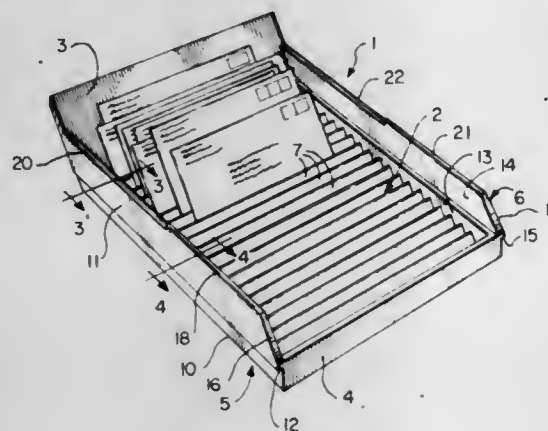
Seymour Henig, Kensington, Md., assignor to John I. Thompson & Company, Rockville, Md.

Filed May 12, 1971, Ser. No. 142,599

Int. Cl. B65d 1/36, 11/10; A47b 63/00

U.S. Cl. 206—73

9 Claims



A receptacle which can be employed as a tray for collecting groups of thin generally flat articles, typically letters, during sorting and which can be combined with an identical but inverted receptacle to provide a complete container in which the collected group of articles can be transported. Constructed to be advanced by a conveyor beneath a series of article retaining stations, with the articles dropped one by one into the receptacle, the receptacle has an upwardly and rearwardly inclined trailing end wall, to support the first article dropped into the receptacle, and a series of upwardly opening transverse notches respectively arranged to receive the lower edges of the first and subsequent other articles dropped into the receptacle, the configuration and disposition of the notches being such that the dropped articles collect in the receptacle as an orderly group with all of the articles oriented in the same fashion, e.g., addresses of envelopes all facing the same way.

3,754,647

# APPARATUS AND METHOD FOR REMOVING SELECTED SHEETS FROM THE LOWER BRIDGE OF A CORRUGATED PAPER BOARD MANUFACTURING MACHINE

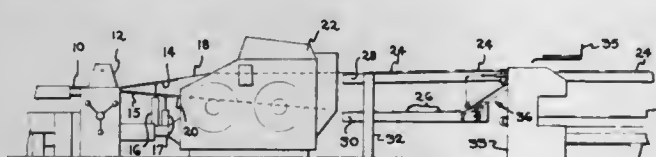
Frank J. DiFrank, and Walter R. Skudlarek, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 22, 1972, Ser. No. 228,018

Int. Cl. B07c 3/02

U.S. Cl. 209—74 R

12 Claims



Apparatus and method for removing selected sheets from the lower bridge of a corrugated paperboard manufacturing machine. In the present invention, a slot is provided in the upper bridge of a corrugated paperboard manufacturing machine. Under the slot, an inclined sorting conveyor is positioned at a point adjacent the lower bridge of the corrugated

machine. A hold-down conveyor is also mounted on the upper bridge adjacent to the sorting conveyor such that sheets of corrugated paperboard are drivingly engaged between the two conveyors. When defective sheets of paperboard appear on the lower bridge, the machine operator activates a lever which raises fingers into position to divert the defective sheets. The defective sheets are engaged by the sorting conveyor and the hold-down conveyor and transported through the slot in the upper bridge. Sheets so removed from the stream of production are stacked and stored for disposal in a rack positioned over the upper bridge of the machine.

3,754,648

# FLUID FILTERING DEVICE

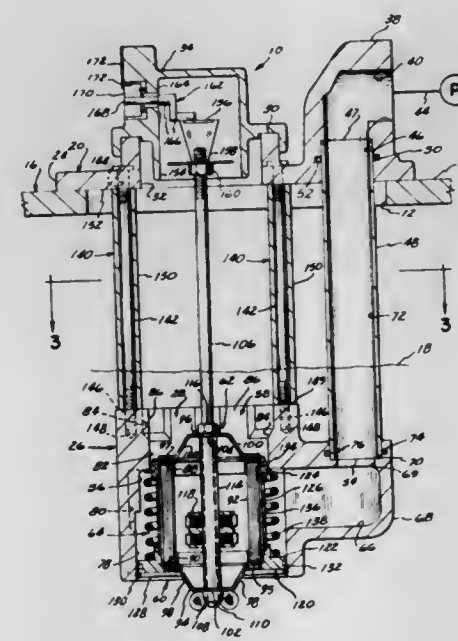
Carl A. Brown, Birmingham, Mich., assignor to Parkin-Hanfin Corporation, Cleveland, Ohio

Filed Oct. 1, 1971, Ser. No. 185,583

Int. Cl. B01d 35/14

U.S. Cl. 210—90

13 Claims



A fluid filtering device in which the filter element can be changed without interrupting the operation of the device and which includes means for directing fluid around opposite ends of the filter element to operate as a bypass when the filter element becomes unduly clogged. The filtering device also is provided with an indicator housing portion mounted to the top plate of a fluid reservoir and a plurality of support rods extending downwardly into the reservoir to support a filter housing portion at a position below the level of the fluid in the reservoir. The filter housing portion has a chamber opening at the top and bottom of the housing portion and within which the filter element is removably supported for filtering fluid flowing from the chamber openings to an outlet passage which in one embodiment of the invention terminates in a boss that supports one end of an upright tubular member disposed in a spaced parallel arrangement with respect to the support rods. The opposite upper end of the tubular member is received in a boss of the indicator housing portion in such a manner that the tubular member is secured to the upper and lower bosses upon connection of the support rods to the filter housing portion. In another embodiment the housing portion is provided with an outlet port adapted for connection to an outlet conduit to extend through the top of the reservoir. In both embodiments the indicator housing portion mounts an indicating device operatively coupled to the filter element to provide a visual indication of the filtering condition of the filter element.

3,754,649

# ARTIFICIAL KIDNEY MACHINE

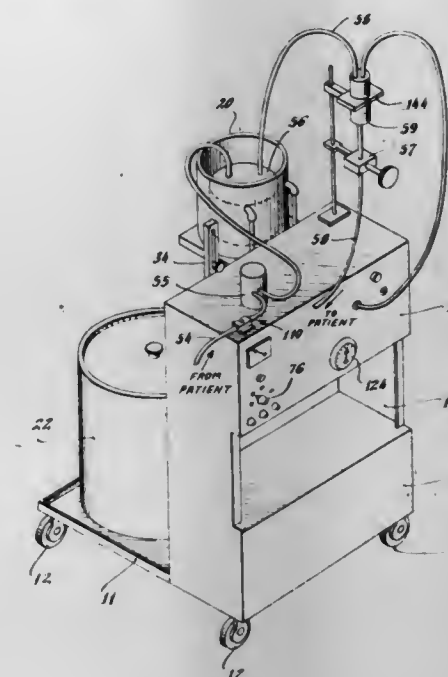
Paul Palubniak, and Sung C. Lee, both of Bridgeport, Conn., assignors to LPT Corp., Bridgeport, Conn.

Filed Nov. 17, 1971, Ser. No. 199,437

Int. Cl. B01d 31/00

U.S. Cl. 210—103

8 Claims



A batch-type artificial kidney machine especially adapted for home use and operation by non-professionals. The machine is automatic in operation with all functions controlled by a single four-position switch.

The foregoing abstract is not to be taken either as a complete exposition or as a limitation of the present invention, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be had to the following detailed description and the accompanying drawings as well as to the claims.

3,754,650

# METHOD FOR THE DIALYSIS OF MILK, AND MORE PARTICULARLY METHOD FOR PRODUCING ALBUMIN FROM MILK AND WHEY, AND APPARATUS FOR CARRYING OUT THIS METHOD

Kurt Kautz, and Otto Stahnke, both of Dahlenburg, Germany, assignors to Molkerergenossenschaft Dahlenburg EGMbH, Dahlenburg, Germany

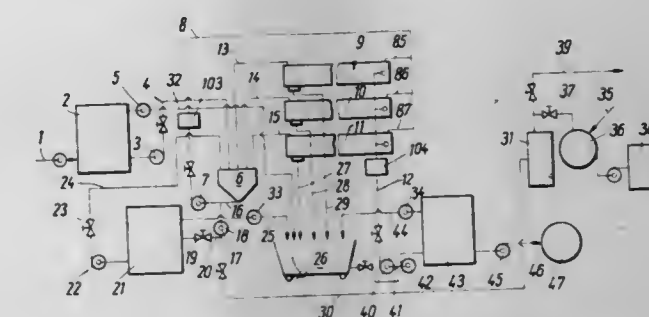
Division of Ser. No. 94,642, Dec. 3, 1970. This application May 11, 1972, Ser. No. 252,307

Claims priority, application Germany, Jan. 23, 1970, P 20 02 985.0; Dec. 10, 1969, P 19 61 885.0

Int. Cl. B01d 31/00

U.S. Cl. 210—152

7 Claims



A method for producing albumin from milk and whey by the dialysis of skimmed milk or whey, wherein the skimmed milk or whey is concentrated prior to the dialysis, and an apparatus for carrying out this method, and comprising a dialytic device.



### 3,754,651 FILTER

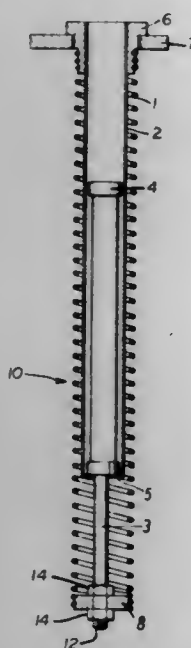
Rudolf Lannoch, Teplitzer Str. 38, Berlin, Germany  
Filed Mar. 19, 1971, Ser. No. 125,975

Claims priority, application Germany, Mar. 26, 1970, P 20 16 001.4

Int. Cl. B01d 39/02

U.S. Cl. 210-106

7 Claims



A fluid filter consisting of a helical or spirally wound wire element, a fluid guide pipe disposed within the center of the element and containing a piston-like member responsive to the pressure of the fluid connected to one end of the helical element. When the fluid is pumped, the pressure forces the piston-like member up within the fluid guide pipe, and the helical filter winding is contracted so as to provide effective filtering of dirt and other foreign particles. When no fluid is being pumped and no pressure exists, the piston-like member forces the helical winding into an extended position so as to cause the collected dirt and residue to be cleaned from the winding.

### 3,754,652

#### FILTER PUMP SYSTEM FOR LIQUID CONVECTION COOKER

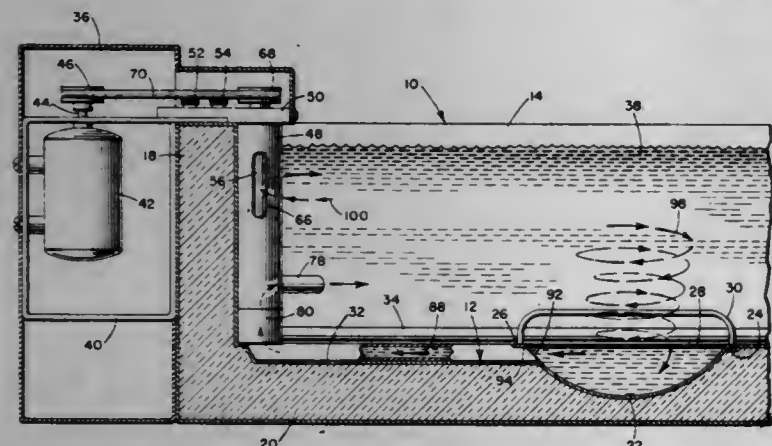
Dan R. Franklin, 12830 Lacy Dr., Silver Spring, Md.

Filed Oct. 26, 1972, Ser. No. 301,075

Int. Cl. B01d 35/28

U.S. Cl. 210-167

9 Claims



The present pump and filter system is used in a liquid convection cooker to create a vortex which causes circulation of the liquid in the tank or vat of the cooker in such manner as to achieve substantially uniform liquid temperature and to prevent the liquid from becoming laden with food particles. The pump is positioned directly in the vat along one wall

thereof and is arranged to draw liquid from the periphery of a well located centrally in the bottom of the vat. The liquid is returned to the vat horizontally through a nozzle spaced above the bottom of the vat and at an angle with respect to the vat walls. The vortex is created, at least in part, by the pumping action and the shape of the components. Those parts of the pump and filter which actually contact the liquid can be readily removed from the vat, disassembled for cleaning and can even be sterilized. There is no necessity for emptying the vat before removing either the pump or the filter.

### 3,754,653

#### APPARATUS AND METHOD FOR COLLECTION OF OIL FROM SURFACE OF THE SEA

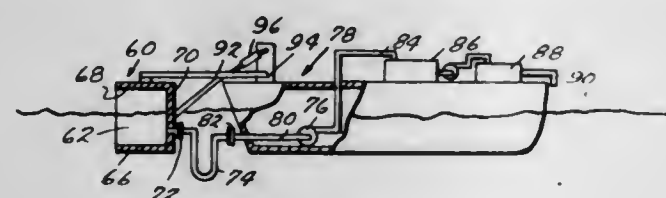
Sam M. Verdin, 2600 Breton Dr., Marrero, La.

Continuation-in-part of Ser. No. 46,963, June 17, 1970, abandoned. This application Apr. 21, 1971, Ser. No. 136,147

Int. Cl. B01d 21/00; E02b 15/04

U.S. Cl. 210-197

6 Claims



An oil spill on the surface of the sea is collected by means of a funnel-like scoop which is moved horizontally through the water in a direction such that oil and sea water, including waves, flow into the open end of the scoop. An oil-rich mixture flows over a weir located at the apex end of the scoop and the water is returned to the sea after separation of the oil. The trim of the scoop is adjusted by ballast tanks.

### 3,754,654

#### DEVICE FOR APPLYING A LIQUID ALONG A LINE ON A SUPPORT

Ethel Barbro Louise Nybom, Kristianstad, Sweden, assignor to AB Instrumenta, Lund, Sweden

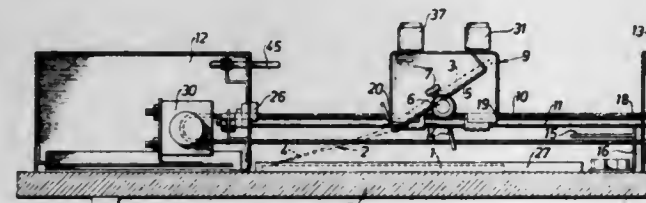
Filed Apr. 7, 1971, Ser. No. 131,904

Claims priority, application Sweden, Apr. 13, 1970, 4960/70

Int. Cl. B01d 15/08

U.S. Cl. 210-198 C

7 Claims



Apparatus for linear application of a liquid along the surface of a plate utilized in conjunction with chromatographic investigations includes a pipette arranged to be moved back and forth along the plate. The pipette is mounted pivotally in order that a capillary liquid application prong thereon can be maintained in contact with the surface of the plate when moving in one direction while it is raised from the surface when the pipette is moved in the opposite direction.

### 3,754,655

#### VORTEX-TYPE SLURRY SEPARATOR

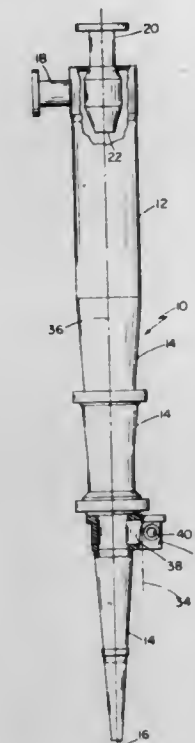
Edwin P. Troland, Hingham, Mass., assignor to Bird Machine Company, South Walpole, Mass.

Filed Feb. 7, 1972, Ser. No. 224,011

Int. Cl. B04c 5/18

U.S. Cl. 210-209

5 Claims



In a vortex-type slurry separator dilution liquid is introduced through an eddy chamber adjacent the separator body, the chamber having a transfer opening which extends through the wall of the body to allow overlap of a dilution liquid body with the outer vortex in the separator, so that the liquid will pass smoothly into the outer vortex by eddy current transfer.

### 3,754,656

#### FLOATATION SEPARATORS

Tadao Horiguchi, and Katsumi Tagomori, both of Yokohama, Japan, assignors to Kurita Water Industries, Ltd., Hodogaya-ku, Yokohama-shi, Japan

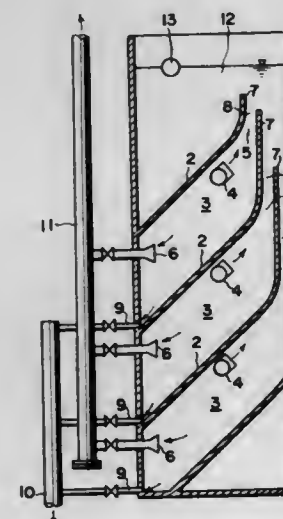
Filed Sept. 14, 1971, Ser. No. 180,429

Claims priority, application Japan, Nov. 17, 1970, 45/101237; Sept. 28, 1970, 45/84797; Nov. 12, 1970, 45/99670; Nov. 13, 1970, 45/99951; Nov. 14, 1970, 45/100333; Nov. 17, 1970, 45/101234

Int. Cl. B03c 5/02

U.S. Cl. 210-221

15 Claims



A flotation separator comprises a flotation tank containing a plurality of vertically spaced apart parallel inclined

### 3,754,657 FILTER PRESSES

John Harp, Woodlands Grange, 25 Caverswall Rd., Stoke-on-Trent, England

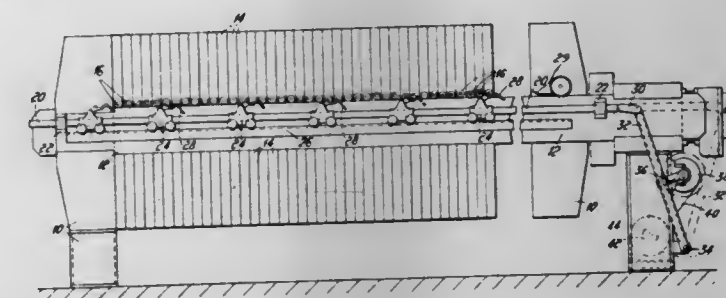
Continuation-in-part of Ser. No. 1,712, Jan. 9, 1970, abandoned. This application Feb. 23, 1972, Ser. No. 228,699

Claims priority, application Great Britain, Jan. 16, 1969, 2,533/69; Aug. 27, 1969, 42,633/69; Feb. 26, 1971, 5,506/71

Int. Cl. B01d 25/00

U.S. Cl. 210-230

9 Claims



There is described a propulsion mechanism for moving trays along a filter press, the mechanism consisting of one or more bars which may be arranged at the side or sides of or above the press and which are mounted for reciprocation lengthwise of the press. The bars may be reciprocated by a mechanical linkage or a fluid actuator and carry tray-engaging elements such that reciprocation of the bar or bars effects sliding movement of one or more trays along the press. The tray engaging elements may be spring-loaded to urge them into tray-engaging positions.

### 3,754,658

#### PULP THICKENER HAVING TWO VERTICAL PERFORATED SCREENS WITH NONMOVING SPIRALLY WRAPPED BLADES THEREBETWEEN

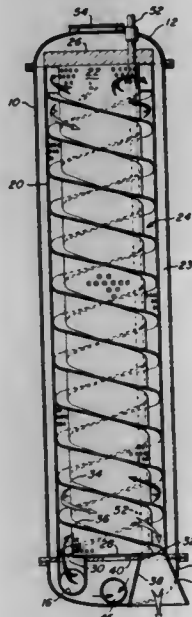
Hjalmar Messing, deceased, late of 7 Church St., Fort Fairfield, Maine (by Mary Agnes Messing, executrix)

Filed Oct. 19, 1970, Ser. No. 81,867

Int. Cl. D21d 5/02; B01d 25/20

U.S. Cl. 210-304

9 Claims



A pulp thickener characterized by a vertically oriented housing containing concentric perforated tubular screens



which form therebetween a tube-like chamber. Within said chamber are two spirally wrapped blades providing helical flights which have a 180° displacement. At their lowermost extremities one flight is positioned to commence at the inlet to while the other ends at the outlet from said chamber. In a pressurized continuing flow through said chamber a pulp slurry is guided by said helical flights from said inlet to said outlet in a manner that a substantial amount of liquid is expressed through the tubular screens in a relatively small amount of space.

3,754,659

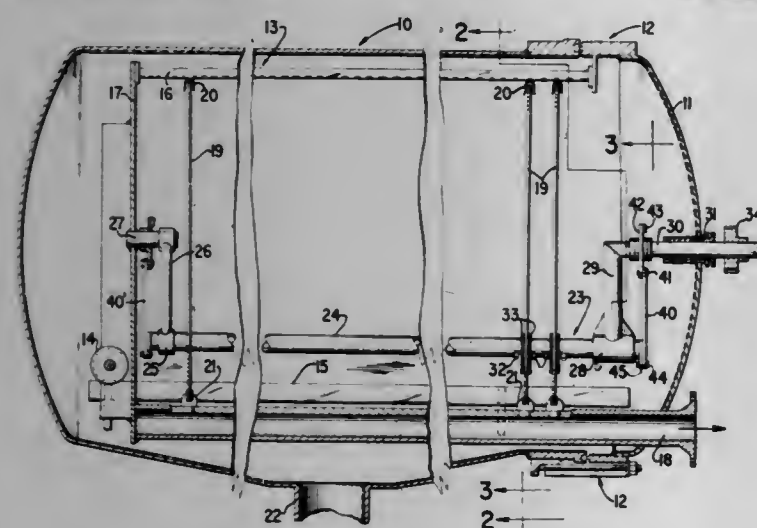
## SLUICE MEANS AND ROTATABLE NOZZLES

John E. Krynski, East Moline; William C. Smith, Moline, and Kenneth A. Anderson, Silvis, all of Ill., assignors to Ametek, Inc., New York, N.Y.

Filed June 4, 1971, Ser. No. 150,095  
Int. Cl. B01d 29/38, 29/34

U.S. Cl. 210-334

8 Claims



A horizontally disposed filter has a plurality of filter leaf elements spaced along its axis with a sluicing assembly provided for sluicing filter cake from the leaves. The assembly includes a pair of pivotally mounted crank-shaped arms whose outer portions are positioned outwardly of the peripheral edges of the filter leaf elements and on opposite sides thereof. Each arm pivots through an angle of about 80° and linkage or cable means are provided to pivot nozzles positioned on the outer portions of the arms. The nozzles pivot through angles of about 155° so that a sluicing liquid sprayed from the nozzles is distributed over the surfaces of the filter leaf elements. While the sluice arms pivot back and forth through their angles, the nozzles are concurrently pivoted with respect to the sluice arms.

3,754,660

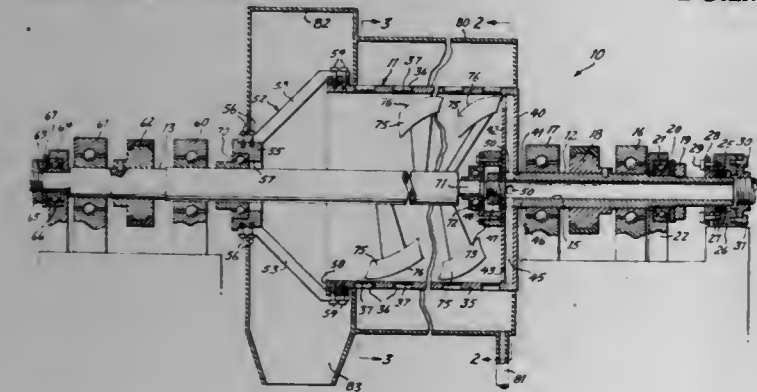
## APPARATUS FOR EXTRACTING FLUID FROM PULP

Herbert Cottrell, Box 240, R.D. 1, Matawan, N.J.

Filed July 28, 1971, Ser. No. 166,759  
Int. Cl. B01d 33/06

U.S. Cl. 210-374

2 Claims



A fluid extracting apparatus including a rotary drum having a circumferential filter element for centrifugally passing fluid

while retaining pulp, and rotary blade means in the drum for conveying pulp toward an outlet at a predetermined rate, to control the fluid content of the pulp.

3,754,661

## APPARATUS FOR CLARIFYING LIQUID

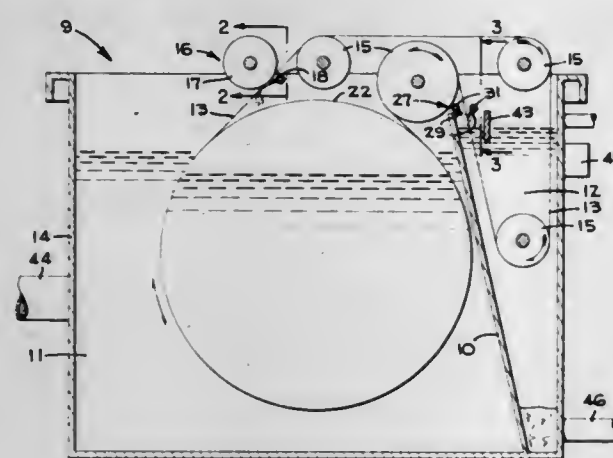
Warren G. Palmer, Saratoga, Calif., and Roger Davidson, Arlington Heights, Ill., assignors to FMC Corporation, San Jose, Calif.

Filed Apr. 15, 1971, Ser. No. 134,334

Int. Cl. B01d 35/20

U.S. Cl. 210-386

10 Claims



The effectiveness of a liquid clarifier having two liquid filled compartments, the first for depositing solids suspended in an incoming liquid solution on a continuous screen and the second for removing the solids from the same continuous screen, is optimized by preventing carry-over of water via the screen from the first compartment to the second by squeezing, wiping, drawing, or blowing the water off the screen as it emerges from the first compartment and by preventing carry-back of the solids from the second compartment to the first by spraying, wiping, blowing, or brushing the solids off the screen as it emerges from the second compartment.

3,754,662

## APPARATUS FOR SUPPORTING A PLURALITY OF MEMBERS

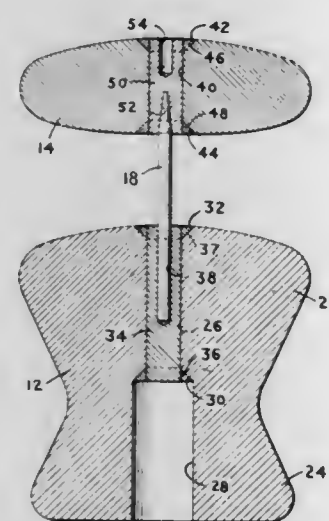
Klaus D. Prinz, 251 Longview Rd., Union, N.J.

Filed Sept. 13, 1971, Ser. No. 180,035

Int. Cl. A471 7/00

U.S. Cl. 211-13

3 Claims



Apparatus for supporting a plurality of members in spaced relation including a first base, a bore formed in the first base, a second base, a bore formed in the second base, and an elongated pin slidably secured within the bores of the first and second bases to support them in axially disposed spaced relationship. Each of the bases is designed to support a member, e.

g., a wig or hair piece, thereon. The elongated pin is provided with at least one tapered end and adapted to be passed through the member supported.

3,754,663

## NOTE-HOLDING DEVICE

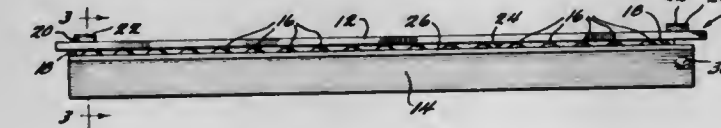
Richard W. Bittner, Box 57, Sipesville, Pa.

Filed Jan. 18, 1972, Ser. No. 218,709

Int. Cl. A471 5/08, 7/00

U.S. Cl. 211-89

9 Claims



A note-holding device including a horizontally elongated base member having a vertically extending planar surface, a substantially coextensive cooperating elongated member having upper and lower edge structures and a marble receiving cavity therebetween, the cooperating member being fixedly secured to the base member by end walls closing the marble cavity and spacing the upper and lower edge structures from the vertical planar surface of the base member to define horizontally elongated upper and lower note paper receiving slots, the cavity is substantially filled with a plurality of spherical glass marbles which engage a lower surface within the cavity disposed at a 45° angle with the vertical planar surface so that the weight of the marbles bias the same into point contact with the vertical surface, the arrangement permits the marbles to releasably hold note paper either in a depending relation from the lower slot or an upstanding relation from the upper slot, or both.

3,754,664

## TELESCOPING HANGER BRACKETS

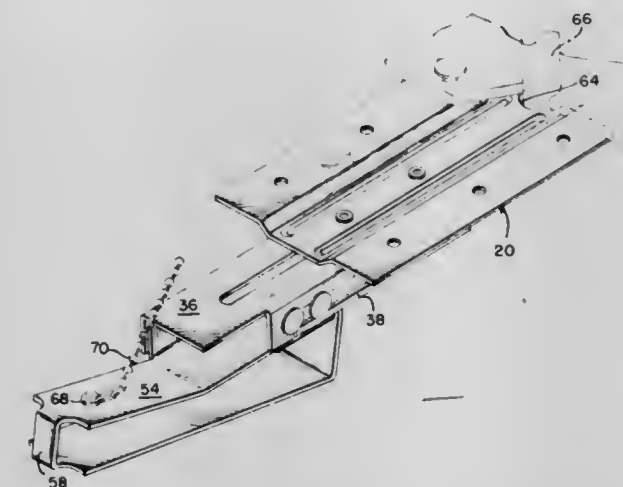
Henry L. Kotkins, Seattle, Wash., assignor to Skyway Luggage Company, Seattle, Wash.

Filed Nov. 29, 1971, Ser. No. 202,833

Int. Cl. A45c 13/02

U.S. Cl. 211-94

3 Claims



The telescoping multi-section hanger bracket for use in a luggage case wherein the hanger supporting means has a downward slope toward the back of the case, whereby the hangers tend to continually move to the back of the case. For loading or unloading the hangers, the bracket is extended outwardly from the case to a distance approximately twice the depth of the case and includes a minimum of two-point support for each of the sections during the entire extension, thereby preventing twisting or bending of the bracket when loaded and extended.

3,754,665

## OVERLOAD SAFETY DEVICE FOR A CRANE

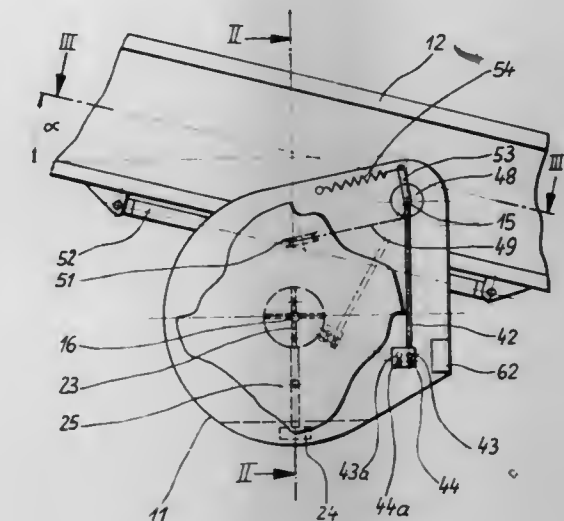
Peter Eiler, Dusseldorf-Benrath, Germany, assignor to Leo Gottwald K.G., Dusseldorf-Holthausen, Germany

Filed Feb. 14, 1972, Ser. No. 225,865

Int. Cl. B66c 13/48

U.S. Cl. 212-39 MS

19 Claims



An overload safety device for cranes, particularly for mobile cranes, includes a housing preferably mounted on a surface of the crane boom which is under compression when loaded. Within the housing a plurality of cam discs are mounted on a shaft with each cam disc representing a specific boom or crane support arrangement. Each cam disc has a plurality of peripheral segmental surfaces and each of these surfaces represents a different operating length of the boom, such as in a telescopic boom. The shaft supporting the cam discs can be rotated to locate the applicable segmental surface in position for operation. Another shaft is located within the housing laterally offset from the shaft for the cam discs and it supports swivel arms located, under permissible load conditions, laterally outwardly from the cam discs. Adjacent swivel arms are arranged in pairs with each pair supporting a combination light source-photocell assembly. An expansion rod dynamometer is fixed to the boom and a cable, extends from the dynamometer to the shaft for the swivel arms for pivoting the swivel arms and moving them into the range of the cam discs as the load on the boom approaches overload conditions. When overload conditions are reached, the cam discs interrupt the path between the light source and photocell and cut off further boom movements. Moreover, a pendulum arrangement is associated with the cam discs to assure proper orientation of the device as the crane and boom are moved.

3,754,666

## FOLDING CRANE

Don Suverkrop, Bakersfield, Calif., assignor to Hopper, Inc., Bakersfield, Calif.

Continuation-in-part of Ser. No. 17,390, March 9, 1970, Pat. No. 3,608,952. This application Feb. 24, 1971, Ser. No. 118,453

Int. Cl. B66c 23/06

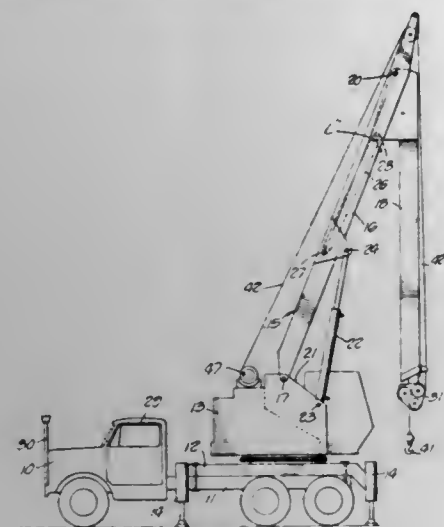
U.S. Cl. 212-59 R

3 Claims

A folding crane has a first boom comprising laterally spaced boom elements pivotally supported on a base and a second boom pivoted in the space between said elements. The second boom swings between an extended position, and a folded position in which the swinging end of the second boom lies adjacent the pivotal support for the first boom, and between laterally spaced supports on the base which pivotally carry the first boom elements. Separate power means move each boom. The second boom is movable by gravity toward or away from folded position by changing the inclination of the first boom in order to cause the power means for



the second boom to move through a dead-center position. In a modification, the power means for the second boom comprises an hydraulic cylinder having two pistons and piston rods, one piston rod projecting from each end of the cylinder.



A barrier wall fixed within the cylinder isolates the hydraulic fluid acting on one piston with respect to the hydraulic fluid acting on the other piston.

3,754,667

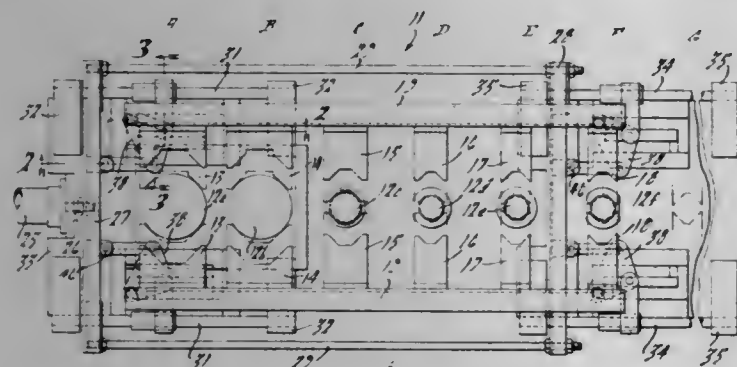
## TRANSFER MECHANISM

Robert H. Storch, 4674 Coachmaker Dr., Bloomfield Hills, Mich.

Filed Jan. 7, 1972, Ser. No. 216,178  
Int. Cl. B65g 25/04

U.S. Cl. 214-1 BB

10 Claims



A mechanism for transferring workpieces along a succession of equidistantly spaced work stations. The mechanism comprises a plurality of workpiece-engaging members carried by one or more bars, together with actuating means for moving the bars in a rectangular path to engage, transfer, and disengage the workpieces, and retract to their original positions. The actuating means comprises a reciprocable actuator which may be linked with the motion of a press, link and bell crank means connecting the actuator to the bars, and cam and cam follower means connected to the bell crank to create rectilinear motion of the work-engaging bars in response to the reciprocating motion of the actuator.

3,754,668

## POSITIVE MECHANICAL DRIVE FOR THE BALE SEPARATING HOOKS OF A SINGLE BALE UNLOADING BALE WAGON

Gene R. Butler, Kingsburg, Calif., assignor to Sperry Rand Corporation, New Holland, Pa.

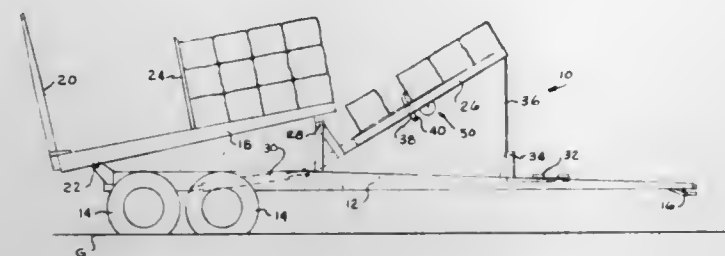
Filed June 12, 1972, Ser. No. 261,760  
Int. Cl. B65g 60/00; B65p 1/04

U.S. Cl. 214-8.5 G

14 Claims

The present invention relates to a positive mechanical drive for cycling the bale separating hooks of a single bale unloading

bale wagon between an up bale engaged position and a retracted non-engaged position. Generally, the positive mechanical drive comprises a single revolution clutch drivingly interconnected by a four bar linkage to a rockshaft



carrying the bale separating hooks. The single revolution clutch is clutched and declutched by an actuating linkage that is responsive to the timed movement of a cross conveyor associated with a single bale unloading table mounted on the bale wagon.

3,754,669

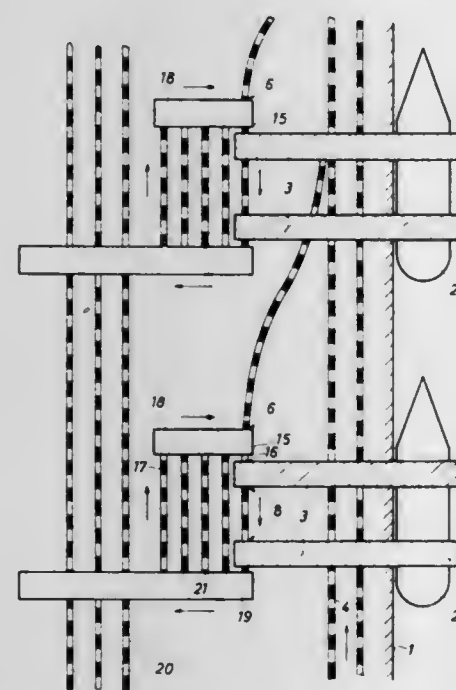
## ARRANGEMENT FOR CONTINUOUSLY TRANSFERRING LOADS UNITS

Kurt Alsen, Wolfenbuttel, Germany, assignor to Salzgitter Aktiengesellschaft, Salzgitter-Druthe, Germany

Filed June 23, 1971, Ser. No. 155,888  
Claims priority, application Germany, June 24, 1970, P 20 31 127.7; Aug. 8, 1970, P 20 39 585.1  
Int. Cl. B65g 63/00

U.S. Cl. 214-14

17 Claims



Containers are unloaded from a conveyance, such as a ship or train, at a first transfer station onto cars moving along an endless path also through a plurality of second transfer stations where the cars may be unloaded and then moved further on the endless track back to the first transfer station for repeated loading. The cars preferably leave the endless track at one of the second transfer stations, and other, empty cars are placed on long distance rails are supplied to the endless path for loading at the first transfer station. The operations are reversed when the ship is loaded at the first transfer station from cars loaded at the second transfer stations, or entering the endless track from rails at a second transfer station.

3,754,670

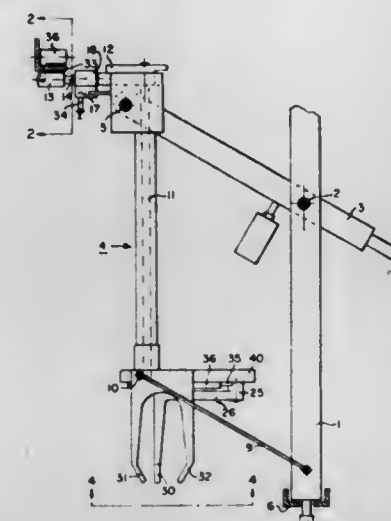
## DISCHARGING DEVICE FOR A MOVABLE HOLDER

Jacob H. Mosterd, Stationsweg 117, Barneveld, Netherlands  
Filed June 25, 1971, Ser. No. 156,835

Claims priority, application Netherlands, Aug. 12, 1970, 7011935

Int. Cl. B65g 47/38

U.S. Cl. 214-60



The invention relates to a device provided with a movable holder and means for making this holder discharge, retaining means being present for delaying the discharge of the holder, in such a way, that deviations in the location of the objects discharged by the holder, which deviations might have been caused by velocity differences of the holder, are compensated.

3,754,671

## APPARATUS FOR TRANSFERRING AND SORTING ARTICLES

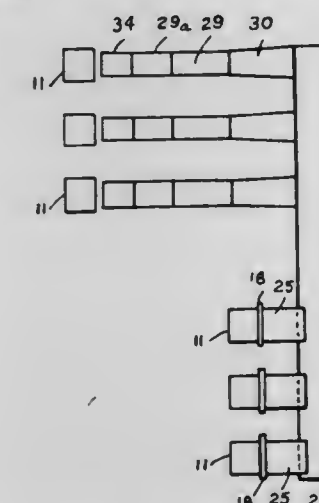
Feede Walda, Leendert Sparreboomstraat 15, Rotterdam, Netherlands

Continuation-in-part of Ser. No. 843,123, July 18, 1969, abandoned. This application Sept. 3, 1971, Ser. No. 177,657  
Claims priority, application Great Britain, July 22, 1968, 34,946/68

Int. Cl. B65b 35/00

U.S. Cl. 214-301

2 Claims



Apparatus for unloading articles from containers each of which has been loaded with like articles, sorting the articles, and loading each of a plurality of containers with assorted articles comprises mechanism for discharging articles upon a common conveyor from a plurality of successive groups of containers, each group of containers being loaded with like articles. A plurality of branch conveyers lead from the common conveyor, and each of them is provided with a gate that is operable to divert a selected article onto the branch conveyor from the common conveyor. A loading station is located at the end of each branch conveyor for holding a container in a position to receive articles from the branch conveyor.

3,754,672

## MOTORCYCLE CARRIER HOIST FOR VEHICLE BUMPER

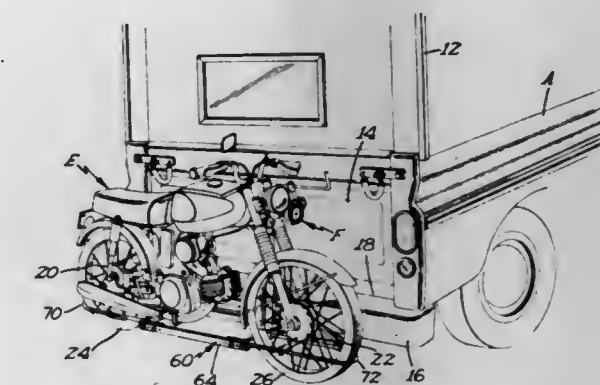
Ruben Blomquist, 104 Ryan Rd., and Herbert Blomquist, 9965 Greenwood Rd., both of Duluth, Minn.

Filed June 11, 1971, Ser. No. 152,279

Int. Cl. B60r 9/00

5 Claims U.S. Cl. 214-450

7 Claims



A motorcycle carrying attachment for the rear end of a motor vehicle comprising a guide structure having spaced posts supporting a guided structure slidable along the posts and a foldable cradle carried by the guided structure and foldable in a plane parallel to the plane of the posts together with a winch for moving the cradle from a position lying flat on the ground to an elevated position.

3,754,673

## DETACHABLE FORK FOR LIFT TRUCKS

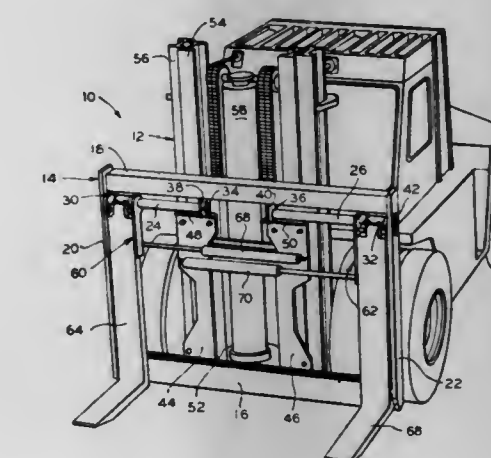
Rudolph C. Barda, Battle Creek, and William H. Ward, Athens, both of Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Dec. 13, 1971, Ser. No. 207,381

Int. Cl. B66f 9/14

U.S. Cl. 214-731

5 Claims



A fork mount particularly for heavy duty lift trucks which provides a side shiftable shaft mounted fork hanger bracket having hook portions for receiving stub support shafts of a rapidly detachable fork tine, and a manipulatable keeper element for retaining the stub shafts in the hook portions for operation and for permitting the rapid release thereof for detachment of the fork tines from the lift truck under selected conditions.



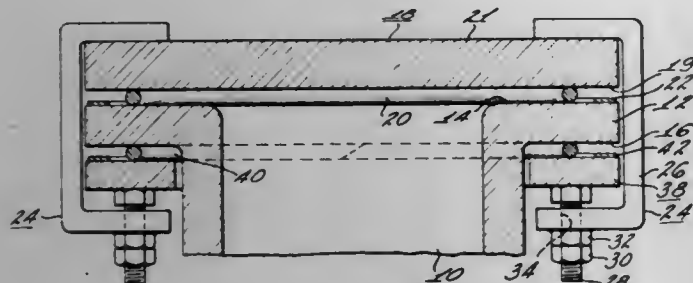
3,754,674

**MEANS FOR PROVIDING HERMETIC SEALS**

Henry J. Wesoloski, Milton, Mass., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.  
Division of Ser. No. 691,421, Dec. 18, 1967, abandoned. This application Mar. 3, 1970, Ser. No. 18,804  
Int. Cl. H01k 1/42

U.S. Cl. 220-2.3 R

3 Claims



The outwardly flanged end of a glass tube is hermetically sealed by means of a pure or indium coated aluminum wire gasket which is squeezed at a pressure of about 5,000 pounds per linear inch of wire between the glass flange and a metal closure plate and heated to about 482°F or above. The pressure is applied by C-clamps which grip the closure plate and a split ring collar surrounding the tube. An aluminum cushioning gasket is disposed between the collar and the glass flange to prevent glass fracture. Steel spacer shims surround both gaskets to prevent extrusion of the gaskets under pressure.

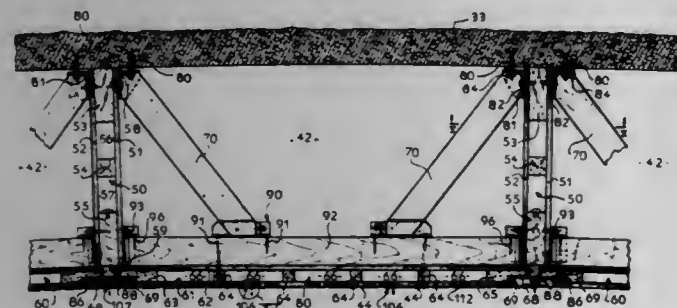
3,754,675

**LOW-TEMPERATURE LIQUEFIED-GAS STORAGE RESERVOIR**

Lucien Louis Richard, Neuilly sur Seine, and Auguste Prosper Gilles, Paris, both of France, assignors to Gaz De France and Gaz Transport, Paris, France  
Filed Oct. 18, 1971, Ser. No. 190,111  
Claims priority, application France, Oct. 19, 1970, 7037691  
Int. Cl. B65d 25/18

U.S. Cl. 220-9 LG

11 Claims



The reservoir intended for the storage of very great quantities of liquefied gas at very low temperature is provided with a heat insulating layer of very great thickness. For this purpose the insulating layer consists of juxtaposed caissons made of radial panels secured to the walls of the reservoir and of front panels resting side by side, with a clearance between one another, upon the inner radial edges of said radial panels. Struts angularly disposed between the walls of the reservoir and the front panels reinforce the construction.

3,754,676

**POULTRY TRANSPORT CAGE**

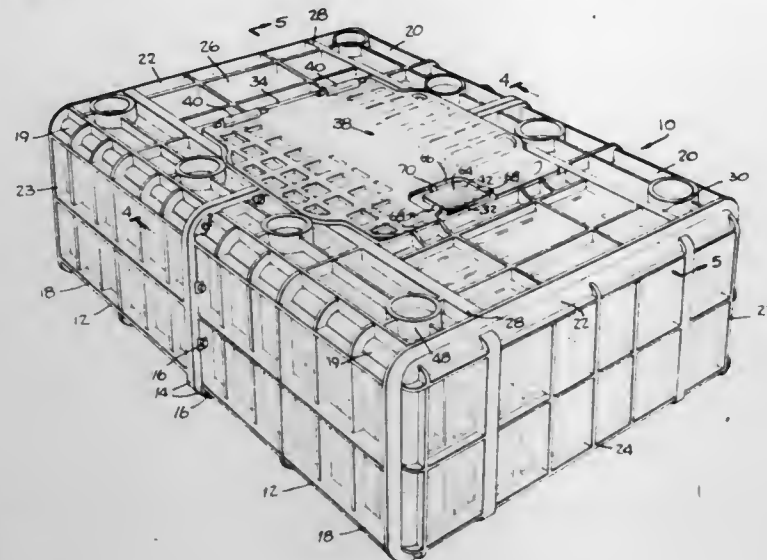
Theodor Box, 1108 Alleen Rd., Brielle, N.J.  
Filed July 14, 1971, Ser. No. 162,536  
Int. Cl. B65d 43/16, 1/38

U.S. Cl. 220-31 S

7 Claims

A poultry transport cage of the type having a rectangular frame structure supporting openwork sides, ends, bottom, and top with additional longitudinal and lateral enlarged beam

members spaced from the sides and ends of the cage for reinforcing the top has an enlarged opening in the top for convenient insertion and withdrawal of poultry into and from the cage.



Flanges across the corners of the opening support a complementary hinged lid without restricting the lateral and longitudinal dimensions of the opening and at the same time round the corners of the opening to reduce injury to poultry being inserted into or withdrawn from the cage.

3,754,677

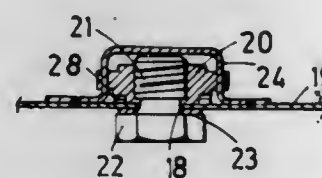
**LIQUID CONTAINER DRAIN DEVICE**

Karl Hug, Lenzhanner, Germany, assignor to General Motors Corporation, Detroit, Mich.  
Filed Mar. 15, 1971, Ser. No. 124,371  
Claims priority, application Germany, Apr. 4, 1970, G 70 12 405.9

U.S. Cl. 220-39 R

Int. Cl. B65d 41/04

7 Claims



A liquid container drain device, such as a drain device for the sump of an automotive engine. A threaded nut, into which a threaded closure plug is insertable, is carried by a blade spring secured to the container wall at at least one end. When the plug is inserted, the blade spring is loaded, and the nut is drawn against the container wall opposite a drain aperture; when the plug is removed the blade spring is unloaded and acts to lift the nut away from the container wall, thus permitting the dregs of the container contents to drain away. In modifications, a portion of the container wall may be resilient instead of, or in addition to, a support for the nut.

3,754,678

**CONTAINER END WITH PROTECTIVE BEAD**

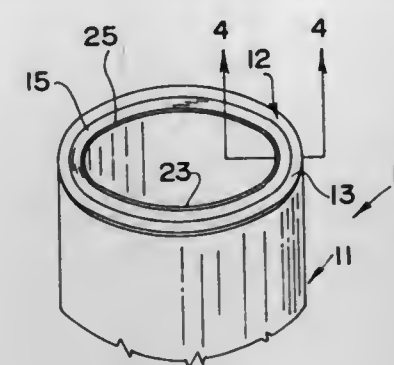
James D. Fox, Darlington; Earl P. Norman, Jr., and Jerry F. Sansbury, both of Hartsville, all of S.C., assignors to Sonoco Products Company, Hartsville, S.C.  
Filed July 14, 1971, Ser. No. 162,379  
Int. Cl. B65d 17/20

U.S. Cl. 220-54

5 Claims

A container having a body and at least one open end with the container end secured to the body and closing the opening, wherein the container end includes a removable panel

portion, the removal of which produces an inner edge in the container end defining an access opening through which the contents of the container may be removed and a protective bead operatively associated with the container end and the removable panel portion for guarding the hazardous edges of



said removable panel portion and said inner edge for allowing the removal of the contents of the container through the access opening by the consumer without injury from the edge of the container end or the removed panel portion thereby produced.

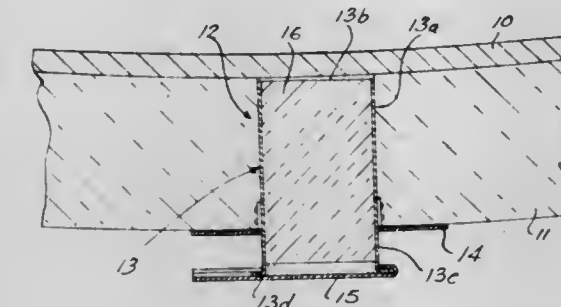
3,754,679

**INSPECTION DEVICE**

John William Beernink, 150 Wilkerson Pl., Corruna, Ontario, Canada  
Filed Nov. 4, 1971, Ser. No. 195,795  
Int. Cl. B65d 25/14, 41/00

U.S. Cl. 220-63

3 Claims



An inspection device for mounting in a cavity in a body of insulating material surrounding a vessel wall, said device comprising a tubular part and a flange part connected thereto. The flange part is shaped to conform to the outer surface of the body of insulating material, and the tubular part has an inner portion projecting from an inner face of the flange part to enter said cavity and extend towards the vessel wall and an outer portion projecting from an outer face of the flange part. Closure means are also provided for securing to said outer portion to close the tubular part from the exterior. The device enables the vessel wall to be inspected promptly without the need to disrupt the insulating material, and without giving rise to any need to reinstate insulating material that has been removed for inspection purposes.

3,754,680

**ARTICLE CARRIER**

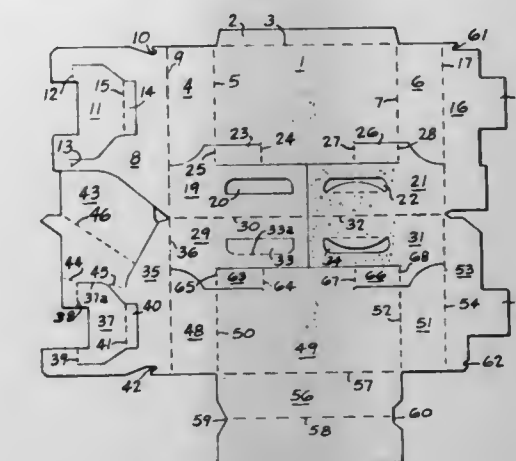
Prentice J. Wood, Jonesboro, Ga., assignor to The Mead Corporation, Dayton, Ohio  
Filed Nov. 15, 1971, Ser. No. 198,758  
Int. Cl. B65d 5/46, 5/48

U.S. Cl. 220-113

3 Claims

An article carrier of the basket style comprises a bottom wall, side walls foldably joined to the side edges of the bottom wall, end wall panels foldably joined to the end edges of the side walls and extending inwardly therefrom, medial partition

structure including a pair of medial panels foldably joined respectively to said end wall panels at one end of the carrier and extending medially inward of the carrier, riser panels foldably joined to the end wall panels at the other end of the carrier and extending medially inward of the carrier, handle structure secured at one end to the upper ends of the riser



panels and at the other end to the upper portion of the medial panels together with auxiliary partition structure struck from said medial partition structure and foldably joined to one of said medial panels along a diagonal fold line and folded into flat face contacting relation therewith and arranged so that a portion of the auxiliary partition structure is interposed between and secured to the riser panels.

3,754,681

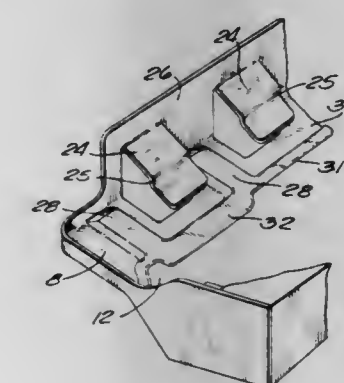
**UNIVERSAL TOWEL DISPENSER**

Norman J. Slye, and James A. Diring, both of Green Bay, Wis., assignors to Alwin Manufacturing Company, Inc., Green Bay, Wis.

Filed Mar. 11, 1971, Ser. No. 123,265  
Int. Cl. A47k 10/24

U.S. Cl. 221-45

3 Claims



In a cabinet having interior shelf flanges for the support of towels in a stack from which the lowermost is to be dispensed, there is a support for the intermediate portions of successive lowermost towels which support has extensions spaced to project from its opposite ends toward the dispensing slot.

3,754,682

**SUGAR CANE PLANTER**

Charles V. Allain, 909 2nd Street, Franklin, La.  
Filed Apr. 21, 1972, Ser. No. 246,225  
Int. Cl. A01c

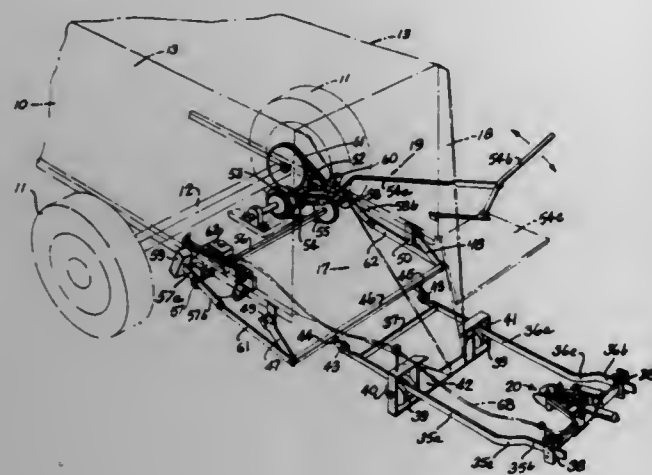
U.S. Cl. 221-185

8 Claims

The present disclosure is directed to a sugar cane planter which is placed on the rear of a cane cart and which receives sugar cane stood on their butt ends at the open end of the cane cart and into which a mechanical hand will enter and grasp cane stalks and transfer the stalks rearwardly clear of the cane



cart and drop same into the planting furrow as the planter moves over the ground. The mechanical hand or cane grasping means is reciprocated into and out of the hopper by a mechanism which converts the rotary motion of a power drive shaft driven from the cane cart wheels into a rectilinear



reciprocating motion at a speed and in synchronism with the rate of travel of the cane cart. The mechanical hand is hydraulically operated by a master cylinder which is cam operated from the power drive shaft in synchronism with the forward and backward reciprocation of the mechanical hand.

3,754,683

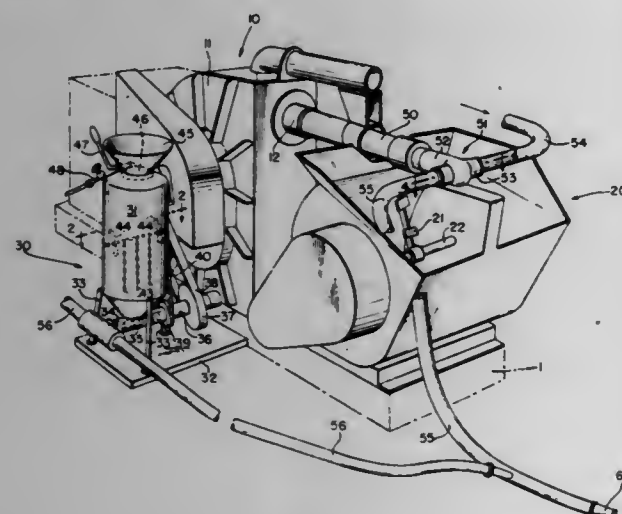
# APPARATUS FOR PNEUMATICALLY PLACING SEMI-FLUID MATERIALS

John T. Broadfoot, 12714 Aurora Ave. North, Seattle, Wash.  
Continuation of Ser. No. 175,764, June 18, 1970, abandoned.  
This application Aug. 27, 1971, Ser. No. 175,764

Int. Cl. B67d 5/60

U.S. Cl. 222-134

7 Claims



Quick-setting concrete is applied to a work surface by air conveying wet concrete through a hose to a nozzle and air conveying a dry accelerator powder for the wet concrete through a separate hose into juncture with the stream of suspended wet concrete a predetermined distance back of the nozzle. A positive metering concrete pump meters the concrete into a T-intersection where compressed air entering through one side of the top of the T impinges at substantially right angles to the flow of wet concrete through the base of the T resulting in shearing off of discrete pieces of wet concrete which are conveyed through a hose attached to the other side of the T-intersection. The positive metering concrete pump is directly attached to a positive metering device for the accelerator powder so as to maintain the ratio of wet concrete to accelerator constant.

3,754,684  
CENTRAL LUBRICATING DISPENSER  
Otokar Chladek, Trebic, Czechoslovakia, assignor to Elitex Zavody Textilního Strojénství Generalní ředitelství, Liberec, Czechoslovakia

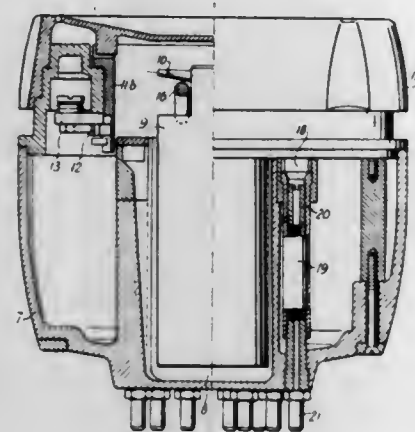
Filed Aug. 26, 1970, Ser. No. 67,122

Claims priority, application Czechoslovakia, Sept. 3, 1969, 6014/69

Int. Cl. B67d 5/52

U.S. Cl. 222-135

10 Claims



A lubricant dispenser having a storage vessel adapted to contain lubricant. The vessel may be divided into one or more compartments for feeding separate lubricants or the same lubricant to a plurality of discharge openings. A pump is located in the vessel and gravity discharge openings are arranged about the pump. At least one of the openings is supplanted by a pressure feed mechanism conducting lubricant from the vessel independently of the pump means. Actuating means, operable manually and/or automatically is provided for actuating the pump and the feed means in a simultaneous synchronous system.

3,754,685

# WIRE ROPE DISCHARGER

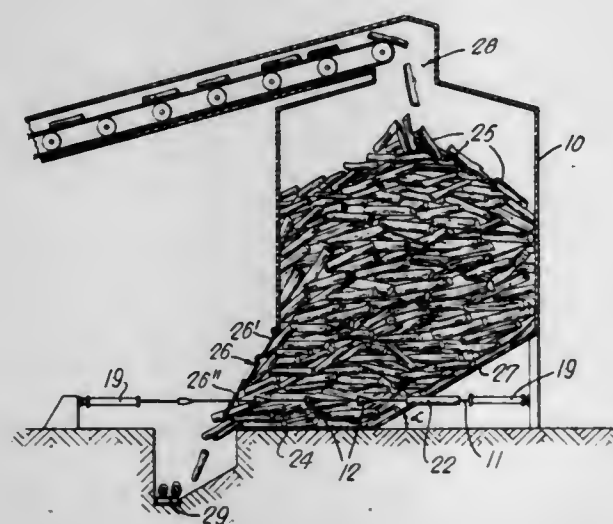
Pekka Kalervo Kauppi, 918 Malouin St., Sherbrooke, Quebec, Canada

Filed June 30, 1972, Ser. No. 267,896

Int. Cl. B65g 3/12

U.S. Cl. 222-196

12 Claims



A material discharging system comprising an elongated cable having a plurality of conveying elements fixedly secured, in spaced apart relationship, on the cable. Each conveying element has a diverging side wall for agitating material and opposed ends. A cable receiving hole extends across each conveying element between the ends for receiving a portion of the cable therein. One of the ends defines a conveying surface ex-

tending about the cable for engaging material when moved therethrough. The outer periphery of the conveying surface is connected to the side wall by a rearwardly tapered surface for both agitating and discharging the material. Reciprocating means are connected to each end of the cable for reciprocating the cable.

3,754,686

# COFFEE DISPENSER

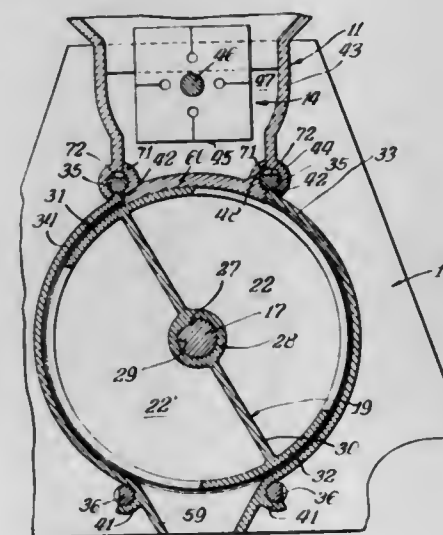
Harvey R. Karlen, Chicago, Ill., assignor to Cory Corporation, Chicago, Ill.

Filed Feb. 9, 1971, Ser. No. 113,996

Int. Cl. G01f 1/20

U.S. Cl. 222-238

17 Claims



A dispenser for dispensing particulate material, such as coffee, in any one of a number of different preselected quantities. The dispenser includes means for delivering the coffee past a preselected group of blocking elements controlling the filling of a corresponding plurality of receptacles. The receptacles are movably mounted for delivery of the ground coffee therefrom when desired. The dispenser further includes agitating means for improved delivery of the ground coffee, with means for effecting operation of the agitating means automatically as an incident of operation of the dispenser delivery means.

3,754,687

# MULTI-POSITIONAL PIPETTING DISPENSER

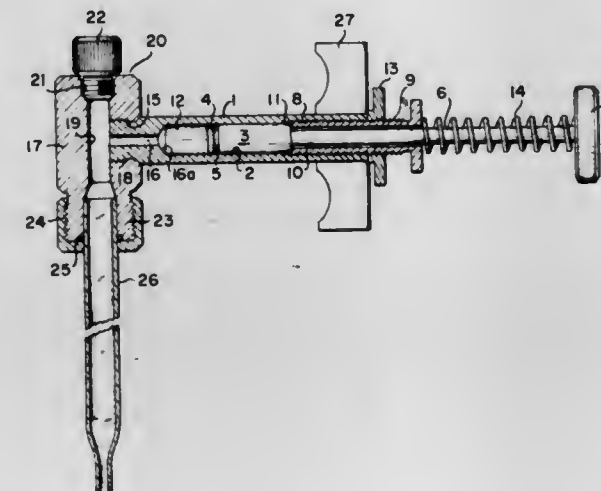
Robert W. Norton, Vineland, N.J., assignor to Kontes Glass Company, Vineland, N.J.

Filed Sept. 21, 1971, Ser. No. 182,469

Int. Cl. G01f 1/06

U.S. Cl. 222-309

6 Claims



A pipetting dispenser of the piston-cylinder type with interchangeable fittings by which the operative movement of the

piston may be arranged to be in line with or at an angle to the axis of an attached pipette and having adjustable stop means to limit travel of the piston within predetermined limits, together with means automatically retracting the piston from its discharge position to a position in engagement with said adjustable stop means, thereby insuring the repeated dispensing of like volumes of liquid from said pipette in successive operations of the dispenser, for any adjusted position of the stop means.

3,754,688

# SOLIDS METERING DEVICE

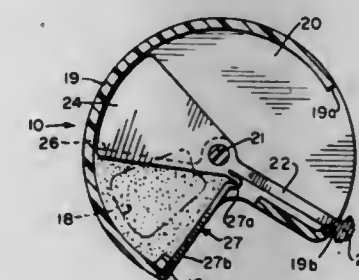
Richard R. Colvin, 140 W. 57th St., New York, N.Y.

Filed Mar. 6, 1972, Ser. No. 232,092

Int. Cl. G01f 1/24

U.S. Cl. 222-362

4 Claims



There is disclosed a dispenser for instant coffee and other granular materials, suitable for attachment to jars of such materials as a replacement for conventional jar caps, said dispenser having means for receiving a predetermined quantity of material from the interior of the container for dispensing the predetermined amount.

3,754,689

# SAFETY OVERCAP FOR AEROSOL CONTAINERS

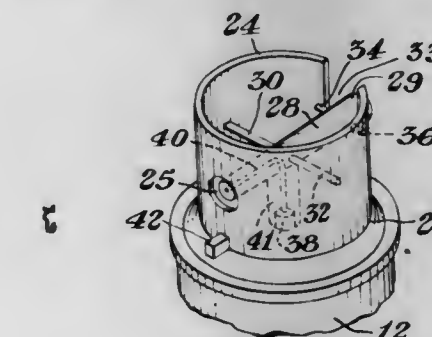
Elliott E. Blank, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 1, 1971, Ser. No. 176,917

Int. Cl. B65d 83/14

U.S. Cl. 222-402.11

7 Claims



A safety overcap which, when attached to an aerosol container, prevents uninformed users such as children from dispensing products which may cause harm to them or others. The overcap includes a rotating shell with a hinged tab. When the shell is positioned for dispensing, the tab can be pushed inwardly against a tilt action inner element for dispensing of product.

3,754,690

# FLEXIBLE CONTAINER WITH DISPENSING CAP

Paul A. Marchant, Kansas City, Mo., assignor to Ethyl Development Corporation, Kansas City, Mo.

Filed Nov. 18, 1970, Ser. No. 90,754

Int. Cl. B65d 35/50

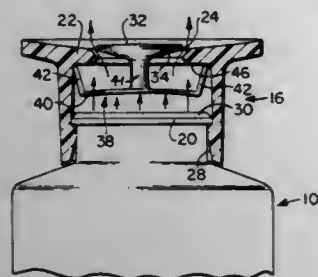
U.S. Cl. 222-494

3 Claims

A plastic container having flexible sidewalls adapted for dispensing viscous materials. The container is provided with a



hollow, cylindrical neck section which receives a two-piece, snap-on dispensing cap. The dispensing cap contains a spring-loaded, normally closed valve member that is opened by application of pressure to the container to force the product to lift



an upstanding tapered boss carried by the valve member from a sealing engagement with a central opening in the dispensing cap. When the pressure is released, the valve member automatically closes and prevents intrusion of air into the container.

3,754,691

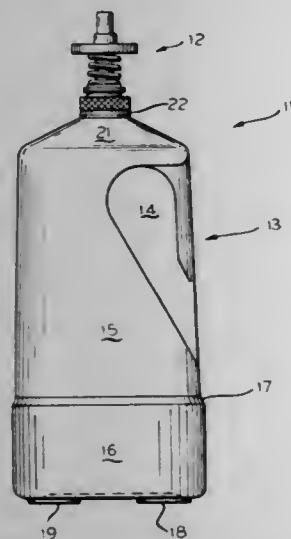
## SOLVENT DISPENSER

Frank S. Flider, 8139 S. Keating, Chicago, Ill.

Filed May 27, 1971, Ser. No. 147,346

Int. Cl. B67d 3/00

U.S. Cl. 222-525



A self-closing solvent dispensing container fabricated from plastic and characterized so that the forefinger of the hand holding the container can operate a dispensing valve on the container without the container slipping from the grip.

3,754,692

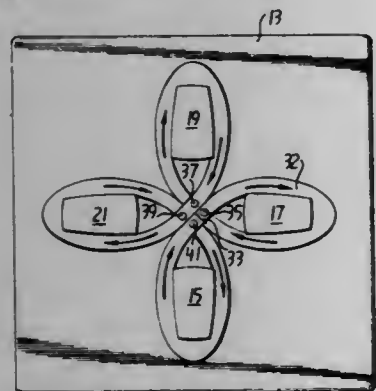
## DEVICE FOR MAKING ORNAMENTAL DESIGNS

Mildred P. Sanders, 304 Melrose Dr., Jackson, Miss.

Filed July 20, 1972, Ser. No. 273,365

Int. Cl. A41h 43/00

U.S. Cl. 223-46



A device for making an ornamental design such as a Chinese frog from cording including a base with upstanding fingers.

The fingers are spaced from the center of the flat upper face of the base and include extending lips at their terminal ends. Pinholes are located between the fingers and the center of the base. The base may have multiple apertures and the fingers may be removably inserted therein.

3,754,693

## NEEDLE

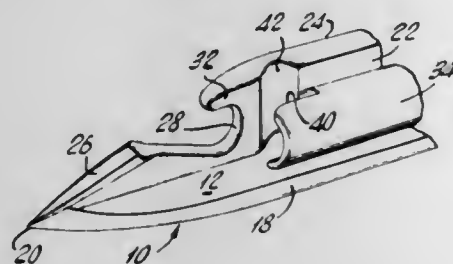
Nicholas George Herr, 450 E. 63rd St., New York, N.Y.

Filed Aug. 4, 1972, Ser. No. 277,944

Int. Cl. F02d 1/110; D05b 85/00

U.S. Cl. 223-102

9 Claims



2 Claims

A needle for delivering filamentary material to work which is pierced by the needle. The needle has an elongated blade which terminates at one end in a sharp pointed tip which is adapted to puncture through the work while delivering the filamentary material thereto. The blade has opposed faces and fixedly carries at one of the latter faces a partition which extends longitudinally of the blade from the tip thereof and which is situated between the opposed side edges of the blade. The partition terminates in an outer free edge which is inclined to and merges with the tip of the blade, and this partition is formed in the region of the tip with an open eye which contains the filamentary material and is designed to allow free access to the material and within which the filamentary material is adapted to extend. Just rearwardly of the open eye the partition carries at opposite sides thereof a pair of tubular guides for the filamentary material so that these tubular guides prevent direct contact between the filamentary material and the work until the needle is withdrawn from the work.

3,754,694

## FLUID ADJUSTING MEANS

Imants Reba, Vancouver, Wash., assignor to Metallgesellschaft

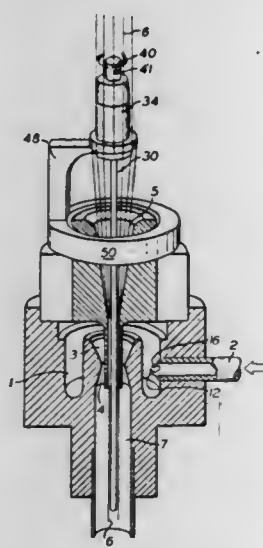
Aktiengesellschaft, Frankfurt/Main, Germany

Filed Jan. 6, 1972, Ser. No. 215,737

Int. Cl. B65h 17/32

U.S. Cl. 226-97

7 Claims



An improvement in a device through which passage of filaments is accelerated which device has a housing, a primary

fluid inlet through which fluid enters to accelerate said passage of filaments, a plenum communicating with said fluid inlet, and a passageway in fluid communicating relationship with said plenum which passageway terminates within a filament passageway through which spun filaments pass, said improvement comprising at least two baffle means disposed in said fluid inlet, one of said baffle means being a primary fluid directing means, another of said baffle means being a secondary fluid directing means; an improvement for such an accelerating means comprising at least one variable baffle disposed in said plenum; a device for determining the extent of swirl in a tube through which fluid passes which device comprises a rotatable member adapted to extend within said tube through which fluid passes and indicator means associated with such rotatable member for measuring the number of rotations in a given period of time.

3,754,695

## AUTOMATIC SHUT-OFF SYSTEM FOR MAGNETIC TAPE REPRODUCERS AND RECORDERS

Nobuo Suzuki, 26-9 Yokoyama 3-chome, Sagami-hara-shi, Japan

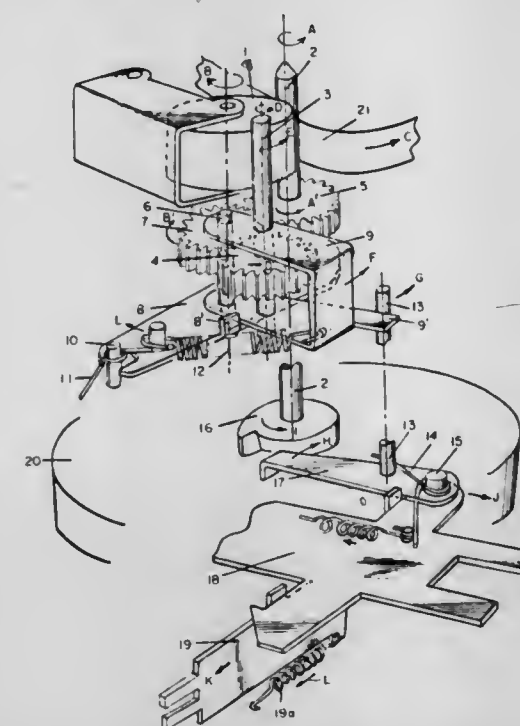
Filed July 20, 1972, Ser. No. 273,374

Claims priority, application Japan, Dec. 25, 1971, 47/889

Int. Cl. G11b 15/28

U.S. Cl. 226-174

4 Claims



A magnetic tape reproducer and recorder with an automatic switch-off system, including a pressure roller driven by a motor driven shaft and engaged by another shaft which is adapted to be rotated when engaging the pressure roller and to be rotated independently of the pressure roller so as to cause the giving of a signal which causes the starting key or starting button of the tape device to return to its inoperative starting position when the tape has run off.

3,754,696

## CASSETTE RECORDING APPARATUS

Wilhelmus Petrus Carolus Rietbergen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 16, 1972, Ser. No. 263,676

Claims priority, application Netherlands, June 25, 1971, 7108766

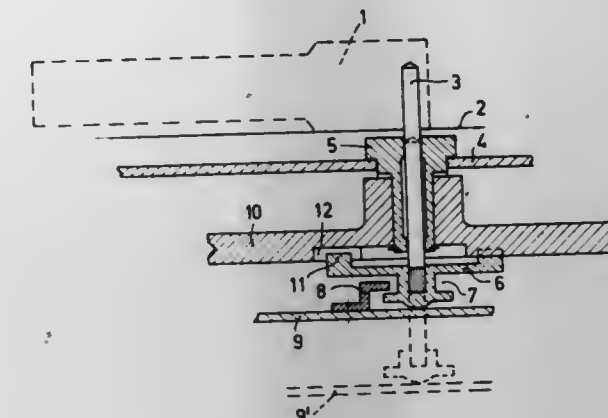
Int. Cl. B65h 17/22

U.S. Cl. 226-179

4 Claims

Apparatus for recording and/or playing back magnetic recordings on and/or from a recording tape accommodated in

a cassette, which apparatus is provided with at least one capstan which is displaceable in the direction of its longitudinal axis between an operative position and a retracted position. A flywheel, which is arranged coaxially with the capstan and



serves to drive the capstan, is axially immovably mounted on the outer surface of a fixed sleeve in which the capstan is mounted. In the operative position of the capstan the rotation movement of the flywheel is transmitted to the capstan by means of a dog clutch.

3,754,697

## APPARATUS FOR PROVIDING COMPOSITE SHEATHED ELEMENT

Thomas C. Stout, Concord, Mass., and Andrew J. Kaiser, Albany, Ga., assignors to Brunswick Corporation, Skokie, Ill.

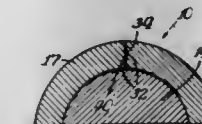
Division of Ser. No. 71,122, Sept. 10, 1970, Pat. No.

3,705,022, which is a division of Ser. No. 736,649, June 13, 1968, Pat. No. 3,562,899. This application Sept. 13, 1972, Ser. No. 288,755

Int. Cl. B23k 1/20

U.S. Cl. 228-17

5 Claims



An apparatus for forming clad wire wherein the wire is surrounded by a strip of sheathing material deformed about the wire with the edges thereof being at least partially secured with the securing means not attaching the sheathing material to the wire. The product is of a metallic composite comprising a metal core and a metal sheath surrounding the core with the adjacent edges of the sheath defining a semi-continuous longitudinal seam.

3,754,698

## HOT GAS FUSION APPARATUS

Julius H. Bochinski, and John E. Linkel, both of La Habra, Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Division of Ser. No. 85,047, Oct. 29, 1970, Pat. No. 3,698,699.

This application Dec. 20, 1971, Ser. No. 209,860

Int. Cl. B23k 1/00, 5/00

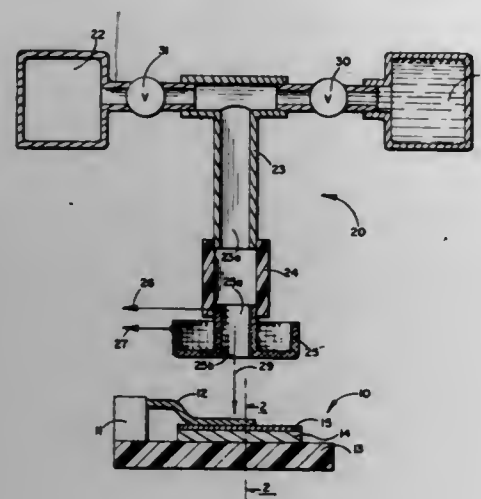
U.S. Cl. 228-42

12 Claims

A hydrazine compound in a carrier gas wherein the hydrazine compound is transformed into its gaseous state and the gaseous hydrazine is used by processing apparatus to bond metallic materials with a soldering material, to remove film compound formation from metallic surfaces, and to minimize porous formation in soldering materials which may be attached to metallic surfaces. The hydrazine compound is trans-



ported by the gaseous carrier and heated to a temperature that vaporizes the hydrazine and is used for reacting the gaseous sterilizable, surgical kraft paper or other gas permeable, sheet material having bacteria holdout properties are disclosed



hydrazine with the film formation on the metals or with the soldering material thereon to achieve excellent bonding characteristics and low conductivity joints.

3,754,699

**REINFORCED LARGE POLYSTYRENE CONTAINER**

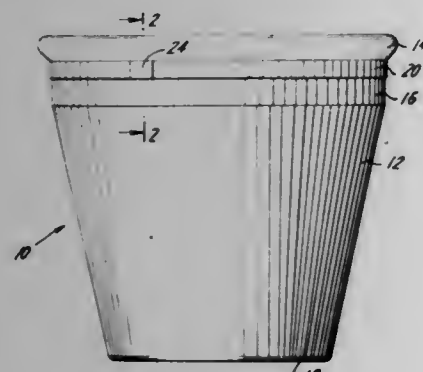
Roy Edward Moore, Phoenix, Ariz., assignor to Dart Industries, Inc., Los Angeles, Calif.

Filed July 14, 1971, Ser. No. 162,485

Int. Cl. B65d 3/00

U.S. Cl. 229—1.5 B

4 Claims



An expanded polystyrene container is described as having capacities of between about 50 and 200 fluid ounces and having a pressure-sensitive adhesive-backed reinforcing band positioned adjacent its uppermost peripheral edge.

3,754,700

**SURGICAL POUCHES**

Joseph Paul Bonk, Des Plaines, Ill., assignor to Rollprint Packaging Products, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 836,332, June 25, 1969, Pat.

No. 3,627,611. This application Feb. 26, 1971, Ser. No.

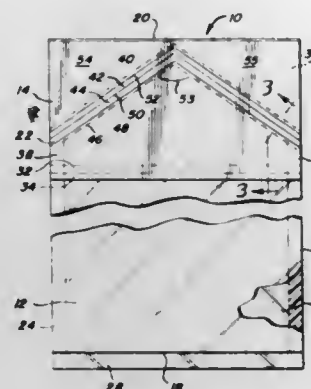
119,292

Int. Cl. B65d 3/100

U.S. Cl. 229—62

17 Claims

Surgical pouches having a back wall of sheet polyethylene and a front wall of sheet polyethylene with a header piece of



3,754,701

**SELF CLEANING CENTRIFUGE DRUM WITH A PISTON VALVE DEFINING ONE SIDE OF THE SLUDGE CHAMBER**

Paul Bruning, Oelde, Germany, assignor to Westfalia Separator AG, Oelde/Westfalen, Germany

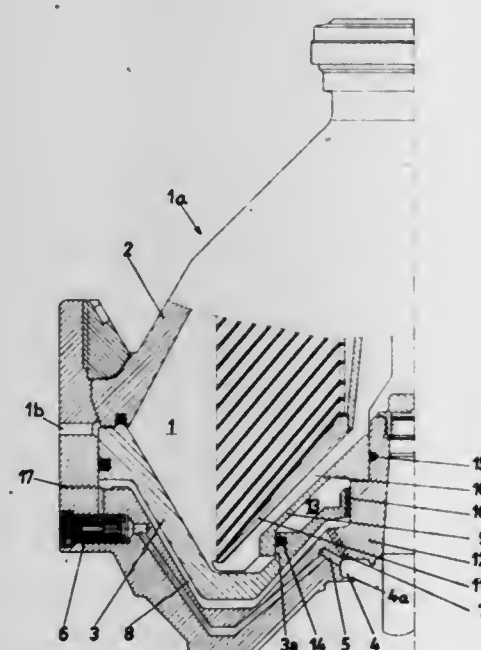
Filed Aug. 10, 1971, Ser. No. 170,532

Claims priority, application Germany, Aug. 20, 1970, P 20 41 371.2

Int. Cl. B04b 11/00

U.S. Cl. 233—20 A

4 Claims



A centrifugal separator constructed for intermittent discharge of sludge. One end member of the separator drum is a valve piston closure movable vertically to open and close sludge discharge nozzles disposed at the outer periphery of the drum. The valve piston closure forms one end of the sludge chamber in the drum. Radially inwardly of the sludge chamber, a cap is mounted in the separator drum covering a part of the valve piston closure and the cap and valve piston closure are in sliding sealing contact, providing a chamber on the drum side of the valve piston closure for receiving and holding fluid to force the valve piston closure to the open position. On other side of the valve piston closure, a chamber is provided for receiving fluid for closing of the valve.

3,754,702

**CALCULATING DEVICE**

Walter K. Schwarz, and David J. Schlink, both of Peoria, Ill., assignors to The Peoria Journal Star, Inc., Peoria, Ill.

Filed July 13, 1972, Ser. No. 271,629

Int. Cl. G06g 1/04; G06c 19/02; G06g 1/12

U.S. Cl. 235—71 A

13 Claims



A calculating device for making mathematical calculations comprises a body including first and second panels joined along an edge for folding them from an open to a closed position with the second panel overlaying the face of the first. A belt is carried by the first panel and is movable with respect thereto substantially parallel to the joining edge. There is a mathematical scale on the belt extending longitudinally thereof and a stationary mathematical scale located on the outside face of the second panel so as to be parallel and adjacent the belt mathematical scale when the panels are in the closed position. The stationary scale has the same unit dimension as the belt scale and includes an identity operator index. A computation based on the relationship  $z=f(x,y)$  may be made by setting  $x_1$  on the belt mathematical scale adjacent the identity operator on the stationary mathematical scale and reading  $z$ , on the belt scale adjacent  $y$ , on the stationary scale.

3,754,703

**CONTROL APPARATUS**

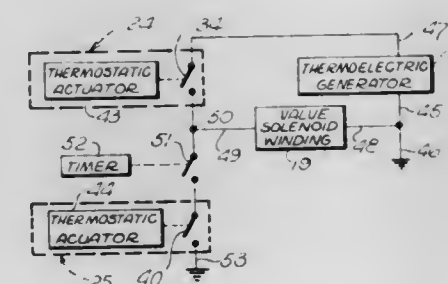
Domenick Saponara, Chattanooga, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,077

Int. Cl. F23n 5/10

U.S. Cl. 236—15 A

8 Claims



A control assembly to operate a gas oven. The main burner receives gas from a solenoid valve energized by a thermoelectric generator through a main thermostat switch. In order to reduce the oven temperature to, e.g., 170° F. to keep the food warm after a timer has run down, the timer and a keep-warm thermostat operate two switches, respectively, to short circuit the solenoid or the thermoelectric generator periodically. The thermoelectric generator output is in the millivolt region.

Thus, use of one or two additional, inexpensive, series switches in the circuit can make solenoid operation unreliable because of even moderate contact resistance. Even the use of expensive gold may not avoid the series switch problem. The control assembly disclosed herein avoids this problem by use of a disabling shunt instead of a series switch.

3,754,704

**OVEN VALVE CIRCUIT AND THERMOSTATIC ACTUATOR THEREFOR**

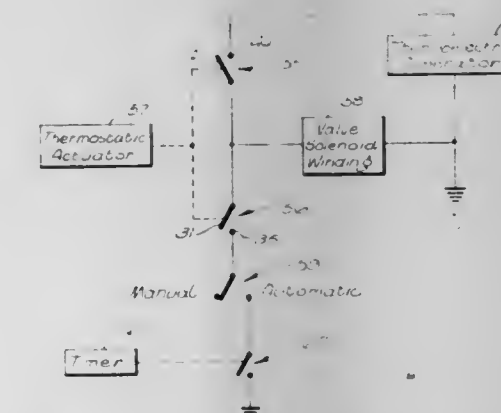
Richard Davis Grayson, Arcadia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 30, 1971, Ser. No. 176,139

Int. Cl. G05d 23/22; F23n 5/10

U.S. Cl. 236—15 A

8 Claims



A gas oven having one thermostat switch operated main burner solenoid valve utilizing a pilot heated thermoelectric generator for electrical power to energize the valve solenoid. The generator, the solenoid and the one switch are thus connected in series in a closed loop. A timer and another thermostat switch are connected in a series circuit that shunts the solenoid or thermoelectric generator or both. Opening and closing of the one switch controls baking temperature. The timer switch disables the other switch until the baking period of time has ended. The timer switch then closes and permits the other switch to act as an override and periodically to provide a short circuit to keep the oven warm, but at a temperature, e.g., 170°F., less than the baking temperature. The short circuiting of the solenoid or thermoelectric generator is an outstanding advantage because expensive gold or platinum plated contacts and unreliability are avoided and the time-control circuit is simplified. Inexpensive high resistance contacts in the closed loop are undesirable because of the low e.m.f. provided by the thermoelectric generator. A single thermostatic actuator operates both of the thermostat switches. The single thermostatic actuator makes possible a substantial equipment and cost saving. The actuator is also of an economical construction because leaf springs and a diaphragm bias spring are employed.

3,754,705

**DOUBLE CAM DRIVEN FEED ROLL**

Chester M. Wiig, Lincolnwood, Ill., assignor to F. J. Littell Machine Company, Chicago, Ill.

Filed July 5, 1972, Ser. No. 269,019

Int. Cl. G03b 1/56

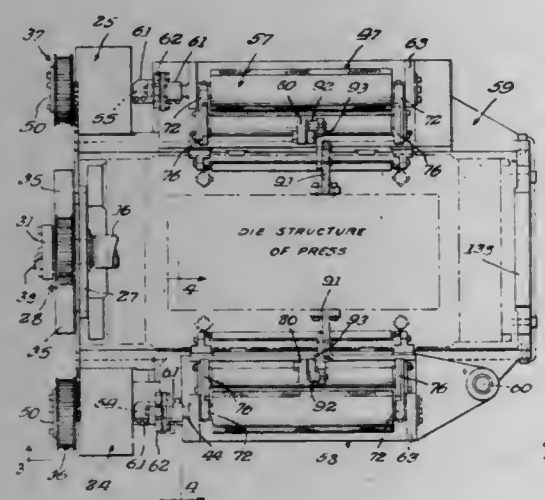
U.S. Cl. 226—90

17 Claims

The present invention is adapted to be associated with a cutting and punching press and accordingly a pair of feed rolls including an upper idler feed roll and a lower driven feed roll is journaled respectively by an entering end frame section and by a stationary exit end frame section. The entering end frame section is pivotally movable to permit access to the die structure of the press and the constantly rotating shaft of the press



is operatively connected by a flexible timing belt to driven pulleys and then through cam and follower devices to the lower feed rolls which are thus caused to rotate intermittently. A vernier type adjustable mounting is provided for the upper feed roll so that with the rolls in assembled relation different vernier openings in the assembled parts can be aligned and as a result the operative position of the upper feed roll with respect to the lower feed roll can be varied to accommodate lower feed rolls of larger or smaller diameter. Also the vernier



adjustable mounting provides depending angled arms and air bags are associated therewith for yieldingly biasing the arms in a direction to force the upper feed roll into pressure contact with its lower feed roll. A connecting tube forming part of the vernier adjustable mounting is cammed by means on the upper reciprocating die of the press on each down stroke thereof to rock the tube and the upper feed roll to lift the same from contact with its lower feed roll whereby to momentarily free the material being fed while the press is operative for cutting and punching the material.

3,754,706

## TEMPERATURE RESPONSIVE BYPASS VALVE

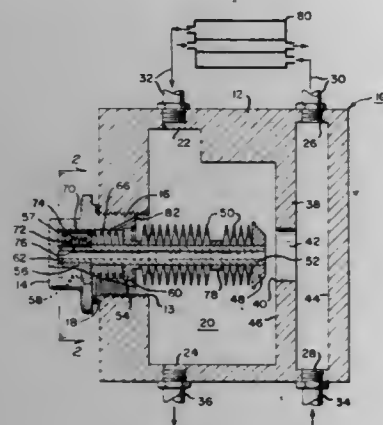
Ting C. Tao, Bedford Heights, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Nov. 15, 1971, Ser. No. 198,735

Int. Cl. G05d 27/00

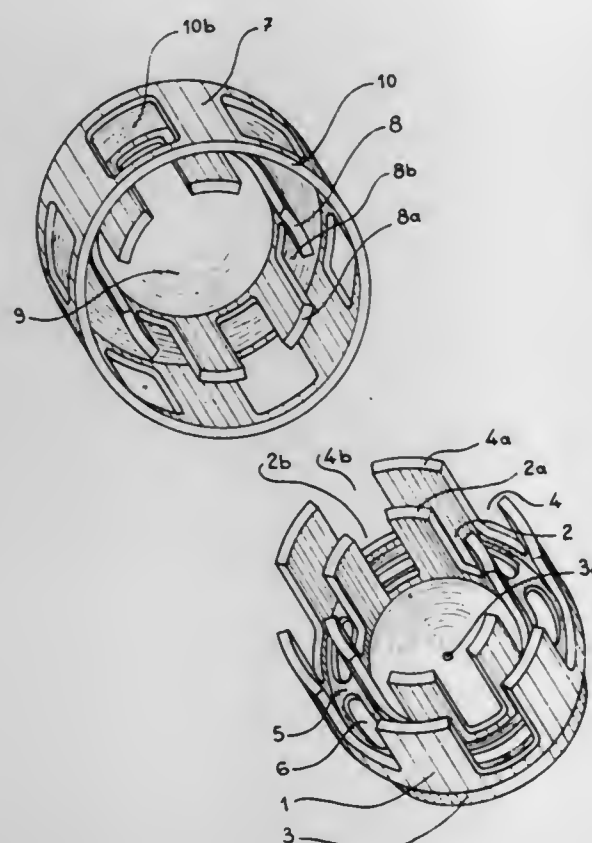
U.S. Cl. 236-92 R

3 Claims



A normally pressure balanced thermally responsive bypass valve is provided in which the pressure balance is disabled above a predetermined fluid pressure.

3,754,707  
DIFFUSING BOX  
Bruno P. Morane, Paris, France, assignor to L'Oreal, Paris, France  
Filed June 21, 1972, Ser. No. 264,921  
Claims priority, application France, June 24, 1971, 7123079  
Int. Cl. A24f 25/00; A61l 9/04  
U.S. Cl. 239-59 10 Claims



Box for holding a material to be slowly diffused comprises two mating parts, each consisting of a disc carrying a pair of concentric walls which may be interfitted to form a central chamber holding the material and an annular chamber surrounding the central chamber. Openings are provided in the walls which may be moved into and out of registration to open and close the box.

3,754,708

## GAS TURBINE ENGINE THRUST REVERSERS

Jack Britt, Ambergate, and Leonard John Rodgers, Spondon, both of England, assignors to The Secretary of State for Defence, in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whitehall, London, England

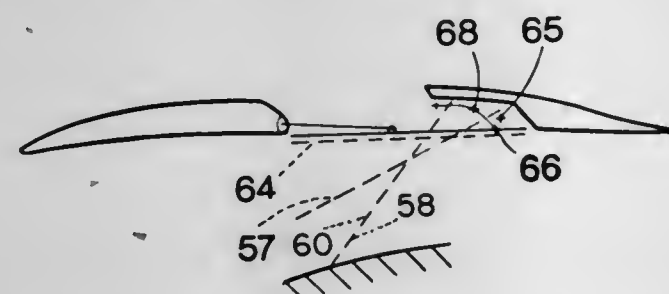
Filed Oct. 18, 1971, Ser. No. 190,354

Claims priority, application Great Britain, Oct. 20, 1970, 48662/70

Int. Cl. B64c 15/04

U.S. Cl. 239-265.29

7 Claims



Aircraft gas turbine engine duct blocker doors are mounted so as to move across the duct in a manner which causes fluid

pressures to combine with door mounting structure reaction loads so as to produce a resultant force on the doors which, up to a given point in aircraft flight conditions, the resultant force tries to stop the doors from moving across the duct and, beyond said point, helps the doors to move across the duct, thereby providing a fail/safe operation of the doors during given aircraft flight conditions.

3,754,709

## HOSE NOZZLE WITH DISCHARGE CONTROL

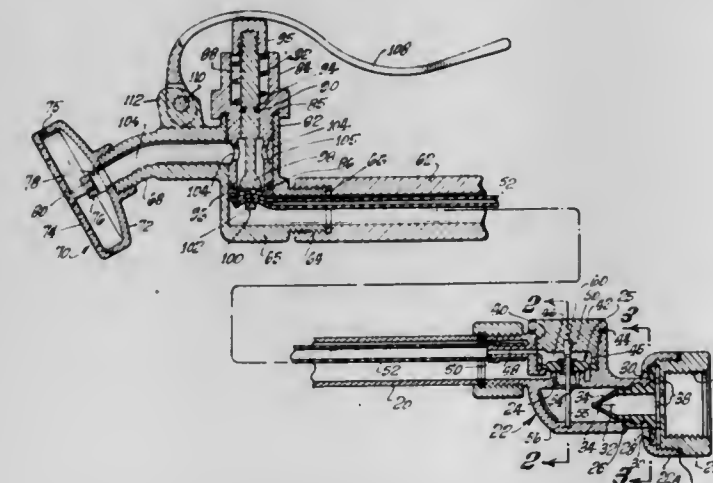
Kurt A. Laatsch, La Puente, Calif., assignor to Joseph R. Battieger, La Mirada, Calif., a part interest

Filed Sept. 20, 1971, Ser. No. 181,662

Int. Cl. B05b 9/08, 1/30; E03c 1/10

U.S. Cl. 239-530

27 Claims



In a device to wash bedpans in a hospital, an inlet end of a hose is connected to a pressured water supply and the outlet end of the hose is equipped with both a discharge nozzle and manual means for control of the discharge from the nozzle. The inlet end of the hose is equipped with a check valve and anti-siphon means upstream from the check valve.

3,754,710

## NOZZLE TIP OF A SPRAY GUN OF THE AIRLESS TYPE

Kihachi Chimura, Nishi-ku, Yokohama-shi, Japan, assignor to Kabushiki Kaisha Inouye Shokai (Inouye & Co., Ltd.), Yokohama-shi, Japan

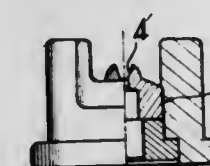
Filed July 27, 1972, Ser. No. 275,855

Claims priority, application Japan, Aug. 7, 1971, 46/59835

Int. Cl. B05b 1/00

U.S. Cl. 239-597

9 Claims



A nozzle tip of a spray gun of the airless type in which a slot is formed at a forward end of the nozzle tip which slot has a bottom at which a nozzle orifice opens and two opposite walls disposed parallel to each other and along the major axis of the nozzle orifice, each wall having an inner surface inclined outwardly in going from bottom to top so that the slot is trapezoidal in cross-sectional shape. The nozzle orifice at its edge is substantially in the form of a rectangle with four sides thereof being slightly curved outwardly, and a connecting portion between the nozzle orifice and a passage for the paint inside the gun is elliptically curved, the degree of elliptic curving varying depending on the specific gravity and viscosity of the paint used. The nozzle tip shaped and configured as aforementioned represents an improvement in conventional nozzle tips

of the type described, permitting the production of a tail or a maximum thickness portion near each of opposite end portions of the pattern of a coat of paint applied by a conventional nozzle tip to be avoided.

3,754,711

## LOW PROFILE FEEDING SPREADER

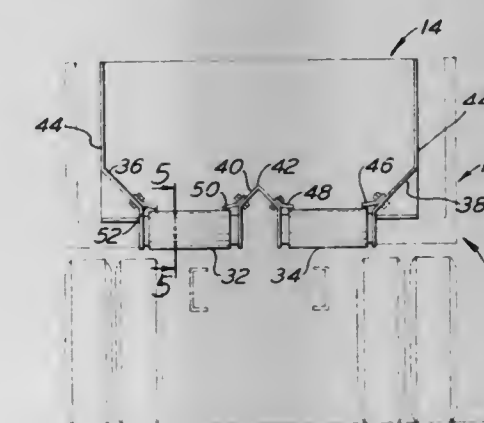
William Gledhill, Galion, Ohio, assignor to The Gledhill Road Machinery Company, Galion, Ohio

Filed Feb. 22, 1972, Ser. No. 227,944

Int. Cl. A01c 19/00

U.S. Cl. 239-674

6 Claims



A hopper body is mounted on the bed of a truck for spreading particulate matter over a wide area as the truck moves forward. Normally some special means is mounted near the rear of the truck for broadcasting the particulate matter. For example, in the northern part of the United States a dump truck may spread a mixture of salt and sand on roadways following a snow storm to melt the snow and provide better traction for following vehicles. Dual conveying belts are located in the bottom of the hopper to move the salt, sand or other particulate material to the broadcasting means at the rear of the hopper. Each belt runs over both a driving drum located beyond the rear wall of the hopper and an idler drum located adjacent the front wall of the hopper. Guide means are located adjacent each drum to force the belt into parallel upper and lower paths with the spacing between said paths being less than the diameter of either drum. The sides of the hopper are inclined downwardly toward the conveyors to prevent material from collecting in corners and to assist gravity feed of material to said conveyors.

3,754,712

## PREPARATION OF STABLE SUSPENSION OF CALCINED CLAY

Tom A. Cecil, Highland Park, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Woodbridge, N.J.

Filed Mar. 15, 1972, Ser. No. 235,019

Int. Cl. B02c 19/12

U.S. Cl. 241-16

2 Claims

Method for forming a fluid, concentrated, aqueous suspension of calcined clay which is stable without adding a colloidal thickening agent. A suspension of the calcined kaolin clay containing a minimal amount of a clay deflocculating agent is subjected to wet-milling during which increments of calcined kaolin clay are added until a fluid concentrated suspension of desired high solids content is produced.



3,754,713

## SEPARATION OF MAGNETIZABLE PARTICLES

Gerhard Kienast; Heribert Stutgens, and Hans-Gunter Zander, all of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

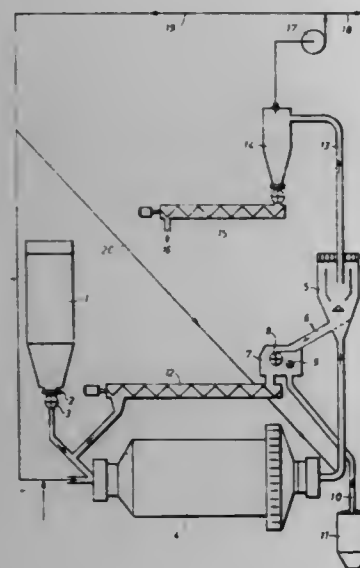
Filed Mar. 17, 1971, Ser. No. 125,149

Claims priority, application Germany, Mar. 28, 1970, P 20 15 073.6

Int. Cl. B07b 4/00

U.S. Cl. 241-24

5 Claims



Apparatus and process for the removal of magnetizable particles during grinding of material containing such particles, e.g. grinding of iron-containing titanium ores or slag. The titanium ore, for example, is ground, ground material is pneumatically conveyed to a separator from whence the fines are withdrawn to be treated in conventional manner. The coarse material is subjected to magnetic attraction to remove magnetizable particles and the balance is recycled for further grinding.

3,754,714

## GRINDING APPARATUS ESPECIALLY FOR LIGNOCELLULOSE CONTAINING MATERIAL

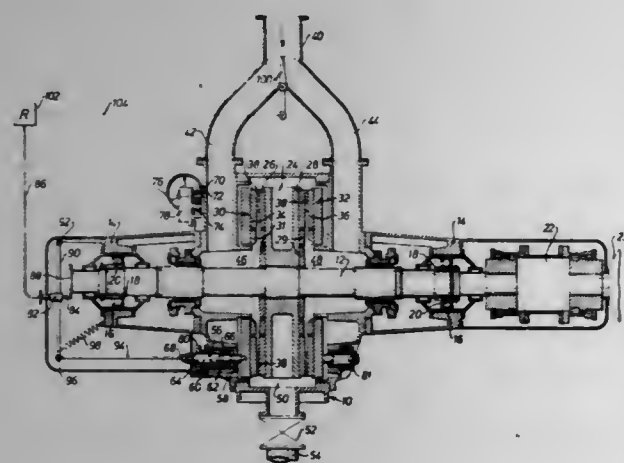
Rolf Bertil Reinhall, Killingevägen 16, Lidingö, Sweden

Filed Sept. 24, 1971, Ser. No. 183,362

Int. Cl. B02c 7/14

U.S. Cl. 241-34

3 Claims



A grinding apparatus especially for lignocellulose containing material having two pairs of cooperating grinding discs. In each pair of grinding discs one disc is fixed to a stationary casing and the other carried on a common shaft extending through the casing from end to end and mounted rotatably in bearings permitting axial self-adjustment of the shaft responsive to the pressure prevailing in the interspaces between each

pair of cooperating grinding discs; the disc mounted on the rotatable shaft performing a rotational movement relative to the disc which is fixed to the stationary casing. Each pair of cooperating grinding discs has a supply channel for the material to be ground. A feeler member is provided to ascertain the axial position of the shaft and adapted to emit an impulse to a control or regulation member for distributing of the material to be ground to the supply channels in such a manner that divergences in the width of the interspaces within the two pairs of cooperating discs are compensated by increase of the supply of material to be ground to the channel communicating with the interspace having momentarily the smaller width.

3,754,715

## METHOD AND MEANS FOR SIZE REDUCTION AND COLLECTION OF SOLID MATERIALS

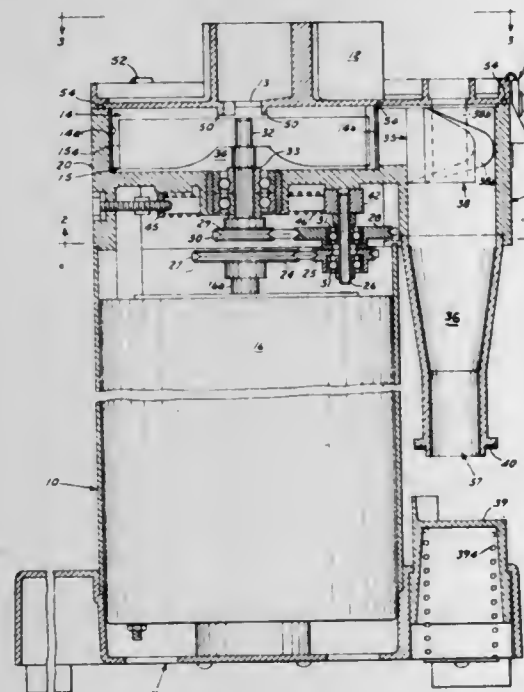
Doyle C. Udy, 1680 Wilson Ct., Boulder, Colo.

Filed Aug. 16, 1971, Ser. No. 171,872

Int. Cl. B02c 13/18

U.S. Cl. 241-73

3 Claims



A combined size reduction mill and collector for forming powdered samples having an enclosed cylindrical chamber including an upright wall provided with an abrasive surface throughout a greater portion of its circumferential extent and a perforate surface throughout its remaining extent, an inlet at the top of the chamber for gravitational feed of commodities to its interior, baffle means disposed in the chamber between a zone of material deposit and the perforate surface, a rotary impeller in horizontal alignment with the abrasive surface and inwardly thereof, a discharge outlet from the chamber exteriorly of the perforate surface, a conduit connecting said outlet with the feed intake of a cyclone collector, and means for imparting a centrifugal flow to matter entering the cyclone collector so as to pass substantially the entire product to a lower discharge outlet and holding receptacle. The combined size reduction mill and collector also includes a helical path formed adjacent the inlet of the cyclone collector and facing toward said collector's underflow outlet, the distance separating the impeller blades from the abrasive and perforate surfaces is equal to approximately the diameter of the material to be fed into the grinding chamber, and the material traveling within said grinding chamber undergoes an abrupt change in direction of flow upon traveling to the inlet to the cyclone collector.

3,754,716

## GYRATORY CRUSHERS

Roy Webster, Glenfield, England, assignor to Pegson Limited, Coalville, Leicester, England

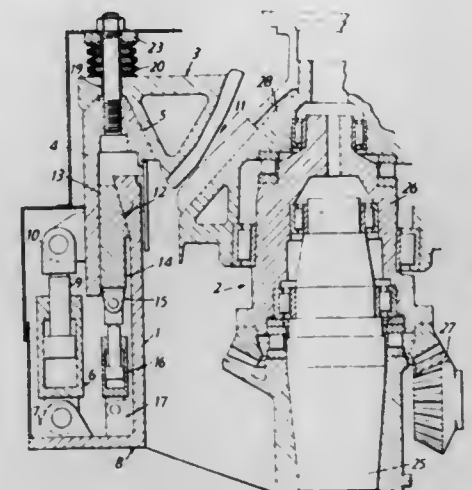
Filed Dec. 13, 1971, Ser. No. 207,125

Claims priority, application Great Britain, Jan. 1, 1971, 0,009/71

Int. Cl. B02c 2/04

U.S. Cl. 241-208

5 Claims



The invention concerns gyratory crushers and proposes that the bowl in such a crusher be adjustably supported by hydraulic piston/cylinder units, hydraulically actuated wedges positioning the bowl radially when in use, and that the bowl be held in an adjusted position by locking hydraulic liquid on one side of the pistons of the support units whilst permitting the release of the bowl from the adjusted position in the event of the intrusion of tramp iron or the like. The crusher comprises a control system having elements for locking liquid on said sides, sensing elements for sensing the pressure on said sides and for actuating the locking elements to release said liquid in the event that tramp iron or the like intrudes into the crushing chamber and hydraulic accumulator elements connected to the other sides of the pistons such that, when the locked liquid is released, the bowl is automatically raised to clear the tramp iron by liquid pressure derived from said accumulator means.

3,754,717

## COLLAPSIBLE MANDREL

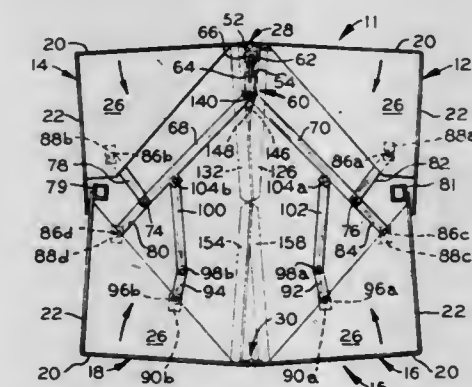
Glen W. Saldia, Wyomissing Hill, Pa., assignor to Dana Corporation, Toledo, Ohio

Filed July 12, 1971, Ser. No. 161,804

Int. Cl. B28b 7/30

U.S. Cl. 242-1

4 Claims



A collapsible mandrel is provided for use, for example, in the production of filament wound containers and has retractable side walls which are operative in such a manner as to permit the walls to be peeled-away from contact with the interior of a finished container so that the mandrel can be quickly and easily removed from the interior of the container and readily

reusable for the production of another container. Retraction of the side walls is accomplished by the provision of a primary and secondary lever or linkage assembly. The secondary linkage assembly is operatively connected to the side walls of the mandrel while the primary linkage is connected to and controls the movement of the secondary linkage by means of a fluid power actuated cylinder.

3,754,718

## END-FINDING MEANS FOR YARN HANDLING APPARATUS

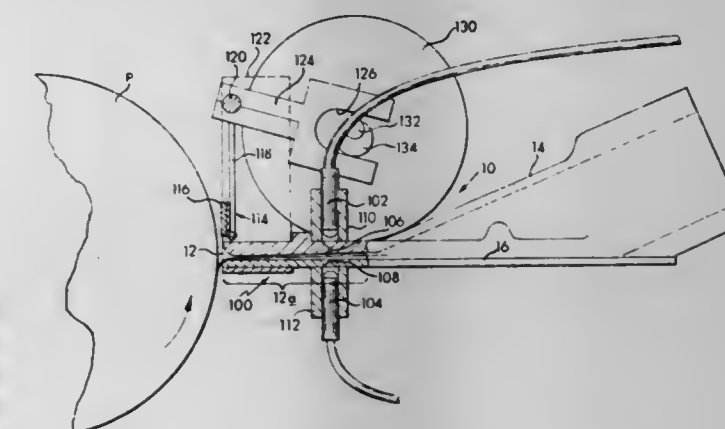
Samuel Abbott, Wilton, N.H., assignor to Abbott Machine Co., Inc., Wilton, N.H.

Filed Aug. 30, 1971, Ser. No. 176,132

Int. Cl. B65h 54/24

U.S. Cl. 242-35.6 R

20 Claims



A yarn end-finding nozzle mounted to be moved to and from the surface of the package on which an end is to be found and a yarn knitter, said nozzle being provided with a sensor adapted when it detects the found end within the nozzle to effect retraction of the nozzle to the knotting position for knotting and resumption of the winding operation.

3,754,719

## ROLL PAPER DISPENSERS

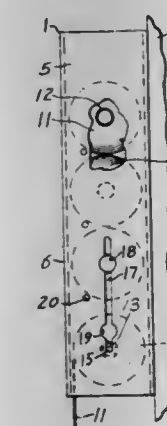
Solomon K. Choy, 601 Iaukea St., Honolulu, Hawaii

Filed Apr. 26, 1971, Ser. No. 137,400

Int. Cl. A47k 10/22

U.S. Cl. 242-55.3

8 Claims



This invention concerns a dispenser of paper from rolls thereof and which rolls may contain toilet paper or paper towels and similar rolls of material to be neatly stored and dispensed. A magazine is associated with the dispenser so that paper rolls, or rolls of material, are always available for use in the dispenser. A roller core is removed through an enlarged opening in the side of a dispenser and is inserted laterally through an enlarged opening into the next above roll.



3,754,720

## EXPANDIBLE MANDREL ASSEMBLY

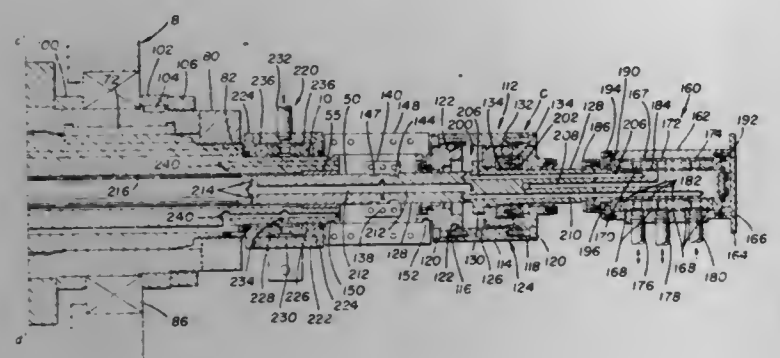
John Gross, and Arthur L. Lind, both of Salem, Ohio, assignors to Gulf & Western Industrial Products Company, Grand Rapids, Mich.

Filed July 16, 1969, Ser. No. 842,238

Int. Cl. B65h 75/18

U.S. Cl. 242—72.1

8 Claims



An expandible and contractible mandrel assembly of the type used for coiling metal strip. The disclosed assembly includes means permitting both lubricant and cooling fluid to be supplied internally of the mandrel during mandrel rotation.

3,754,721

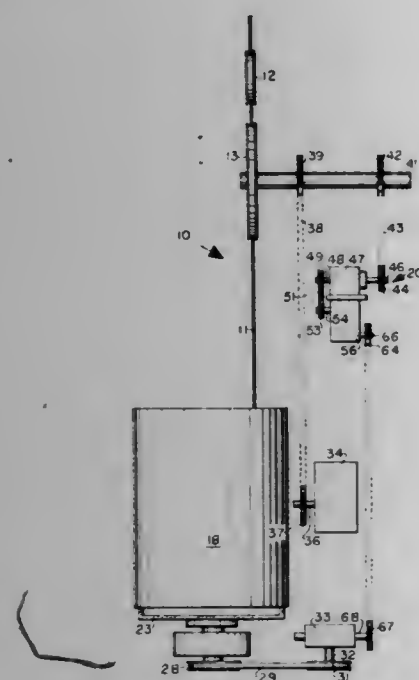
## PACKAGING APPARATUS FOR STRAND

Jerry L. Herrendeen, and Phillip E. Liebing, both of Muskegon, Mich., assignors to Anaconda Wire and Cable Company New York, N.Y.

Filed Mar. 31, 1972, Ser. No. 240,045

Int. Cl. B21c 47/08

U.S. Cl. 242—83



Apparatus for depositing strand into a rotating drum package varies the speed of rotation of the drum by means of a speed reducer driven in reverse through a sprocket having its axis of rotation offset from its center.

3,754,722

## SELF-LOCKING WINDING DEVICE FOR THE SAFETY BELT OF AIR AND LAND VEHICLES

Hubert Nohren, Halstenbek, Germany, assignor to Autoflug GmbH, Egenbuttel, Germany

Filed Apr. 20, 1971, Ser. No. 135,607

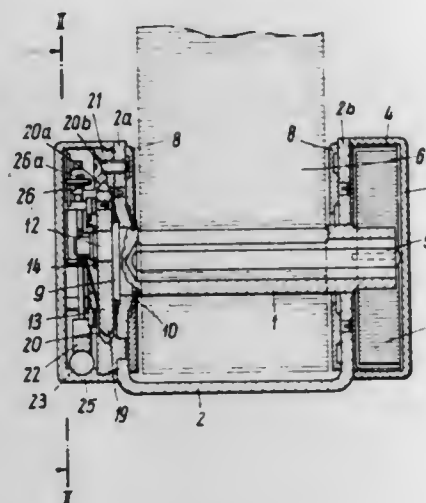
Claims priority, application Germany, Apr. 21, 1970, P 20

19 135.9

Int. Cl. A62b 35/00

U.S. Cl. 242—107.4

19 Claims



A device for winding up one part of a safety belt for a passenger vehicle, especially a land or air vehicle. The device has a spring biased shaft to which the belt is connected so the belt is normally drawn into a housing. The belt can be pulled from the housing when the belt is to be placed in service. The device includes an arresting mechanism operable to lock the shaft to the housing which is actuated when at least one of a certain speed of rotation or a certain angular acceleration of the shaft is exceeded. The device also includes an inertia operated system sensitive to bodily acceleration of the device in at least one plane for actuating said arresting mechanism.

3,754,723

## SELF-THREADING MEANS FOR TAPE

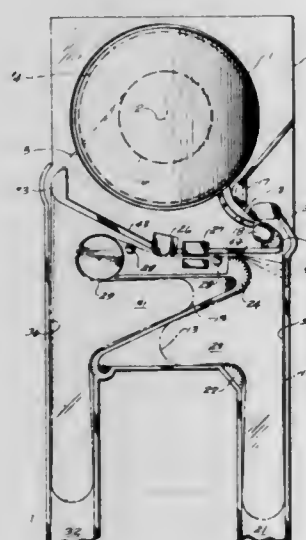
John A. Meyer, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 12, 1971, Ser. No. 161,521

Int. Cl. G11b 15/66, 15/58

U.S. Cl. 242—193

9 Claims



Magnetic recording tape is stored on a reel coaxial with a takeup reel both of which are canted at a small angle relative to a work plane in which a magnetic recording transducer is arranged. The tape passes through vacuum storage columns, over air bearings, past the recording transducer and over a

drive capstan between the storage reel and the takeup reel. The twist of the tape between the plane of the reels and the work plane is accomplished in the vacuum columns. In order to self-thread the leading end of a tape through such a path, jets of air guide the tape. At a sharp turn and location of tape twist during self-threading, a plurality of spaced apart gas jets are focused at a point near the end of the turn for guiding the tape.

gases are communicated directly to both ends of the tube. Canted nozzles are affixed over the ends of the tube. The unitary dual nozzled rocket motor is mounted in a diametric disposition athwart the cylindrical body of the missile, with the canted nozzles directed in the same circumferential direction about the missile body.

3,754,724

## HANGER STRIP FOR TROPHIES

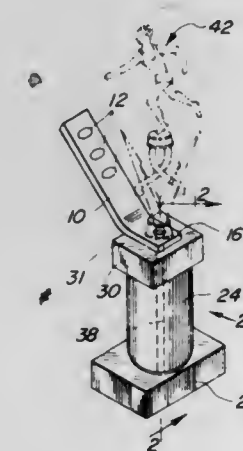
Theodore Osowski, 4404 S. Florida Ave., Lakeland, Fla.

Filed Oct. 21, 1971, Ser. No. 191,415

Int. Cl. A47f 5/00

U.S. Cl. 248—359

4 Claims



A hanger strip for trophies which is incorporated therein whereby the trophy may be hung on a wall rather than be supported on a shelf.

3,754,725

## AUXILIARY ROCKET APPARATUS FOR INSTALLATION ON A MISSILE TO IMPART A ROLL MOMENT THERETO

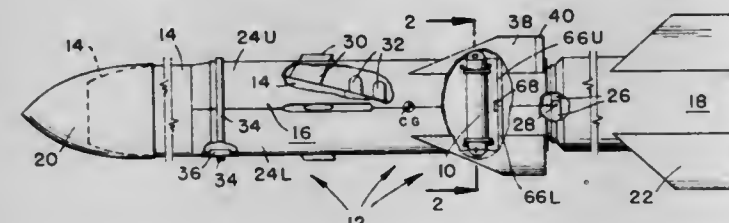
Roy M. Kartzmark, Duarte, and John D. Skoog, Ridgecrest, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 30, 1968, Ser. No. 725,545

Int. Cl. F42b 15/14

U.S. Cl. 244—3.23

2 Claims



An auxiliary rocket system for imparting a roll to a missile employing a unitary dual nozzled rocket motor. The dual nozzled rocket motor comprises a rocket tube containing a propellant grain of the type having internal burning surfaces, such as a central bore or the like, by which the propellant

The invention relates to an assembly comprising a self-propelled finned projectile and its case that is successively used as a container and as a launching tube. This assembly is fitted at its rear end with an insertable member which can be ejected under the effect of the thrust of the propellant gases of the projectile and which locks at least one movable part of a coupling, that is carried by the rear end of the said projectile, to a fixed part of this coupling that is carried by the rear end of the case. All the elements of this fixed coupling part which projects into the interior of the case are ejected under the effect of the thrust of said gases.

3,754,727

## AILERON CONTROLS

Bradford P. Donovan, Lakewood, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

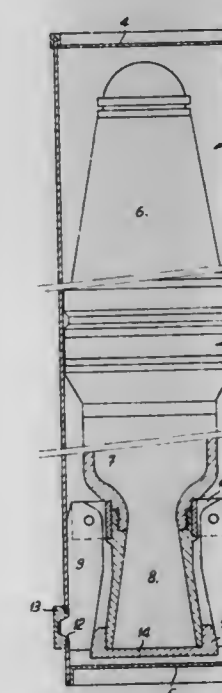
Filed Apr. 28, 1971, Ser. No. 138,087

Int. Cl. B64c 9/00

U.S. Cl. 244—90 R

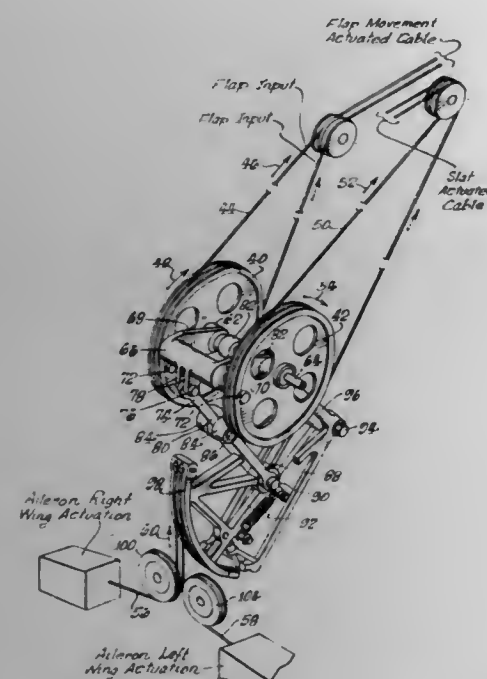
8 Claims

A flap or slat extension controlled mechanism for engaging outboard ailerons of an aircraft during the initial part of the extension, with a capability of absorbing additional flap or slat extension input. This structure consists of a latch dwell mechanism which comprises a rotary input member, a rotary output member, a pitman of the overcenter linkage type, and a





fixed abutment whereby upon rotation of the input member up to a certain angle of rotation, the output member rotates in



proportion thereto but beyond that point dwells as a result of the pitman overcenter linkage coming into contact with the abutment member.

3,754,728

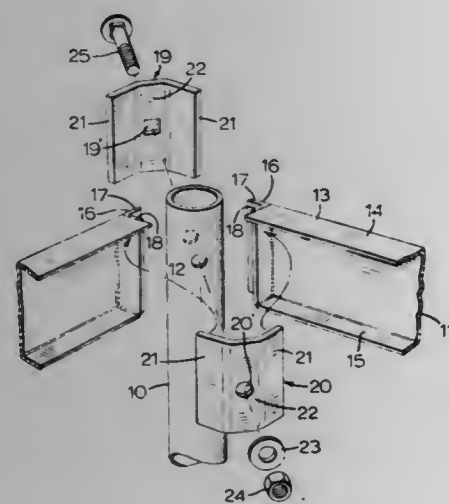
#### TABLE FRAME STRUCTURES AND CORNER CONSTRUCTIONS THEREFOR

Robert Walter Bowman, Woodstock, Ontario, Canada, assignor to Standard Tube Canada Limited, Woodstock, Ontario, Canada

Filed June 20, 1972, Ser. No. 264,445  
Int. Cl. F16m 11/16

U.S. Cl. 248-188

10 Claims



A corner construction for a table comprises an upright leg, a pair of horizontal side frame members, and means for clamping the side frame members into end abutting relation to the leg. The clamping means comprises a pair of clamping members, each clamping member comprising a flanged plate the flanges of which subtend an angle which is supplementary to the angle subtended between the flanges of the other plate, said angles defining the angle subtended between the side frame members when the latter are clamped in position.

#### ERRATUM

For Class 248-359 see:  
Patent No. 3,754,724

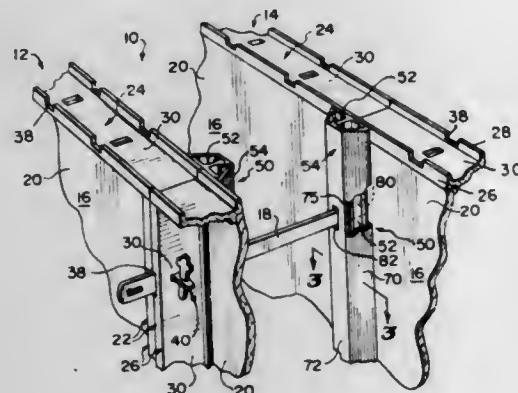
#### 3,754,729 GROOVE-FORMING PATTERN ASSEMBLY FOR A CONCRETE WALL FORM STRUCTURE

James D. Maynen, Arlington Heights, Ill., assignor to Symons Corporation, Des Plaines, Ill.

Filed Dec. 27, 1971, Ser. No. 212,440  
Int. Cl. E04g 11/08

U.S. Cl. 249-40

3 Claims



A two-piece groove-forming pattern assembly adapted for use in connection with a concrete wall form structure and including a base piece adapted to be nailed in position on the form structure, and a pattern piece adapted to be applied to the thus positioned base piece by a snap-on operation.

3,754,730

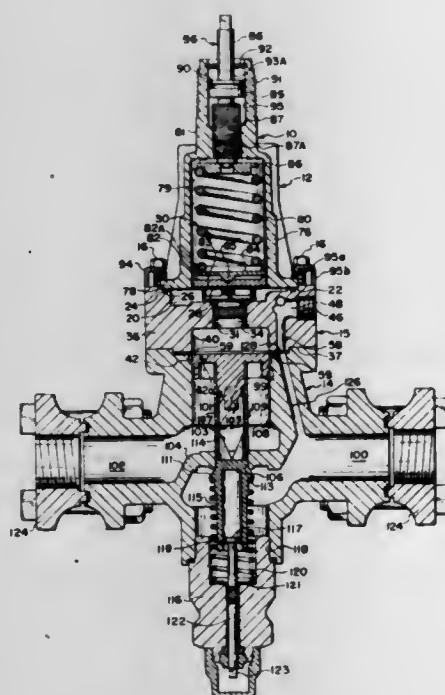
#### PRESSURE REFRIGERANT REGULATOR

John D. Nilles, Roselle; Robert S. Hunka, Cicero, and Raymond E. Downen, Berwyn, all of Ill., assignors to Refrigerating Specialties Company, Broadview, Ill.

Filed May 1, 1972, Ser. No. 248,927  
Int. Cl. F25b 19/00; F16k 31/12

U.S. Cl. 251-28

26 Claims



A pressure regulator for upstream or downstream refrigerant pressure has its bonnet and main valve assemblies secured to an intermediate member which is provided with selectable conduits to form a basic unit by which the operation of the regulator can be variously controlled and modified with external components interchangeably attached thereto.

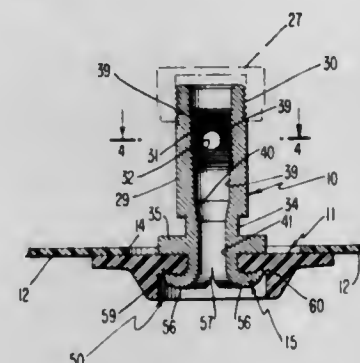
#### 3,754,731 INFLATION MANIFOLD VALVE AND FLANGE ASSEMBLY

Glenn H. Mackal, Saddle River, and George E. Lardner, Hawthorne, both of N.J., assignors to Halkey-Roberts Corporation, Paramus, N.J.

Filed Jan. 18, 1972, Ser. No. 218,669  
Int. Cl. F16l 5/02; B21d 39/18

U.S. Cl. 251-145

9 Claims



An assembly of valve body and mounting flange connected and sealed together by a novel crimped joint which strongly resists turning of the valve body relative to the flange. The valve body, for example, may be adapted for mounting in an inflation manifold, and the flange may be adapted for being sealed to the wall of an inflatable article at an opening through such wall. The invention includes a novel method of and an apparatus for forming the crimped joint.

3,754,732

#### BOARD-STRIPPING TOOLS

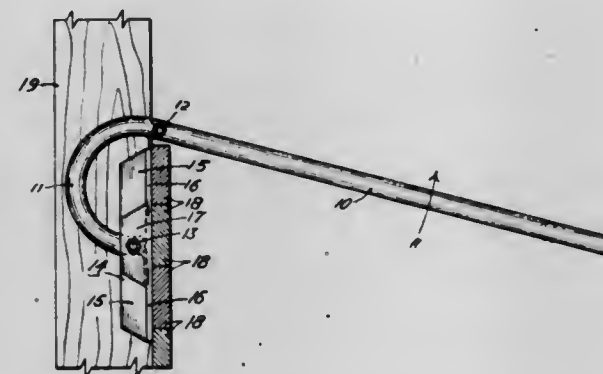
John B. Olson, 511 Tennyson St., Denver, Colo.

Filed Sept. 7, 1971, Ser. No. 178,013

Int. Cl. B66f 3/00

U.S. Cl. 254-131

3 Claims



A straight tubular handle one extremity of which is arcuately bent back to form a hook-shaped, semi-circular, prying portion therebeing support-contacting fulcrum elements projecting oppositely outward from the handle adjacent the prying portion and an elongated, board-contacting foot member medially pivoted on the free extremity of the prying portion. The foot member being rotatable in the plane of the prying portion.

3,754,733

#### TENSIONING DEVICE

Howard F. Foster, 4500 Cavendish Cir., Fort Lauderdale, Fla.

Filed May 1, 1972, Ser. No. 248,892

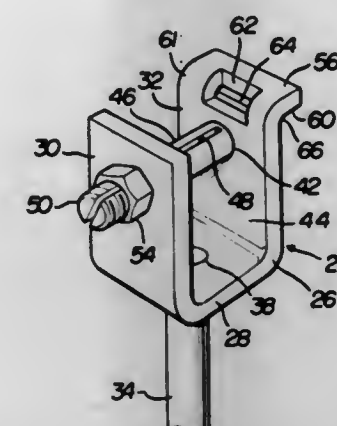
Int. Cl. A63b 61/04; B65d 63/00

U.S. Cl. 254-161

8 Claims

In a tensioning device for a flexible element including a stem and a frame having spaced, parallel legs with axially aligned openings therein, the combination therewith of a lip projecting outward from one of the legs adjacent to the open-

ing therein, an apertured bolt extending through the openings and having an enlargement with a flat side to bear against the lip for locking the bolt against rotation, and means at the other



end of the bolt to retain it against axial movement. Another opening is provided adjacent the lip to receive a portion of the enlargement.

3,754,734

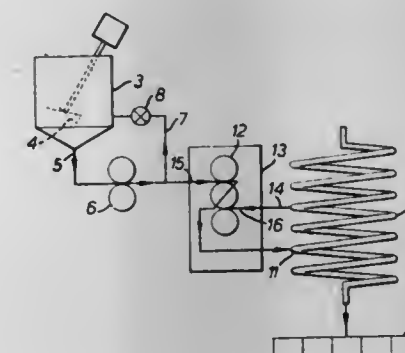
#### COLORATION OF HOT MELT POLYMERS

John Hoyle, and Thomas Reuben Griffin, both of Kegworth, near Derby, England, assignors to Slack & Parr Limited, Kegworth, England

Filed July 8, 1971, Ser. No. 160,812  
Int. Cl. B01f 5/14, 13/10

U.S. Cl. 259-4

2 Claims



The invention concerns the coloration of hot melt polymers by direct injection of a dye into the polymer stream during polymerization, e.g., before feed to a spinning machine.

A feed pump raises the dye pressure to approximate to that of the polymer at the injection point and a gear or turbine pump provides and controls continuous flow injection of the dye from the feed pump into the polymer stream.

A three gear pump in a temperature-controlled zone is preferably used for dye injection and the polymer is bled upstream of the injection point for premixing with the dye in the three gear pump.

3,754,735

#### POLYMER COLORATION

John Hoyle, and Thomas Reuben Griffin, Kegworth, Near Derby, England, assignors to Slack & Parr Limited, Kegworth, England

Filed July 8, 1971, Ser. No. 160,813

Claims priority, application Great Britain, July 8, 1970, 33,247/70

Int. Cl. B01f 13/10, 15/04, 5/14

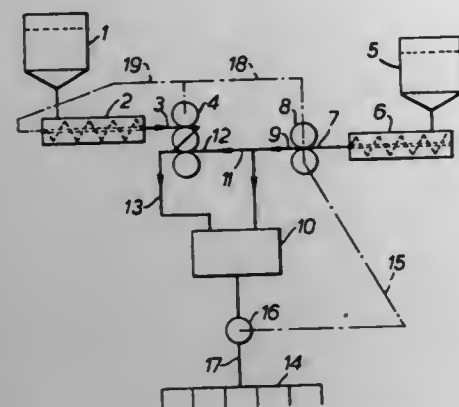
U.S. Cl. 259-4

3 Claims

The invention concerns the coloration of hot melt polymer by direct injection of a dye into a stream of the polymer after or in a late stage of polymerisation e.g., before feed to a spinning machine.



Separate pressure-balanced continuous flow metering pumps respectively feed melted undyed polymer and melted concentrated-colour-dyed polymer to a mixer and the pumps



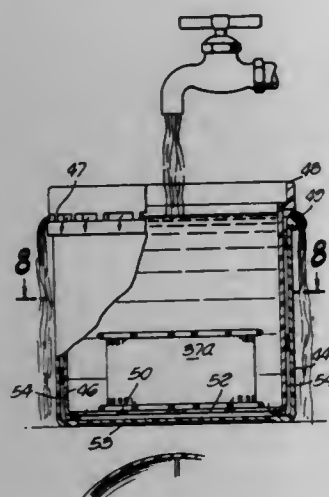
are controlled to run in a speed relationship adjustable for colour and colour constancy. A three stage gear pump is preferably used for the colour-dyed polymer, undyed polymer being bled to the second inlet of this pump for premixing.

### 3,754,736 FILM DRYER

Louis D. Statham, and Walter H. Elsele, both of Oxnard, Calif., assignors to Statham Instruments Inc., Oxnard, Calif.

Division of Ser. No. 853,750, Aug. 28, 1969, Pat. No. 3,650,050. This application Dec. 6, 1971, Ser. No. 205,280  
Int. Cl. B01f 7/08

U.S. Cl. 259-18



A dryer assembly particularly designed for use by photographers who do their own developing, comprising a closed system isolated from the ambient environment, containing a desiccant space and an article-containing space suitable to receive film strips, and means to circulate the air in closed cycles through the article space, and desiccant contained in said desiccant space.

### 3,754,737

#### DIRECT GEAR DRIVE FOR TRUCK MIXER DRUM

John A. O'Dea, Columbus, Ohio, assignor to The Jaeger Machine Company, Columbus, Ohio

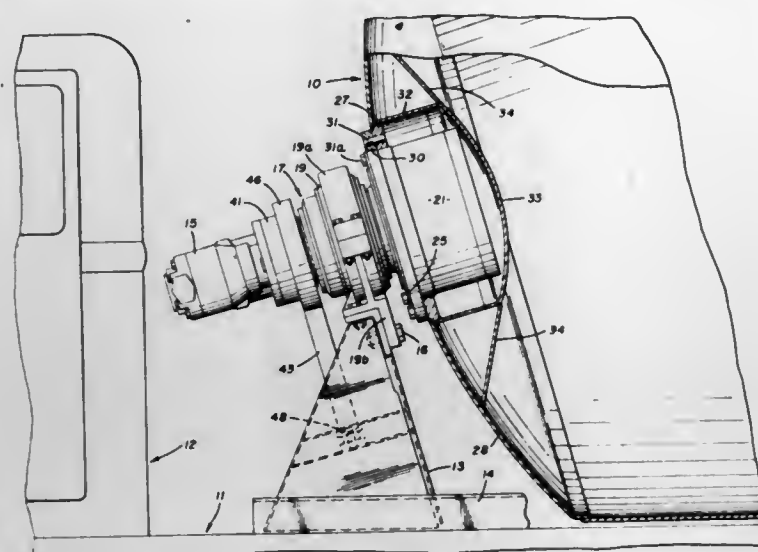
Filed Feb. 1, 1972, Ser. No. 222,585  
Int. Cl. B28c 5/18

U.S. Cl. 259-177 A

16 Claims

A direct gear drive for a mixer or agitator of the type in which the drum is mounted for rotation on a transporting vehicle, usually a truck. The power unit may be a hydraulic motor mounted directly behind the cab of the truck and the present invention provides a direct gear drive between that motor and the rotatable drum. This gear drive is in the form of a transmission of the planetary gear type, and, according to this inven-

tion, part of the transmission is disposed within the adjacent end of the drum itself, along with means for adequately protecting it from the contents of the drum, or in an exterior space recessed within the contour of the end of the drum.



### 3,754,738

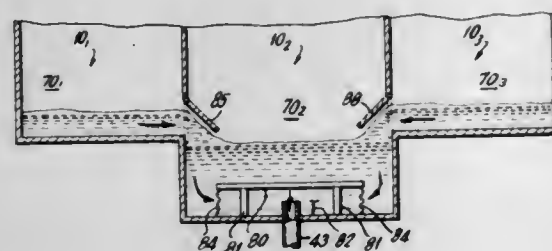
#### COOLING TOWER APPARATUS

Benjamin V. Blazer, Paterson, and Mahmoud S. El-Tahry, Passaic, both of N.J., assignors to Blazer Corporation, East Rutherford, N.J.

Continuation-in-part of Ser. No. 9,794, Feb. 9, 1970, Pat. No. 3,637,195, which is a continuation-in-part of Ser. No. 742,567, July 5, 1968, Pat. No. 3,494,109. This application Dec. 3, 1971, Ser. No. 204,552  
Int. Cl. B01f 3/04

U.S. Cl. 261-30

2 Claims



An improved modular cooling tower includes an air fan centrally located at the bottom of the tower, and a baffle vane and pivoted shutter arrangement disposed above the fan. The fan generates an air flow which passes through the baffles and vanes to react with a heated liquid flowing downward through the tower via a plurality of evaporating surfaces. The shutter structure is adapted to pass the fan generated air flow for cooling purposes while preventing the escape of fluid or vapor laden air from the tower fan orifice, thus obviating a potentially hazardous condensation condition.

In accordance with other aspects of the present invention, improved sump, fan and drive apparatus is provided to accommodate plural module installations.

### 3,754,739

#### CARBURETOR AIR/FUEL DISTRIBUTION CONTROL

George W. Bulke, Plymouth, and William P. Haboush, II, St. Clair Shores, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

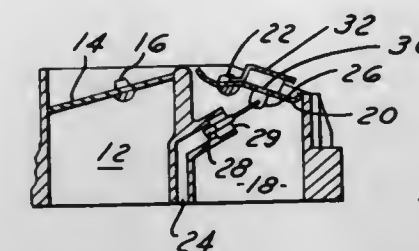
Filed July 21, 1971, Ser. No. 165,423  
Int. Cl. F02m 19/04

U.S. Cl. 261-50 A

10 Claims

The air valve of a dual stage carburetor has a tapered fuel metering rod secured to it and movable as a function of air

valve movement to increase fuel flow; the fuel inducted passes through a hole in the air valve and splashes against a member that deflects the fuel downwardly to provide good fuel and air distribution on both sides of the valve; the splash member and



air valve together act as a venturi at higher engine speed air flows to provide a greater than normal fuel metering signal at the fuel nozzle, thereby providing greater fuel delivery volume at the higher engine speeds.

### 3,754,740

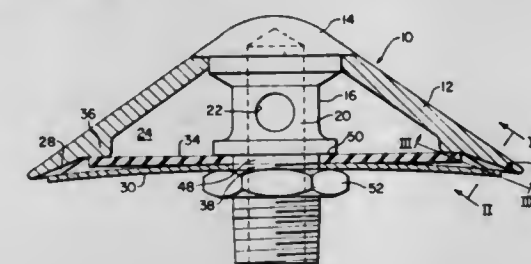
#### GAS DISTRIBUTOR

Louis H. Piper, Richmond, Va., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 18, 1971, Ser. No. 116,495  
Int. Cl. B01f 3/04

U.S. Cl. 261-124

6 Claims



A conical chamber having a serrated bottom edge is provided with a centrally and upwardly supported bottom plate in order to distribute gas bubbles throughout a liquid when a gas is introduced under pressure into the chamber. In one embodiment, a second plate contacting the inner wall of the conical chamber, or an annular ledge formed thereon, acts as a check valve in the event of a gas pressure failure. In another embodiment, a resilient sleeve fitted about a gas inlet pipe having only circumferential openings acts as the check valve.

### 3,754,741

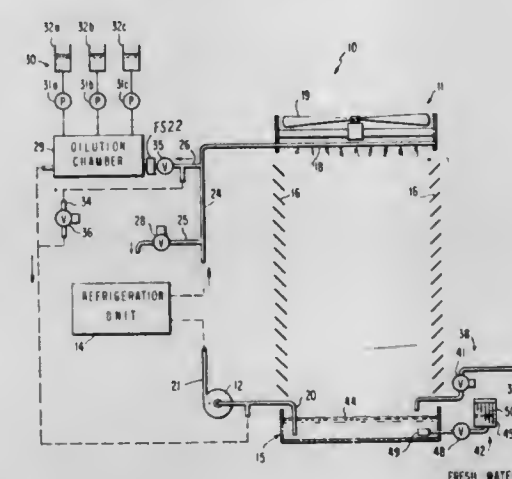
#### WATER TREATMENT SYSTEM

Chester M. Whitehurst, Atlanta, and Frank D. Parker, Jr., Chamblee, both of Ga., assignors to Parker Engineered Chemicals, Inc., Atlanta, Ga.

Filed Sept. 28, 1971, Ser. No. 184,464  
Int. Cl. C10k 1/08

U.S. Cl. 261-151

9 Claims



A water treatment system for large capacity air conditioning systems or similar heat exchange systems which include a

water reservoir, a refrigeration unit, a cooling tower for spraying the water to the reservoir, and water flow means for moving the recirculating water from the reservoir through the refrigeration unit to the cooling tower, and back to the reservoir. Water makeup means is provided for adding additional fresh water to the reservoir, and a water drain system functions to drain away the stale water from the reservoir. Chemical additives pumps function to add chemical compositions to the recirculating water. The chemical additive pumps and water drain system function during the flow of recirculating water through the heat exchanger and during the flow of makeup water to the reservoir.

### 3,754,742

#### KILN WITH OVERLYING BEDS FOR DRYING, BURNING AND SINTERING OF GRANULAR AND/OR SLUDGE-TYPE MATERIAL

Alfred Kryczun, and Theo Manshausen, both of Cologne, Germany, assignors to Klockner-Humboldt-Deutz Aktiengesellschaft, Cologne, Germany

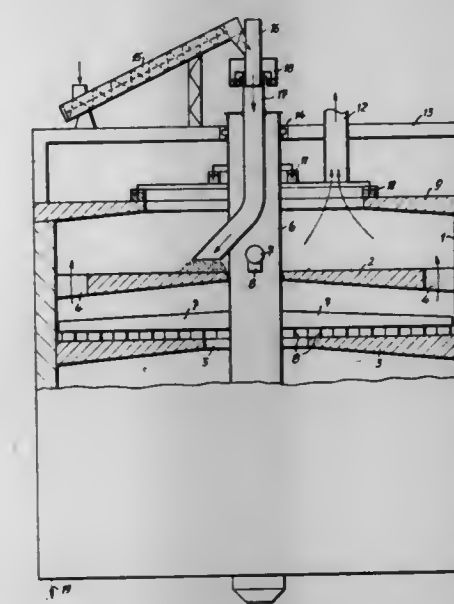
Filed Aug. 9, 1971, Ser. No. 170,086

Claims priority, application Germany, Sept. 26, 1970, P 20 47 518.7

Int. Cl. F27b 1/02, 9/16

U.S. Cl. 432-95

7 Claims



A kiln with overlying beds for drying, burning and sintering granular and/or sludge-type material is provided with a centrally arranged vertical hollow rotatable shaft having outwardly extending raking arms thereon for distributing the material to be treated over the beds. The material to be treated is fed above the kiln into a fixed vertical pipe which extends into the upper end of a vertical distribution pipe arranged within the rotatable hollow shaft. The lower end of this vertical pipe is deflected laterally and passes through the wall of the vertical shaft and delivers the material to be treated to the uppermost bed while rotating with the hollow shaft. From the uppermost bed the material descends to the next lower beds through suitable apertures in the periphery and the center portions of the beds until it is finally discharged from the lower end of the kiln.

### 3,754,743

#### SILVER RECOVERY FROM PHOTOGRAPHIC WASTES

Edward B. Johnson, 4654 34th St. North, Arlington, Va.

Division of Ser. No. 879,144, Nov. 24, 1969, Pat. No.

3,671,222. This application Dec. 29, 1971, Ser. No. 213,564  
Int. Cl. F27b 17/00

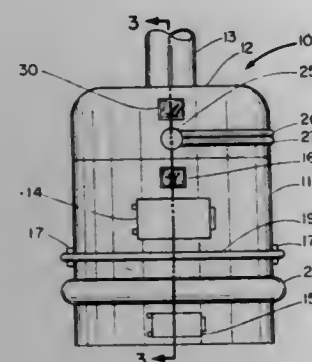
U.S. Cl. 266-24

4 Claims

An apparatus for the rendering of silver from photographic waste in which the film or other waste is ignited and brought



up to a satisfactory burning temperature in a primary chamber and maintained at this temperature until the film or waste is burned by controlling the amount of oxygen supplied to the primary chamber. During the ignition and burning of the photographic waste the smoke and particulate matter is directed to a secondary chamber where it is subjected to burn-



ing at a temperature that is higher than that in the primary chamber. After the photographic waste is burned, the silver bearing ash is cooled and removed from the primary chamber. The ash is then processed by conventional techniques to refine the silver. This apparatus permits the economical rendering of silver from photographic waste by burning with the elimination or reduction of smoke and other air pollutants.

3,754,744

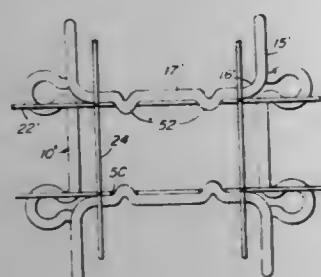
**SPRING ASSEMBLY AND METHOD OF MANUFACTURE**  
Fred A. Ciampa; Angelo Serafini, both of East Boston, and Louis Mazzarella, Boston, all of Mass., assignors to Standard Box Spring Company, East Boston, Mass.

Filed Aug. 6, 1971, Ser. No. 169,724

Int. Cl. F16f 3/02

U.S. Cl. 267—101

10 Claims



A spring assembly includes a top mesh comprising two transverse groups of wires and a border frame, which are welded together at points of intersection. The assembly also includes a number of compression springs, either coils, saddle-shaped springs, or other types. One of the groups of wires is formed with a series of bights located between the intersections of the wires, and these wires are arranged in adjacent pairs whose bights extend in opposite directions. Each of the springs has two upper portions for attachment to the mesh, and these are spaced apart a different distance than the adjacent wires, but substantially the same as the distance between the bights of adjacent wires. The springs are assembled by deflecting them or the adjacent mesh wires enough to permit the attachment portions of the springs to pass between the bights and abut against the mesh wires. The bights are then allowed to return to their original form, in which they engage the spring attachment portions to secure them in place on the mesh.

### 3,754,745 ARRANGEMENT FOR THE MECHANICAL DAMPING OF COIL SPRINGS IN DEVICES FOR THE PRODUCTION OF ARTIFICIAL REVERBERATION

Werner Fidi, Baden near Vienna, Austria, assignor to AKG Akustische u. Kino-Gerate, Vienna, Austria

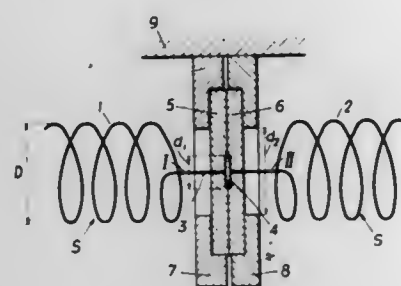
Filed Jan. 28, 1972, Ser. No. 221,583

Claims priority, application Austria, Mar. 19, 1971, A 2414/71

Int. Cl. F16f 7/00

U.S. Cl. 267—136

12 Claims



A spring arrangement, for use in an artificial reverberation device, includes a mechanically damped, torsionally vibratory, helical spring which is sub-divided into at least two spring portions. Each pair of adjacent spring portions is interconnected by a rigid spindle extending therebetween along the longitudinal axis of the two portions. A damping plate on each spindle lies in a plane substantially perpendicular thereto, and is embraced by a pair of resilient pads engaging opposite surfaces of the plate, the resilient pads preferably comprising foamed plastic. A pair of rigid diaphragm-like clamping members press the pads therebetween so that the damping plate is clamped between the pads. The pressure applied to the pads is preferably adjustable, and the damping members have apertures through which the spindle extends, with these apertures having a diameter smaller than that of the helical spring. The damping plate may have various configurations.

3,754,746

### MECHANICAL DAMPING STRUCTURE

Wolfgang Thiele, Bad Homburg, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

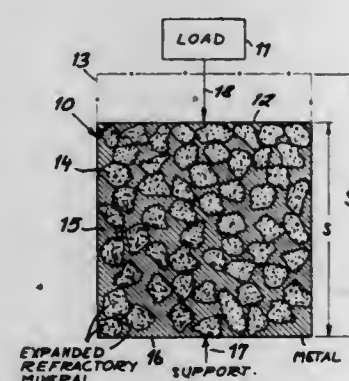
Filed Oct. 7, 1971, Ser. No. 187,400

Claims priority, application Germany, Oct. 10, 1970, P 20 49 918.7

Int. Cl. F16f 1/36

U.S. Cl. 267—151

14 Claims



A body adapted to absorb energy, especially a shock or force damper, consists of a sponge or foam metal matrix with pores and, preferably, a filler of vermiculite or perlite in an expanded state. The body is predeformed through 5 to 35 percent of its original volume before it is employed as a shock or force damper.

3,754,747

### APPARATUS FOR WIDTHWISE CLAMPING WORKPIECES IN MACHINE TOOLS AND THE LIKE

Hiromiti Tateisi, and Mituo Tamura, both of Iwata-shi, Sizuoka-ken, Japan, assignors to Toyo Bearing Manufacturing Company Limited, Osaka-shi, Japan

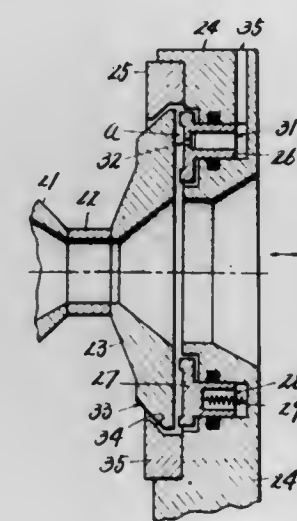
Filed May 5, 1971, Ser. No. 140,367

Claims priority, application Japan, Dec. 25, 1970, 45/129784

Int. Cl. B23q 3/08; B24b 41/04

U.S. Cl. 269—20

3 Claims



The present invention provides a method of and apparatus for widthwise clamping workpieces in machine tools and the like wherein a workpiece is rotatably supported between a clamp member on the stationary side and a clamp member on the movable side, the principal arrangement thereof being such that when there is no workpiece which is clamped, the clamp member on the movable side is supported in its centered state whereas when a workpiece is clamped, the clamp member on the movable side is spaced apart from a centering portion and is floatably supported by a hydrostatic bearing with respect to a pressure plate which provides a clamping force. The invention also provides methods of and apparatus for widthwise clamping workpieces in machine tools and the like comprising sub-arrangements based on said principal arrangements. Advantages and details in arrangement will be made clear.

3,754,748

### APPARATUS FOR SUPPORTING TIRE RIM FOR ROTATION IN PREDETERMINED PLANE

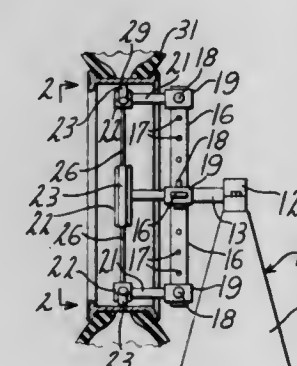
Hugh M. Parker, 718 Cherokee St., Talladega, Ala.

Continuation-in-part of Ser. No. 821,920, May 5, 1969, Pat. No. 3,589,705. This application June 14, 1971, Ser. No. 152,855

Int. Cl. B60b 29/00; B25h 5/00; B23q 3/08

U.S. Cl. 269—20

7 Claims



Apparatus supporting tire rim for rotation in a predetermined plane including a supporting spindle extending perpen-

dicular to said predetermined plane. A support member is operatively connected to and supported from spindle for rotation about the axis of rotation of the spindle. Angularly spaced inflatable members are carried by the support members with outer surfaces thereof engagable with rim, upon inflation of inflatable members.

3,754,749

### MULTI-ARTICULATED TABLE

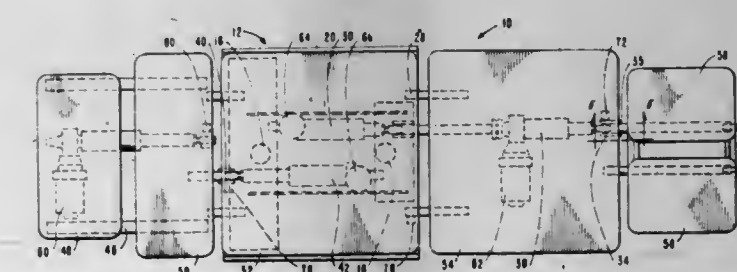
John Jeffrey Lyon; Merrill K. Lyon, both of Northridge, and L. Noel Stupkovich, Granada Hills, all of Calif., assignors to Medical Engineering Development Company, Granada Hills, Calif.

Filed June 25, 1971, Ser. No. 156,811

Int. Cl. A61g 13/00

U.S. Cl. 269—325

3 Claims



This patent relates to an improved table useful in medical and related practices. More particularly, this invention comprises a table having a central portion which includes a flat generally horizontally disposed base, extending upwardly from said base, spaced apart first and second extendible supporting means, a first cushion supporting means pivotally attached to said extendible supporting means whereby said first and second extendible supporting means can be simultaneously extended to vertically raise and lower said first cushion supporting means while said first cushion supporting means is horizontal and said first and second extendible supporting means can also be differentially extended with respect to each other to tip said first cushion supporting means at an angle with respect to the horizontal; a second cushion supporting means connected by pivotal attachment to the upper end of said central portion and at one side thereof, a third extensible means carried by said central portion for providing pivotal movement of said second cushion supporting means around said pivotal attachment, a third cushion supporting means connected by pivotal attachment to the second cushion supporting means, extensible means carried by said second cushion supporting means for providing pivotal movement of said third cushion supporting means around said second cushion supporting means whereby said second and third cushion supporting means can be pivoted simultaneously or individually above and below the horizontal; a fourth cushion supporting means connected by pivotal attachment to the upper end of said central portion and at the opposite side thereof, a fourth extensible means carried by said central portion for providing pivotal movement of said fourth cushion supporting means around said pivotal attachment, a fifth cushion supporting means slidably attached to said fourth cushion supporting means, extensible means carried by said fourth cushion supporting means for providing coplanar movement of said fifth cushion supporting means with respect of said fourth cushion supporting means to increase or decrease the distance therebetween, said fourth and fifth cushion supporting means being adapted to be simultaneously pivoted above and below the horizontal around said central portion.



3,754,750

**METHOD AND APPARATUS FOR FOLDING SHEETS**

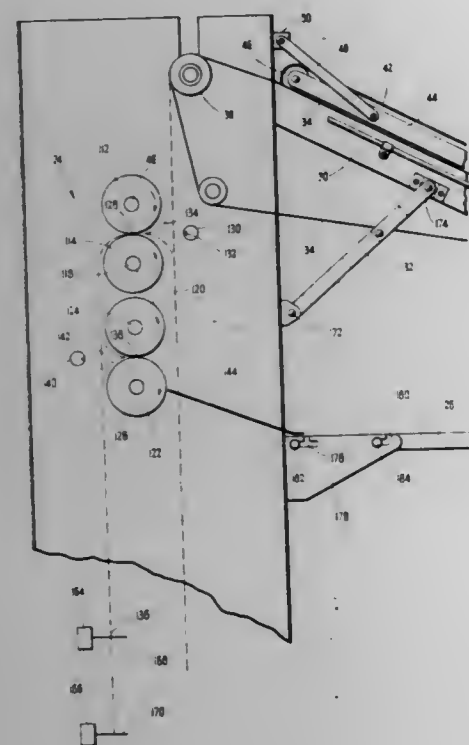
Robert L. Sjostrom, 133 N.W. 16th St., Boca Raton, Fla.

Filed Feb. 24, 1970, Ser. No. 13,277

Int. Cl. B65h 45/04

U.S. Cl. 270-69

21 Claims



A compact sheet folder for longitudinal folding of ironed or "no-iron" sheets, including means for feeding the unfolded sheet into the machine with one edge of the sheet leading the remaining portions of the sheet. The feeding device advances the sheet to a number of parallel horizontal rollers which are arranged in a generally vertical alignment. The sheet moves downwardly from the feeding arrangement to the rollers and is passed transversely and repeatedly through the rollers to effect a number of folds. The last fold is made by a pair of rollers which advance the sheet horizontally toward the side of the machine at which the sheet was originally fed in. This enables the operator to both load and unload the machine from the same operating station. A cross folding device may be located at the unloading station to receive automatically the longitudinally folded sheets. The folder may be connected to an automatic ironer which delivers ironed sheets to the feeding means.

3,754,751

**SUCTION DEVICE FOR PICKING UP SHEETS**

Federico Capetti, and Giancarlo Terzuolo, both of Turin, Italy, assignors to Ing. C. Olivetti &amp; C. S.p.A., Turin, Italy

Filed Mar. 2, 1971, Ser. No. 120,215

Claims priority, application Italy, Mar. 13, 1970, 67858 A/70

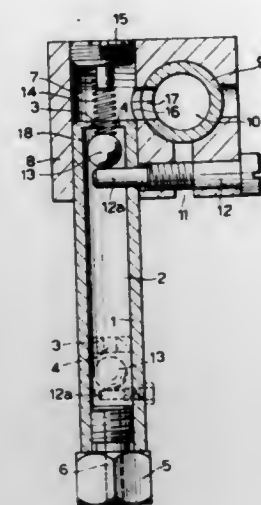
Int. Cl. B65h 3/08

U.S. Cl. 271-26 R

3 Claims

A suction device used for picking up sheets, for example in a paper printing machine, has a valve which automatically closes, cutting off the suction device from a suction manifold, when the mouth of the device is not covered by a sheet,

thereby preventing unnecessary loss of suction in the manifold, which usually serves a number of suction devices.



The valve is closed by the air which flows through the device when its mouth is uncovered.

3,754,752

**METHOD OF AND APPARATUS FOR FEEDING BLANKS**

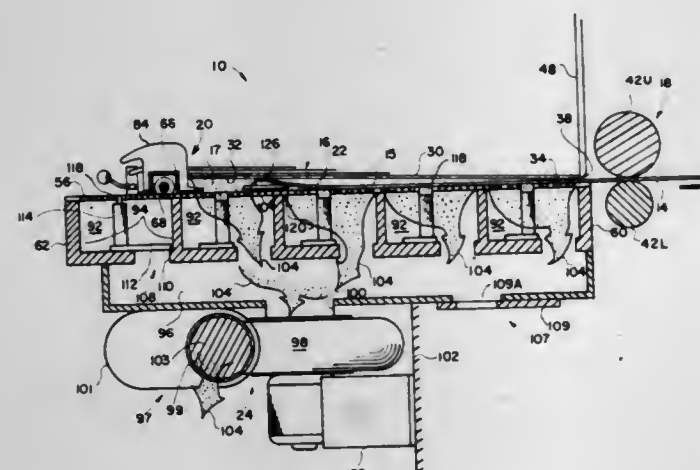
William S. Thayer, c/o Kappers Company Inc., Kappers Building, Pittsburgh, Pa.

Filed Dec. 22, 1971, Ser. No. 210,724

Int. Cl. B65h 1/06

U.S. Cl. 271-132

30 Claims



A method of and apparatus for feeding the bottom blank of a stack of blanks into adjacent processing machinery wherein the leading edge of a stack is supported adjacent the processing machinery on a support table; the trailing edge of the stack is supported above the support table; subatmospheric pressure is applied to the underside of the bottom blank through perforations in the top of the table leading to a number of selectively operable subchambers beneath the perforated top to urge the bottom blank downward toward the table; and, the bottom blank is advanced into the adjacent processing machinery by a reciprocating feeder bar simultaneously exposing the next bottom blank to subatmospheric pressure which exposure begins at its trailing edge and continues to its leading edge as the blank being fed moves forward. The subchambers can be selectively closed so that selected portions of the underside of the blank can be exposed to subatmospheric pressure. Stop-feed means are provided for lifting the trailing edge of the stack above the feeder bar in the event of a malfunction; the same means can be operated intermittently to skip-feed blanks at one-half the normal rate.

3,754,753

**APPARATUS FOR SEPARATING AND GUIDING SHEET MEANS OF DIFFERENT THICKNESS AND WIDTH**

Horst Gorner, St. Georgen; Manfred Kohler, Monchweiler; Alois Limberger, Gruningen, and Walter Usbeck, Villingen, all of Germany, assignors to Kienzle Apparate GmbH, Villingen, Germany

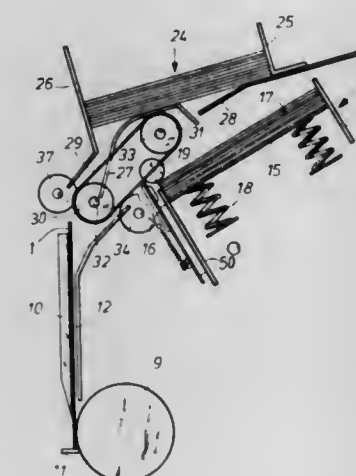
Filed Oct. 13, 1971, Ser. No. 188,913

Claims priority, application Germany, Oct. 14, 1970, P 20 50 370.2

Int. Cl. B65h 3/04

U.S. Cl. 271-34

11 Claims



Apparatus by which single cards, or pads consisting of several sheets and having a width different from the width of the cards, are transported from a magazine to a printing station, is provided with means for manually setting the card knife to different thicknesses, and a movable margin guide to the different widths of the transported cards or pads.

3,754,755

**DEVICE FOR REGISTERING SHEETS ON FEED BOARD OF SHEET FED PRINTING MACHINES**

Karl-Heinz Krochert, Offenbach/Main, Germany, assignor to Roland Offsetmaschinenfabrik Faber &amp; Schleicher AG

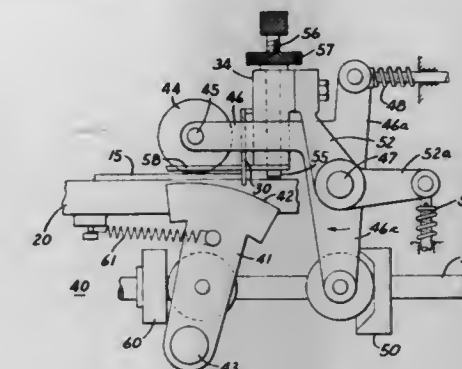
Filed July 24, 1972, Ser. No. 274,609

Claims priority, application Germany, July 28, 1971, P 21 37 661.4

Int. Cl. B65h 9/00, 7/10

U.S. Cl. 271-58

5 Claims



A sheet registering arrangement for positioning sheets on a feed board prior to take-off and transfer to a printing unit. Seated engagement of the leading edge of a sheet with front guide means is maintained during register with a side guide member in the form of a short length of fence by pivotally mounting the side guide member so that it is free to swivel into self-alignment with the lateral edge of the sheet. Thus, non-square sheets can be reproducibly registered. Light biasing of the side guide member by means of springs or the like can be used to place the member in a neutral position, when no sheet is present. The neutral position can be made adjustable so as to accommodate sheets with different characteristic angular errors.

3,754,756

**THEATRICAL SCREEN FOR COMBINING LIVE ACTION AND PROJECTED PICTURES**

Paul Szigety, 170 Winnick Ave., Las Vegas, Nev.

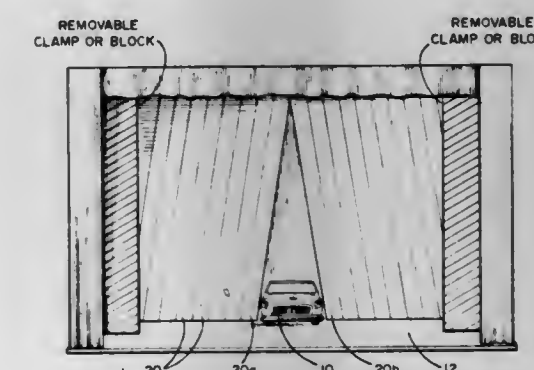
Division of Ser. No. 41,209, May 28, 1970, Pat. No. 3,625,510.

This application Aug. 16, 1971, Ser. No. 172,189

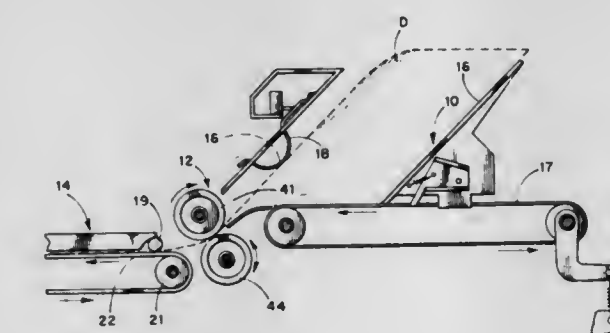
Int. Cl. A63j 5/02

U.S. Cl. 272-21

4 Claims



A theatrical screen for reflecting projected images and through which objects may pass comprises a plurality of substantially vertically extending elongated elastic strips the upper and lower ends of which strips are attached to movable guides. The guides are located within or cooperate with a guide channel and may be moved along the guide channel which extends laterally across a stage platform. Removable blocks or clamps are disposed in the upper or lower guide channels for selectively preventing movement of either the upper or lower guides. A large object such as a vehicle or the like may be moved through the screen between a pair of parted elastic strips which thereafter will return to their normal substantially vertical position.



A document handling device is provided with a feed arrangement having a pair of rollers arranged to cooperate in feeding documents of varying size and thickness singly and sequentially from a stack, without adjustment of the device.

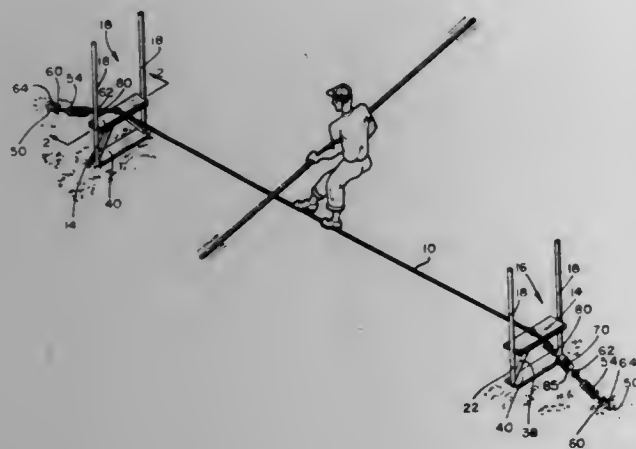


3,754,757

**TIGHTWIRE SPORTS EQUIPMENT**

Duane C. Bowen, 2551 State St., Carlsbad, Calif.  
Continuation-in-part of Ser. No. 749,336, Aug. 1, 1968,  
abandoned. This application Jan. 21, 1971, Ser. No. 108,606  
Int. Cl. A63b 23/04; A63j 7/00  
U.S. Cl. 272-60

18 Claims



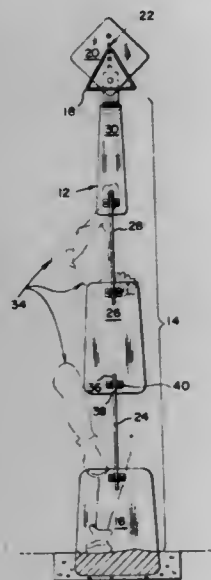
A cable forming a tightwire is supported above the ground at low height by a pair of spaced apart standards with the ends of the cable secured to ground anchors and stretched over the standards by turnbuckles. A tension spring is connected in the cable string to limit tension forces. The standards have platforms at about cable height and the cables are secured to the standards by U-bolts. A pair of tubes at the sides of the standard have upper ends extending substantially above the platform to be grasped by user hands in stepping onto the tightwire and leaving the tightwire, and the lower ends of the tubes penetrate the ground, the standards having pad means bearing on the ground to limit ground penetration.

3,754,758

**VERTICAL SWING BEAM FOR AMUSEMENT AND EXERCISE**

Richard A. Hanson, 5750 Tamarack Way, Concord, Calif.  
Filed July 20, 1972, Ser. No. 273,420  
Int. Cl. A63b 9/00  
U.S. Cl. 272-60 A

6 Claims



A normally upstanding resilient structure for amusement and exercise of children or adults comprising a plurality of interconnected, vertically, aligned, elastically bendable plate sections arranged so that the faces of the plates thereof are generally non-coplanar, and having a rotatable top plate from which a handle is suspended for the user to perform the aforementioned activity. The structure is fixedly positioned at its

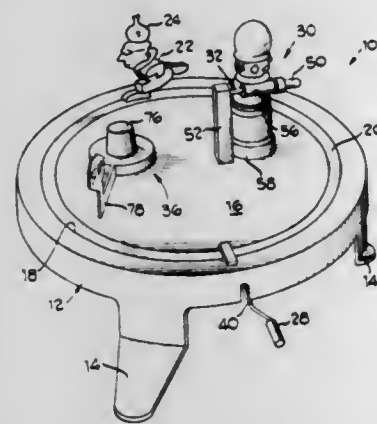
base but is not secured thereabove so that the structure is free to perform a swaying movement when acted upon by the weight of a user grasping the handle.

3,754,759

**ROUND-ABOUT GAME APPARATUS**

Jeffrey Dale Breslow, Highland Park, and Eugene Jaworski, Park Ridge, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.  
Filed Feb. 16, 1972, Ser. No. 226,738  
Int. Cl. A63f 9/00  
U.S. Cl. 273-1 R

17 Claims



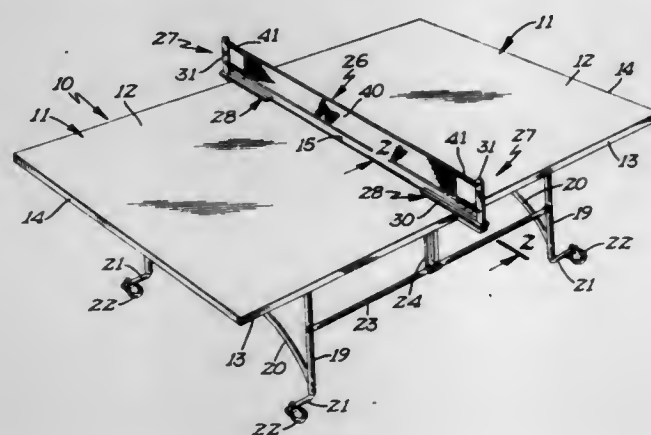
A round-about toy game apparatus wherein the object is to knock off a moving target from its path of travel. The game generally includes a housing having a platform, a track associated with the platform defining a target path of travel, a target removably mounted on the track, a drive mechanism for moving the target relative to the platform, and a striking element adjacent the track for knocking the moving target passing thereby off the track. The striking element is in the form of an inverted L-shaped member having a horizontal leg extending over the platform at the same height as the target perpendicular to the track and a downwardly extending vertical leg. The L-shaped member is movable between a normally retracted position away from the target path of travel and a striking position intersecting the target path of travel. The game also includes a blocking element capable of halting the progress of travel of a moving target and a spring wound timer mechanism employed to actuate the blocking element after a given amount of time.

3,754,760

**NET HOLDER DEVICE AND HOLDABLE TENNIS TABLE**

Otto S. Nielsen, 4875 Sorell Ave. North, Minneapolis, Minn.  
Filed June 19, 1972, Ser. No. 264,186  
Int. Cl. A63b 39/00  
U.S. Cl. 273-30

3 Claims



A net holder device for use with a foldable ping-pong or tennis table includes a pair of net holder structures which are

removably connected to the foldable table top sections and are swingable between an extended position and a collapsed position. Each net holder structure extends outwardly from between the table top sections and cooperates with the other net holder structure to hold the net in a taut condition. Each net holder structure is readily swingable inwardly to a collapsed position wherein the net holders are located between the table top sections when the top sections are in the folded condition. The net holders structures may also be swung to an out-of-the-way position below the table when the table is in an unfolded extended position.

3,754,761

**GOLF PRACTICE DEVICE**

Gunther M. W. Pruss, Herzogstand Weg 27, Kochel am See, Germany  
Filed Apr. 6, 1972, Ser. No. 241,576  
Claims priority, application Germany, Apr. 8, 1971, P 21 17 297.4  
Int. Cl. A63b 69/36  
U.S. Cl. 273-200 A

3 Claims



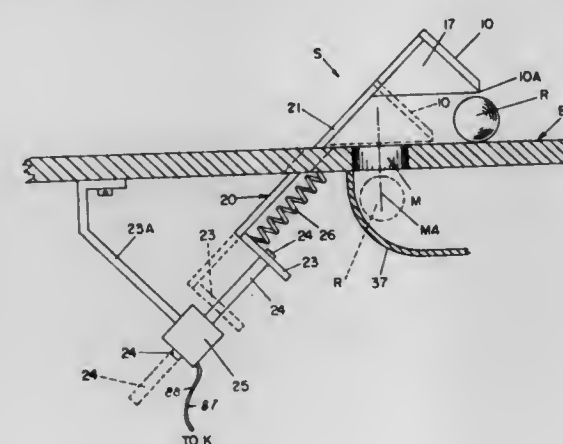
A golf practice device including a golf ball which travels a restricted distance along an inclined guiding string. The ball is provided with a ring which slides along the string. A tee is integrally connected to the ring. The guiding string is slanted upwardly away from the golfer so that the ball will slide back on its own to the tee off position.

3,754,762

**BALL SWEEPER APPARATUS FOR BALL ROLLING GAMES**

Richard L. Brown, Bellevue, Nebr., assignor to Bally Manufacturing Corp., Chicago, Ill.  
Filed Oct. 27, 1971, Ser. No. 193,092  
Int. Cl. A63f 7/00  
U.S. Cl. 273-124 A

19 Claims



There is provided ball sweeping apparatus adapted to be employed in proximal combination with a generally vertically extending target of ball rolling games, the ball sweeping apparatus including a transversely extending frontal-deflector member which commencing at a stationary "ready" normal-condition for the ball sweeper apparatus can move in elevation and in the longitudinal rearward direction thereby being

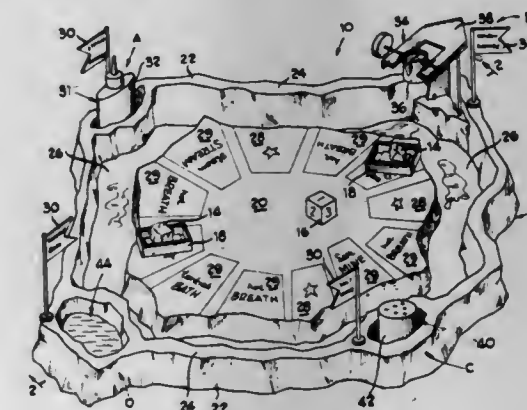
capable of contacting a rolling ball as it approaches the vicinity of the target and ball sweeper combination and thence rearwardly longitudinally deflecting the ball toward the relatively stationary proximal target. Preferred embodiments of the ball sweeping apparatus include: longitudinal orientation means for the rearwardly deflectable ball; automatic restoration of the rearwardly displaced ball sweeper to the stable "ready" normal-condition; means for causing the frontal-deflector to preliminarily leap forwardly from the target toward an approach-in ball thereby forwardly extending the ball control area; and means for employing the frontal-deflector as a relatively low temporary barrier to the proximal target.

3,754,763

**BOARD GAME APPARATUS**

Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.  
Filed Dec. 30, 1971, Ser. No. 214,060  
Int. Cl. A63f 3/00  
U.S. Cl. 273-134 B

9 Claims



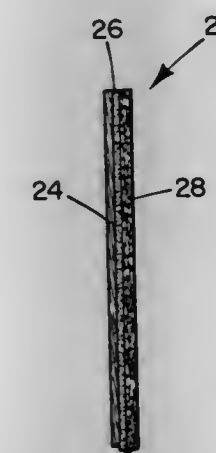
A game device of the type having a gameboard, playing pieces, and a chance device to determine the advance of the playing pieces along certain spaces on the gameboard. Each playing piece is made out of ice. The spaces provide instructional information and represent hazards that may destroy the playing piece. Associated with the gameboard are actual physical hazards which involve application to the game piece of warm water, hot air or salt according to the hazard provided, for by the space. Alternatively, the playing piece may be a sugar cube or a balloon.

3,754,764

**GOLF CLUB IMPACT MARKER**

Frederick J. Manheek, 8 Apache Rd., Nashua, N.H.  
Filed Apr. 27, 1972, Ser. No. 248,254  
Int. Cl. A63b 69/36  
U.S. Cl. 273-186 D

3 Claims



An impact marker for golf clubs and the like. The marker is comprised of a self-contained imaging-type sheet material including minute rupturable capsules, which sheet material is



applied to the face of the club by means of a pressure-sensitive non-permanent adhesive distributed uniformly over substantially all of the back side of the sheet material. The sheet material is suitably adapted to produce an image at the exact point at which the sheet is contacted by the ball during the golfer's swing. Prior to being attached to the club, the adhesive layer is covered by an easily removed protective sheet.

3,754,765

**ONE-TOUCH OPERATION CASSETTE TAPE PLAYER**  
Taro Tanaka, 7-12, Nishi Minecho, Ohtaku, Tokyo, Japan

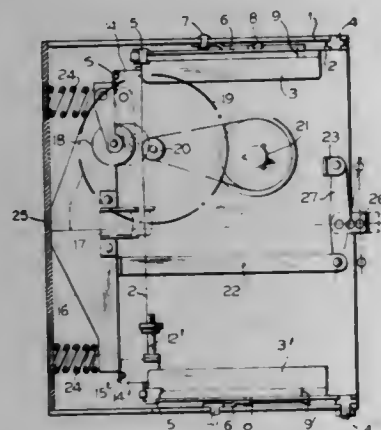
Filed Aug. 23, 1971, Ser. No. 174,094

Claims priority, application Japan, Sept. 7, 1970, 45/77794

Int. Cl. G11b 15/24

U.S. Cl. 274-4 E

3 Claims



A cassette holder is pivotally mounted on pivot pins horizontally fixed on the opposite side walls of a chassis, and a pair of cassette guides are pivotally mounted on pivot pins fixed on the front end portions of the opposite side walls of the cassette holder. Further, a pair of links are vertically pivotally mounted on pivot pins on the inner surfaces of the opposite side walls of the chassis for causing a vertical pivotal movement of the cassette guides, each of the links being provided with an elongated slot at the central portion thereof for engagement with a pin provided on the corresponding side surface of the cassette holder.

3,754,766

**SPRING TYPE RING SEAL**

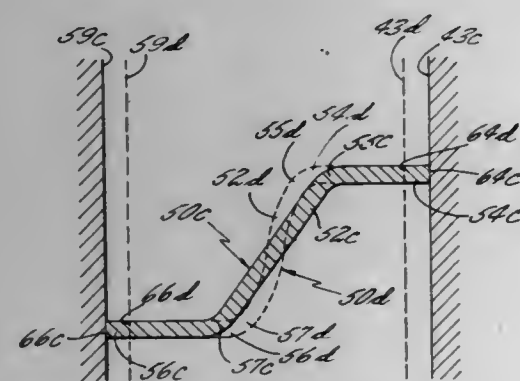
Herbert F. Asplund, South Windsor, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 11, 1971, Ser. No. 197,799

Int. Cl. F16j 15/38

U.S. Cl. 277-236

3 Claims



A seal is provided between two oppositely directed cooperating surfaces to prevent the radial leakage of fluid between the surfaces, the seal comprising a ring disposed between the surfaces, the ring including a truncated conical mid-section having a substantially axially extending outwardly directed flange at each end. The ring is able to accommodate

relative axial movement between the surfaces by rotation about a circumferential center line located approximately midway of the conical mid-section. This mode of compression reduces bending stresses in the ring. Two of these rings can be used in combination to provide a passageway for carrying fluid across the axial gap between the cooperating surfaces.

3,754,767

**INTERCHANGEABLE TOOL MOUNTING DEVICE**

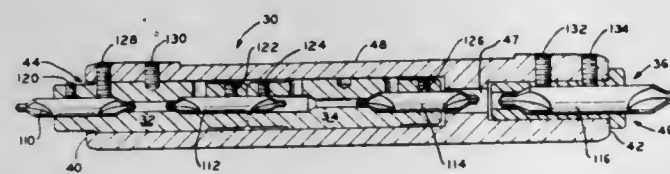
Gene Lee Bennett, North Madison, Ohio, assignor to Genio Tools, Inc., Mentor, Ohio

Filed Sept. 23, 1971, Ser. No. 183,090

Int. Cl. B23b 29/00, 29/26

U.S. Cl. 279-14

17 Claims



An interchangeable tool mounting device particularly adapted for use with turret lathes in retaining center drills in a desired position. The device includes an elongated body portion having first and second coaxial tool holder receiving passages extending inwardly from the ends thereof. Tool holders which are dimensioned to be closely received in the tool holder receiving passages have tool element receiving passages extending coaxially inward from the ends thereof which are adapted to closely receive different standard sized center drills. By varying the relative disposition of the tool holders within the body portion, a particular sized center drill may be placed in an operative position.

3,754,768

**HEIGHT CONTROL VALVE FOR VEHICLE LEVELING**

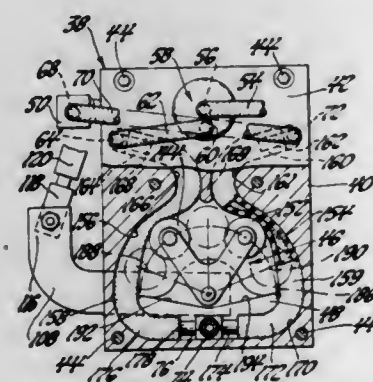
George S. Ellis, Roseville; Bernard J. Finn, Troy, and Charles H. Pinx, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 19, 1972, Ser. No. 245,498

Int. Cl. B60s 9/10

U.S. Cl. 280-6 R

4 Claims



A vehicle height control valve operated in response to vehicle movement includes a housing having a cavity therein with generally circular walls against which an elongated tubing member is supported in juxtaposed relationship. The tube has two ends adapted to be connected to first and second pressure sources and is connected to an output fitting at a point intermediate the tube end. A roller assembly with angularly spaced apart roller elements engages the tubing member to control flow therethrough. A torsion shaft that operates the roller assembly twists to prevent movement of the roller assembly from a centered frictional engagement with the tube thereby to prevent valve operation in response to ordinary vehicle road movements.

3,754,769

**SKI BINDING**

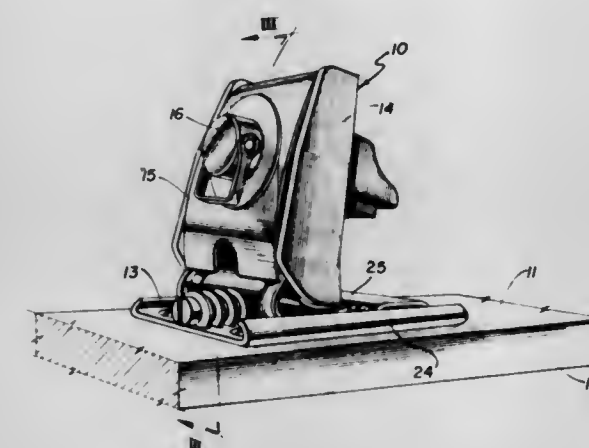
Kenneth L. King, c/o Dovre Ski Binding, Inc., West Concord, Mass.

Filed Nov. 30, 1971, Ser. No. 203,158

Int. Cl. A63c 9/00

U.S. Cl. 280-11.35 T

1 Claim



A ski binding for use against the heel of a ski boot having a large leaf spring to produce release action.

3,754,770

**HEEL HOLDING ASSEMBLY FOR A SAFETY SKI BINDING**

Willy Suhner, Aaraustrasse 38, 5200 Brugg, Switzerland

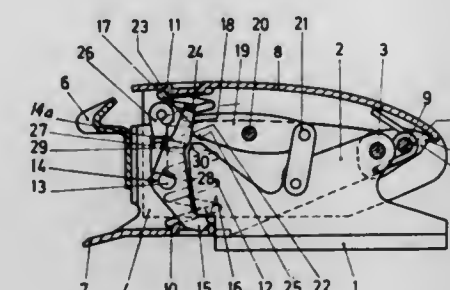
Filed Aug. 3, 1971, Ser. No. 168,555

Claims priority, application Switzerland, Aug. 5, 1970, 11765/70

Int. Cl. A63c 9/00

U.S. Cl. 280-11.35 T

13 Claims



A safety ski binding wherein the heel holding assembly includes a holder which is pivoted with reference to the ski about a transverse horizontal axis when stepped on by the heel of a ski boot. The holder is overlapped by a pivotally mounted support for a retaining lever having a claw which normally engages one or more surfaces on a base which is secured to the ski to thereby hold the support in a locked position. The holder is also mounted on the base and supports a disengaging lever which is coupled to the base by a link and engages the retaining lever to prevent the latter's disengagement from the base while the holder pivots within a range of heel-retaining positions. A helical spring which operates between the support and the holder tends to resist the lifting of the heel when such heel is received in the holder. In the event of a fall, the holder is pivoted beyond a predetermined position and thereby enables the disengaging lever to permit or to cause disengagement of the retaining lever from the base. The two levers thereupon cooperate to automatically pivot the holder to a step-in position in response to expansion of the spring as soon as the claw of the retaining lever is disengaged from the base. The support can be pivoted with reference to the holder and base to permit intentional disengagement of the retaining lever.

3,754,771

**BAG HOLDER**

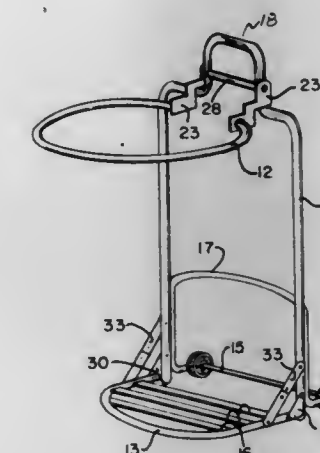
Paul B. Shagoury, 547 Nicholes St., Norwood, Mass.

Filed Nov. 26, 1971, Ser. No. 202,115

Int. Cl. B62b 11/00

U.S. Cl. 280-36 C

1 Claim



A plastic bag holder fitted to receive plastic bags commonly used in yard clean-up and known as leaf bags which is collapsible for easy storage and transportable for greater facility in its use about one's yard.

3,754,772

**APPLIANCE FOR THE TRANSPORT AND LAUNCHING IN PARTICULAR FOR BOATS AND OTHER APPLICATIONS**

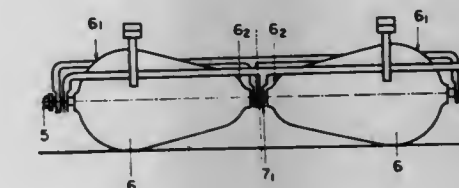
Patrick Carn, 81 Route de Benodet, Quimper (Sud Finistere), France

Continuation-in-part of Ser. No. 889,258, Dec. 30, 1969, abandoned. This application Mar. 10, 1971, Ser. No. 122,752  
Claims priority, application France, Mar. 10, 1970, 7008573

Int. Cl. B60p 3/10

U.S. Cl. 280-47.13 B

6 Claims



This invention relates to improvements in apparatus for transporting of boats and includes wide low pressure wheels of asymmetrical shape to present a large contact area over soft ground while allowing a boat with a V-bottom hull to ride lower in the apparatus, thereby increasing the stability.

3,754,773

**LUGGAGE ROLLERS**

Michael Bruno, 6464 Dry Harbor Rd., Middle Village, N.Y.

Filed Jan. 24, 1972, Ser. No. 220,158

Int. Cl. A45c 13/38; B62b 3/04

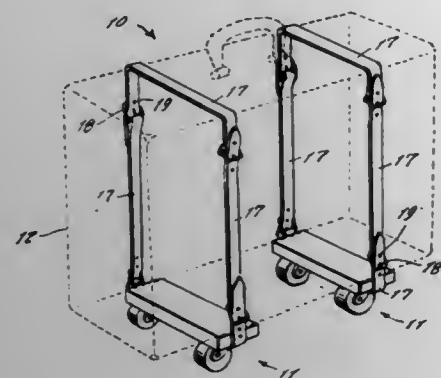
U.S. Cl. 280-47.13 R

2 Claims

A pair of units attachable around a luggage so to permit the luggage to travel along a floor or other surface such as a sidewalk and which eliminates the tiring task of carrying the luggage.



gage particularly when heavy, the units each consisting of a pair of roller casters on the underside of a block placable



against the underside of the suitcase, the block being secured to the suitcase by straps extended up and around the suitcase and secured together by buckles.

3,754,774

**VEHICLE AXLE-FRAME LOCK**

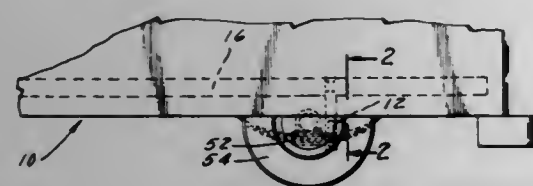
Oscar M. Nelson, 13209 Oval Dr., Whittier, Calif.

Filed Nov. 18, 1971, Ser. No. 200,039

Int. Cl. B60r 27/00

U.S. Cl. 280—150 G

4 Claims



There is disclosed an apparatus for locking a vehicle frame and the axle thereof in a relative position, whereby the axle will move together with the frame when manual adjustment of the vehicle is required. The apparatus comprises an adjustable depending bracket attached to the frame, the bracket being provided with an elongated, vertical slot therein to receive a bolt therethrough, the bolt being slidably mounted to a support plate secured to the axle, and the bolt being operably connected to a flexible cable for positioning the bolt in a locked mode of operation.

3,754,775

**BELT ARRANGEMENT**

Alverson B. Williams, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 26, 1972, Ser. No. 247,565

Int. Cl. B60r 21/10

U.S. Cl. 280—150 SB

4 Claims



A belt arrangement for restraining an occupant of a vehicle body in seated position includes a belt with one end received by an inertia responsive retractor mounted on the vehicle

body adjacent an upper outboard portion of the seat back of the seat. The other end of the belt attaches a first D-ring, while an adjustable attachment secures a second D-ring to an intermediate portion of the belt. The D-rings are respectively received by a pair of buckles located at opposite sides of the seat cushion of the seat to allow use of the belt as a combination lap and shoulder belt and are received by the buckles in an opposite manner to allow use of the belt only as a lap belt. An attachment on the belt between the second D-ring and the retractor allows attachment of the first D-ring while the second D-ring remains secured to the outboard buckle to provide a storage position for the belt arrangement.

3,754,776

**ACTUATOR FOR MOVING A BELT ARRANGEMENT**

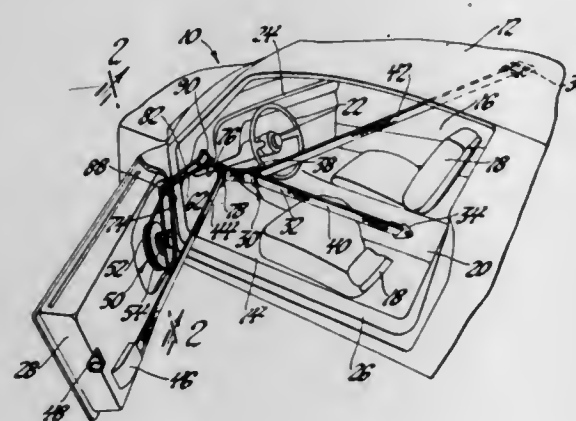
Roy S. Cataldo, Birmingham, and Edward W. Yott, St. Clair Shores, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 15, 1972, Ser. No. 253,207

Int. Cl. B60r 21/10

U.S. Cl. 280—150 SB

7 Claims



An actuator for moving a belt arrangement associated with a vehicle body door from an occupant restraining position to an easy-enter position in response to door opening movement. The actuator includes first and second pulleys mounted on the door for rotational movement with each other and having respective cable receiving spiraling portions which wind in opposite directions to each other and respectively receive first and second cables. The first cable extends from the first pulley and attaches to the belt arrangement, while the second cable extends from the second pulley and attaches to the vehicle body such that opening door movement increases the effective length of this cable between the second pulley and the vehicle body. This increase in effective length unwinds the second cable outwardly from the spiraling portion of the second pulley and rotates both pulleys such that the first cable winds inwardly onto the spiraling portion of the first pulley and pulls the belt arrangement forwardly toward easy-enter position more during the initial door opening movement than during later stages to aid occupant ingress to and egress from the vehicle body with the door in a partially open position.

3,754,777

**AUTOMATICALLY OPERATIVELY POSITIONED AND STORABLE OUTRIGGER PAD**

David K. Riggs, and Frank G. Smith, both of Battle Creek, Mich., assignors to American Fire Apparatus Co., Battle Creek, Mich.

Filed Mar. 9, 1972, Ser. No. 233,209

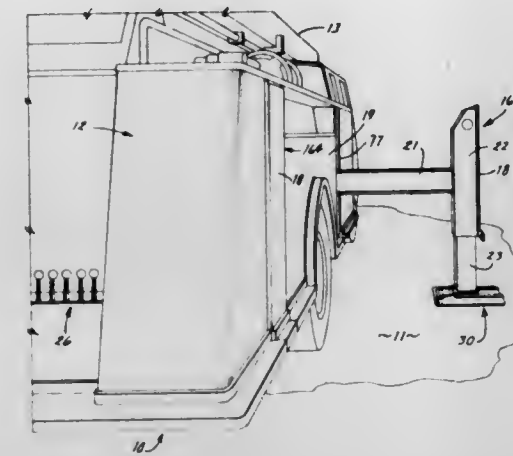
Int. Cl. B60s 9/02

U.S. Cl. 280—150.5

9 Claims

An outrigger pad assembly for an extendible, vehicle stabilizing outrigger. The pad assembly is automatically carried from a position of storage within the perimeter of the vehicle to a ground-engaging position of use by extension of the

outrigger. The pad assembly includes a platelike pad or foot swivelly affixed to the bottom of the outrigger leg and translatable with respect thereto transversely of the truck between a storage position eccentric of the outrigger leg and a use position



tion substantially central of the outrigger leg. The pad area is a large multiple of the cross-sectional area of the outrigger leg and both the outrigger leg and pad store within and substantially flush with the sides of the vehicle.

3,754,778

**INDEXING MEANS AND BOOK FOR ORGANIZED HIERARCHICAL SUBJECT MATTER**

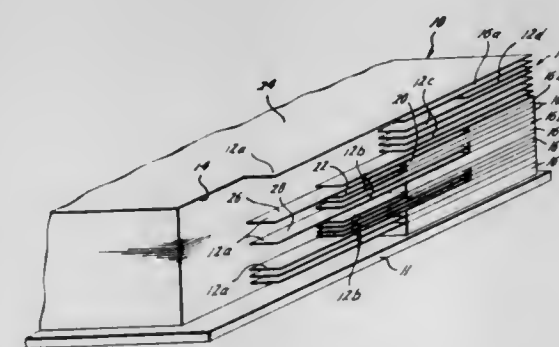
John J. Lenahan, 5107 Mimosa Dr., Bellaire, Tex.

Filed Feb. 22, 1972, Ser. No. 228,041

Int. Cl. B42f 21/04

U.S. Cl. 283—38

10 Claims U.S. Cl. 285—18



A new and improved indexing means and book for organized hierarchical subject matter provides rapid access to the text for the student or user with an overview of the organization of the subject matter therein, while allowing students to progress in individual sequences through the book in accordance with their understanding of the subject matter.

3,754,779

**FLEXIBLE JOINTS**

Joseph S. Peress, Moorcroft, Lammas Ln., Esher Surrey, England

Filed Aug. 30, 1971, Ser. No. 175,978

Claims priority, application Great Britain, Sept. 4, 1970,

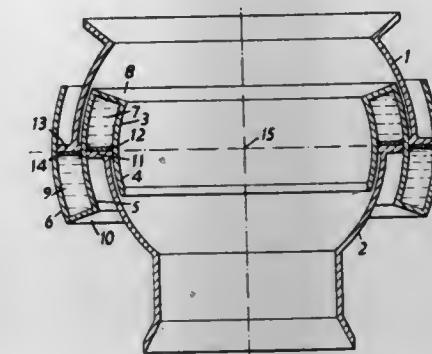
42,619/70; Nov. 25, 1970, 56,174/70

Int. Cl. F16l 27/00

U.S. Cl. 285—11

22 Claims

A flexible joint for use with apparatus subjected to an internal/external pressure differential for example, submersible diving apparatus. The joint comprises an annular female member into which a relatively angularly movable annular male member can extend and which members are coupled



together by an annular connecting member. The couplings between the female member and the connecting member, and between the connecting member and the male member each include an annular piston located within a part-spherical closed annular cylinder filled with fluid.

3,754,780

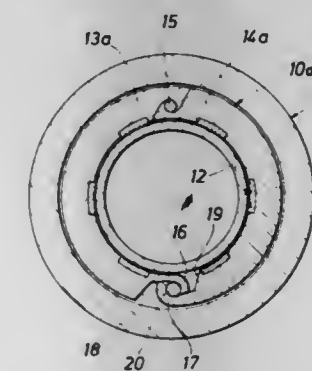
**REMOTE CONTROL LOCKING CLAMP FOR DETACHABLY INTERCONNECTING TWO CONCENTRIC ELEMENTS**

Ivo C. Pogonowski, Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 30, 1971, Ser. No. 175,891

Int. Cl. F16l 35/00

15 Claims



A remote control retractable locking clamp for detachably telescopically connecting a template cylindrical element of an offshore drilling tower with a subsurface structural cylindrical inner pile element, including an elongated circular clamp with tapered overlapping ends positioned between the two cylindrical elements and encircling the pile element. The clamp ends are hook shaped so that the pushing in of a tapered pin therebetween with a reversible motor remotely controlled on the surface increases the overlap and accordingly causes the clamp to grip the outer sleeve element for detachably locking the sleeve to the pile. Pulling out of the tapered pin causes contraction of the clamp for unlocking the sleeve from the pile.

3,754,781

**THERMOPOLASTIC PIPE COUPLING**

Kevin Conroy, Acton, Ontario, Canada, assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Sept. 13, 1971, Ser. No. 179,686

Int. Cl. F16l 21/06

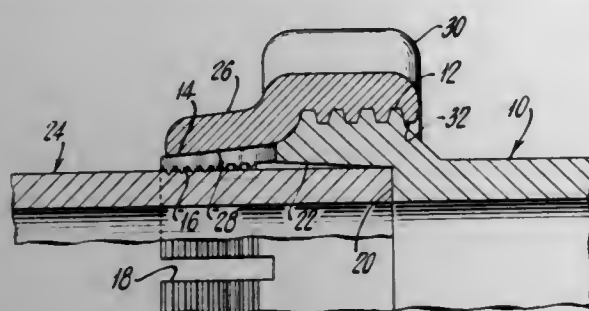
2 Claims

U.S. Cl. 285—322

A coupling for use in joining lengths of plastic pipe compris-



ing a cylindrical body having a socket to receive and securely grip the end of a piece of pipe. The body is engaged by a



locknut having a tapered portion which forces a threaded collet on the body against the pipe to secure it.

3,754,782

**CORNER DEVICE FOR DUCT JOINTS**

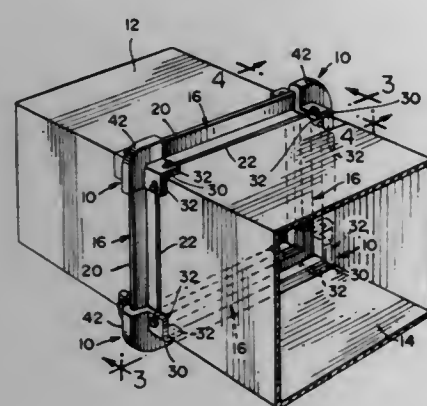
Ernest P. De Lord, Prospect Heights, Ill., assignor to Cleats Mfg. Inc., Chicago, Ill.

Filed June 18, 1971, Ser. No. 154,284

Int. Cl. F16I 25/00

U.S. Cl. 285-424

3 Claims



A corner device for connecting together rectangular ducts in end-to-end relation across a transverse joint comprising angle means adapted to extend longitudinally of the ducts along a corner and across the joint. The angle means includes a pair of flanges adapted to extend along interconnecting walls of the ducts, and each flange has inside end surfaces at opposite ends adapted to be attached to an adjacent duct wall. Corner rib means extends transversely of said angle means outwardly of the flanges away from the duct walls along the joint and includes a rib receiving recess defined therein for receiving an end portion of a joint connector used for interconnecting the adjacent edges of the duct walls.

3,754,783

**LOCKING DEVICE FOR A SLIDING DOOR**

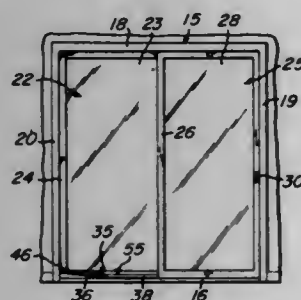
John L. Childers, 191 Blackstone Dr., Centerville, Ohio

Filed Jan. 20, 1972, Ser. No. 219,481

Int. Cl. E05c 17/32

U.S. Cl. 292-263

2 Claims



A sliding door panel is supported by a base track member for sliding movement between open and closed positions ad-

acent a set of opposing vertical jamb members. An elongated locking bar includes two bar sections connected by a hinge, and one of the bar sections is pivotally connected by another hinge to one of the jamb members to provide for movement of the bar sections between a collapsed position adjacent the one jamb member and a generally aligned over-center position extending between the jamb member and the door panel in its closed position. The latter hinge is attached to the one jamb member by a strip of double faced pressure sensitive adhesive material which is protected by a sheet of strippable paper until the locking bar is ready to install. The hinges are constructed of either metal or of a plastics material which form integral hinges and are also attached to the bar sections by strips of pressure sensitive adhesive material.

3,754,784

**VEHICLE BUMPER MOUNTING ARRANGEMENT**

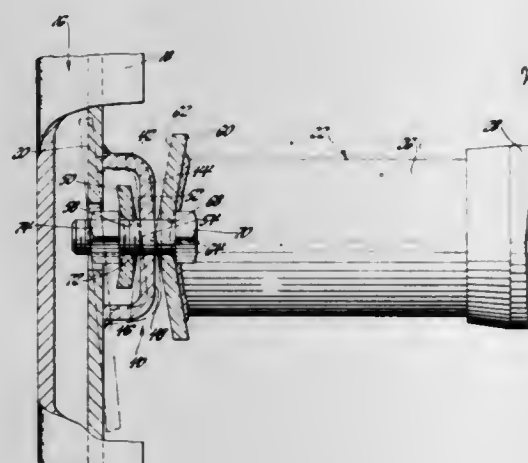
Howard G. Heinig, Flint, and Donald W. Peterson, Fenton, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 26, 1971, Ser. No. 202,265

Int. Cl. B60r 19/04; F16c 5/00

U.S. Cl. 293-99

2 Claims



A bumper bar is mounted on an automobile by a pair of collapsible energy absorbing mounting units attached to the vehicle frame. Bracket assemblies are provided to attach the bumper bar to the mounting units and include knife-edge like bearing surfaces adapted to permit limited transverse cocking of the bumper bar during uneven collapses of the mounting units.

3,754,785

**PORTABLE BAG HOLDER**

John Ernest Anderson, 182 Park Lawn Rd., Toronto 18, Ontario, Canada

Filed Dec. 30, 1970, Ser. No. 102,797

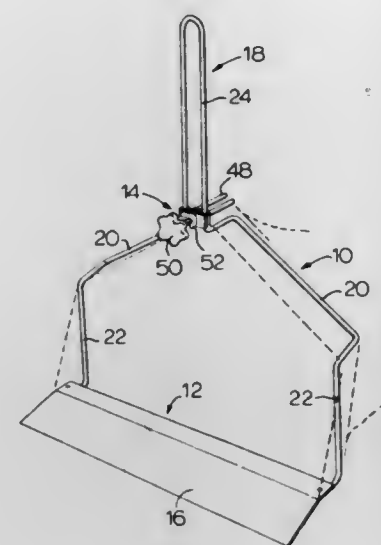
Int. Cl. A47I 13/06

U.S. Cl. 294-19 R

1 Claim

A portable bag holder for detachably mounting a flexible garbage bag thereon is described. Several embodiments described have, as common features, a handle, the provision

of spaced supports for the mouth of the bag, devices for tensioning the mouth of the bag about said supports and a lip is adjustable to satisfy individual needs and preferences and does not interfere with the freedom of the surgeon's hand and



located to extend from the inside to the outside of the bag mouth for facilitating loading of refuse into the bag directly off the ground.

3,754,786

**PLAYSEAT WITH FINGER GUARD**

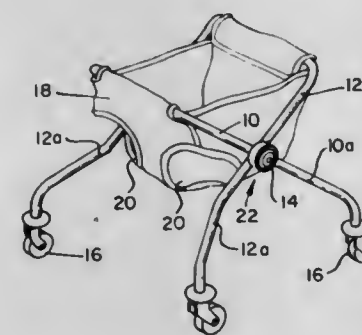
Raymond Boucher, Dothan, Ala., and Robert Boudreau, Bedford, Pa., assignors to Hedstrom Company, Bedford, Pa.

Filed Jan. 12, 1972, Ser. No. 217,137

Int. Cl. A47d 13/04

U.S. Cl. 297-5

5 Claims



A children's playseat comprises two inverted U-shaped members whose legs are pivoted together to form a pair of spaced-apart scissor frames. A rigid bearing plate is mounted between the legs at each pivot point. Each plate has one or more tongues at its periphery which extend transversely to the plane of the plate and engage a leg of the scissor frame to prevent the plate from turning relative to that leg. The plate also has one or more other tongues at its periphery which extend in the opposite direction from the first tongue and which engage the other leg of the frame when the scissor frame is opened to its operative position to limit the further opening of the scissor frame. A cup-like housing engages over the plate and leg portions at the site of each pivot point to shield the occupant's fingers from pinch points at that location.

3,754,787

**OPERATING SUPPORT FOR SURGEONS**

William Wilson Garber, 6501 Hagueman Dr., Richmond, Va.

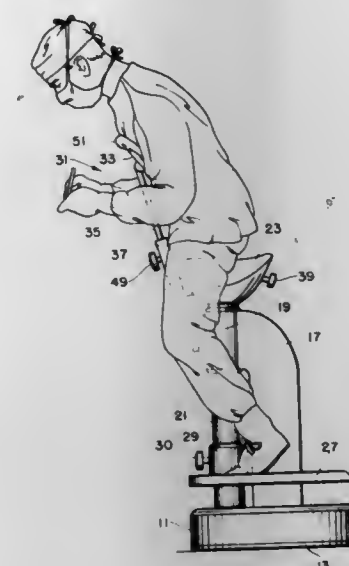
Filed Dec. 2, 1971, Ser. No. 203,980

Int. Cl. A47c 7/62

U.S. Cl. 297-390

6 Claims

Operating room equipment is provided for supporting the body, feet and chest of a surgeon while operating. The support



arm movements. The support is preferably releasably secured adjacent an operating table and may be provided with means for illuminating the operating field.

3,754,788

**COMPOSABLE SEAT STRUCTURE**

Alfredo Martini, Via della Giardina, Monza, Italy

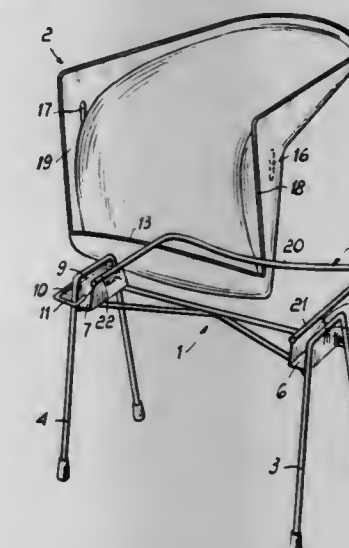
Filed Nov. 27, 1970, Ser. No. 92,995

Claims priority, application Italy, Jan. 17, 1970, 19493 A/70

Int. Cl. A47c 7/00, 7/20, 1/12

U.S. Cl. 297-445

1 Claim



A modular composable seat structure suitable to be connected to other adjacent modular seats comprising a rigid carrying frame and a single piece seat member and a snapping means for removably connecting the said seat member to the said carrying frame.

3,754,789

**PROCESS FOR RECOVERING HEAVY MINERAL BY SELECTIVE SEDIMENTATION FROM A BODY OF FLOWING WATER**

Norbert Hering, Frankfurt, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt/Main, Germany

Continuation-in-part of Ser. No. 66,551, Aug. 24, 1970, abandoned. This application Feb. 17, 1972, Ser. No. 227,246

Claims priority, application Germany, Aug. 26, 1969, P 19 43 301.3; Mar. 27, 1971, P 21 14 925.7

Int. Cl. E21c 45/00

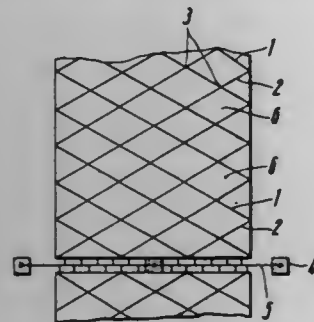
U.S. Cl. 299-8

13 Claims

A process of recovering heavy minerals from a body of natural flowing water in which said minerals are entrained, comprising



- providing in said body of flowing water adjacent the bottom thereof a collecting structure which is capable of promoting a selective settling of said heavy minerals from said body of flowing water,
- artificially agitating the bottom of said body of water upstream of said collecting structure, thereby producing a suspension of said heavy minerals and material of lower density,
- permitting said suspension to flow downstream to said



collecting structure, whereby said heavy minerals selectively settle in said collecting structure and their proportion to total solids in said collecting structures is raised beyond their proportion in said suspension, and

- periodically removing the settled and concentrated heavy minerals from said collecting structure. The collector comprises walls or bristles defining settling cells of limited depth into which heavier particles settle while lighter particles are carried along by the flowing water.

3,754,790

# SELF-PROPELLED VEHICLE FOR A ROCK WORKING MACHINE

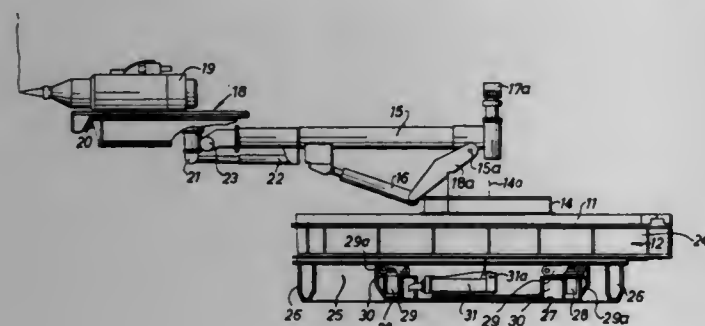
Henry Mappin, Ashton-in-Makerfield, and Joseph Gaskell, Wigan, both of England, assignors to Dobson Park Industries Limited, Nottingham, Nottinghamshire, England  
Filed Nov. 12, 1971, Ser. No. 198,365

Claims priority, application Great Britain, Nov. 18, 1970, 54,722/70

Int. Cl. B25d 17/28

U.S. Cl. 299—31

9 Claims



A vehicle carries an extensible boom rotatable about a horizontal and vertical axes. The end of the boom arm carries a universally articulated rock breaking tool mounting means. The vehicle has two ground engaging sole plates carrying hydraulic rams for raising the remainder of the vehicle from the floor to enable the vehicle to be advanced by a pair of advancing rams which are independently operable to enable the vehicle to be steered. The raising rams act on pivotal links which have rollers at their free ends to bear on an underneath surface of the chassis. The sole plates are in open-bottomed channel-like parts of H-section beams whose upper parts are sealed and act as sumps for hydraulic fluid and as radiators to dissipate heat. Control of the boom is from either side of the vehicle by means of a changeover valve. Control of advancing and reversing movement of the vehicle is from the front or rear of the vehicle.

## 3,754,791 APPARATUS FOR PRODUCING GROOVES IN SURFACES SUCH AS ROAD SURFACES

Hubert Hoermann, Kaufbeuren, Germany, assignor to Firma Unileit-Bayerische Bitumen-Chemie Ferdinand Heinrich, Kaufering, Germany

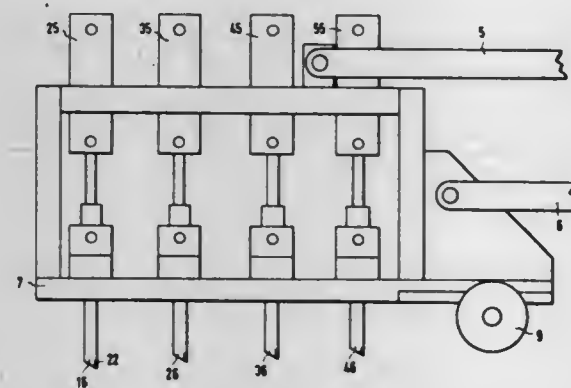
Filed Sept. 28, 1971, Ser. No. 184,439

Claims priority, application Germany, Oct. 9, 1970, P 20 49 588.9

Int. Cl. E01c 23/09

U.S. Cl. 299—36

2 Claims



Grooves are formed in a pavement by means of planing chisels mounted on a tool holder carriage hitched to a tractor by means of a plurality of parallel bars to hold the carriage parallel to the surface to be grooved. The planing chisels are held stationary relative to the tool holder carriage and vertical or perpendicular relative to the surface to be grooved.

3,754,792

# CONTROL VALVE ASSEMBLY

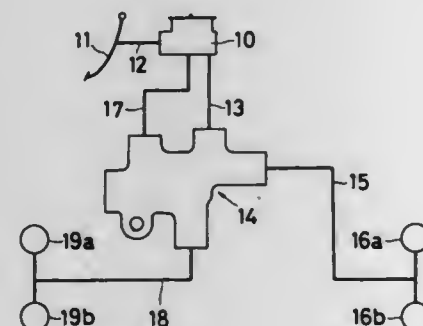
Noriakira Ishigami, Chiryu City, and Massasi Ban, Kariya City, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi Pref., Japan

Filed Mar. 3, 1972, Ser. No. 231,463

Int. Cl. B60t 13/00

U.S. Cl. 303—6 C

5 Claims



A fluid pressure control system for a vehicle comprising front and rear brake cylinders, dual master cylinder having two distinct fluid chambers and a fluid pressure control valve assembly including means for directly delivering fluid pressure supplied from one of the fluid chambers of the dual master cylinder to the front brake cylinders, controlling means for delivering fluid pressure supplied from the other fluid chamber of the dual master cylinder to the rear brake cylinders at a lower rate than fluid pressure generated at the other fluid chamber of the dual master cylinder and means for directly delivering fluid pressure supplied from the other fluid chamber of the dual master cylinder to the rear brake cylinders in the event of hydraulic failure of the front brakes.

3,754,793

# SPRING BRAKE CONTROL VALVE

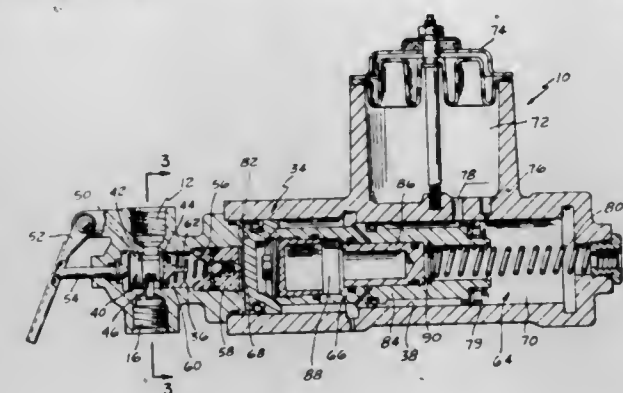
Robert E. Meyers, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Dec. 3, 1971, Ser. No. 204,569

Int. Cl. B60t 13/22

U.S. Cl. 303—13

18 Claims



A spring brake control valve is disclosed which is used in a vehicular hydraulic system for developing pressure to release the vehicle's spring-applied emergency and parking brake. The valve includes a housing having an inlet and outlet connected to the vehicle's hydraulic system and a chamber communicated to the spring brake release mechanism. Valve means within the housing normally permits uninhibited flow of fluid between the inlet and outlet, but is movable to a position restricting fluid flow between the inlet and outlet to develop back pressure in the hydraulic system to develop pressure in the chamber communicated to the spring brake release mechanism with a fluid at a predetermined pressure level. The valve means is movable to yet another position to release the fluid pressure communicated to the release mechanism when the vehicle is parked.

3,754,794

# PNEUMATIC ANTISKID BRAKING SYSTEM

Philippe Durand, Saint-Denis, France, assignor to Societe Anonyme D.B.A., Paris, France

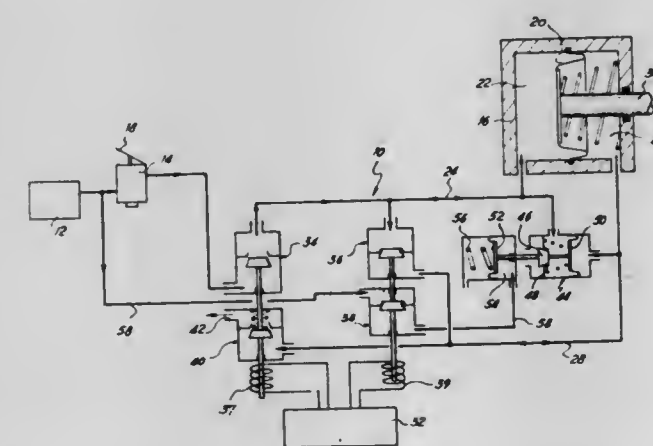
Filed Dec. 8, 1971, Ser. No. 205,851

Claims priority, application France, Dec. 11, 1970, 7044703

Int. Cl. B60t 8/06

U.S. Cl. 303—21 F

3 Claims



The invention relates to a pneumatic antiskid braking system for vehicles equipped with pneumatic power assistance.

An exhaust valve designed to connect the motor chamber of a brake motor to the atmosphere is controlled on the one hand by a piston submitted to motor pressure differential between the two opposite chambers of the brake motor, and on the other hand by a control submitted to the opposed efforts provided by a preloaded spring and by a pilot pressure controlled by a valve operatively actuated by the antiskid control unit.

3,754,795

# VEHICLE BRAKING SYSTEM

Alexander Von Lowis, Mauren, and Josef Trui, Bissingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

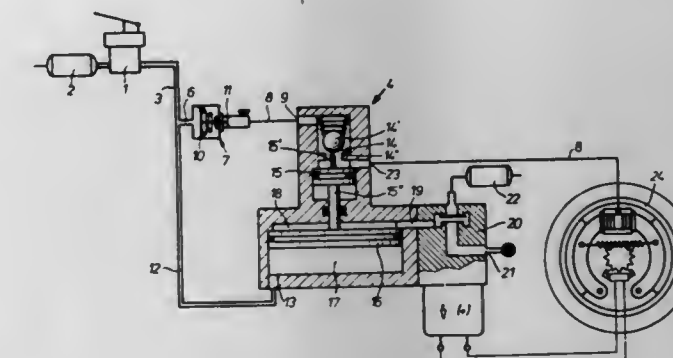
Filed Aug. 5, 1971, Ser. No. 169,335

Claims priority, application Germany, Aug. 13, 1970, P 20 40 206.6

Int. Cl. B60t 8/02

U.S. Cl. 303—21 F

4 Claims



Rotatable road wheels of a vehicle are associated with fluid-operated brakes and with pressure-exerting brake-operating means for operating the brakes. An anti-blocking system is provided between the brakes and the brake-operating means and has a sensor which senses the revolutions of the road wheels, an electromagnetic valve controlled by the sensor and able to switch on and off a source of compressed air, a control valve which controls the flow of brake fluid to the brakes and which is movable between an open and a closed position, and a reducing piston which switches the control valve between its positions and which is movable in a sense switching the control valve to closed position under the influence of pressure fluid from the compressed air source, and in a sense switching the control valve to open position under the influence of pressure exerted by the brake-operating means.

3,754,796

# HYDRAULIC PRESSURE MODULATOR FOR USE IN ADAPTIVE BRAKING SYSTEMS

Michael Slavin, and Ralph W. Carp, both of Baltimore, Md., assignors to The Bendix Corporation, Southfield, Mich.

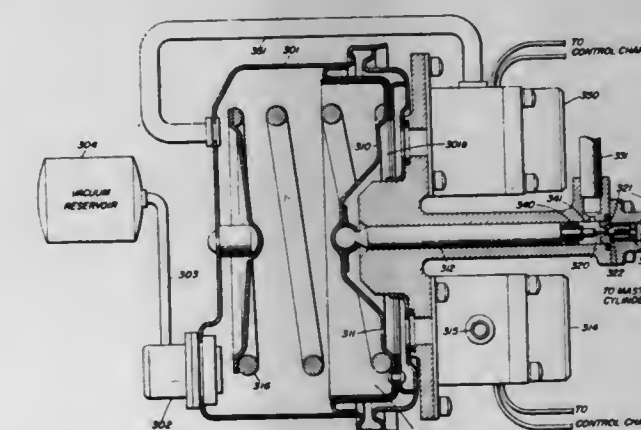
Division of Ser. No. 867,840, Oct. 20, 1969, Pat. No.

3,669,403, which is a division of Ser. No. 712,672, March 13, 1968, Pat. No. 3,494,671. This application Aug. 19, 1971, Ser. No. 173,268

Int. Cl. B60t 8/12

U.S. Cl. 303—21 F

3 Claims



A vacuum actuated hydraulic pressure modulator for use in an adaptive braking system for automobiles, trucks and the like, which is interposed in the vehicle hydraulic brake line



between the master cylinder and the wheel cylinders to be controlled in response to error signals generated in an adaptive braking system control channel includes a diaphragm and a cooperating displacement rod within the modulator body which are positioned in accordance with the volumetric rate of air admitted to one side of the diaphragm by a solenoid valve which opens in response to an error signal generated by the adaptive braking system control channel when the vehicle wheels attain a certain dynamic condition. The displacement rod cooperates with a ball valve to normally allow free communication between the master cylinder and wheel cylinder; however, when the air is admitted through the solenoid valve in response to the error signal the displacement rod is displaced so as to isolate the wheel cylinders from the master cylinder and additionally to rapidly attenuate the hydraulic pressure at the wheel cylinders. In response to the decreasing brake pressure at the wheel cylinders, the wheel begins to accelerate to its vehicle speed. At another dynamic wheel condition, the error signal is extinguished thereby closing the solenoid valve. The modulated diaphragm and displacement rod are now repositioned so as to slowly increase the braking pressure, the rate of pressure increase being determined by the amount of air leakage across the modulator diaphragm. If wheel acceleration, in spite of the increasing brake pressure, increases to a third reference level, a modulator bypass valve is opened in response to a second control channel error signal so as to pneumatically shunt the aforementioned diaphragm causing the displacement rod and diaphragm to be repositioned more rapidly, thus increasing the brake pressure at a more rapid rate, which rate is determined by the size of the bypass valve.

3,754,797

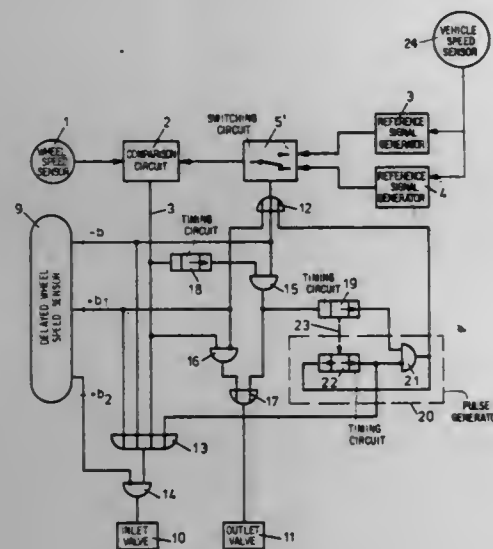
## SKID CONTROL SYSTEM

Anton Rodi, Karlsruhe; Heinz Leiber, Leimen; Wolf-Dieter Jonner, Heidelberg-Boxberg, and Wolfgang Korasiak, Ketsch, all of Germany, assignors to Teldix G.m.b.H., Heidelberg, Germany  
Filed Nov. 12, 1971, Ser. No. 198,336  
Claims priority, application Germany, Dec. 28, 1970, P 20 63 944.5

Int. Cl. B60t 8/08

U.S. Cl. 303—21 BE

20 Claims



An antilocking control system for controlling brake pressure in a vehicle. A first reference signal generator and a second reference signal generator are provided. The two reference signal generators each develops a separate reference signal which approximates in its time sequence the speed of the vehicle. The second reference signal is lower in value than the first reference signal. A wheel speed sensor is provided for supplying a signal which corresponds to wheel speed. The signal which corresponds to wheel speed is com-

pared alternately with the two reference signals in a comparison circuit which develops, as its output, a control signal. A valve arrangement responsive to the control signal controls fluid pressure.

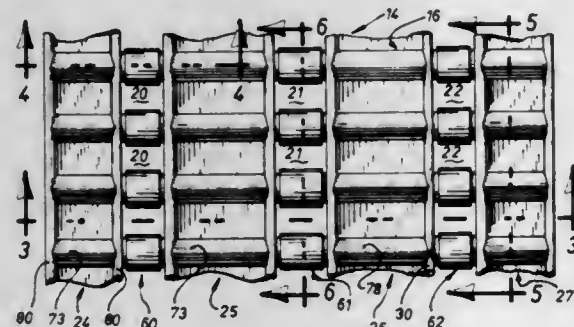
3,754,798

## TRACK FOR SNOWMOBILE OR THE LIKE

Guy-Noel Chaumont, Tring-Jonction, Quebec, Canada, assignor to Dayco Corporation, Dayton, Ohio  
Filed Mar. 2, 1971, Ser. No. 120,159  
Int. Cl. B62d 55/24

U.S. Cl. 305—38

7 Claims



The disclosure herein describes an endless flexible track for a snowmobile or the like which comprises at least two laterally spaced and longitudinally extending strips of elastomeric material, a plurality of equidistantly spaced reinforcing members incorporated in the strips and extending transversely thereof, and roller means rotatably mounted on the reinforcing members and defining between the strips at least one row of sprocket-teeth-receiving openings. This type of construction considerably diminishes wear due to friction between the sprocket teeth and the flexible track looped around the driving and idler sprockets.

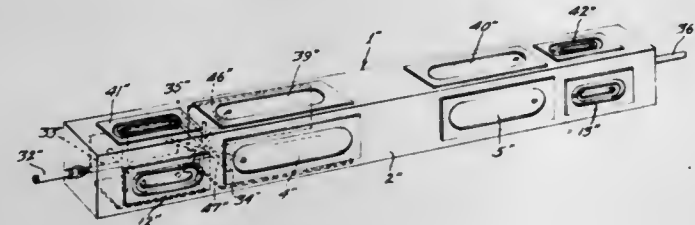
3,754,799

## MOVABLE MACHINE ELEMENT SUPPORTED WITH THE AID OF A GAS OR FLUID BEARING

Olof Johan Gerhard Hedberg, Lidköping, Sweden, assignor to Lidköpings Mekaniska Verkstads AB, Lidköping, Sweden  
Filed Nov. 18, 1971, Ser. No. 200,012  
Int. Cl. F16c 17/00

U.S. Cl. 308—5 R

6 Claims



Movable machine element such as a rotating shaft or a reciprocating rod with an arbitrary cross section which partly or entirely is supported with the aid of a gas or fluid bearing or a combination of both in such a way that the medium, gas or fluid, before it forms a bearing or a slide cushion passes a throttle, characterized in that each throttle is formed by a part of a surface of the element, which surface is supported at the surface facing it by means of a gas or fluid cushion, and by a part of the last-mentioned surface, which last-mentioned part faces the first-mentioned part.

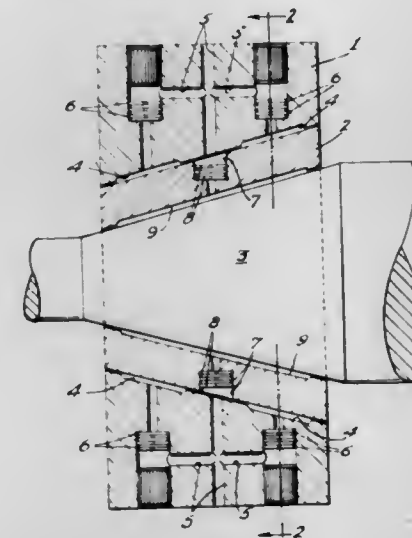
3,754,800

## HYDROSTATIC BEARING

Erik Lennart Waldemar Johansson, Goteborg, Sweden, assignor to SKF Industrial Trading and Development Company, N.V., Amsterdam, Netherlands  
Filed Jan. 17, 1972, Ser. No. 218,420  
Claims priority, application Sweden, Jan. 25, 1971, 790/71  
Int. Cl. F16c 17/16

U.S. Cl. 308—9

3 Claims



A hydrostatic bearing with two bearing surfaces which are movable relative to each other, characterized by a movable element, situated between these surfaces, which element is provided with two surfaces which together with the said bearing surfaces constitute two bearing gaps, one on each side of the intermediate element, and that the intermediate element, because of the friction occurring in the respective gaps when the first mentioned bearing surfaces are moving relative to each other, is moving at a speed which makes the frictional losses in the two gaps equal.

3,754,801

## SUBSTANTIALLY RIGID BEARING MOUNTING FOR ROTARY BODIES

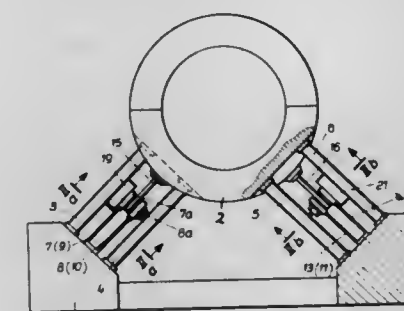
Alfred J. Giers, Rosdorf; Friedhelm Widmann, Gross-Zimmern, and Manfred Helland, Hahn/Pfungstadt, all of Germany, assignors to Firma Carl Schenck Maschinenfabrik GmbH, Darmstadt, Postfach, Germany  
Filed Nov. 15, 1971, Ser. No. 198,691

Claims priority, application Germany, Aug. 19, 1971, P 21 41 502.1

Int. Cl. F16c 35/00

U.S. Cl. 308—15

4 Claims



A substantially rigid bearing mounting for rotary bodies, especially for balancing machines comprises, in addition to the main supporting rods, sets of auxiliary supporting means which are controllable, for example, by a piston cylinder arrangement to vary their frictional force transmitting ability, whereby the resonant frequency of the entire structure may be varied or controlled.

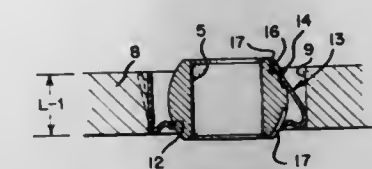
3,754,802

## SELF-ALIGNING BEARING ASSEMBLY

Joseph R. Keller, Fairfield, Conn., assignor to MPB Corporation, Keene, N.H.  
Filed Jan. 25, 1972, Ser. No. 220,572  
Int. Cl. F16c 23/04

U.S. Cl. 308—72

25 Claims



A self-aligning bearing assembly having a single piece, stamped housing of general cup-shaped configuration, an opening in the bottom of the housing for seating a spherical bearing ball and spring fingers extending from the bottom of the housing for engaging the diametrically opposite side of the ball and retaining it in the housing.

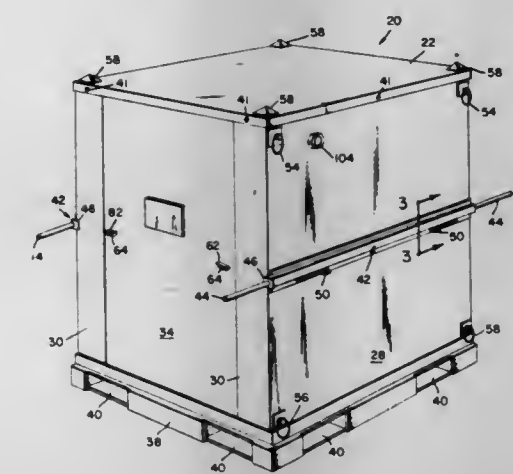
3,754,803

## EQUIPMENT TRANSPORTER AND STORAGE MODULE

Paul Underwood, Garden Grove, and Douglas A. Miller, Playa del Rey, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.  
Filed Sept. 30, 1971, Ser. No. 185,215  
Int. Cl. A24f 25/00

U.S. Cl. 312—31

24 Claims



Capable of withstanding minimum forces of 300G and frequencies from zero to 50 Hz, the invention comprises a light weight, reusable, humidity controlled, controlled breathing, shipping and storage container with removable access doors at both ends. A carriage is suspended inside the exterior container by means of shock and vibration isolators. The carriage carries two or more shelves, the top shelf being hinged at both ends of the container at the doors to permit easy access to the lower shelf.

3,754,804

## BATHROOM TISSUE DISPENSER

Hal E. Cushman, 709 East 1st, Cle Elum, Wash.  
Filed July 26, 1972, Ser. No. 275,176  
Int. Cl. B65d 83/00

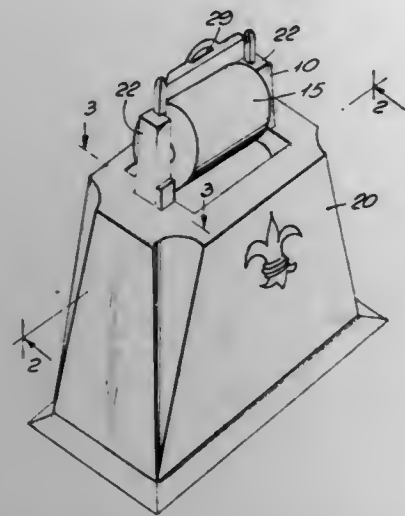
U.S. Cl. 312—71

4 Claims

A disposable pre-packed rack containing several rolls of toilet tissue which fit into a mating floor mounted dispenser. Springs and latches in the dispenser engage the rack to expose



one roll at a time of tissue mounted on a rotatable spindle fastened to the rack. Upon complete use of the exposed roll,



the dispenser is unlatched to expose a second roll of tissue, and the portion of the rack containing the initial spindle is broken off, or otherwise detached.

3,754,805

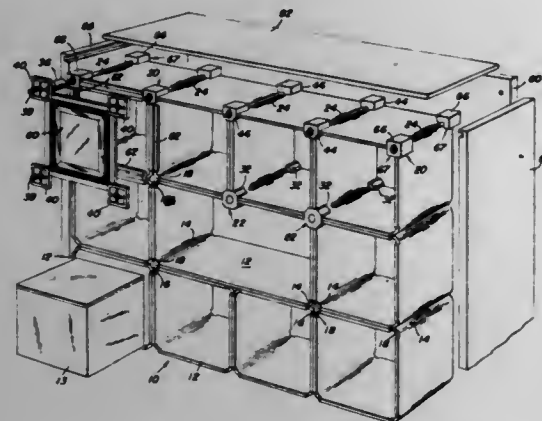
## URN STORAGE ASSEMBLY

Thomas W. Pangburn, Sewickly, and Kenneth Pavlitsa, Pittsburgh, both of Pa., assignors to Jas. H. Matthews & Co., Pittsburgh, Pa.

Filed Nov. 15, 1971, Ser. No. 198,645  
Int. Cl. F16b 12/00

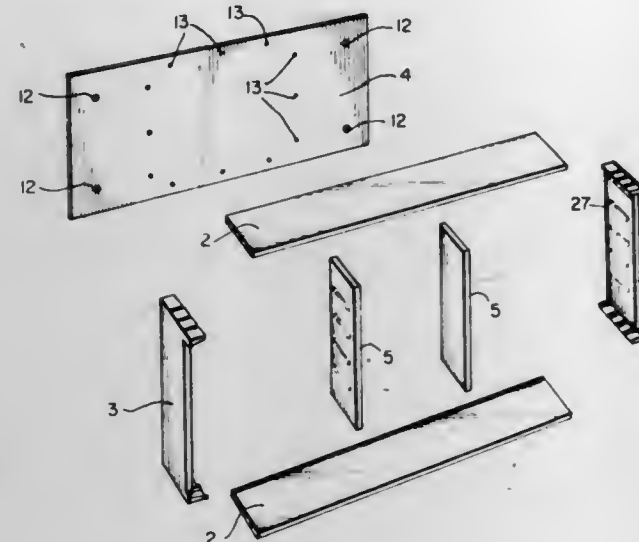
U.S. Cl. 312-111

8 Claims



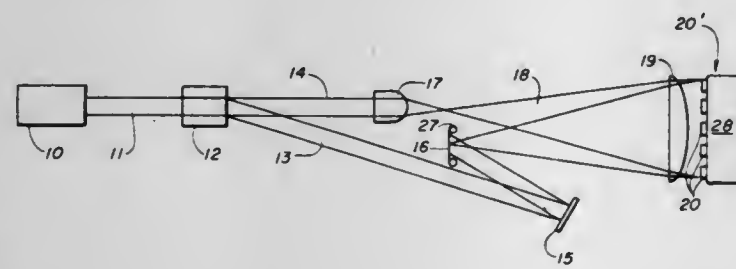
An urn storage assembly for the interment of cremated remains is disclosed. The assembly includes a plurality of tubular storage members of generally rectangular cross-section, shaped to receive cremated remain storage urns. The storage members are nested in abutting side-by-side and top-to-bottom relationship to one another. Each storage member has generally rounded axial corners whereby axially extending passageways are defined among the corners of abutting storage members. Securing means in the form of clips are provided for holding the storage members in fixed relationship with each other. The clips are sized and shaped to snugly grasp the corner portions of the ends of the adjacent nested support members. One form of clip is shaped to fit within the four corners of four adjacent support members while another form is shaped to fit within two corners of two side-by-side or top-to-bottom abutting support members. Each pair of oppositely arranged clips are held together by a rod engaging the clips and extending through the passageway defined among the axial corners of adjacent storage members. Cover plates removably secured to the clips and decorative edge strips for covering the exposed outer edges of the support members are also provided.

3,754,806  
FRAME STRUCTURE FOR BATHROOM CABINETS  
Yasuharu Nakagawa, Suita, Japan, assignor to Toyo Plastic Co. Ltd., Osaka, Japan  
Filed July 29, 1971, Ser. No. 167,345  
Claims priority, application Japan, Aug. 5, 1970, 45/78385  
Int. Cl. A47b 43/00, 87/00; A47f 5/08  
U.S. Cl. 312-257 3 Claims



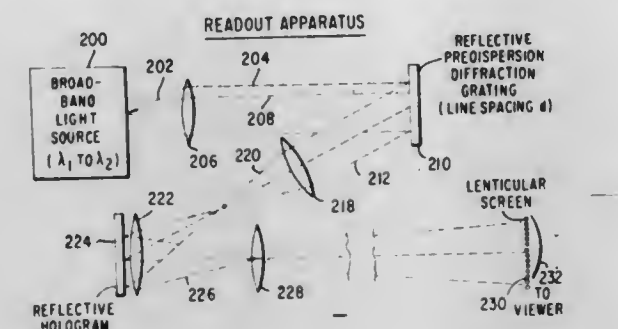
A frame structured plastic bathroom cabinet, including at least two side profiles or components having arms extending at right angles at the lower and upper ends and two hollow upper and lower profiles or components with open ends to receive the arms of the side profiles so as to form a framed enclosure, said enclosure being capable of vertical and horizontal division into compartments.

3,754,807  
PHASE MODULATION HOLOGRAPHIC DATA RECORDING APPARATUS  
Donald H. McMahon, Carlisle, and James Bruce Thaxter, Townsend, both of Mass., assignors to Sperry Rand Corporation, New York, N.Y.  
Filed Dec. 6, 1971, Ser. No. 204,808  
Int. Cl. G02b 27/00  
U.S. Cl. 350-3.5 7 Claims



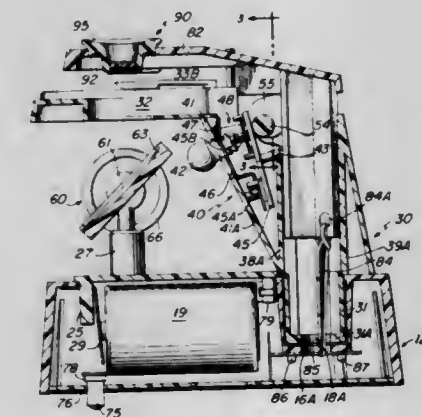
A holographic apparatus for recording digital data comprising a recording medium and means for producing coherently related reference and signal beams in combination with a plurality of phase modulators disposed across the path of the signal beam and each responsive to a discrete bit of the digital data to be recorded. In the absence of electrical excitation applied to the modulators, the entire signal beam would normally interfere with the reference beam to produce high intensity interference fringes. Application of electrical energy representative of discrete digital bits, however, to one or more of the modulators causes the associated portions of the signal beam to be varied in phase such that interference thereof with the reference beam is substantially weakened whereby upon illumination of the developed hologram for readout only the unmodulated parts of the signal beam are reproduced.

3,754,808  
HOLOGRAPHIC READOUT SYSTEM EMPLOYING  
PREDISPERSION DIFFRACTION GRATING  
Burton Ross Clay, Wayland, and Douglas Alan Gore, Billerica, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.  
Filed Aug. 30, 1971, Ser. No. 176,178  
Int. Cl. G02b 27/00 6 Claims  
U.S. Cl. 350-3.5



A hologram recorded with coherent wave energy of a predetermined wavelength is read out with broad-band energy by employing a predispersion diffraction grating for angularly dispersing broad-band wave energy incident thereon to provide each angular component of the output beam derived therefrom with a different angular orientation with respect to the hologram. By appropriately selecting the line spacing of the diffraction grating with respect to the period of the spatial carrier of the hologram, a hologram read out with the output beam of the grating may have the respective reconstructed images corresponding to each component wavelength positioned in substantial coincidence with each other.

3,754,809  
MICROSCOPE  
Burton H. Harrison, Weston, Mass., assignor to Selective Educational Equipment, Inc., Newton, Mass.  
Filed Feb. 3, 1972, Ser. No. 223,120  
Int. Cl. G02b 21/06 6 Claims  
U.S. Cl. 350-87



A microscope including a base and a support arm extending upwardly from the base and projecting over a portion of the base. A lens carrier is positioned on and movable with reference to the support arm, and includes lens receiving means. A cam means is provided to raise and lower the lens carrier.

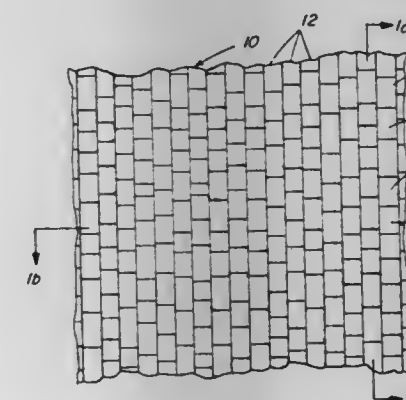
The microscope also includes a mirror, a bulb positioned adjacent to the mirror, a battery, and a pushbutton switch. The pushbutton switch is arranged to protrude in part below the bottom surface of the base and is closed to illuminate the bulb when the edge of the microscope base is depressed to a position flush with the supporting surface.

3,754,810  
CONVERTIBLE SUNSHADE AND NON-GLARE VISOR  
Frank J. Starczewski, 1225 W. 31st Pl., Chicago, Ill., and Robert E. Spychalski, 6214 S. Kilpatrick Ave., Chicago, Ill.  
Filed Feb. 15, 1972, Ser. No. 226,485  
Int. Cl. B60j 11/00; G02b 5/30 6 Claims  
U.S. Cl. 350-156



A transparent non-glare visor body having a removable, flexible opaque cover, which is mounted to entirely enclose the visor body when said visor body is not used to protect viewing against glare of sunlight. The non-glare visor body is plastic with safety trim edging along the free edges of the visor body. The flexible cover has safety material to provide cushioning.

3,754,811  
PROJECTION SCREEN  
Harvey O. Hoadley; Robert N. Wolfe; Harold F. Langworthy, and James J. Depalma, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.  
Filed Dec. 13, 1971, Ser. No. 207,084  
Int. Cl. G03b 21/06 19 Claims  
U.S. Cl. 350-127



A highly efficient projection screen of improved aesthetic quality. The screen comprises a plurality of contiguous grooves, each groove having a depth which undulates at a random spatial frequency within a predefined spatial frequency range to define a row of contiguous microelements of random sizes, preferably alternating from concave to convex in shape. Each microelement is contoured to redistribute substantially all of the incident image flux through a predefined audience space in such manner that its luminance, viewed from any point in the audience space, is substantially constant.

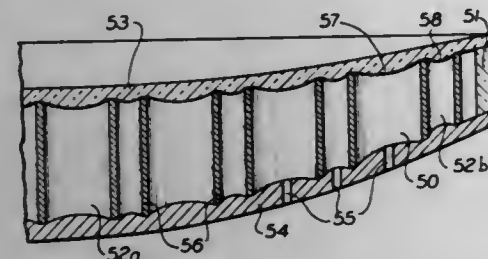


3,754,812

# **LIGHTWEIGHT OPTICAL ELEMENTS WITH HONEYCOMB SUPPORT PLATE**

Heinrich Mohn, Hailer, Kreis Gelnhausen, Germany, assignor to Heraeus-Schott Quarzschmelze GmbH, Hanau, Germany  
Continuation-in-part of Ser. No. 491,525, Sept. 30, 1965, abandoned, Continuation-in-part of Ser. No. 630,147, Sept. 23, 1966, abandoned, Continuation of Ser. No. 825,087, March 20, 1969, abandoned. This application Mar. 4, 1971, Ser. No. 153,799

Int. Cl. G02b 5/08  
U.S. Cl. 350—167



A light weight optical assembly comprising an optical surface, such as a mirror or an optically transparent surface, which surface is in the form of a plate and is supported by and fused to a fused silica perforated support structure, which support structure comprises walls extending longitudinally transverse to the major surfaces of the optical plate wherein the optical plate is fused to the walls at the interface of the ends of the walls and the rear surface of the optical plate, especially a device having a supporting structure whose perforations are of a diameter between 40 and 80 mm, which perforations are substantially uniformly distributed throughout its area, all extending generally axially parallel to each other, especially a support structure comprising large and small perforations with said small perforations having a smaller diameter, at least at the outer edge of the supporting structure.

3,754,813

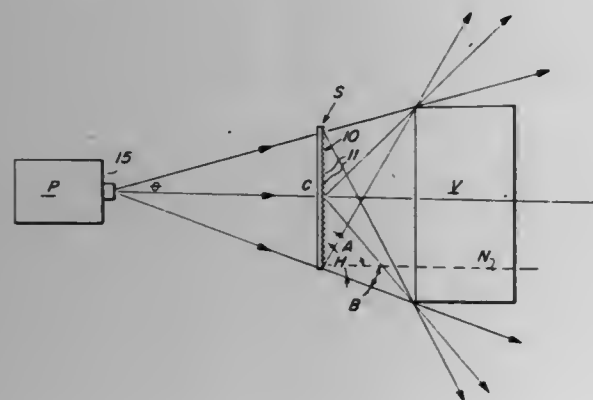
# **RADIATION-REDISTRIBUTIVE DEVICES**

James J. Depalma, and Harold F. Langworthy, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,082  
Int. Cl. G03b 21/60

U.S. Cl. 350—127

18 Claims



Devices for redistributing incident radiation in a prescribed manner. Such devices comprise a multitude of contiguous optical microelements, each of such microelements being contoured and oriented to redistribute incident radiation, emanating from an intended irradiating source, only throughout an angular field just large enough to encompass a predefined region wherein the redistributed radiation has particular utility.

Moreover, the contour and orientation of each microelement is such as to produce substantially uniform radiance throughout such predefined region of utility, and to redirect extraneous or undesirable radiation incident thereon away from said predefined region. The radiation-redistributive devices of the invention are particularly useful as front or rear projection screens, lighting reflectors or refractors, illumination aids for photographic prints, traffic signs, advertisements, etc., etc.

3,754,814

# **COHERENT IMAGING WITH REDUCED SPECKLE**

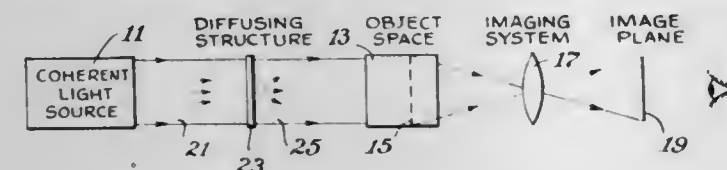
Emmett N. Leith, Plymouth, Mich., assignor to Battelle Development Corporation, Columbus, Ohio

Continuation of Ser. No. 820,879, May 1, 1969, abandoned. This application Jan. 19, 1971, Ser. No. 107,853

Int. Cl. G02b 5/02

U.S. Cl. 350—162 R

20 Claims



An improved technique for imaging a multiplicity of planes of non-diffuse objects, including non-diffuse transparencies, with coherent illumination which utilizes a diffusion structure having a periodic phase thereacross.

3,754,815

# **ROTATABLE MIRROR ANGULAR POSITION ELECTRONIC MEASURING SYSTEM FOR ACTIVATING A DIGITAL DISPLAY**

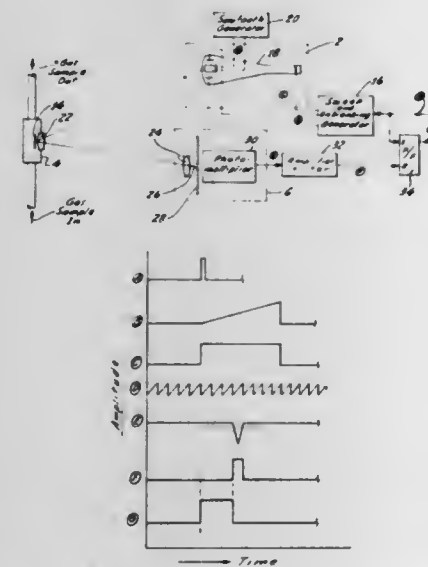
Clifford Sanctuary, Palos Verdes Estates, and Donald C. Woods, Big Bear City, both of Calif., assignors to Del Mar Engineering Laboratories, Los Angeles, Calif.

Filed Mar. 17, 1972, Ser. No. 235,540

Int. Cl. G02f 1/34; G01c 1/00

U.S. Cl. 350—285

5 Claims



An electronic measuring system is provided which measure: the angular position of a rotatable mirror so as to provide an electrical output signal suitable for activating a digital display or for introduction into a computer for further processing. The mirror, for example, may be incorporated into a galvanometer, gas analyzer, or other measuring instrument. In the practice of the invention, a moving light spot is directed to the mirror for reflection thereby to a photo-detector assembly. The reflected light spot reaches the photo-detector after a time interval which is dependent upon the angular position of the mirror, so that an electrical output signal representative of the angular position of the mirror may be obtained.

3,754,816

# **STEEP-EDGE ABSORPTION FILTER**

Willi Ritzke, Mainz, Mombach, Germany, assignor to Jenaer Glaswerk Schott & Gen., Mainz, Germany

Filed Nov. 15, 1967, Ser. No. 683,228

Claims priority, application Germany, Nov. 25, 1966, J 32335

Int. Cl. G02b 5/22; C03c 3/22

U.S. Cl. 350—311

1 Claim

There is disclosed glass compositions, i.e., filters characterized by steep edged absorption curves in the wave length range  $\lambda = 380 - 475$  nm. The filters are prepared by heat treating glass samples having the following composition at a temperature between  $550^\circ$  and  $620^\circ$  C at which CdS + ZnS color centers are formed:

	wt-percent
SiO <sub>2</sub> .....	44 - 66
K <sub>2</sub> O.....	8 - 24
ZnO.....	12 - 24
B <sub>2</sub> O <sub>3</sub> .....	0 - 8
Na <sub>2</sub> O.....	0 - 4
Al <sub>2</sub> O <sub>3</sub> .....	0 - 3
MgO.....	0 - 6
CaO.....	0 - 12
BaO.....	0 - 8
SrO.....	0 - 12
ZnS.....	0.5 - 2.4
CdS.....	0.5 - 1.5

3,754,817

# **APPARATUS FOR RETRIEVING FILM SHEETS**

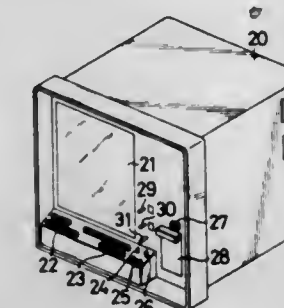
Takeo Iida, Setagayaku, Tokyo; Shiro Toriumi, Nerimaku, Tokyo; Masahiro Yamamoto, Shinagawaku, Tokyo, and Hiroshi Endo, Fuchu, Tokyo, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

Filed Nov. 3, 1971, Ser. No. 195,159

Int. Cl. G03b 23/08, 21/00

U.S. Cl. 353—27

12 Claims



A retrieval apparatus comprises a lifter carrying an unloadable cassette in the form of a rectangular box containing a great number of film sheets, a retrieving mechanism for selecting and taking out a film sheet from the cassette in operative relation to the upward movement of the lifter, a positioning mechanism for receiving the selected film sheet from the retrieving mechanism by way of a delivery mechanism and setting the desired frame of the film sheet at the projecting position in accordance with a signal instruction, and a returning mechanism for returning the film sheet into the cassette after completion of projection. After the cassette is placed on the lifter, the opening of the lid of the cassette, selection and positioning of the film sheet, projection, and returning the film sheet into the cassette are all conducted automatically.

3,754,818

# **PROJECTOR FOR PHOTOGRAPHIC TRANSPARENCIES**

Rolf Gehlert, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 12, 1971, Ser. No. 114,906

Claims priority, application Germany, Feb. 17, 1970, G 70 05 576.4

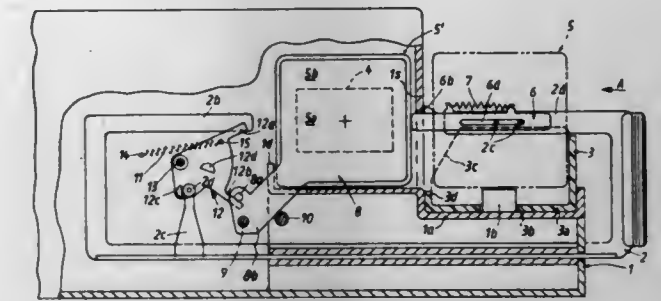
Int. Cl. G03b 23/04

U.S. Cl. 353—92

9 Claims

A projector for color slides wherein a shutter moves in front of the slide which is held in projection position before the slide begins its return movement into the magazine and wherein the

shutter moves out of registry with a slide in projection position after the slide comes to a full stop. The shutter is movable by a lever which is pivotable by the slide changer, by a rotary electromagnet or motor which is energizable by the slide changer, or by a disk which is rotated by a motor and has a cam



cooperating with a follower on a linkage which is connected with the shutter. The disk also carries an eccentric wiper which cooperates with a cam on the slide changer to move the slide changer while the shutter is at a standstill in front of a slide in projection position.

3,754,819

# **APPARATUS FOR PLACING ROLLERS IN CONTACT IN A PRESSURE FUSER ASSEMBLY**

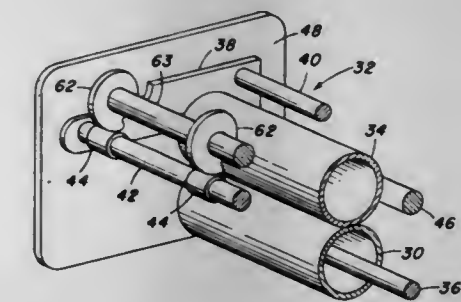
Oskar Braun, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 30, 1971, Ser. No. 214,304

Int. Cl. H05b 3/10; G03g 15/20

U.S. Cl. 355—3

7 Claims



A cam assembly is mounted on an electrostatographic machine in contact with a structure bar of a pressure roller assembly. Upon activation of a motor, the cam shaft is caused to rotate through a suitable gearing arrangement thereby swinging the assembly about an axis to place the pressure roller in contact with the fuser roller. Upon reaching the end stop position, a solenoid is activated to lock by appropriate linkage the rollers in operational position. Upon deactivation of the solenoid the cam shaft is caused to rotate to its standby position by a torsional spring affixed to the shaft and to the support assembly.

3,754,820

# **COPIER-DUPPLICATOR MACHINE**

Loren Sheffo, Platine, and Henry A. Mathisen, Northbrook, both of Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Division of Ser. No. 735,402, June 7, 1968, Pat. No. 3,612,682.

This application Apr. 16, 1971, Ser. No. 134,846

Apr. 16, 1971, Ser. No. 134,846

Int. Cl. G03g 15/00

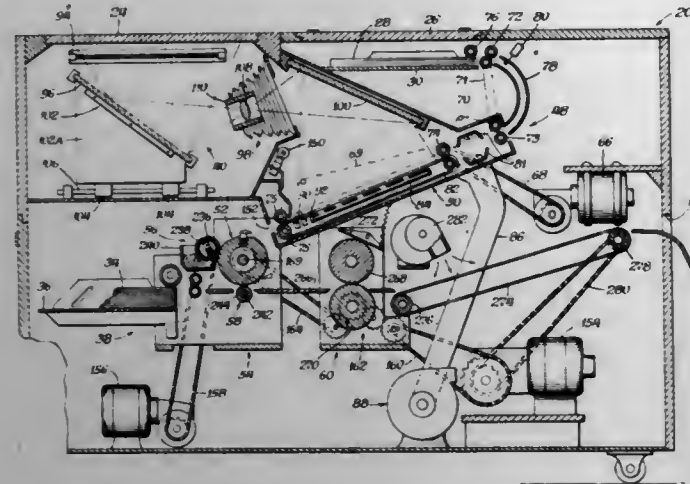
U.S. Cl. 355—3

10 Claims

A copier-duplicator includes a master preparing section for uniformly charging and then exposing a photoelectrostatic master to provide a latent image on the master. An adjustable optical system permits the size of the image to be changed to provide copies of different sizes, and a controlled illumination source removes the charge from the unused area of the master



to avoid spurious powder transfer to the copies. The prepared master is clamped on a rotating cylinder, and the image is



developed by powder and transferred to copy sheets by a pressure roller as many times as required to produce the desired number of copies.

3,754,821

## AUTOMATIC DEVELOPMENT CONTROL

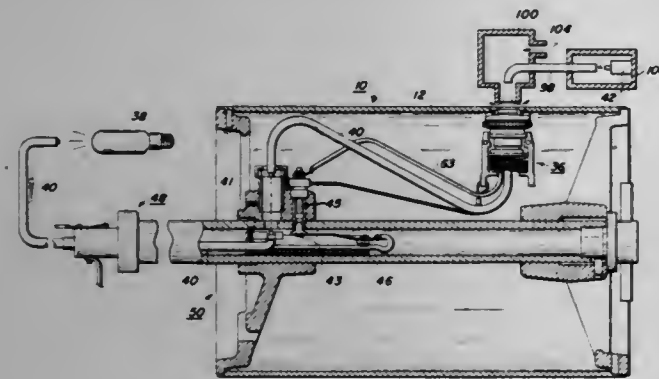
Charles A. Whited, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1971, Ser. No. 213,056

Int. Cl. G03g 15/00

U.S. Cl. 355—4

24 Claims



An apparatus for regulating the developability of a multi-color developing system utilized in a reproducing machine. The regulating apparatus controls image density and maintains color balance. Environmentally induced developability changes and toner colorant usage rate variations are adjusted by controlling the concentration of selected toner colorants in the corresponding developer material.

The foregoing abstract is neither intended to define the invention disclosed in the specification, nor is it intended to be limiting as the scope of the invention in any way.

3,754,822

## SCANNING SYSTEM

Lawrence E. Melrose, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 880,577, Nov. 26, 1969, abandoned.

This application Feb. 26, 1971, Ser. No. 119,406

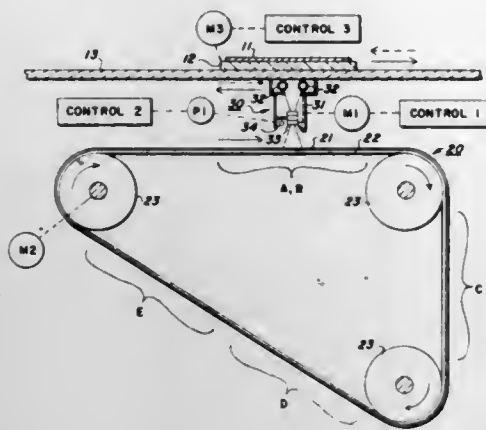
Int. Cl. G03g 15/04

U.S. Cl. 355—8

9 Claims

An optical scanning system for minimizing the time required for exposing information on a document to a continuously moving photosensitive member, having a moving transparent platen which supports the document in a plane parallel to the photosensitive member and transports the document in the same direction and at the same speed as that

of the photosensitive member, and a scanning device including a lamp and lens movably disposed between the document and photosensitive member which, during exposure of the photosensitive member, moves in the direction opposite the direction of the document and photosensitive member. The



system, in one embodiment, includes a photosensitive member in the form of an endless belt which is exposed in a flat plane and a charging device attached to the scanning device which is adapted to deposit an electrostatic charge on the belt immediately prior to the belt being exposed to the light pattern.

3,754,823

## LIGHT SOURCE FOR COLOR ENLARGERS

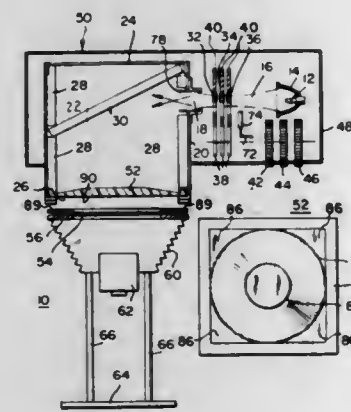
Louis L. Weisglass, New York, N.Y.; Robert A. Flieder, Englewood Cliffs, N.J., and Alfred Simmon, New York, N.Y., assignors to Berkey Photo, Inc., Woodside, N.Y.

Filed Dec. 14, 1971, Ser. No. 207,808

Int. Cl. G03b 27/76

U.S. Cl. 355—35

20 Claims



In the photographic enlarging apparatus disclosed, three filters partially intercept a white light beam emerging from a light source having a reflector. The filters divide the beam into a white portion and an intensely colored portion. A mixing chamber mixes the white and intensely colored light. A diffuser at the bottom of the chamber illuminates a color film, either negative or positive slide. Optical means focus the light at the film onto printing paper. A light attenuator composed of a perforated metal plate is interposed between the source and the filters to dim the total light output of the enlarger. Mechanical means allow the attenuator to be shifted into and out of the beam. The face of the attenuator directed away from the source and toward the filters is provided with a reflecting surface. This reflecting surface prevents an undesirable color shift when the attenuator is moved into or out of the beam.

3,754,824

## LIGHT COLOR CONTROL APPARATUS

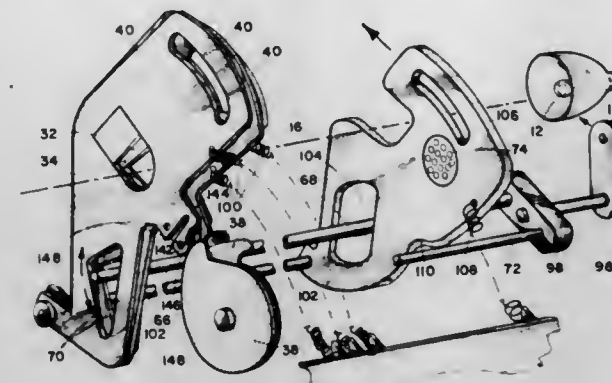
Louis L. Weisglass, New York, N.Y.; Robert A. Flieder, Englewood Cliffs, N.J., and Lewis Rubin, Great Neck, N.Y., assignors to Berkey Photo, Inc., Woodside, N.Y.

Filed Dec. 14, 1971, Ser. No. 207,809

Int. Cl. G03b 27/76

U.S. Cl. 355—35

27 Claims



The disclosed apparatus forms part of the lamp house in a photographic enlarger. Three dichroic filters partially intercept a white light beam emerging from a light source having an elliptical reflector. The filters divide the beam into a white portion and an intensely colored portion. The beam enters a mixing chamber wherein white-opaque side walls and a ceiling coat with each other to mix the white and intensely colored light. The light exits through a diffuser at the bottom of the chamber and passes through a color slide or negative having a color image. An optical system focuses the image on printing paper. Three pivotally mounted filter holders support the filters in their respective positions. Three cams movable by manually adjustable wheels control the positions of the holders. A control arm engageable with all three of the holders simultaneously draws the filter holders out of engagement with the cams until the filters are removed from the beam. A regulating arm moves an attenuator into the path of the beam.

3,754,825

## PHOTOGRAPHIC COPY SYSTEM

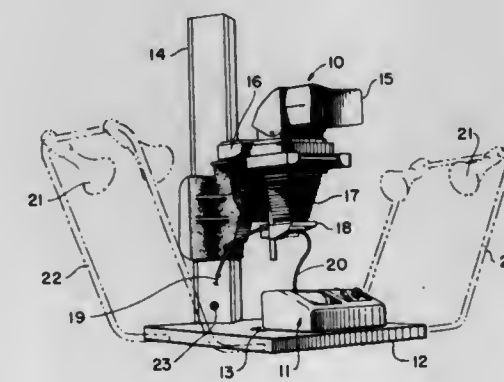
Dundan C. Sorli, Chelmsford, and Charles M. Ventre, Saugus, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 26, 1971, Ser. No. 137,486

Int. Cl. G03b 27/54

U.S. Cl. 355—70

32 Claims



A photographic copy system including a portable light source accessory unit having a plurality of light producing elements. The unit includes a translucent window configured to support an object such as a film transparency in the illumination path in an area in registration with the camera and in an area out of the registration therewith for editing or other ancillary purposes. A flash bulb mounted within the lighting unit directly beneath the translucent window provides illumination

of the object for photographic copying purposes and a pair of projector type lamps disposed along side the flash bulb and separated from the translucent window by a dichroic element are utilized primarily for editing and composing purposes, and include separate control elements configured for continuous operation of one lamp and supplemental intermittent operation of the other for viewing of relatively dense transparencies. Additionally, the light source unit includes a reflector accessory for surface lighting of the object, and a control system capable of varying the flash intensity over a prescribed range and for indicating when the proper charge level is achieved. The system also includes supplemental lighting elements for surface illumination of an object when the latter is properly positioned on the lighting unit.

3,754,826

## DEVICE FOR AUTOMATICALLY CORRECTING THE POSITION OF AN ORIGINAL IN AN AUTOMATIC COPYING MACHINE

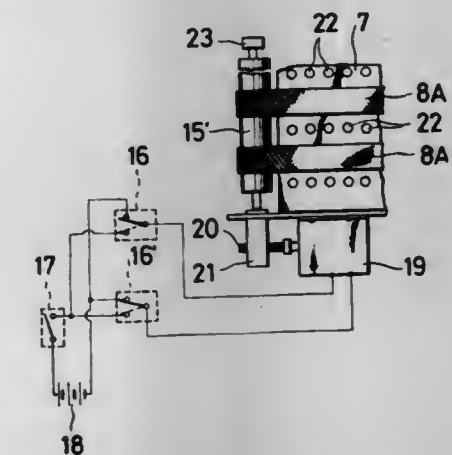
Yugoro Kobayashi, Sugami-ku, Tokyo, and Tsutomu Yamagami, Arakawa-ku, Tokyo, both of Japan, assignors to Ricoh Co. Ltd., Tokyo, Japan

Filed Sept. 21, 1972, Ser. No. 290,875

Int. Cl. G03b 27/12

U.S. Cl. 355—109

6 Claims



In an automatic copying machine of the type having an original circulation repeat path for producing a number of duplicates, a device for automatically correcting the orientation of the original during circulation on the repeat path endless belt comprising the disposing of original sensing switches on opposite sides of the repeat path upstream of the duplicating station, which switches lie on a line normal to the direction of travel of the original so that when the original is correctly oriented on the belt, the switches are simultaneously actuated, but when the original is incorrectly oriented, one switch will be actuated before the other. The time lag between the actuation of the switches is used to actuate a correcting system which through a bearing nut mounted on a threaded portion of a DC motor output shaft moves one end of one of the belt mounting rollers whose other end is pivoted so as to change the length of one side of the belt with respect to the other side, thus reorienting the original before entry into the duplicating station.

3,754,827

## DUPLICATING EQUIPMENT WITH A MOVABLE GRID

Tomio Okada, Asaka-shi, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 15, 1971, Ser. No. 198,538

Claims priority, application Japan, Nov. 16, 1970, 45/113730

Int. Cl. G03b 27/04

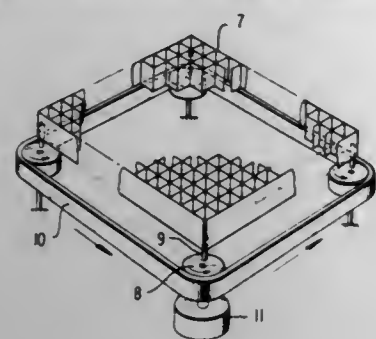
U.S. Cl. 355—113

4 Claims

In duplicating equipment having a light source radiating scattered light such as fluorescent lamp, a grid made of fine



partition plates is provided to decrease the scattered light. To prevent the shadow of the grid from appearing in the duplicated image, the grid is shifted during the time of exposure. As a



specific example, therefore, the grid can be supported by pin members, each of which is provided eccentrically on supporting disks rotated by a motor, so that the grid is circularly shifted.

3,754,828

**BALANCED NEEDLE FOCUSING SYSTEM**

John Darvasi, Des Plaines, Ill., assignor to Bell & Howell Company, Chicago, Ill.

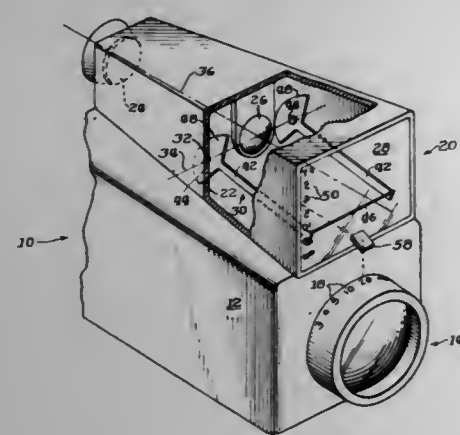
Continuation of Ser. No. 50,503, June 29, 1970, abandoned.

This application May 4, 1972, Ser. No. 250,403

Int. Cl. G03b 13/04, 13/18

U.S. Cl. 356—8

6 Claims



A distance determining mechanism usable with an optical instrument having a focusable objective and a viewfinder in which the distance determining mechanism yields a visual indication of instrument to subject distance, which indication is usable for adjusting the focus condition of the focusable objective to that distance while continuing to view the subject. Preferably, the distance determining mechanism within the viewfinder, includes a balanced indicator member orientable responsive to gravity and arranged to form a movable subject base reference and further arranged so that the indicator member is visible in the viewfinder during determination of distance and is substantially aligned with a vertical limit of the field of view of the viewfinder when substantially horizontally oriented.

3,754,829

**METHOD AND MEANS FOR QUANTITATIVE SPECTROGRAPHIC ANALYSIS**

John M. Hoyte, Menlo Park, and Keith E. Hollenbeck, Mountain View, both of Calif., assignors to Spectrex Company, Redwood City, Calif.

Filed Aug. 19, 1971, Ser. No. 173,078

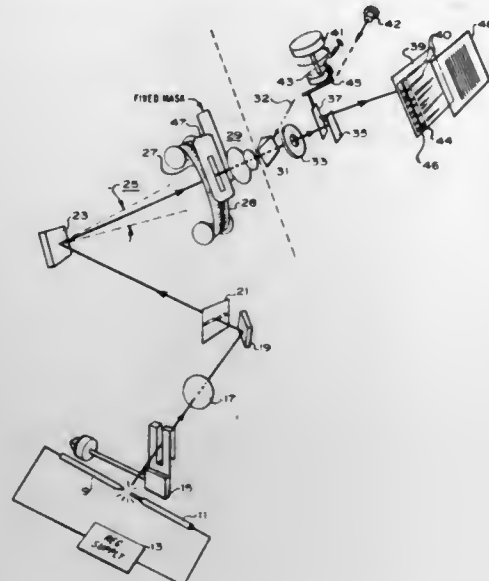
Int. Cl. G01j 3/06, 3/18

U.S. Cl. 356—76

10 Claims

The spectral lines associated with a sample of material under examination are deflected from their normal optical path by an angle which varies logarithmically with time toward

a sheet of photographic film. The film is thereby exposed to provide a photographic image of the spectral lines which taper



3,754,830

**SCATTERING CELL EMPLOYING ELECTROSTATIC MEANS FOR SUPPORTING A PARTICLE**

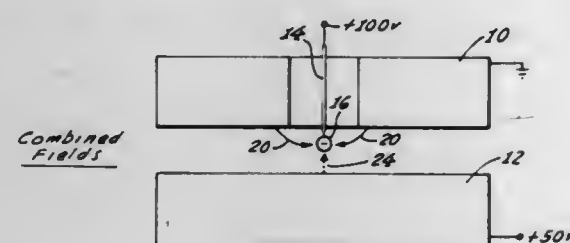
David T. Phillips; Herman H. Brooks, both of Goleta, Calif.; Philip J. Wyatt, and Chelcie R. Liu, both of Santa Barbara, Calif., assignors to Science Spectrum, Inc., Santa Barbara, Calif.

Filed Oct. 21, 1971, Ser. No. 191,373

Int. Cl. G01n 21/00; H01g; B01d 59/44

U.S. Cl. 356—103

14 Claims



A levitator for use with a light scattering photometer unit including a spaced pair of plate electrodes to provide an electric field for producing a first electrostatic force on a charged particle located between the spaced plate electrodes and with the levitator additionally including a pin electrode extending through and insulated from one of the plate electrodes to provide an electric field for producing a second electrostatic force and with the combination of the first and second electrostatic forces suspending the charged particle between the plate electrodes at a location spaced from but adjacent to the pin electrode. An automatic servo system includes an optical detector for detecting the position of the charged particle to produce a control signal to adjust the electric fields to maintain the charged particle in the proper position.

3,754,831

**SCRAPING AND CLEANING DEVICE**

Wayne R. Hutter, Sanford, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 27, 1971, Ser. No. 147,478

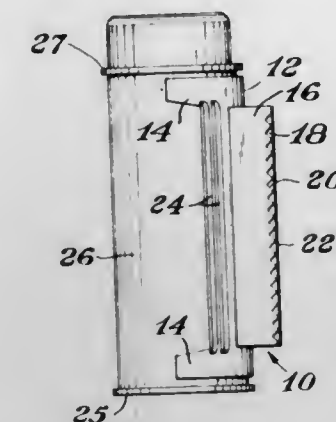
Int. Cl. A47l 1/16

U.S. Cl. 401—139

16 Claims

A scraping and cleaning device which, when attached to a container of cleaning fluid, facilitates removal of dirt, soil, ice,

frost and like material from windows, mirrors, windshields, etc. The device has an elongated body element with a curved or arcuate shaped cross section adapted to fit snugly against the side wall of a container. The body element may include at least one pair of opposing integrally curved fingers, which body element and fingers combined preferably form an arc or



curve of greater than 180° for snap-on attachment of the same to the side wall of a container. Integral, transversely elongated scraping and cleaning blade sections diverge from the body element. One section of the blade sections is provided on its outer end with a smooth beveled edge or squeegee and another blade section of the blade sections is provided on its outer end with a coarse serrated or toothed edge.

3,754,832

**DEVICE FOR DEBURRING PLASTIC PIPES**

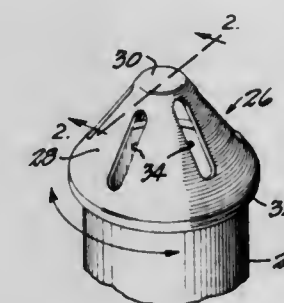
Charles F. Stickler, 57455 Poppy Rd., South Bend, Ind.

Filed Dec. 1, 1970, Ser. No. 94,008

Int. Cl. B23d 79/08

U.S. Cl. 408—227

3 Claims



A pipe deburring tool having a rigid body with tapered inner and outer surfaces adapted to engage the end of a pipe to be deburred and having means defining sharp edges at said inner and outer surfaces to remove burrs from the end of the pipe upon relative rotation of contacting tool and pipe while substantially concentrically positioned.

3,754,833

**DEVICE FOR RADIALLY CENTERING TURBINE HOUSINGS**

Axel Remberg, Mulheim, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim, Germany

Filed Apr. 17, 1972, Ser. No. 244,416

Claims priority, application Germany, Nov. 5, 1970, P 20 54 465.4

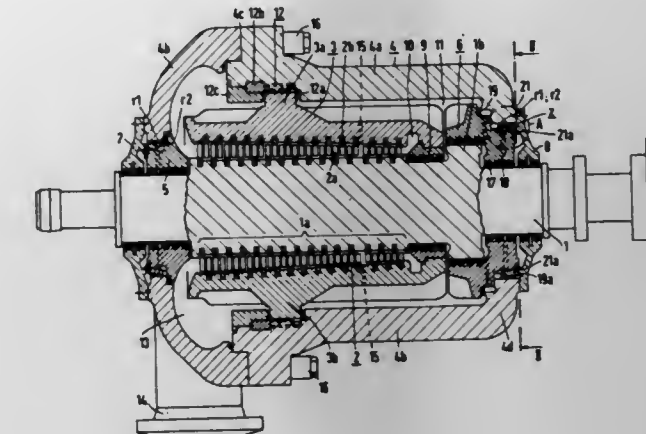
Int. Cl. F01d 25/26

U.S. Cl. 415—108

8 Claims

In order to attain an axially fixed mounting of the inner shell of a turbomachine housing in the vicinity of the bearing and centering locations of a respective, axially-normal plane, a pocket space of a groove widening provided in an axial groove formed in the outer shell of the housing is located, as viewed

from the outside, axially behind a respective retaining claw received in the axial groove and is formed by a reduction of the narrower axial groove with respect to the groove widening. Another fitting member in form of a cross bar is insertable into the pocket space, rearwardly engages the retaining claw and abuts axially against housing shoulders located in vicinity of a



bottom surface of the pocket space, thereby fixing the inner shell against displacement in one axial direction. The inner shell is formed with annular surfaces abutable against corresponding annular shoulder-countersurfaces formed on the outer shell, thereby fixing the inner shell against displacement in the other axial direction.

3,754,834

**CENTRIFUGAL PUMP**

Tjako Aaldrik Wolters, Vianen, Netherlands, assignor to Ballast-Nedam Groep N.V., Amsterdam, Netherlands

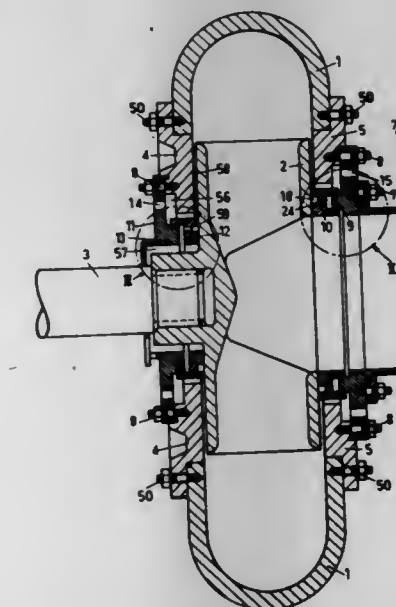
Filed July 30, 1971, Ser. No. 167,674

Claims priority, application Netherlands, Aug. 4, 1970, 7011545

Int. Cl. F04d 29/08, 7/00

U.S. Cl. 415—110

20 Claims



A centrifugal pump with at least one sealing ring, having two faces divided from each other by a space, of which faces a first face is positioned at the high-pressure zone and a second face at the low-pressure zone. By communicating the space with the low-pressure zone the high-pressure is decreased along the first face up to the low-pressure. The required actuating force for contacting the sealing ring with the co-acting face is therefore small, so that the specific face surface pressure and therewith the wear of the face are small.



### 3,754,835 TURBODRILL

Evgeny Illarionovich Ivanov, 2 Setunsky proezd, 4 kv. 150, Moscow; Viktor Semenovich Olkhov, oblast, Kungur ulitsa K. Marxa 30, kv. 8; Evgeny Dmitrievich Kostyrya, oblast, Kungur Truda, 43, kv. 75, both of Permskaya, and Nikolai Dmitrievich Derkach, ulitsa Stakhanova, 40, kv. 66, Perm, all of U.S.S.R.

Filed Aug. 25, 1971, Ser. No. 174,861  
Int. Cl. F01d 15/12

U.S. Cl. 415-122

19 Claims



A turbodrill for drilling wells, provided with a mechanism for reducing the rotation speed of the bit made in the form of a friction speed reducer wherein the rotors function as the inner wheel while the turbodrill stators function as the outer wheel. The speed reducer carrier accommodates rolling elements between the stators and rotors, said elements rolling during rotor rotation under the effect of the contact forces of friction.

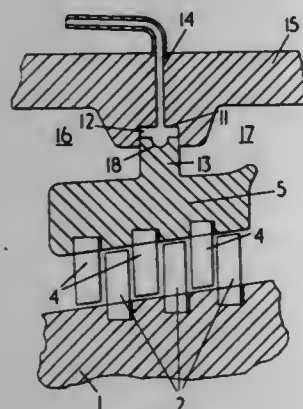
### 3,754,836 STEAM TURBINES

John Reginald Bolter, and Harry Ashley Kirby, both of Newcastle-upon-Tyne, England, assignors to Reyrolle Parsons Limited, Newcastle-upon-Tyne, England

Filed Mar. 28, 1972, Ser. No. 238,907  
Int. Cl. F01d 25/26

U.S. Cl. 415-136

6 Claims



In an axial flow steam turbine, erosion of stator blade supporting structure is minimised in wet steam regions by injecting high pressure dry steam into the turbine by way of the said structure in such a way that the vulnerable areas of the structure are protected from the wet motive steam by the injected dry steam.

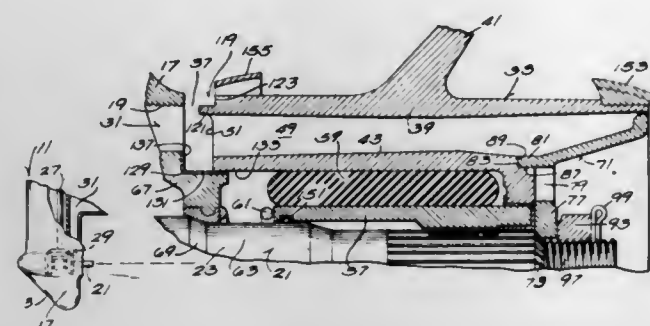
### 3,754,837 VARIABLY VENTILATED PROPELLER

William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed June 5, 1972, Ser. No. 259,963  
Int. Cl. B63h 1/20

U.S. Cl. 416-93

8 Claims



Disclosed herein is a marine propulsion device comprising a propeller shaft supported by a lower unit and extending rearwardly through an exhaust gas opening in the lower unit, a propeller having a hub adapted for discharging exhaust gas there through and mounted on the rearwardly extending propeller shaft for common rotary movement with the propeller shaft and for axial movement relative to the propeller shaft between a first, forwardly located position and a second position located rearwardly of the forward position with the propeller spaced axially rearwardly of the lower unit exhaust gas opening, together with means biasing the propeller toward the rearward position.

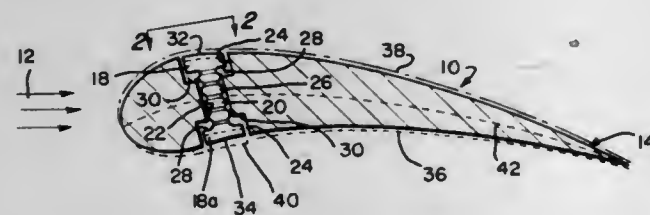
### 3,754,838 VIBRATION-SUPPRESSED BLADE

Chuen-Cheng Fu, North Brunswick, and Mukund D. Gangal, Princeton, both of N.J., assignors to Ingersol-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 15, 1971, Ser. No. 198,756  
Int. Cl. F01d 5/26

U.S. Cl. 416-145

1 Claim



A blade operative in a fluid environment and, therefore subject to vibration, has inertially-responsive weights movably mounted therein to impact on blade surfaces during vibration to dissipate the vibration energy.

In a first embodiment, the invention comprises a pair of inertially-responsive weights mounted to either ends of a shaft for relatively slidable movement within a cross-section of the blade. In an alternate embodiment of the invention, a pair of inertially-responsive weights are coupled to opposite ends of a resilient shaft which is disposed through the cross-section of the blade, and the weights swing about an arc to impact on blade surfaces to dissipate the vibration energy.

### 3,754,839 FILAMENT REINFORCED ROTOR ASSEMBLY

Robert R. Bodman, Riviera Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed May 1, 1972, Ser. No. 249,336  
Int. Cl. F04d 29/26; F01d 5/24

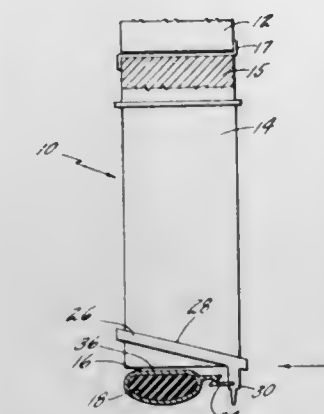
U.S. Cl. 416-195

8 Claims

This invention relates to a rotor assembly reinforced with a filament wound composite ring. The rotor assembly comprises

a rotor including a plurality of radially extending circumferentially spaced blades. The composite ring surrounds the blade tips and is closely spaced therefrom by radially flexible support means. During rotor operation the blade tips grow

braking system having the ability to generate an additional source of vacuum which can be combined with the vacuum in



radially outwardly and come into centrifugal load carry relationship to the composite ring, whereupon the ring carries a portion of the centrifugal loads thus reducing the strength requirements of the blades and rotor.

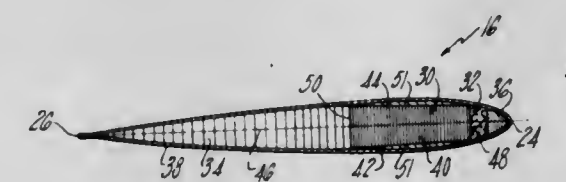
### 3,754,840 COMPOSITE HELICOPTER ROTOR AND BLADE

Robert Zincone, Norwalk, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed May 31, 1972, Ser. No. 258,147  
Int. Cl. B64c 27/46

U.S. Cl. 416-226

29 Claims



A composite helicopter rotor and blade is produced by building the blade around a selectively fabricated structural spar which includes a central filler member and a plurality of fiber members commencing at the blade tip, extending substantially for its full length to the blade root, extending therebeyond and then folding back upon itself to form a loop, and then extending along the other side of the filler member to substantially the tip of the blade again and being bonded to the opposite sides of the filler member. The spar is then bonded on both upper and lower spar surfaces to the blade cuff attachment member, which includes a pin about which the loop is formed. Redundant retention therefore occurs through either of the bond areas between the cuff attachment member and the fiber members, and by means of the pin-type member. Preferably the fiber members are unidirectional. Additional layers of fiber members are wrapped around the spar at its root end and extend in various directions on opposite sides of the blade so as to form a cylindrical or oval shaped boot to carry blade torsional loads.

### 3,754,841 VACUUM INTENSIFIED BRAKE BOOSTER SYSTEM

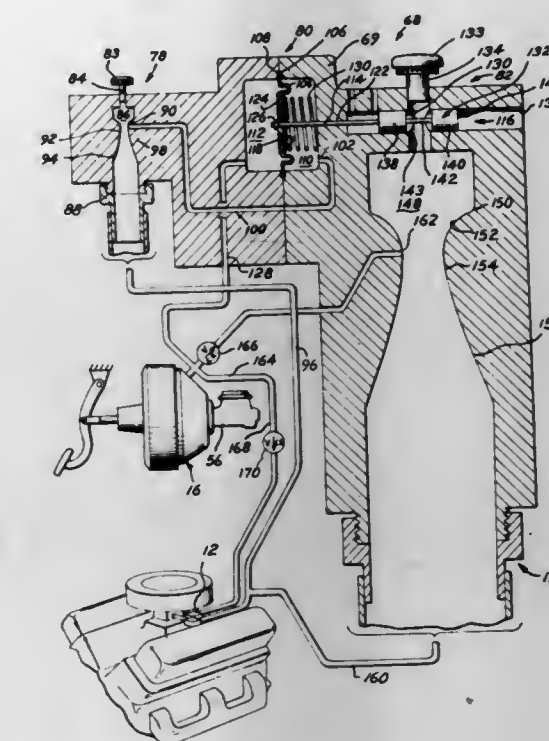
Frederick G. Grabb, and Mark E. Beck, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed May 14, 1971, Ser. No. 143,419  
Int. Cl. F04l 5/48

U.S. Cl. 417-189

10 Claims

An apparatus for sensing the available vacuum in a power



the system to maintain the vacuum in the system within a predetermined range.

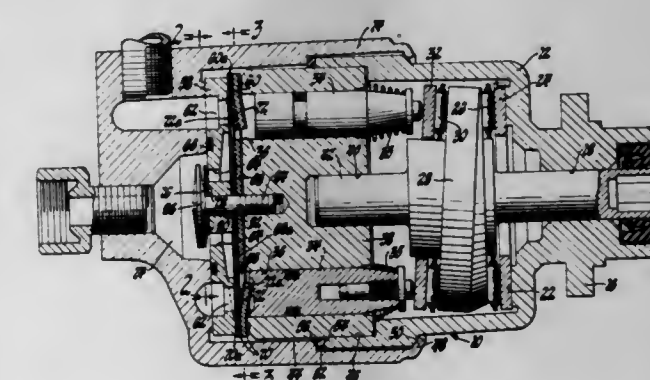
### 3,754,842 HYDRAULIC PUMP

Manfred P. Schlantzky, Frankenmuth, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 13, 1971, Ser. No. 142,881  
Int. Cl. F04b 21/02

U.S. Cl. 417-269

1 Claim



An axial piston pump having flapper valves on the inlet ports and a continuous flexible ring member providing valving for the outlet ports. The ring member has an elastic sealing surface adjacent to the outlet ports to prevent reverse flow from the pump outlet to the cylinder bores. The ring member is deflected away from the outlet ports when the cylinder bores are pressurized. The deflection of the ring member varies with the amount of fluid flow from the cylinder. Since the amount of fluid flow from a single cylinder in this type of pump is sinusoidal, the outer edge deflection of the ring member is in the form of a sine wave. The ring member also seals the outlet ports to prevent back-flow through the pump when the input shaft is not being driven.



3,754,843

**PUMP SUPPORTING AND ALIGNING ARRANGEMENT**

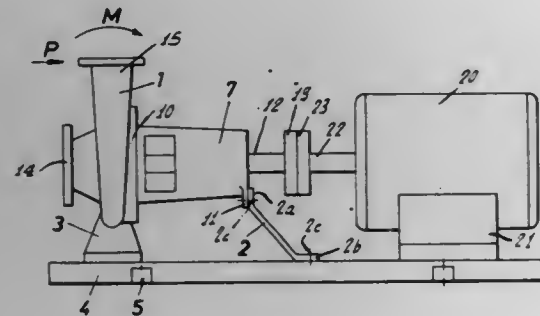
Robert Darnedde, Frankenthal, and Gerd Niermayer, Bremen, both of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal/Pfalz, Germany  
Filed Dec. 2, 1971, Ser. No. 204,044

Claims priority, application Germany, Dec. 4, 1970, P 20 59 636.5

Int. Cl. F04b 39/12

U.S. Cl. 417—363

11 Claims



The alignment of a pump shaft and drive shaft, which are connected by coupling means, is maintained by a slanted resilient leg whose upper end is secured to a projecting housing portion of the pump, and whose lower end is secured to a base plate to which the pump and its drive motor are secured. Turning moments exerted on the pump outlet due to pressure, flow of liquid, and the weight of attached parts, are sustained by the slanted leg.

3,754,844

**PUMP AND ELECTRIC DRIVE MOTOR UNIT**

Herman Nusser, Asperg, Germany; Hendricus van Eeden, Johannesburg, South Africa, and Jurgen Ebert, Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

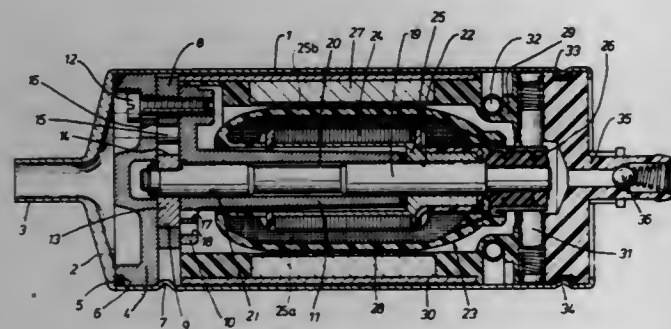
Filed July 27, 1972, Ser. No. 275,574

Claims priority, application Germany, Aug. 24, 1971, P 21 42 257.1

Int. Cl. F04b 17/00

U.S. Cl. 417—423 R

9 Claims



There is described a pump assembly which, in a unitary structure, comprises a pump proper and an electric pump drive motor, both contained in a common housing. The pump housing which is disposed within the common housing, has a bearing tube in which journals a shaft carrying the pump impeller and, spaced therefrom, a bell-shaped motor armature surrounding a substantial portion of the bearing tube.

3,754,845

**APPARATUS FOR SPLICING JACKETED CABLE**

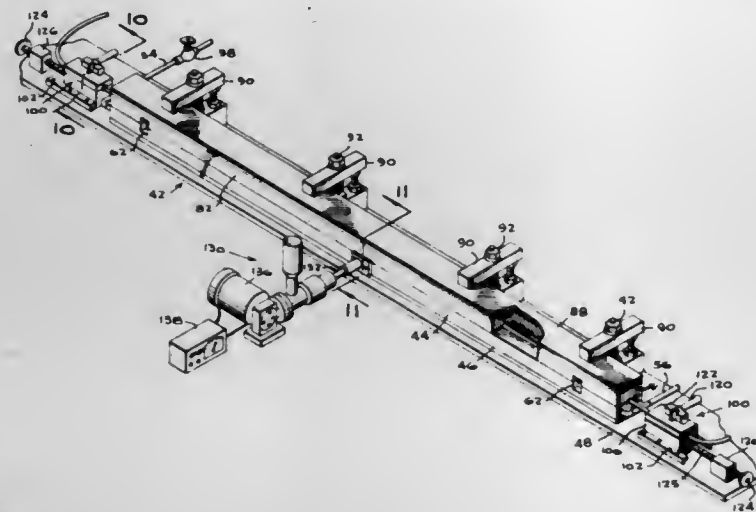
David Albert Rauscher, Columbia, S.C., and Robert Warren Alexander, Fort Lee, N.J., assignors to Carolina Steel and Wire Corporation, Lexington, S.C.

Division of Ser. No. 158,482, June 30, 1971, Pat. No. 3,721,277. This application June 30, 1972, Ser. No. 268,115

Int. Cl. G29c 27/14; B29c 27/30

U.S. Cl. 425—111

10 Claims



A method of splicing cable encased in a plastic jacket is disclosed in which the jacket is removed for a given distance inwardly from the ends of the cable to be spliced, the strands are cut and interleaved to provide a mechanical splice portion which is then inserted in a mold and heated to a high temperature, liquid plastic at a high temperature is then injected into the mold to flow into the intestines of the splice and the space surrounding the splice and the mold is then cooled to provide a completely jacketed splice; another aspect of the invention resides in the mold construction in which an inlet is provided centrally of an elongated hollow cylindrical mold with outlets being provided adjacent each end of the mold adjacent the ends of the cable splice so that hot plastic injected into the mold flows outwardly to expel all air in the mold and to consequently provide a more uniform jacket over the splice.

3,754,846

**APPARATUS FOR SINGLE CAVITY INJECTION MOLDING OF OIL SEALS**

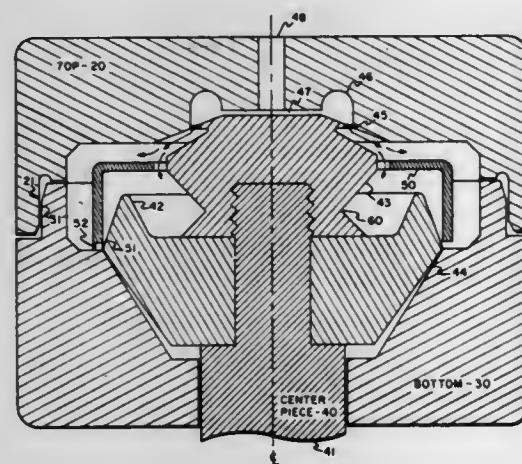
James Robert Choate, Rochester, N.H., assignor to CPI, Inc., Bristol, N.H.

Continuation-in-part of Ser. No. 128,080, March 25, 1971, abandoned. This application Jan. 21, 1972, Ser. No. 219,615

Int. Cl. B29c 27/30; B29d 3/00; B29f 1/10

U.S. Cl. 425—125

12 Claims



In the repetitive single cavity injection molding of an oil seal reinforced with a casing, with vacuum being applied to the

mold cavity, the molding composition is forced rapidly through fine orifices under high pressure and high internal shear into the mold cavity so that a predominant amount of the heat required for curing comes from the mechanical working. A three-part mold of special design is used wherein the orifices are annularly spaced about and formed between the mold top through which injection occurs and a center piece that defines the interior walls of the oil seal. The center piece is of a special three-part construction so that it functions as a vacuum valve and to assist in ejection of the completed seal. A casing of special design is used and mold pins are not required to support and align the casing.

3,754,847

**FLAT-DIE FOR EXTRUDING LAMINATED SYNTHETIC RESIN SHEETS**

Takehiko Sawada, and Takesi Fujisawa, both of Kawasaki, Japan, assignors to Ikegai Tekko Kabushiki Kaisha, Tokyo, Japan

Filed June 28, 1971, Ser. No. 157,180

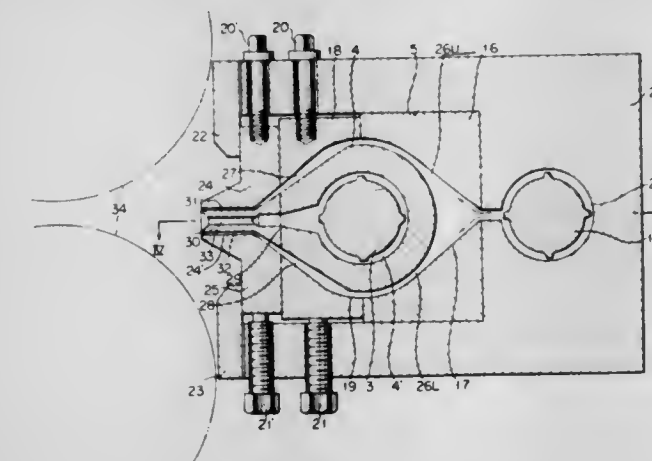
Claims priority, application Japan, July 23, 1970, 45/73024 (utility model)

Int. Cl. B29f 3/02

U.S. Cl. 425—131

2 Claims

relationship with the upper mold half and the other is in a second position where the molded article is ejected and a new reinforcing casing can be inserted.



A flat-die for extruding laminated synthetic resin sheets is composed of a plurality of flow passages for resins, each of which is connected, at its one end, to a hollow distributing chamber containing a distributing screw to be supplied with the resin from respective extruders and terminates in a lip at its other end, said lips being arranged so that they provide a number of openings lying side by side.

3,754,848

**HIGH SPEED SINGLE CAVITY MOLDING APPARATUS**

James Robert Choate, Rochester, N.H., assignor to CPI, Inc., Bristol, N.H.

Continuation-in-part of Ser. No. 128,080, March 25, 1971.

This application Nov. 10, 1971, Ser. No. 197,206

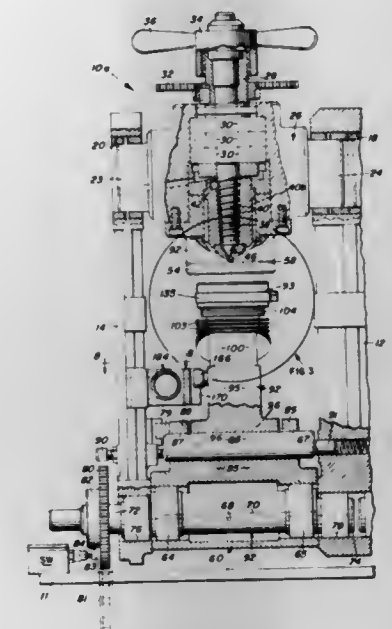
Int. Cl. B29f 1/02

U.S. Cl. 425—242

13 Claims

An automatic, single cavity injection molding apparatus especially useful for the manufacture of circular shaft oil seals reinforced with a metal case, having a trunnion-mounted, upper assembly through which molding material is injected under high pressure and then is liquefied and heated by being forced through an orifice in an upper mold half, a carriage

Apparatus is disclosed for restraining and controlling the edges of a mass of material, especially a package of particulate metal, as the material enters the bite of a rolling mill. The apparatus contains two wear block members adapted to fit into the bite region of the rolling mill and to guide and restrain the edges of the material being rolled. The wear members are supported at corresponding ends of substantially parallel frame members, with one wear block on each frame. The frame members are joined together by one or more tie rods and caused to pivot slightly about the tie rods, which act as fulcrums, by means of hydraulic cylinder and piston so as to maintain substantially uniform force through the wear blocks on the material being rolled.



3,754,849

**APPARATUS TO CONTROL EDGES OF ROLLED PRODUCTS**

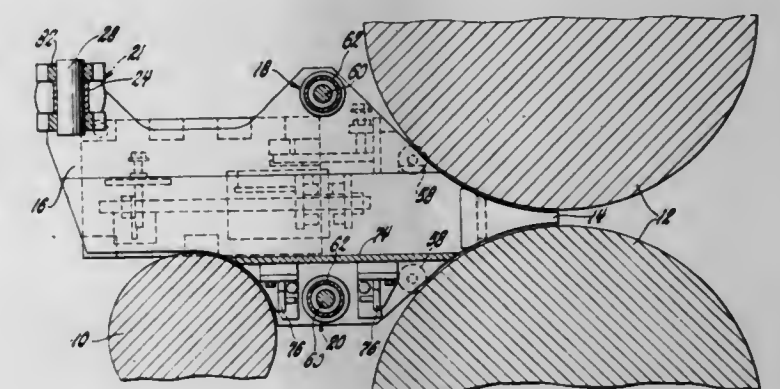
Joseph J. Fox, Mt. Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 8, 1971, Ser. No. 187,797

Int. Cl. B22f 3/18; B29d 7/14

U.S. Cl. 425—363

3 Claims





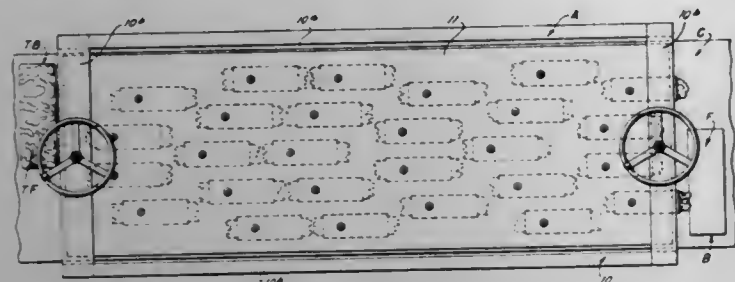
3,754,850

**APPARATUS FOR MANUFACTURING SIMULATED AGED BRICKS AND THE LIKE**

Rayford L. Pate, 4702 Trenton Dr., Tyler, Tex.  
 Filed July 7, 1971, Ser. No. 160,466  
 Int. Cl. B28b 1/29

U.S. Cl. 425—385

8 Claims



Apparatus for treating green brick blocks prior to firing the blocks to harden them. Indentations in and roughening of the exposed face of the brick are produced by passing the blocks on a conveyor beneath and between a plurality of sets of rollers having hard rubber or plastic faces which engage and round the corners and edges of the brick blocks and may have roughened faces which indent the exposed faces thereof. The rollers are disposed to positively engage the forward and rear edges of the brick blocks extending transversely of the line of movement of the bricks on the conveyor beneath the rollers. If desired, sand or other particulate or comminuted material, or saw dust, may be applied to the upper face portion of the brick prior to treatment by the rollers to produce pits, charcoal effects and the like when the brick is fired or cured. If desired, smooth rollers and sand may be used to form adobe type bricks with rounded edges on the face.

3,754,851

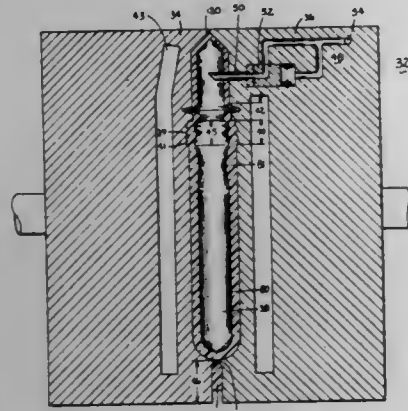
**APPARATUS FOR FORMING MULTIAXIALY ORIENTED CONTAINERS**

Joseph R. Reilly, Naugatuck, and Thomas F. Sincok, Simsbury, both of Conn., assignors to Monsanto Company, St. Louis, Mo.

Filed June 1, 1971, Ser. No. 148,544  
 Int. Cl. B29d 23/03

U.S. Cl. 425—387

1 Claim



Multiaxially oriented containers are formed from an extruded, molecularly orientable thermoplastic parison having a programmed wall thickness. The parison while at extrusion temperature is sealed at one end and expanded incrementally in a conditioning mold into the shape of a preform which is allowed to set therein for a brief time period in order to develop an outer skin at reduced temperature. The full wall of the variable thickness preform is then reduced in temperature to within the orientation temperature range and the preform then stretched longitudinally and expanded radially in a finishing mold to develop axial and radial orientation while forming the container. Since the thicker portion(s) of the programmed

parison do not cool as much in the conditioning mold as do the thinner portion(s) they consequently subsequently stretch to a greater extent, and this phenomenon must be compensated for in the initial programming step. The container finish is preferably formed in the conditioning mold while the thermoplastic is at elevated temperature. The molecularly orientable thermoplastic may be a high nitrile-group-containing polymer having excellent barrier properties of the type covered by the trademark LOPAC.

3,754,852

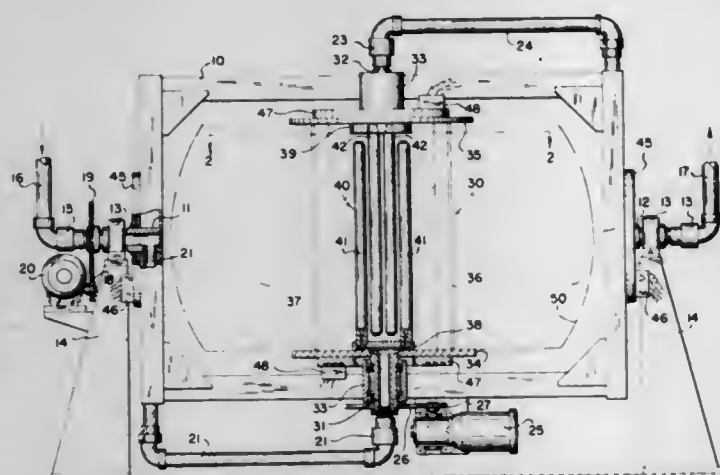
**APPARATUS FOR ROTATIONAL CASTING**

Dietrich G. Rempel, Akron, Ohio, assignor to Thomas M. Dodds, Inc., Lakewood, N.J.

Filed Aug. 24, 1965, Ser. No. 482,198  
 Int. Cl. B29c 5/00

U.S. Cl. 425—429

5 Claims



This invention relates to improved apparatus for rotational casting in hollow molds and a method of operating the same; more particularly, this invention relates to apparatus in which liquid materials are solidified or powdered materials are fused to a solid material while being rotated to distribute the material over an inside mold wall surface and to a method of supply and/or removing heat from the molds during such casting operations.

3,754,853

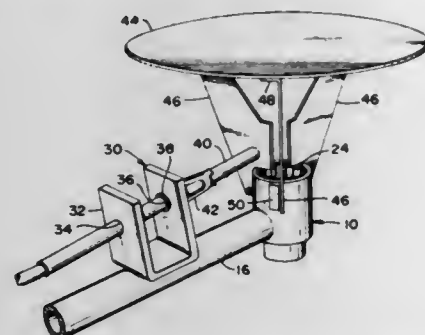
**DUAL RATE GASEOUS FUEL BURNER ASSEMBLIES**

Henry C. Braucksieck, Buena Park; Jay R. Katchka, Long Beach, and Theodore J. Dykzeul, Rolling Hills, all of Calif., assignors to Robertshaw Controls Company, Richmond, Va.

Filed June 22, 1971, Ser. No. 155,537  
 Int. Cl. F23g 9/00

U.S. Cl. 431—285

10 Claims



Dual rate gaseous fuel burner assemblies wherein a unitary burner is designed to operate at dual rates for full and standby operation in accordance with the fuel flow supplied from a single supply conduit. A flame sensing element is cooperatively disposed upon the burner assemblies such that both the main and standby flame patterns impinge upon the sensing element to provide an effective safety feedback signal for control of the fuel flow to the burner.

3,754,854

**DEVICE FOR USE WITH GAS APPLIANCES**

Josef Reutter, Wellheim, and Josef Schmid, Wernau/Neckar, both of Germany, assignors to Junkers & Co., GmbH, Wernau/Neckar, Germany

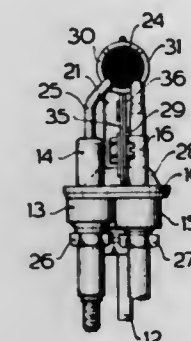
Filed Apr. 14, 1972, Ser. No. 244,041

Claims priority, application Germany, June 26, 1971,  
 G 71 24 731.9

Int. Cl. F23d 13/24

U.S. Cl. 431—343

7 Claims



A gas igniting device and a thermo-electric element of an ignition-safety device are mounted on a base plate. A burner tube has a 90° bend and is composed of two mirror-symmetrical shell sections of semi-cylindrical cross-section. This burner tube has an end adjacent to and another end remote from the base plate, and the latter is provided with a pair of upstanding mounting ribs projecting at right angles to one another with one of said ribs extending tangentially of the burner tube

3,754,855

**TOWER FURNACE RECIPROCATING FEED**

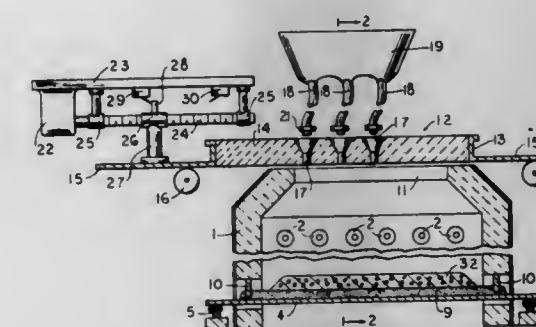
Ernst A. Slemssen, Gwynedd, and John M. Hummel, Doylestown, both of Pa., assignors to Selas Corporation of America, Dresher, Pa.

Filed Aug. 17, 1971, Ser. No. 172,489

Int. Cl. F27b 3/18

U.S. Cl. 432—14

6 Claims



Apparatus for reciprocating the feed mechanism for a tower furnace in order to obtain a dropping pattern of feed material which will produce a ceramic foam slab with a substantially flat upper surface.

## CHEMICAL

3,754,856

**PRODUCING A DYED PROPYLENE POLYMERIC FABRIC BY INCORPORATING A PLURALITY OF FIBERS CONTAINING DYE RECEPTORS THEREIN**

Robert F. Johnson, Lubbock, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 5, 1969, Ser. No. 822,054

Int. Cl. D06p 1/68

U.S. Cl. 8—15

7 Claims

A method of producing dyed polymeric materials by incorporating in a polymer fabric a plurality of fibres, each of which contain a dye receptor or a combination of dye receptors.

3,754,858

**PROCESS FOR CONTINUOUS DYEING POLYESTER FIBER MATERIAL WITH ANTHRAQUINONE DYESTUFF**

Volker Hederich, Gunter Gehrke, and Manfred Groll, all of Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 28, 1971, Ser. No. 110,591

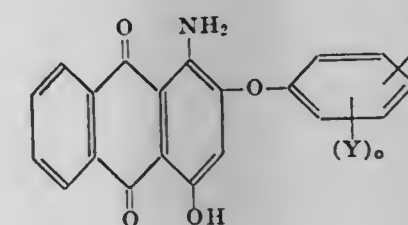
Claims priority, application Germany, Feb. 4, 1970, P 20 05 012.8

Int. Cl. D06p 1/20

U.S. Cl. 8—39

8 Claims

Process for the continuous dyeing of synthetic fibre materials from organic solvents wherein the fibre materials are impregnated with dye liquors containing anthraquinone dyestuffs of the formula



3,754,857

**POLYETHYLENE TEREPHTHALATE, NYLON AND ORGANIC ESTERS OF CELLULOSE DYED WITH 5-(2-NITRO-PRANISYLazo) BARBITURIC ACID**

Donald Edward McKay, Middlesex, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 853,539, Aug. 27, 1969, Pat. No.

3,654,258. This application Mar. 13, 1972, Ser. No. 234,425

Int. Cl. C09b 29/36; D06p 1/18

U.S. Cl. 8—41 B

3 Claims

A colorfast strong yellow disperse dye is prepared by coupling 2-nitro-p-anisidine to barbituric acid to form 5-(2-nitro-p-anisylazo) barbituric acid, m. 305°-6°C. It dyes polyesters and organic derivatives of cellulose (including acetate and triacetate), and nylons in greenish yellow shades.

in which X, Y and n have the meaning given in the description below and are subsequently subjected to a heat treatment. There are obtained without originating waste waters dyeings which are characterised by excellent fastness properties.



3,754,859

**DURABLE TEXTILE SOIL RELEASE AGENT**

Richard L. Doerr, Orange, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 91,214, Nov. 19, 1920, abandoned. This application June 7, 1972, Ser. No. 260,534

Int. Cl. D06m 15/62, 15/54

U.S. Cl. 8—115.6

6 Claims

A polyol N-methylol-amino plast composition containing an oxyalkylated phosphoric acid is provided which confers improved soil release properties on cellulosic fibers and blends of cellulosic fibers with polyester fibers having durable press or wash and wear characteristics.

3,754,860

**WRINKLE-RESISTANCE FINISHES FOR COTTON FABRIC USING CITRIC ACID DERIVATIVES FOR SOIL RELEASE**

John G. Frick, Jr., New Orleans; Wilson A. Reeves, Metairie; Andrew G. Pierce, Jr., New Orleans, and Gloria A. Gautreaux, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 5, 1971, Ser. No. 196,213

Int. Cl. D06m 15/54, 15/56, 15/58

U.S. Cl. 8—115.6

6 Claims

A process for producing wrinkle-resistant cotton fabric that does not increase the difficulty of laundering; said process comprises the addition of citric acid or monoesters of citric acid to the usual finishing formulations containing a crosslinking agent for cellulose with or without a softening agent.

3,754,861

**FORMED SOLID FUMIGANT WITH AN IGNITION HEAD**

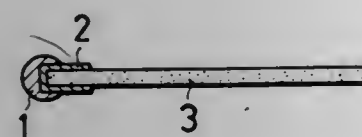
Junichi Sadahiro, Hyogo, Japan, assignor to Daito Match Kogyo Kabushiki Kaisha, Hyogo-ken, Japan

Filed Aug. 9, 1971, Ser. No. 169,939

Int. Cl. A01n 17/04

U.S. Cl. 21—116

1 Claim



A formed solid fumigant of the type used as an incense or insecticide is ignitable only at a relatively high temperature. It is covered at its tip portion with a layer which facilitates ignition of the solid fumigant. An ignition head, ignitable by a relatively low temperature, is provided at the tip of the covering layer.

3,754,862

**REAGENT COMPOSITION AND METHOD FOR DETERMINING TOTAL BILIRUBIN**

August Wilhelm Wahlefeld, Weilheim, upper Baravis; Erich Bernt, Munich; Wolfgang Gruber, Garatshausen, and Hans Ulrich Bergmeyer, Tutzing, upper Baravis, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Feb. 29, 1972, Ser. No. 230,253

Claims priority, application Germany, Mar. 5, 1971, P 21 10 658.1

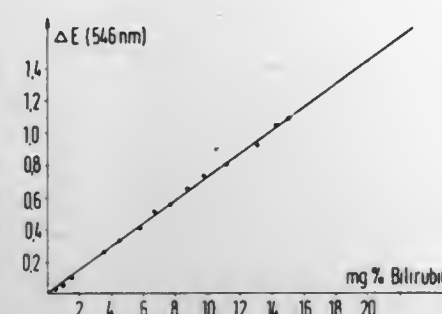
Int. Cl. G01n 33/16

U.S. Cl. 23—230 B

12 Claims

Total bilirubin is determined with a stable, accurate, wide-range reagent composition comprising:  
a. at least one of the group of chlorophenyl diazonium

chlorides consisting of 2,4-dichloro-, 2,5-dichloro- or 2-chloro-4-nitro-phenyl-diazonium chloride and,



b. an alkyl-phenol polyethylene oxide; to produce a color which is then taken as a measure of bilirubin content.

3,754,863

**METHOD AND AN APPARATUS FOR DOSING REAGENTS AND FOR THEIR INCUBATION AND FOR SAMPLING REACTION MIXTURE**

Matti Antero Reunanen, Kupittaaank, 11-13 C 38, Turku, Finland

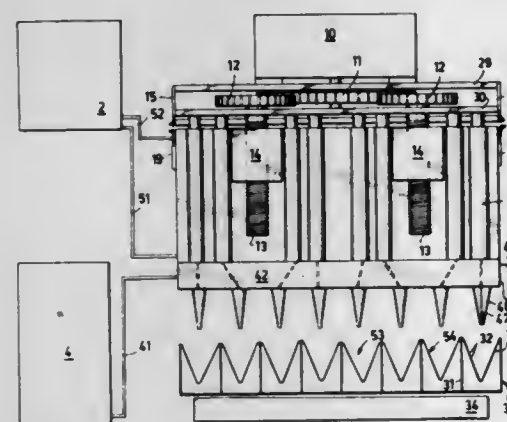
Filed May 10, 1971, Ser. No. 141,511

Claims priority, application Finland, May 12, 1970, 1323/70

Int. Cl. G01n 1/14, 1/16

U.S. Cl. 23—230 R

13 Claims



A method and an apparatus for dosing reagents and for incubation and sampling of the reaction mixture, in which method the reagents are drawn into the reaction syringes in which the incubation is carried out and in which the samples are discharged from the syringes in one or more portions, the apparatus consisting of a syringe unit, reaction syringes mounted on a single frame which is easy to replace, syringes containing stopping liquid and an internal standard and mounted on a fixed outer frame, vessels for the reagents, instruments for feeding reagents and for the automatic adjustment of the pistons and for transferring absorption plates, and a thermostat. The invention is suitable for reactions and dosing purposes, particularly for macromolecular investigation of radioactive parent substances, where the sample is absorbed into a porous medium and where it is washed automatically.

3,754,864

**MICELLE-FORMING PROTECTIVE COLLOID IN COLORIMETRIC ANALYSIS**

E. Melvin Gindler, Rockford, Ill., assignor to Pierce Chemical Company, Rockford, Ill.

Continuation-in-part of Ser. No. 215,638, Jan. 5, 1972. This application Jan. 31, 1972, Ser. No. 222,375

Int. Cl. G01n 33/16

U.S. Cl. 23—230 B

10 Claims

A colorimetric process for accurately determining the concentration of a metal in a protein containing biologic fluid

3,754,867

**CARBON DIOXIDE SENSING SYSTEM**

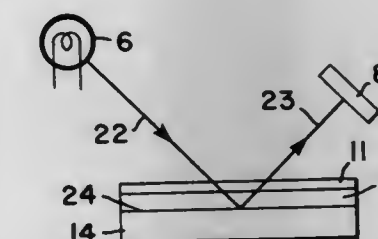
Karl R. Guenther, Stoughton, Wis., assignor to Bjorksten Research Laboratories, Inc., Madison, Wis.

Continuation-in-part of Ser. No. 97,072, Dec. 11, 1970, Pat. No. 3,694,164, and a continuation-in-part of Ser. No. 118,022, Feb. 23, 1971, abandoned. This application Sept. 20, 1971, Ser. No. 181,834

Int. Cl. G01n 21/12, 21/20, 21/22

U.S. Cl. 23—254 R

3 Claims

**3,754,865  
COLORIMETRIC DETERMINATION OF CALCIUM IN BIOLOGIC FLUIDS**

E. Melvin Gindler, Rockford, Ill., assignor to Pierce Chemical Company, Rockford, Ill.

Filed Jan. 5, 1972, Ser. No. 215,638

Int. Cl. G01n 33/16

U.S. Cl. 23—230 B

28 Claims

Methylthymol blue dye in colorimetrically analyzing a biologic fluid such as blood serum for calcium content. Analysis can be accomplished in the presence of proteins, phosphates and bilirubin. 8-Quinolinol can be used to bind magnesium without an accompanying adverse effect on the measurement of calcium concentration. Color stable aqueous solutions of the dye are also provided as well as color stability of the calcium-dye complex during analysis.

3,754,866

**OPTICAL DETECTING SYSTEM**

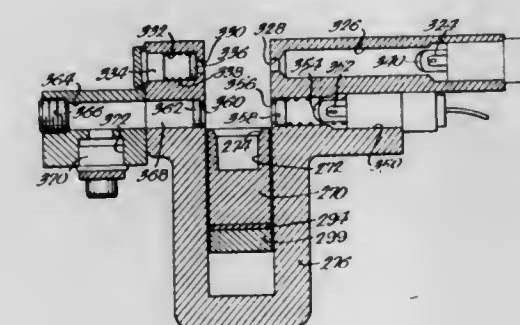
David Alan Ritchie, and Richard A. Reeves, both of St. Louis, Mo., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed July 30, 1971, Ser. No. 167,377

Int. Cl. G01n 21/24, 33/16

U.S. Cl. 23—253 R

10 Claims



A testing apparatus for automatically determining prothrombin times and other similar factor assays. A turntable conveyor moves successive blood plasma samples in containers to a test station where each sample is tested, pertinent information sensed and fed to a printer for readout. Preliminary to the testing station is a first reagent dispenser where a reagent is dispensed to each sample and a second reagent dispenser is located at the testing station for adding a second reagent. Intermediate the two reagent dispensers is a sample incubation device which intimately contacts each container to apply heat thereto to incubate the sample contained therein. Each reagent dispenser is provided with a reagent reservoir and associated magnetic stirring system. A unique system for decoupling the magnetic stirring system from a magnetic stirrer and moving the magnetic stirrer out of the path of a pipette forming part of each reagent dispenser is provided. At the testing station, a unique photosensitive detection device is provided for sensing the formation of clots after the second reagent is added.

3,754,868

**DEVICE FOR PREPARATION OF SAMPLE FOR BIOLOGICAL AGENT DETECTOR**

Samuel Witz, Los Angeles, Calif.; Lee T. Carleton, Northport, N.Y.; Howard H. Anderson, Covina; Rudolph H. Moyer, West Covina, both of Calif., and Harold A. Neufeld, Frederick, Md., assignors to Aerojet-General Corporation, El Monte, Calif., by said Witz, Carleton, Anderson and Moyer and The United States of America as represented by the Secretary of the Army, Washington, D.C., by said Neufeld, part interest to each

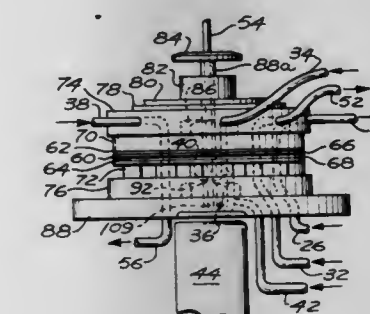
Division of Ser. No. 52,606, July 6, 1970, Pat. No. 3,690,837.

This application Dec. 20, 1971, Ser. No. 210,050

Int. Cl. G01n 1/14, 1/22

U.S. Cl. 23—254 R

3 Claims



Filter means for removing microscopic particles from a fluid stream and delivering said particle to equipment for detecting biological agents such as vegetative bacteria, spores and viruses, capable of operating satisfactorily when supplied with minute samples of material to be tested, even when present in a continuous background of matter similar in nature. The equipment utilizes the phenomenon of chemiluminescence and, more particularly, provides the proper conditions for chemiluminescence of luminol by hydrogen peroxide, operating in an intermittent flow system supplied with the agents by



an aerosol particle collector, and in which detection of the chemiluminescence is by a photomultiplier tube the output of which is monitored. Photomultiplier output could be recorded on a chart, magnetic tape or merely designed to set off an alarm when values exceed a prescribed threshold.

3,754,869

## FUME INCINERATOR

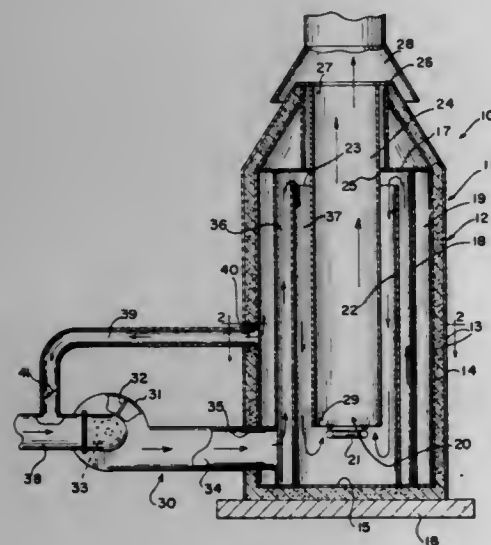
Earl M. Van Raden, Warren, Mich., assignor to Mahon Industrial Corporation, Saginaw, Mich.

Filed Aug. 19, 1971, Ser. No. 173,193

Int. Cl. F23g 7/06; F23j 5/02

U.S. Cl. 23-277 C

4 Claims



A fume incinerator for afterburning fumes containing air polluting elements includes a casing having a burner disposed in a combustion chamber. The casing includes an outer compartment which is sealed from the combustion chamber and provides a dead air space between the combustion chamber and the outer walls of the casing. A blower receiving fumes from an industrial process or apparatus directs the fumes into the combustion chamber. A conduit in communication with the dead air chamber is in communication with the suction conduit of the blower so that any fumes which may leak into the dead air space or chamber are immediately removed and returned into the combustion chamber, thus preventing leakage of the same through the outer walls of the casing and into the atmosphere.

3,754,870

## METHOD AND MEANS OF CATALYTICALLY CONVERTING FLUIDS

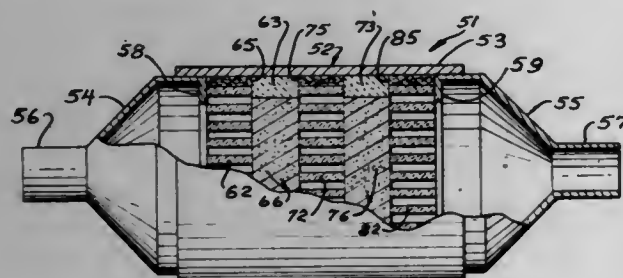
Robert D. Carnahan, Barrington, and Karl J. Youtsey, Chicago, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 26, 1971, Ser. No. 175,237

Int. Cl. F01n 3/14; B01j 9/04

U.S. Cl. 23-288 F

4 Claims



Method and means of catalytically converting fluids such as exhaust gases. The fluid is first passed through a skeletal material zone having a plurality of flow paths in the direction of flow. The skeletal material zone is preferably made catalyti-

cally active. Immediately after withdrawing the fluid from the skeletal material zone, the fluid is passed through subdivided catalyst material. These steps may be repeated more than once prior to final withdrawal.

3,754,871

## CHEMICAL DISPENSING APPARATUS

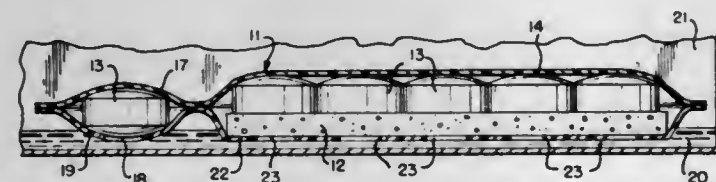
Harold H. Hessel, Briarcliff Manor, and Francis S. Kiele, Yonkers, both of N.Y., assignors to Stewart-Hall Chemical Co., Mount Vernon, N.Y.

Filed Jan. 22, 1971, Ser. No. 108,774

Int. Cl. B01d 11/02; C02b 1/18

U.S. Cl. 23-267 A

5 Claims



A simplified chemical dispenser apparatus capable of dispensing a predetermined amount of a treatment chemical into a fluid includes a porous matrix exhibiting capillary action when the fluid contacts a surface of the matrix, a fluid treatment chemical composition located on a surface of the matrix, and housing means for covering said chemical composition and at least said chemical bearing matrix surface to shield against dripping or splashing from the top or sides. The housing may be applied as an envelope in which case the chemical supported upon the matrix is sealed therein.

3,754,872

## TEST TUBE FOR BODY LIQUIDS

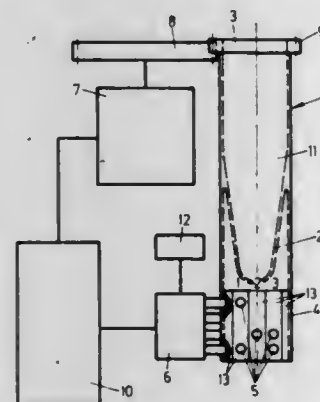
Karl-Heinz Zauft, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Mar. 18, 1971, Ser. No. 125,713

Int. Cl. G01n 1/10

U.S. Cl. 23-292

5 Claims



A little test tube is used to receive body liquids in an automated analyzer. The tube has a portion receiving the liquid, a supporting portion and a further portion carrying coded data for identification of the liquid being tested. The invention is particularly characterized in that the shell of the tube extends axially beyond the part receiving the liquid for receiving stamped coded data.

3,754,873

## COLD ROLLED SHEET

Max E. Bills, Pleasant Hills Borough, Pa., and Henry J. Hansen, Jr., Portage, Ind., assignors to United States Steel Corporation, Pittsburgh, Pa.

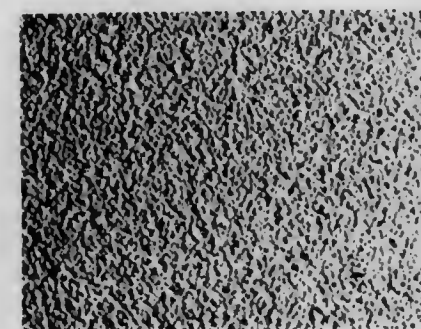
Division of Ser. No. 792,079, Jan. 17, 1969, Pat. No.

3,619,881. This application Feb. 3, 1971, Ser. No. 112,362

Int. Cl. B21b 1/28

U.S. Cl. 29-183.5

2 Claims



A cold rolled steel sheet or strip has a plurality of closely spaced, low, generally frustospherical projections of substantially uniform shape and height throughout its surface, the arithmetic average roughness of the surface being between 20 and 400 microinches.

3,754,874

## AUTOMOTIVE TRIM MATERIAL

Ray B. Anderson, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

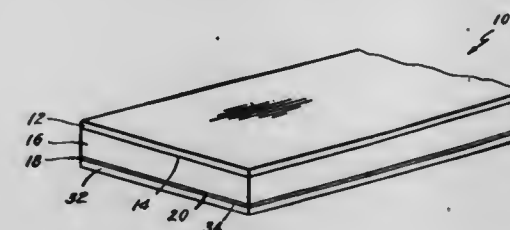
Division of Ser. No. 000,478, Jan. 2, 1970, Pat. No. 3,648,353.

This application Aug. 30, 1971, Ser. No. 176,238

Int. Cl. B32b 15/00

U.S. Cl. 29-196.1

2 Claims



An automotive trim material to be detachably mounted on a painted steel automotive body by means of clips secured to the body is shown to comprise a composite metal laminate material having an outer layer of stainless steel disposed exteriorly of the trim configuration, an intermediate layer of mild steel material, and an opposite outer surface layer of aluminum material, said laminate layer materials being metallurgically bonded together in the solid phase, the stainless steel layer being in scratch-resistant, cold-worked condition, the mild steel layer being in easily formed, annealed condition, and the interface between the mild steel and the aluminum layers being substantially free of embrittling aluminum-iron inter-metallic compounds.

3,754,875

Patent Not Issued For This Number

3,754,876

## UPGRADING LOW RANK COALS AS FUEL

Robert E. Pennington; Hermann E. von Rosenberg, both of Baytown, Tex., and Jack M. Hochman, Morris Plains, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Dec. 10, 1971, Ser. No. 206,819

Int. Cl. C101 5/00; C10g 1/00

U.S. Cl. 44-1 B

12 Claims

A process in which lumps of sub-bituminous or lower rank coal are heated to pyrolysis temperatures of up to about 1,000° F. by contact, preferably countercurrent, with an inert hydrogen-poor hydrocarbonaceous heat transfer fluid, preferably a coal-derived oil, thereby transforming the coal to a char product in lump form of upgraded calorific value, such product, moreover, being less pyrophoric than a char product produced by pyrolysis at the same temperatures in an inert gaseous (nitrogen) atmosphere.

3,754,877

## GELLED FUEL COMPOSITIONS

Eugene D. Klug, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Feb. 4, 1972, Ser. No. 223,762

Int. Cl. C101 7/04

U.S. Cl. 44-7 B

10 Claims

Disclosed are combustible gels comprised of an aliphatic alcohol and a crosslinked olefin-modified hydroxyalkyl cellulose. These gels find utility as fuels for chafing dishes and the like, as flares, and for decorative lighting purposes. Color producing inorganic materials can be added for pyrotechnic applications.

3,754,878

## ABRASIVE CLEANING COMPOSITIONS

Richard L. Burke, San Diego, Calif., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 668,667, Sept. 18, 1967,

abandoned. This application Jan. 4, 1971, Ser. No. 103,821

Int. Cl. B24d 3/02

U.S. Cl. 51-307

7 Claims

This disclosure relates to abrasive cleansing compositions having particular utility as a metallic stain remover from hard surfaces such as porcelain, comprising an oxidant capable of oxidizing the metal in a practical time such as the metallic ions ferric, stannous, cupric and mercuric, a halide promoter, and an abrasive, said composition having a pH of 0.5-5. Additives such as detergents, perfumes, fillers, colorants, etc. may be included provided they do not adversely effect the stain removing properties of the composition. Although aluminum pot marks are most often encountered in normal household cleaning, said cleansers are effective against other metallic stains such as iron, tin, magnesium, etc.

3,754,879

## METHOD FOR FORMING A DOUBLY CLAD GLASS MONOFIBER ELEMENT HAVING A LOW VISCOSITY OUTER CLADDING

Roland A. Phaneuf, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Oct. 29, 1970, Ser. No. 85,204

Int. Cl. C03c 23/20

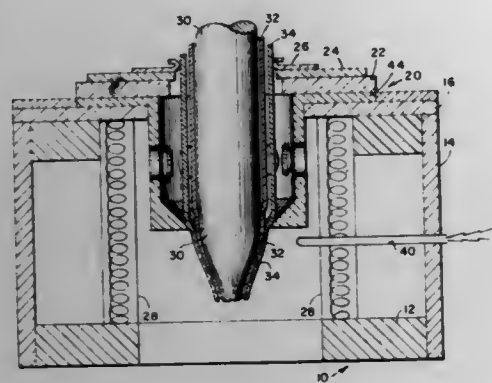
U.S. Cl. 65-4

2 Claims

A glass core is assembled in a glass cladding tube and a plurality of rods of low viscosity glass is fused at regular intervals around the outside of the cladding tube. The fusing process occurs at the mono drawing stage. The assembly is drawn through a ring in the drawing furnace immediately subsequent



to the point where the cladding tube is collapsed against the core by a vacuum which is drawn between the cladding and



core. In this manner, the rods are forced against the cladding tube, thereby fusing the rods on the surface of the cladding.

3,754,880

### CHANGING LIFT-OUT ROLLS SUPPORTING A CONTINUOUS RIBBON OF GLASS

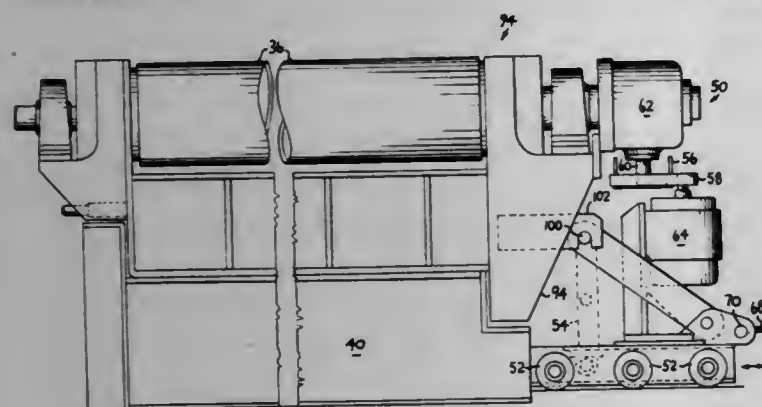
David J. Henderson, Pittsburgh, and Mike Godich, Jr., McKeesport, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sept. 9, 1971, Ser. No. 178,983

Int. Cl. C03b 15/02

U.S. Cl. 65-27

3 Claims



The instant invention improves the float-glass process, transforming the operation of changing of a lift-out roll from one that requires a shutdown of three to four days to one that may be conducted without interruption of the production of float-glass ribbon. Hardware related to the dross box is modified to permit a lift-out roll to be moved substantially axially, preferably along with its associated bottom seal. The equipment used preferably includes first (end) and second (center) support-carriage means; these operate to permit continual rotation of the lift-out roll during the removal operation to prevent warpage.

3,754,881

### ART OF PRODUCING INORGANIC BODIES HAVING AT LEAST A SURFACE LAYER WHICH IS SEMICRYSTALLINE

Richard W. Petticrew, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 486,191, Sept. 9, 1965, abandoned.

This application Mar. 27, 1969, Ser. No. 812,960

Int. Cl. C03c 3/22

U.S. Cl. 65-33

1 Claim

This patent pertains to a method for producing a crystallized glass article in which a glass containing 50.8 percent  $\text{SiO}_2$ , 8.2 percent  $\text{Al}_2\text{O}_3$ , 22.5 percent  $\text{ZnO}$  and 18.5 percent  $\text{CaO}$  is roughened on an exposed surface such that it has a frosted appearance and thereafter is crystallized on the surface by controlled heating, below the softening temperature to initiate and obtain, crystallization.

### 3,754,882 METHOD OF MANUFACTURING A LIGHT CONDUCTIVE PERFORATED PLATE

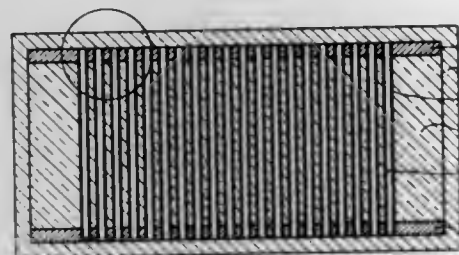
Johannes Van Esdonk, and Jacobus Hubertus Jacobs, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 78,076, Oct. 5, 1970, abandoned. This application Dec. 1, 1972, Ser. No. 311,417

Int. Cl. C03b 23/02, 23/20

U.S. Cl. 65-42

7 Claims



A method of manufacturing a perforated plate comprising placing a plurality of tubes in the holes of at least one perforated base plate, and filling the space between the tubes with a material having a lower softening temperature than that of the tubes. This formed block is then cut in a direction transverse to the tubes to form thinner perforated plates.

3,754,883

### GLASS TUBE FORMING APPARATUS AND METHOD

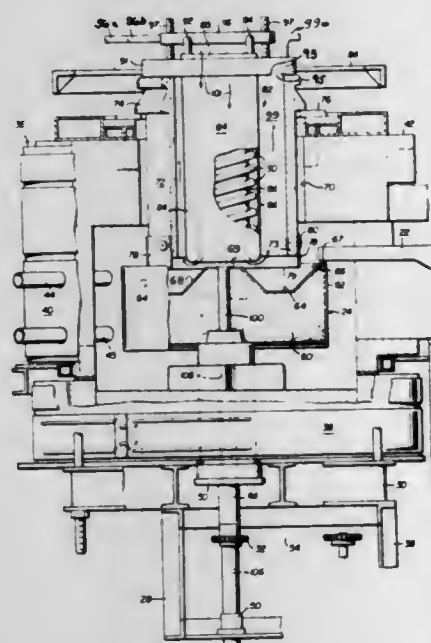
George E. Keefer, and Yu K. Pei, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed May 19, 1971, Ser. No. 144,973

Int. Cl. C03b 15/14

U.S. Cl. 65-88

16 Claims



An improved process and apparatus for forming glass tubes or rods from a readily devitrifiable glass composition by an up-draw process in which molten glass at a controlled temperature flows inwardly over the periphery of a rotating pan to form a shallow pool therein. The rotating pan has a central cone around which the root of the glass tube is formed, the tube being drawn upwardly by overhead draw rolls which rotate concentrically and in synchronism therewith. The wall thickness and diameter of the tube being drawn is controlled, in part at least, by maintaining with extreme accuracy the difference in level between the point of glass introduction into the pan and the point of the tube withdrawal. Preferably, the level of glass in the pan is controlled by allowing molten glass to spill over the edge of the pan. Preferably, the pan is heated by combustion burners playing on the pan, and flame shield is

interposed in the path of the flames, the heat and the shield maintaining an exact temperature differential between the body of glass and the glass at the tube-forming central portion of the pan.

3,754,884

### GLASS CUTTING METHOD AND APPARATUS

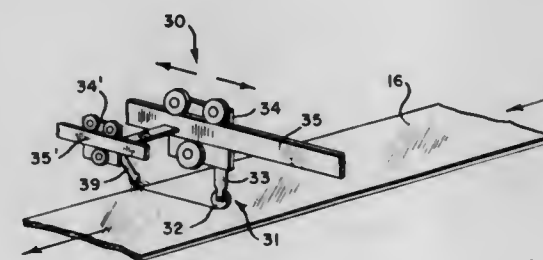
James C. McDavid, and Russell H. Miles, Jr., both of Kingsport, Tenn., assignors to ASG Industries, Inc., Kingsport, Tenn.

Continuation-in-part of Ser. No. 771,385, Oct. 29, 1968, abandoned. This application July 15, 1971, Ser. No. 162,968

Int. Cl. C03b 21/00

U.S. Cl. 65-97

16 Claims



A method and apparatus for cutting glass sheets from a glass ribbon in the continuous production of glass. The glass ribbon, after it is formed from molten glass material, is brought to a temperature corresponding to the strain point of the glass and cut while at this temperature into successive sheets.

3,754,885

### JET FIRED ZONAL LEHR FOR APPLYING TREATING MEDIUM INSIDE AND OUTSIDE OF GLASS CONTAINERS SIMULTANEOUSLY

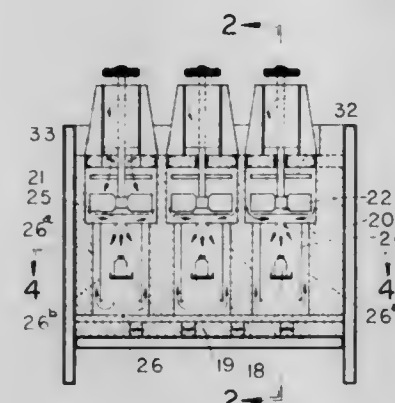
Edward W. Bowman, Uniontown, Pa., assignor to E.W. Bowman, Incorporated, Uniontown, Pa.

Filed Nov. 10, 1971, Ser. No. 197,302

Int. Cl. C03b 25/04

U.S. Cl. 65-119

8 Claims



This disclosure relates to a method and apparatus for annealing glassware by passing the ware continuously through a tunnel in which the application of heat and recirculation of the gaseous treating medium is regulated to establish and maintain independently controllable heating and cooling zones. An endless perforated conveyor passes from end to end of the tunnel and the ware is placed on the conveyor in alignment with and beneath a jet-like blast of the treating medium internally and externally of the ware simultaneously to subject all of the ware to uniform treatment in minimum time. The treating medium in the heating zones of the tunnel is recirculated and furnace pressure and temperature is regulated by circulating fans and by dampers between the furnace chambers with the outside atmosphere.

3,754,886

### METHOD FOR REFINING MOLTEN GLASS

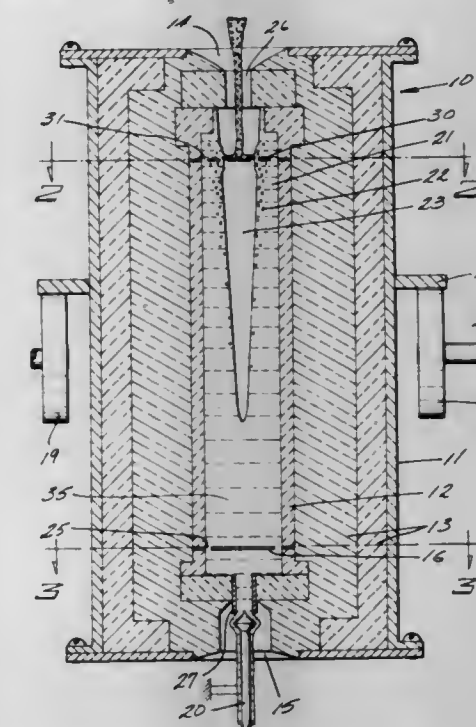
Raymond S. Richards; Robert R. Rough, and Douglas F. St. John, all of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 2, 1971, Ser. No. 130,672

Int. Cl. C03b 5/18

U.S. Cl. 65-134

29 Claims



A method of removing undesirable gaseous inclusions, also known as seeds and bubbles, from seed containing or unrefined molten glass by continuously introducing this unrefined molten glass into a rapidly rotating contained glass mass, subjecting the unrefined molten glass mass to centrifugal forces substantially greater than gravity, and developing static pressure differences in the glass mass, resulting in pressure gradients in the molten glass and causing the gaseous inclusions to migrate to areas of lower static pressure and to the atmosphere from the molten glass, and subjecting the partially refined molten glass to increased centrifugal forces to remove additional gaseous inclusions, delivering refined molten glass from the contained glass mass, having reduced numbers of gaseous inclusions.

The refining apparatus is a container for holding molten glass mounted for rotation about its axis of rotation. A refractory-lined chamber within the container holds molten glass; the container has a centrally located top inlet, and a centrally located outlet at the bottom of the container. A slinger plate is positioned near the top inlet for diverting the entering molten glass stream within the container. A diverter plate is positioned within the container near the outlet of the container and causes the molten glass to flow adjacent the chamber wall on the way to the discharge, then subjecting the molten glass to an increased centrifugal force, and increasing the number of gaseous inclusions removed from the molten glass.

The container has a flange, encircling the outside thereof. Pair of rotatable driving wheels support the flange and provide means for rotating the container.

3,754,887

### UREIDOPYRAZOLES AS DEFOLIANTS

Richard Kirven Brantley, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 822,001, May 5, 1969, Pat.

No. 3,646,059. This application Feb. 25, 1972, Ser. No. 229,555

Int. Cl. A01n 9/22

U.S. Cl. 71-74

8 Claims

Certain ureidopyrazoles, such as 5-(3-phenylurcido)-1,3-dimethylpyrazole, 5-[3-(2-fluorophenyl)urcido]-4-chloro-



1,3-dimethylpyrazole, and 5-[3-(3-fluorophenyl)ureido]-1,3-dimethylpyrazole, are effective as plant growth modifiers. The ureidopyrazoles are particularly useful as defoliant on cotton, soybean, and dry bean plants.

3,754,888

# HERBICIDAL COMPOSITION AND METHOD EMPLOYING THIAZOLE DERIVATIVES

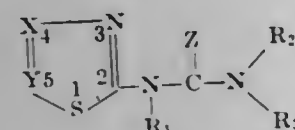
Jean Claude Fullot, 9 rue Paul Langevin, Eaubonne; Pierre Poignant, 15 rue Fabregue, Lyon, and Jacques De Baselaire de Lesseux, 7 Avenue de l'Imperatrice Josephine, Rueil-Malmaison, all of France

Continuation-in-part of Ser. No. 540,192, April 5, 1966, Pat. No. 3,551,442. This application Mar. 2, 1970, Ser. No. 15,899 Int. Cl. A01n 9/12

U.S. Cl. 71-90

13 Claims

A thiazole derivative having the general formula



and pesticidal compositions containing the same.

3,754,889

# HIGHLY FLUXED IRON OXIDE PELLET

Ezekiel Dominguez; Henry W. Hitzrot, Jr., both of Bethlehem, and John D. Lynn, Center Valley, all of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Oct. 14, 1970, Ser. No. 80,728

Int. Cl. C21b 1/08, 1/28, 1/10

U.S. Cl. 75-3

6 Claims

A highly fluxed iron oxide pellet containing about 50 percent to about 95 percent iron oxide, about 20 percent calcium oxide plus magnesium oxide, not more than 10 percent silica, not more than 2 percent alumina, the remainder incidental impurities. The ratio of the calcium oxide plus magnesium oxide to the silica plus alumina in the pellet may be from about 0.5:1 to about 4.5:1. The ratio of calcium oxide to magnesium oxide on a weight basis in the pellet is from about 90 to 10 percent to about 80 to 20 percent, respectively.

The pellet of the invention is produced by forming a mix of about 60 to 95 percent iron ore concentrate, about 40 to about 5 percent flux, a binder and moisture. The mix is balled in an apparatus, for example a balling disc. The green balls are dried at a temperature not higher than 500°F. The dried green balls are fired within a temperature range of 2150°F. to 2350°F. to form pellets. The pellets are cooled to room temperature.

3,754,890

# PROCESS FOR PRODUCING METALLIZED AGGLOMERATES AND RECOVERY OF NON-FERROUS VALUES FROM WASTE MATERIALS

Arthur L. Fitch, Mars, Pa., assignor to Harsco Corporation, Wormleysburg, Pa.

Continuation of Ser. No. 36,719, May 13, 1970, abandoned.

This application Sept. 17, 1971, Ser. No. 181,592

Int. Cl. C21b 1/30

U.S. Cl. 75-3

6 Claims

A process and system for producing metallized iron agglomerates and for recovery of zinc values from waste materials, in dust form, including comminuting and drying the dust. Collecting and separating the dust in accordance with the content of the zinc values and proportionately blending the dust to provide a product having a substantially uniform zinc value content for pelletizing into green balls. Drying and indurating the green balls and reducing the indurated balls with a reductant to provide highly metallized balls and volatilization of the zinc values. Recovering the volatilized zinc values, as exhaust gases, to provide metallized balls having a high iron content substantially free of zinc values.

3,754,891

# METHOD OF PRODUCING IRON-POOR NICKEL SULPHIDE MATTE FROM SULPHIDIC NICKEL CONCENTRATES IN SUSPENSION SMELTING THEREOF

Petri Baldur Bryk, Helsinki; Jorma Bruno Honkasalo, Westend; Rolf Einar Malmstrom, Pori; Simo Antero Livari Makipirtti, Nakkila; Toivo Adrian Toivanen, Harjavalta, and Olavi August Aaltonen, Pori, all of Finland, assignors to Outokumpu Oy, Outokumpu, Finland

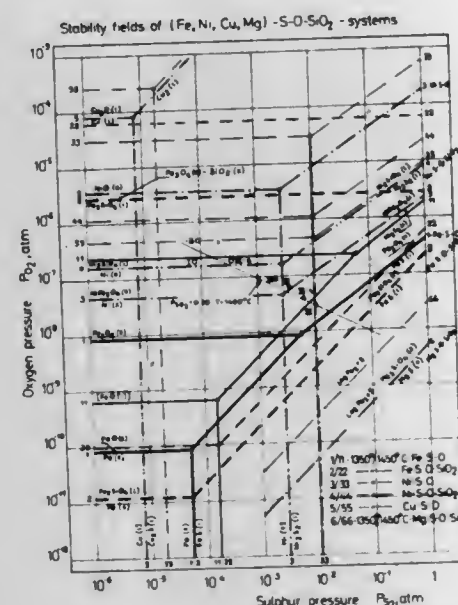
Filed Mar. 29, 1971, Ser. No. 128,803

Claims priority, application Finland, Apr. 10, 1970, 1000

Int. Cl. C22b 15/00, 1/02, 15/04

U.S. Cl. 75-23

6 Claims



A fine-grained concentrate of sulphide ore is suspended by a special disperser into a heated downward flow of air, air enriched with oxygen or oxygen containing gas in a vertical reaction shaft of a furnace to oxidize non-oxidic metal compounds in the concentrate. The gases and flue dust are separated from the solids which form a smelt on the furnace bottom which smelt consists of a matte and a slag on the matte. Oxidation of matte in the lower furnace and incorporation of nickel oxide into the slag are prevented by reducing trivalent iron and nickel oxides in the lower part of the reaction shaft before the gases enter the lower furnace. The reduction is effected by increasing the partial pressure of sulphur of the gases and/or by decreasing the partial pressure of oxygen.

3,754,892

# CONTINUOUS METHOD OF STEEL MAKING

Ryo Ando, and Tsutomu Fukushima, both of Kawasaki-shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Kanagawa, Japan

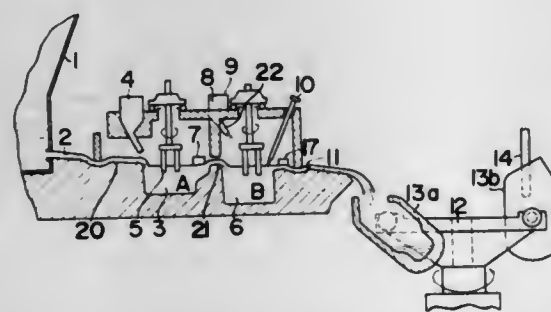
Filed May 2, 1969, Ser. No. 821,385

Claims priority, application Japan, May 9, 1968, 43/30563. The portion of the term of this patent subsequent to July 13, 1988, has been disclaimed.

Int. Cl. C21c 7/00, 7/06

U.S. Cl. 75-46

8 Claims



Steel is made continuously by mechanically agitating molten pig iron and slag proximate their interface and simultane-

ously passing oxygen onto that interface whereupon the pig iron is desulphurized and dephosphorized. The pig iron product is then decarbonized by treatment with oxygen.

3,754,893

# PURIFICATION OF STEEL

James J. Frawley, Albany; Silvio S. Gras, Schenectady, both of N.Y., and Louis D. Tote, Erie, Pa., assignors to General Electric Company, Schenectady, N.Y.

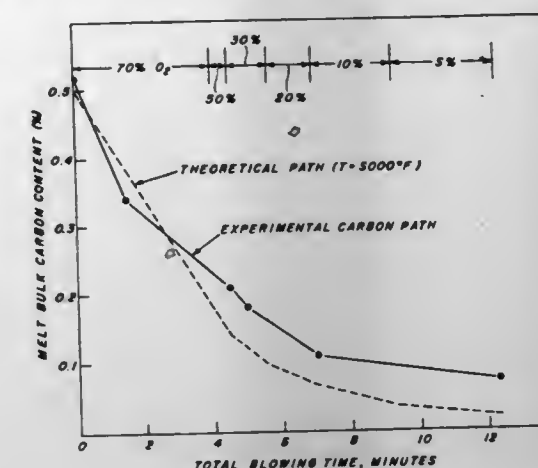
Filed Mar. 8, 1971, Ser. No. 122,141

Int. Cl. C21c 7/02, 7/06

U.S. Cl. 75-58

6 Claims

A process of essentially removing the aluminum oxide inclusions from molten steel which has been aluminum-deoxidized. The process comprises the addition to the aluminum-containing molten steel of from about 0.01 to about 0.05 percent by weight of magnesium based on the weight of the steel.



ments such as chromium, manganese, and iron, by careful control of the input of oxidizing material.

3,754,896

# PROCESS FOR RECOVERING NICKEL FROM VERY LOW GRADE PRIMARY NICKEL ORES

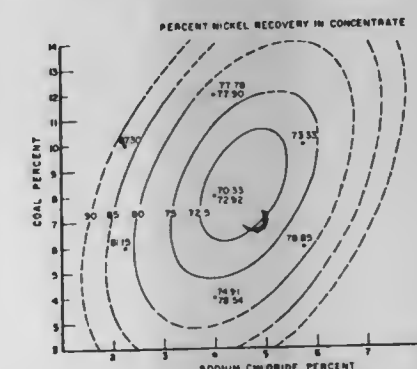
Iwao Iwasaki, Minneapolis, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed Aug. 11, 1970, Ser. No. 62,837

Int. Cl. C22b 23/00, 3/00

U.S. Cl. 75-82

10 Claims



A process for recovering nickel from primary rock materials with a very low nickel content characterized by massive occurrences therein of a relatively uniform and very low grade of nickel in the form of sulphides, oxides, alloys and silicates, very low sulphur and low copper and iron values, low sulphur to nickel ratios and the absence or negligible occurrences of pyrrhotite. The process comprises the grinding of the rock materials to fine particles, adding sodium chloride or other alkali metal chlorides and coal, by itself or in combination with other carbonaceous reducing agents, roasting the resulting mixture in a near neutral atmosphere at temperatures from 800° to 1100°C. for a sufficient time to effect conversion of a substantial amount of the nickel content to nickel in metallic, alloy or oxide forms, cooling the resulting mixture under non-atmospheric conditions to a non-reacting temperature and removing the magnetic fraction from the roasted mixture by magnetic separation procedures.

3,754,897

# MELTING OF METALS

Leslie Jack Derham, deceased, late of Avonmouth, England, and by Michael Gordon Derham, administrator, 20 Ridgehill, Henleaze, England

Continuation of Ser. No. 810,088, March 21, 1969, abandoned. This application Nov. 5, 1971, Ser. No. 196,234

Int. Cl. C22b 9/10, 21/06; C22h 13/06

U.S. Cl. 75-96

12 Claims

A method of purifying or preventing oxidation of metals is achieved by covering the metals in the molten state with a flux

3,754,895

# PROCESS FOR DECARBURIZATION OF STEELS

Sundaresan Ramachandran, Natrona Heights, and Basil U. Igwe, New Kensington, both of Pa., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 801,017, Feb. 20, 1969, abandoned.

This application Jan. 27, 1971, Ser. No. 110,324

Int. Cl. C21c 5/34

U.S. Cl. 75-60

4 Claims

Described herein is an improved process for decarburiza-



containing a molten double salt of sodium chloride and aluminum chloride. Other alkali or alkaline earth metal halides may additionally be included in the flux.

3,754,898

## AUSTENITIC IRON ALLOYS

James A. McGurty, Apt. 101J Colonial Dr., Reading, Pa.  
Filed Jan. 7, 1972, Ser. No. 216,297  
Int. Cl. C22c 37/00, 37/10

U.S. Cl. 75—122

5 Claims

The production of an austenitic iron base alloy with relatively high aluminum and chromium content which forms an aluminum oxide protective film in the presence of yttrium and/or rare earth elements and has high temperature resistance.

3,754,899

## AUSTENITIC ALLOY CONTAINING BORON, AND PROCESSES FOR MANUFACTURING THE SAME

Jerome J. Kanter, Palos Park, Ill.  
Filed Dec. 14, 1970, Ser. No. 98,101  
Int. Cl. C22c 39/20, 39/54

U.S. Cl. 75—129

8 Claims

An austenitic ferrous base alloy characterized by improved stability at high temperatures, and by improved resistance to sensitization and to corrosion, cracking, and general deterioration. The austenite is an iron-chromium-nickel alloy containing from 0.01 to 0.2 percent boron, less than 0.009 percent carbon, and substantially free from nitrogen and oxygen. The boron is a solute in the austenite. The process of manufacture is to form a melt of iron, chromium, nickel and other additives, and then add a ferro-boron alloy having a melting point well below that of the base alloy. The process is carried out in a vacuum furnace in order to substantially eliminate carbon, nitrogen, and oxygen from the alloy.

3,754,900

## PRODUCTION OF LOW-NITROGEN HIGH-CHROMIUM FERROUS ALLOYS

Egil Aukrust, Bethel Park, and T. Grant John, Pittsburgh, both of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Apr. 16, 1971, Ser. No. 134,831

Int. Cl. C22c 33/00

U.S. Cl. 75—130.5

8 Claims

A low-nitrogen low-carbon high-chromium steel is made by forming a melt of chrome ore, iron ore and lime, reducing the melt with silicon or ferrosilicon out of contact with the ambient air, and teeming the underlying metallic phase also out of contact with the ambient air into a mold.

3,754,901

## EVAPORATION SOURCE FOR DEVICE METALLIZATION

Edward L. Hall, and Elliott M. Philofsky, both of Phoenix, Ariz., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.  
Filed Mar. 24, 1972, Ser. No. 237,954  
Int. Cl. C22c 21/02, 21/04

U.S. Cl. 75—141

1 Claim

An evaporation source is provided for device metallization. The evaporation source, an aluminum alloy, comprises the chemical composition in percent by weight: 0.5 silicon, 0.5 iron, 3.8 to 4.9 copper, 0.3 to 0.9 manganese, 1.2 to 1.8 magnesium, 0.1 chromium, 0.25 zinc, balance aluminum.

3,754,902

## NICKEL-BASE SUPERALLOY RESISTANT TO OXIDATION-EROSION

Donald H. Boone, North Haven; David N. Duhl, Newington, and George W. Goward, North Haven, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 5, 1968, Ser. No. 734,706

Int. Cl. C22b 61/00

U.S. Cl. 75—171

2 Claims

Nickel-base superalloys are described which oxidize selectively to form a single protective oxide  $Al_2O_3$  which is particularly adherent to the alloy surface. Alloys of the nickel-chromium-aluminum type are disclosed in a basic chemistry corresponding to, by weight, 4-7 percent aluminum, 12-21 percent chromium, 19-25 percent aluminum plus chromium, 0.01-0.5 percent yttrium or similar material, balance nickel with the usual alloying ingredients associated with the superalloys.

3,754,903

## HIGH-TEMPERATURE OXIDATION-RESISTANT COATING ALLOY

George W. Goward; Donald H. Boone, and Frederick S. Pettit, all of North Haven, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

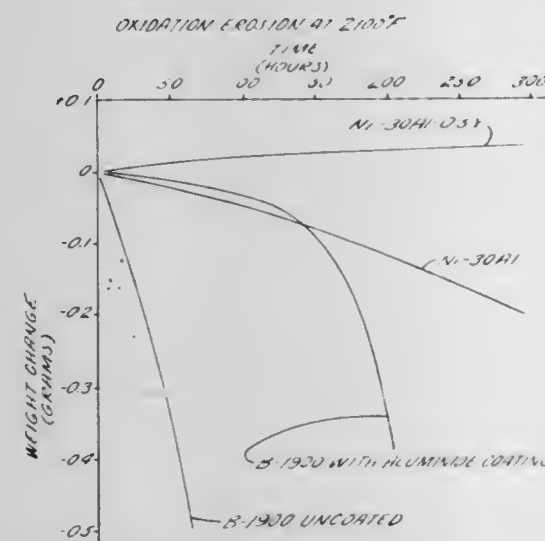
Division of Ser. No. 734,740, June 5, 1968. This application

Sept. 15, 1970, Ser. No. 72,512

Int. Cl. C22c 19/08

U.S. Cl. 75—171

2 Claims



A coating alloy for the gas turbine engine super-alloys is described which consists primarily of nickel, aluminum and a reactive metal such as yttrium, particularly at the composition, by weight, 14-30 percent aluminum, 0.01-0.5 percent reactive metal balance nickel. A preferred embodiment also includes 15-45 weight percent chromium.

3,754,904

## ZINC-ALUMINUM ALLOY

Erich Pelzel, Puchhelm, Germany, assignor to Stolberger-Zink AG Fur Bergbau Und Huttenbetrieb, Aachen, Germany

Filed Mar. 3, 1971, Ser. No. 120,718

Claims priority, application Germany, Mar. 5, 1970, P 20 10 299.2

Int. Cl. C22c 17/00

U.S. Cl. 78—178 A

6 Claims

A zinc-aluminum alloy comprises 18-24 % aluminum, 0.0005 - 0.05 % magnesium, 0.0025 - 0.25 % nickel, balance high-grade zinc.

The form stability of the alloy can be improved by homogenizing it at a temperature above 275° to 380° C and aging it at a temperature above 80° C up to below 275° C for a time of 0.2 to 5 hours.

The alloy has a high ductility, together with a high creep resistance.

3,754,905

## EXOTHERMIC STRUCTURING OF ALUMINUM

Walter V. Knopp, Wyckoff, N.J., assignor to A. Johnson & Co. Inc., New York, N.Y.

Filed Dec. 23, 1971, Ser. No. 211,310

Int. Cl. B22f 1/00

U.S. Cl. 75—227

29 Claims



Strongly bonded aluminous bodies with produced by powder metallurgy by blending an amount of nickel powder with aluminum powder at least sufficient to effect the exothermic sintering of a pressed compact of the blended powder by heating the compact in a furnace maintained at a temperature below the eutectic temperature of the aluminum-nickel system and higher than the temperature at which nickel reacts exothermically with aluminum.

3,754,906

## ELECTROPHOTOGRAPHIC COMPOSITIONS AND PLATES AND METHODS OF MAKING AND USING SAME

Frederick L. Jones, Dayton, Ohio, and Richard A. Connell, Wilton, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Apr. 16, 1971, Ser. No. 134,730

Int. Cl. G03g 5/08

U.S. Cl. 96—1.4

12 Claims

A photoconductive composition and electrophotographic plates made therefrom are disclosed comprising the combination of particulate cadmium sulfoselenide and zinc oxide pigments as the photoactive constituents. The plates have increased electrophotographic speed and broad spectral response for use in electrophotography. In the processing of the photoconductive composition heating of the pigments results in improved charge acceptance and electrophotographic speed of a plate made from the composition. The plate compositions disclosed comprise a styrene modified alkyd resin binder in which the Cd(SSe)-ZnO pigments are dispersed.

3,754,907

## METHOD FOR TRANSFERRING A DYE IMAGE AND ELECTROPHOTOGRAPHIC COPY PROCESS EMBODYING SAME

Leo N. Chapin, Des Plaines, Ill., assignor to A. B. Dick Company, Chicago, Ill.

Filed Dec. 1, 1970, Ser. No. 94,120

Int. Cl. G03g 7/00, 9/04, 13/12

U.S. Cl. 96—1.4

22 Claims

This invention is addressed to a method for transferring a dye image from an imaged receptor sheet having at least one photoconductive composition of the face thereof containing a

photoconductor, a resinous binder, a sensitizer for the photoconductor and a dispersed dye which has been developed with a solid toner in the form of a material which, when heated to a molten state, is a solvent for the dispersed dye in the photoconductive composition, in which the dispersed dye is transferred from the receptor sheet to the copy sheet by pre-fusing the toner particles on the receptor sheet and then placing the receptor sheet in surface contact with the face of a copy sheet whereby the dispersed dye is transferred to the copy sheet.

3,754,908

## ELECTROPHOTOGRAPHIC PRODUCTION OF COLOUR PHOTOCONDUCTIVE MOSAIC MATERIAL

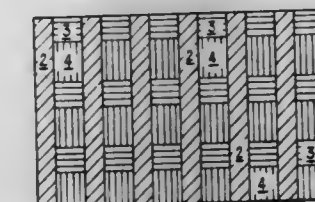
Robert James Hercock, and Simon Lindsay Scrutton, both of Ilford, England, assignors to Ilford Limited, Ilford, Essex, England

Continuation-in-part of Ser. No. 93,925, Dec. 1, 1970, abandoned. This application Apr. 13, 1972, Ser. No. 243,731  
Claims priority, application Great Britain, Dec. 8, 1969, 59,824/69

Int. Cl. G03g 13/22

U.S. Cl. 96—1.2

12 Claims



A process for the production of colour photoconductive material of the mosaic type, wherein areas of the material are sensitive only to selected regions of the visible spectrum which comprises:

- charging the surface of an unsensitized photoconductive material,
- exposing the surface of the material to a pattern of light,
- toning the areas remaining charged on the surface of the photoconductive material by a dye sensitizer which sensitizes them to light of one of the selected regions of the spectrum,
- recharging the surface of the photoconductive material,
- exposing the surface overall to light which comprises all the regions of the visible spectrum to which areas thereof have been sensitized to destroy the charge on the material selectively in such areas,
- exposing the surface of the material to a different pattern of light of such wavelength to which the unsensitized photoconductor layer is sensitive,
- toning the areas remaining charged on the surface of the photoconductor by means of a dye sensitizer which sensitizes them to light of a selected region of the spectrum to which no area of the surface of the material is at present sensitive and repeating steps (d), (e) and (g).

3,754,909

## POLYESTER COATED PAPER AS A CONDUCTIVE SHEET MATERIAL

Joseph Feltzin, and Erich Kuehn, both of Wilmington, Del., assignors to ICI America Inc., Wilmington, Del.

Continuation of Ser. No. 97,391, Dec. 11, 1970, abandoned.

This application Mar. 20, 1972, Ser. No. 236,192

Int. Cl. G03g 5/00; D21f 13/00

U.S. Cl. 96—1.5

12 Claims

An electrically conductive sheet material prepared from paper and a particular class of polyester resins is disclosed. The use of this conductive paper as the substrate in preparing a photoconductive recording sheet material is also disclosed.



3,754,910

## NEUTRALIZING LAYERS IN DIFFUSION TRANSFER PHOTOGRAPHIC FILM

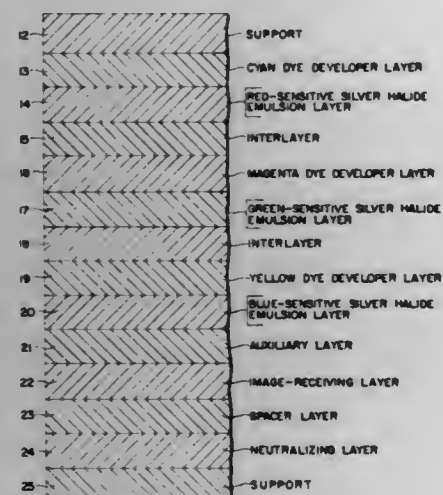
Lloyd D. Taylor, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 16, 1971, Ser. No. 208,616

Int. Cl. G03c 7/00

U.S. Cl. 96—3

23 Claims



Photographic systems employing an acid neutralizing layer comprising a polymeric salt of a monomeric strong acid and a polymeric weak base, i.e., polymeric salts which hydrolyze to give an acid reaction.

3,754,911

## PHOTOIMAGING METHOD COMPRISING CROSSLINKING OF ALKOXY METHYL POLYAMIDES

Viron V. Jones, Caldwell, N.J., assignor to Keuffel &amp; Esser Company, Morristown, N.J.

Division of Ser. No. 53,276, July 8, 1970, Pat. No. 3,695,887.

This application Mar. 6, 1972, Ser. No. 232,196

Int. Cl. G03c 5/00

U.S. Cl. 96—35.1

3 Claims

Alkoxy methylated polyamide resin layers are imagewise insolubilized by exposure to light in the presence of halogenated organic photoinitiator compounds. The compositions are greatly improved in light sensitivity by the addition of dyes, and exposed layers are developable by selective dissolution in unexposed areas with aqueous developer solutions to form direct images, resists, or reprographic masters.

3,754,912

## CHEMICAL MILLING USING FUSED POWDER PARTICLES AS RESIST

Rexford W. Jones, and William B. Thompson, both of Columbus, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. No. 796,847, Feb. 5, 1969, abandoned, and a continuation-in-part of Ser. No. 833,771, June 16, 1969, Pat. No. 3,677,759, and a continuation-in-part of Ser. No. 849,520, Aug. 12, 1969, abandoned, and a continuation-in-part of Ser. No. 123,084, March 10, 1971, abandoned. This application Sept. 27, 1971, Ser. No. 183,802

Int. Cl. G03c 5/00

U.S. Cl. 96—36

10 Claims

Method of chemical milling which comprises the steps of exposing a metal layer bearing a light-sensitive layer capable of developing a  $R_d$  of 1.0 to 2.2 to actinic radiation to produce a potential  $R_d$  of 1.0 to 2.2; developing said light-sensitive layer with water-insoluble powder particles using physical force to embed the powder particles in the light-sensitive layer; removing non-embedded powder particles; fusing the water-insoluble powder particles to the metal layer by heating to form a stencil; and etching through the metal layer in the areas unprotected by the fused water-insoluble powder particles.

3,754,913

## METHOD FOR PRODUCING A COLORED TRANSPARENT PHOTO-MASK

Satoshi Takeuchi, Kawasaki, and Konomi Tsuda, Tokyo, both of Japan, assignors to Eiichi Inoue and Canon, Kabushiki Kaisha, both of Tokyo, Japan, part interest to each Division of Ser. No. 26,875, April 9, 1970, abandoned. This application May 7, 1971, Ser. No. 141,411

Claims priority, application Japan, July 28, 1969, 44/59539 Int. Cl. G03c 5/00

U.S. Cl. 96—38.3

2 Claims



This invention relates to a colored, transparent photo-mask consisted of a transparent base plate and a colored, transparent visible image made of a colored inorganic material. Also this invention relates to a method for producing the colored, transparent photo-mask.

3,754,914

## PHOTOSENSITIVE COMPOSITION CONTAINING AN ORGANIC HALOGEN COMPOUND PHOTOACTIVATOR, A COLOR MODIFIER AND A PHOTOREDUCTIBLE ORGANIC METAL SALT AND THE USE THEREOF

Eiichi Inoue, and Isamu Shimizu, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 24, 1969, Ser. No. 844,669

Claims priority, application Japan, July 29, 1968, 53461/68 Int. Cl. G03c 5/24, 1/52

U.S. Cl. 96—48 R

10 Claims

A free radical is effectively produced from an organic halogen compound having at least one halogen atom in a medium comprising an organic metal salt capable of being reduced by applying radiation energy to at least the organic metal salt. This free radical producing method can be used for recording. A photosensitive composition and article of manufacture based on the above-mentioned components irradiated with such radiation energy is also disclosed.

3,754,915

## COLOUR PHOTOGRAPHY

Alfred Oetiker, Fribourg, and Max Marthaler, Marly-le-Petit, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

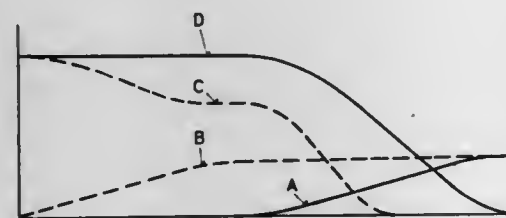
Filed July 7, 1971, Ser. No. 160,558

Claims priority, application Switzerland, July 7, 1970, 10265/70

Int. Cl. G03c 7/00

U.S. Cl. 96—53

15 Claims



A process for producing a photographic colour image by the silver dye-bleach process, comprising exposing image wise and processing to a colour image in the presence of a colour bleaching catalyst a photographic material having on a support at least one diffusion-resistant, bleachable image dye-

3,754,918

## DYE BLEACHING BATH FOR THE SILVER DYE BLEACHING PROCESS

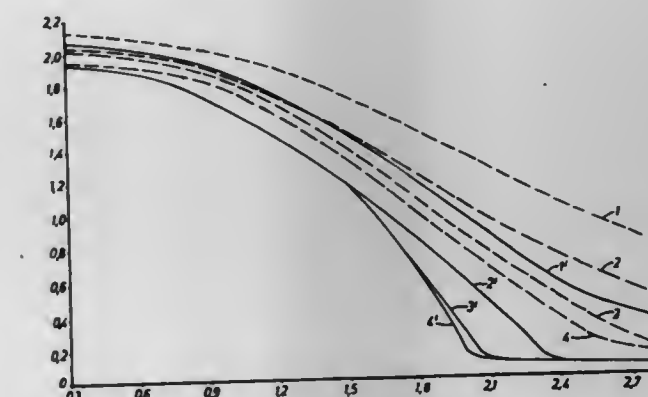
Siegfried Hunig, Wurzburg; Max Hellmann, Cologne, and Peter Bergthaller, Leichlingen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany Filed July 28, 1971, Ser. No. 166,906

Claims priority, application Germany, July 31, 1970, P 20 38 008.9

Int. Cl. G03c 7/00

U.S. Cl. 96—53

7 Claims



Color photographic images are produced by the silver dye bleaching process in which the bleaching is accelerated with a bleaching bath containing substituted 1,5-diazanaphthalenes as defined below.

3,754,917

## PHOTOGRAPHIC FILM UNIT ASSEMBLAGE

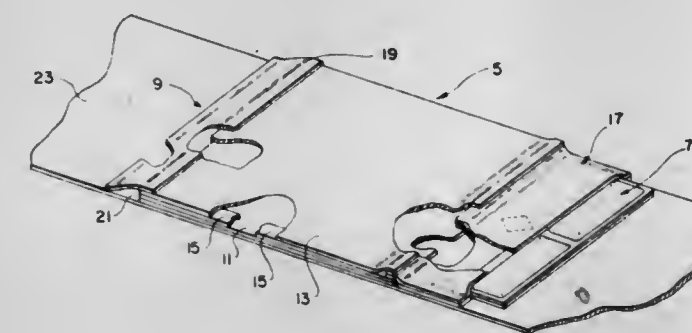
Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 1, 1970, Ser. No. 33,677

Int. Cl. G03c 1/48

U.S. Cl. 96—76 C

11 Claims



A photographic film unit assembly, a cartridge for containing the assembly, and a camera adapted to receive the cartridge, and to expose and initiate processing of film in the assembly, are disclosed. The assembly comprises relatively stiff integral film unit that is supplied before exposure and remains after processing as a single preregistered structure including both photosensitive and image receiving layers. The integral film unit is strippably attached to a relatively flexible carrier by which it may be transported within and out of the camera, and from which it automatically may be separated by pulling the carrier in a direction divergent to the plane defined by the film unit. A container of processing solution and a trap for collecting excess solution cooperate with the film unit during processing but are securely adhered to and remain with the carrier upon stripping of the film unit from the carrier. The carrier, pod, trap, and any other processing waste material then may be advanced into a storage device for later disposal. Preferably, the cartridge and storage device are combined so that the waste material need never be handled by the camera operator either upon introducing the cartridge into the camera or upon disposal of the cartridge after exposure and processing of the film unit.

3,754,919

## PHOTOGRAPHIC LAYERS WHICH CONTAIN UV-ABSORBERS

Johannes Sobel; Fritz Nittel; Wolfgang Himmelmann, and Wilibald Pelz, all of Opladen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany Continuation of Ser. No. 878,220, Nov. 19, 1969, abandoned.

This application Dec. 21, 1971, Ser. No. 210,611

Claims priority, application Germany, Dec. 6, 1968, P 18 13 161.8

Int. Cl. G03c 1/84

U.S. Cl. 96—84 R

2 Claims

The light stability of color photographic images is improved by overcoating the image carrying layer with a UV-protective coating which contains a UV-absorbing compound.

The UV-absorbing layer contains as UV-absorbent a 2-phenolbenzo-triazole, the benzo ring of which is substituted with at least 1 alkoxy group.

3,754,920

## PHOTOPOLYMERIZABLE ELEMENTS OF LOW OPTICAL DENSITY CONTAINING THICKENERS WITH DISCRETE, ORDERLY ORIENTATION

August Dennis Kuchta, East Brunswick, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 762,627, Sept. 25, 1968, abandoned. This application Apr. 30, 1971, Ser. No. 139,280

Int. Cl. G03c 1/68

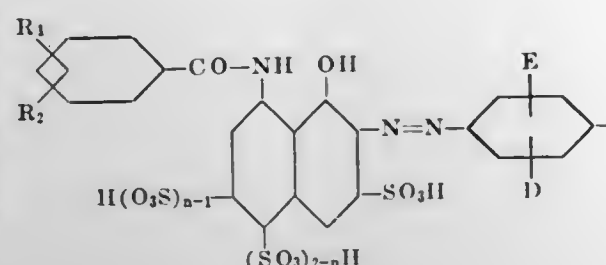
U.S. Cl. 96—87 R

10 Claims

This invention relates to a photopolymerizable element for reproducing images. A photopolymerizable composition is coated on a support, dried, and laminated with a cover sheet. The composition contains a particulate micro-crystalline thickener and 10-90 parts of photopolymerizable monomer per 100 parts, by weight, of liquid monomer-thickener composition with an optical density in the actinic region not more than 0.6 and the dry coating thickness is at least 0.05 mil. The support and cover sheet have significantly different degrees of chemical affinity for the unexposed photopolymerizable layer.



The cover sheet has the higher chemical affinity, and is placed preferably on the side opposite the exposure side. The element is imagewise exposed through the support resulting in an increase of adhesion of the exposed photopolymerizable layer to support and cover sheet but with the greatest increase in adhesion being to the cover sheet. The support and cover sheet are delaminated, the polymerized material adhering to the cover sheet, the unpolymerized material remaining on the support. The unpolymerized image may then be transferred to a receptor by first laminating it to the receptor and then applying pressure at room temperature. This photographic element and process are usable in color proofing.



3,754,921

# PHOTOGRAPHIC LAYER CONTAINING A LIGHT-SENSITIVE LEUCOPHTHALOCYANINE SENSITIZED WITH A PHENYL BORANATE

Oskar Riester, Leverkusen, Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany  
Filed Sept. 22, 1971, Ser. No. 182,920

Claims priority, application Germany, Sept. 25, 1970, P 20 47 250.8

Int. Cl. G03c 1/52

U.S. Cl. 96—90 R

4 Claims

Photographic dye images are produced by imagewise exposure of a light sensitive layer containing a leucophthalocyanine and a phenylboranate.

3,754,922

# LIGHT SENSITIVE TWO-COMPONENT DIAZOTYPE MATERIAL

Shigeaki Yoshida, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation-in-part of Ser. No. 777,494, Nov. 20, 1968, abandoned. This application Aug. 17, 1971, Ser. No. 172,581

Claims priority, application Japan, Nov. 25, 1967, 42/75543  
Int. Cl. G03c 1/60

U.S. Cl. 96—91 R

10 Claims

A light sensitive two-component diazotype material (sensitive sheet) is provided containing a dicarboxylic acid or an alkyl ester thereof as a developing-accelerator together with a diazotype sensitive composition (i.e., diazo compound and coupler) in the sensitive layer in order to accelerate the rate of development of the diazotype sensitive composition following exposure to light.

3,754,923

# PHOTOGRAPHIC SILVER HALIDE MATERIAL CONTAINING DISAZO DYES FOR THE SILVER DYESTUFF BLEACHING PROCESS

Thomas Stauner, Marly-le-Grand; Bernhard Piller, Marly-le-Petit, and Alfred Froehlich, Marly-le-Grand, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of Ser. No. 18,311, March 10, 1970, abandoned.

This application Dec. 30, 1971, Ser. No. 214,456  
Claims priority, application Switzerland, Mar. 25, 1969, 4478/69

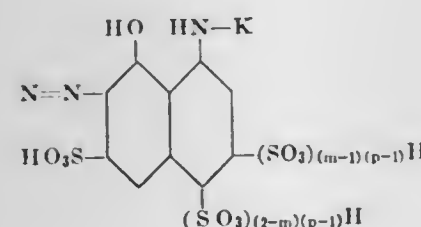
Int. Cl. G03c 1/10

U.S. Cl. 96—99

17 Claims

A photographic light-sensitive material, especially for the silver dyestuff bleaching process is provided, which contains

on a support in at least one layer, at least one dyestuff of the formula



in which R<sub>1</sub>, R<sub>2</sub>, D and E are organic radicals, R<sub>1</sub> and R<sub>2</sub> being in the 3-, 4- or 5-positions to the —CO—group, K is an acyl radical and m, n and p each equals 1 or 2. These dyestuffs are resistant to diffusion, form stable aqueous solutions, can be easily bleached, are fast to light and have favourable spectral properties.

3,754,924

# PHOTOGRAPHIC SILVER HALIDE ELEMENT WITH AN ANTISTATIC OUTER LAYER COMPRISING A FLUORINATED SURFACTANT AND A POLYMETHACRYLATE MATTING AGENT

Wilfried Florent De Geest, Berchem, and Hubert Vandebaele, Wilrijk, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed May 3, 1971, Ser. No. 139,930

Claims priority, application Great Britain, June 4, 1970, 27,048/70

Int. Cl. G03c 1/02, 1/38, 7/00

U.S. Cl. 96—114.2

21 Claims

A photographic element is described which comprises a radiation-sensitive silver halide emulsion layer and a hydrophilic colloid surface coating wherein the said surface coating comprises a fluorinated surfactant and solid water-insoluble discrete particles of a matting agent. The element has improved surface and antistatic properties.

3,754,925

# NEW THERMO-GELABLE POLYSACCHARIDE-CONTAINING FOODSTUFFS

Hiroshi Kimura, Kyoto; Shigehiko Sato; Tsuo Nakagawa, both of Osaka; Hiromi Nakatani, Kyoto; Akihiko Matsukura, Osaka; Takashi Suzuki, Hyogo; Mitsuko Asai; Tsuneo Kanamaru, both of Osaka; Motoo Shibata, Kumamoto, and Saburo Yamatodani, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 22, 1971, Ser. No. 126,999

Claims priority, application Japan, Mar. 4, 1970, 45/24696; Apr. 7, 1970, 45/29533; Apr. 7, 1970, 45/29534

Int. Cl. A231 1/04; C12b 1/00

U.S. Cl. 99—1

7 Claims

A thermo-gelable  $\beta$ -1,3 glucan-type polysaccharide is made by the aerobic cultivation of certain microorganisms. It generally resembles the known thermally gelable  $\beta$ -1,3 glucan known as "curdlan" but possesses definite advantages thereover, particularly when used in the food industry. Also, it may be used advantageously as a substitute for agar in various foods.

3,754,926

# METHOD FOR TEXTURIZING PROTEIN MATERIAL

Palmer K. Strommer, Osseo, and Charles I. Beck, Wayzata, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed July 27, 1970, Ser. No. 58,317

Int. Cl. A23j 3/00

U.S. Cl. 99—17

17 Claims

A method is provided for texturizing protein material by treating the material in the presence of steam at an elevated gaseous pressure and an elevated temperature.

3,754,927

# THE MANUFACTURE OF EDIBLE PROTEIN FROM MARINE ANIMALS BY THE USE OF AMMONIA

Richard G. Woodbridge, III, P.O. Box 111, Princeton, N.J.

Filed May 26, 1971, Ser. No. 147,160

Int. Cl. A22c 25/00; A23j 1/04

U.S. Cl. 99—18

8 Claims

The process for making edible protein products from marine animals by removing undesirable matters through the use of solvents is greatly improved by carrying out the extraction in the presence of ammonia or ammonium ion. The inclusion of ammonia or ammonium ions facilitates the removal of undesirable odor and color materials and so makes possible the practical production of products with reduced undesirable odor and greater whiteness or may be so utilized as to produce products of levels of odor and color acceptable in the trade but with improved economies of manufacture.

3,754,928

# APPLICATION OF COMPRESSIVE AND FRICTIONAL FORCES IN PREPARING DUTCHED COCOA

John Edwin Haney, Oswego, N.Y., assignor to Societe D'Assistance Technique Pour Produits Nestle S.A., La Tour-de-Peilz, Switzerland

Continuation-in-part of Ser. No. 56,647, July 20, 1970, abandoned. This application Nov. 22, 1972, Ser. No. 308,899

Int. Cl. A23q 1/00

U.S. Cl. 99—26

8 Claims

A mixture of cocoa and alkali, containing a small amount of water, is subjected to frictional and compressive forces whereby its temperature is raised rapidly to 200°–300°F, the mixture held in this range to carry out dutching. The resulting dutched cocoa has improved miscibility. Other features of the invention appear in the Specification.

3,754,929

# MALTING PROCESS

Godfrey Henry Oliver Palmer, Crawley, England, assignor to Brewing Patents Limited, London, England

Filed June 8, 1970, Ser. No. 44,410

Claims priority, application Great Britain, June 11, 1969, 29,706/69

Int. Cl. C12c 1/02

U.S. Cl. 99—50

3 Claims

In the conversion of barley to malt the distal end of the individual grains is selectively abraded to permit access of exogenous gibberellic acid to the aleurone layer at positions remote from the germ. The abrasion is carried out to such extent as to permit the above result without splitting the husk of an unduly large proportion of the grains. A weight reduction of 0.2% is usually sufficient.

3,754,930

# METHOD FOR PRODUCING EXPANDED FOOD STUFFS BY GASEOUS CONVEYING HEATING

Ryozo Toel, Kyoto; Tatsuo Aonuma, Kashiwa; Hiroharu Watanabe, and Toshizumi Yuasa, both of Noda, all of Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda, Japan

Division of Ser. No. 833,043, June 13, 1969, Pat. No. 3,661,071. This application Dec. 28, 1971, Ser. No. 213,152

Claims priority, application Japan, Oct. 1, 1968, 43/70808

Int. Cl. A231 1/18

U.S. Cl. 99—82

3 Claims

A method of continuously producing an expanded foodstuff by entraining a material food stuff in a pressurized heated gas stream in a suspended condition, thereby heating and conveying said material, and then discharging the heated material into a gas atmosphere at a lower pressure, whereby said material is expanded.

3,754,931

# HIGH PROTEIN POTATO SNACKS

Reuben H. Waitman, Pearl River; Maria H. Kelly, Tarrytown, both of N.Y., and Frank Hollis, Jr., Hillsdale, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Nov. 2, 1970, Ser. No. 86,312

Int. Cl. A231 1/12; A23b 7/16

U.S. Cl. 99—100 P

1 Claim

High protein containing potato snacks are prepared from raw potato slices with adhering coating of proteinaceous material and deep-fat fried. The protein bearing material is tightly adhered to the surfaces of the potato slices prior to and during deep-fat frying with proteinaceous binding material.

3,754,932

# PROTEARE AND PECTMARE ADDITIVE TO CITRUS JUICES

Robert A. Baker, and Joseph H. Bruemmer, both of Winter Haven, Fla., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 16, 1971, Ser. No. 134,834

Int. Cl. C12b 1/02; A231 1/02

U.S. Cl. 99—106

2 Claims

A method of stabilizing the cloud of citrus juices is disclosed. The method consists of treating the freshly extracted juice with a pectinase containing polygalacturonase activity. The addition of a proteolytic enzyme enhances the breakdown of calcium pectate by polygalacturonase. Spoilage is prevented by including a chemical sterilant in the preparation of the stabilization treatment.

3,754,933

# PROCESS FOR MANUFACTURING INSTANT HAMBURGER STEAK

Yuichi Shinkawa, No. 21-8, 3-chome, Isukishima, Tokyo, Japan

Continuation-in-part of Ser. No. 106,289, Jan. 13, 1971, abandoned. This application Dec. 13, 1972, Ser. No. 314,585

Int. Cl. A22c 18/00

U.S. Cl. 99—108

1 Claim

A process for manufacturing an instant hamburger steak which comprises kneading meats and vegetables with starch, flavoring the kneaded hamburger material with seasoning and spices, shaping the material into a suitable form, immersing the material in hardened oil heated at temperatures of from 60° C. to 100° C. and having a viscosity at that temperature of about 95 to about 53 Redwood seconds for a predetermined period to effectuate a preliminary cooking, taking the material out of the said hardened oil to permit cooling thereby forming a film of fat in solid state around the whole surface of the hamburger steak.



3,754,934

**FLAVORING AND FRAGRANCE COMPOSITIONS AND PROCESSES**

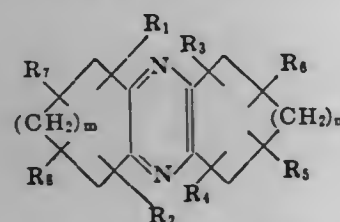
Alan O. Pittet, Atlantic Highlands, and Ranya Muralidhara, Matawan, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 75,782, Sept. 25, 1970, Pat. No. 3,705,121. This application Nov. 2, 1971, Ser. No. 195,006  
Int. Cl. A231 1/26; C07d 51/76

U.S. Cl. 99—140 R

7 Claims

Processes for altering the flavors and aromas of consumable products, including foodstuffs and tobaccos, which comprise adding thereto a small but effective amount of at least one tricyclic pyrazine having the formula



wherein  $m$  and  $n$  are each an integer from one to six, and  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ ,  $R_5$ ,  $R_6$ ,  $R_7$ , and  $R_8$ , are the same or different and represent hydrogen or alkyl; the products so produced; flavoring and fragrance compositions containing such tricyclic pyrazines; and certain novel pyrazines and processes for their production.

3,754,935

**FROZEN PUDDING COMPOSITIONS**

Martin Glicksman, Valley Cottage; Bartley N. Wankier, White Plains, and Jerry E. Silverman, Yonkers, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 14, 1971, Ser. No. 106,584  
Int. Cl. A23g 5/00

U.S. Cl. 99—139

2 Claims

A formulation for making frozen puddings, based on raw, unmodified tapioca starch, which can withstand several freeze-thaw cycles including cycles through the  $+15^\circ\text{F}$  temperature area.

3,754,936

**FLAVOR COMPOSITIONS AND PROCESSES**

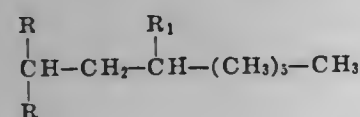
Martin F. Epstein, New City, N.Y., assignor to General Foods Corporation, White Plains, N.Y.

Filed Mar. 31, 1971, Ser. No. 129,959  
Int. Cl. A231 1/12; A231 1/26

U.S. Cl. 99—140 R

9 Claims

Enhancement of foodstuffs, especially coffee flavored foodstuffs, is achieved by the addition of a small but effective amount of a compound of the formula:



Wherein  $R$  is lower alkoxy and  $R_1$  is lower alkoxy or hydroxy.

3,754,937

**PLICATIC ACID ESTERS**

John Howard, and Terence D. McIntosh, both of c/o Rayonier Incorporated, Olympic Research Division, Shelton, Wash.

Division of Ser. No. 710,775, March 6, 1968, which is a continuation-in-part of Ser. No. 687,092, Dec. 1, 1967. This application Aug. 13, 1972, Ser. No. 171,753

Int. Cl. A23d 5/04

U.S. Cl. 99—163

6 Claims

New compositions of matter comprising alkyl and aryl esters of plicatic acid, and the use of these esters as antioxidants for fats and oils, are disclosed.

3,754,938

**PRESERVATION OF APPLE SLICES WITH A SOLUTION CONSISTING OF ASCORBIC ACID, CALCIUM CHLORIDE AND SODIUM BICARBONATE**

James D. Ponting, El Cerrito, Calif., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 26, 1971, Ser. No. 147,153  
Int. Cl. A23b 7/00, 7/10

U.S. Cl. 99—154

1 Claim

The quality of apple slices is preserved for an extended period of time by the synergistic effect of a treatment solution consisting of ascorbic acid, calcium chloride and sodium bicarbonate. Treatment with said solution eliminates the use of any sulfiting agent in a process for the preservation of apple slices.

3,754,939

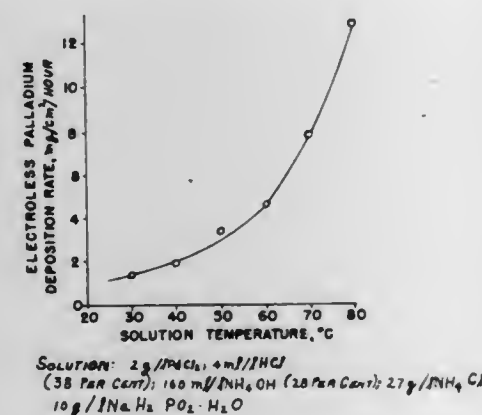
**ELECTROLESS DEPOSITION OF PALLADIUM ALLOYS**  
Fred Pearlstein, and Robert F. Weightman, both of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 74,038, Sept. 21, 1970, abandoned. This application May 23, 1972, Ser. No. 256,049

Int. Cl. C23c 3/02

U.S. Cl. 106—1

8 Claims



A plating solution for providing an electroless deposit of palladium alloys wherein palladium predominates, with a minor amount of nickel, cobalt, or zinc. The electroless palladium alloys contain up to about 6% nickel, or 10% cobalt, or 36% zinc, each with phosphorus. Preferred bath compositions comprise 29.6 g/l  $\text{NiSO}_4 \cdot 6\text{H}_2\text{O}$ , or 29.6 g/l  $\text{CoSO}_4 \cdot 6\text{H}_2\text{O}$ , or 36.0 g/l  $\text{ZnSO}_4 \cdot 8\text{H}_2\text{O}$ , with:

$\text{PdCl}_2$ —2 g/l  
HCl (38%)—4 ml/l  
 $\text{NH}_4\text{OH}$  (28%)—160 ml/l  
 $\text{NH}_4\text{Cl}$ —27 g/l  
 $\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$ —10 g/l

3,754,940

**ELECTROLESS PLATING SOLUTIONS CONTAINING SULFAMIC ACID AND SALTS THEREOF**

Leon A. Kadison, and Eileen Maguire, both of Pasadena, Calif., assignors to Crown City Plating Company, El Monte, Calif.

Continuation-in-part of Ser. No. 118,480, Feb. 24, 1971, abandoned. This application Sept. 6, 1972, Ser. No. 286,837

Int. Cl. C23c 3/02

U.S. Cl. 106—1

5 Claims

Sulfamic acid and its salts are used to stabilize alkaline electroless copper plating solutions against decomposition. When employed in the second bath of a two-bath electroless plating system, the presence of sulfamic acid and its salts permits rapid deposition, over a broad range of concentrations, of copper onto an initial copper or nickel plate, while preventing deposition of copper onto a noble metal catalyzed surface. The stabilizers also serve to supplement single-bath electroless copper plating systems.

3,754,941

**REMOVAL OF METALLIC STAINS FROM PORCELAIN SURFACES**

Richard L. Burke, San Diego, Calif., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 668,668, Sept. 18, 1967. This application Jan. 4, 1971, Ser. No. 103,832  
Int. Cl. C09g 1/02

U.S. Cl. 106—3

3 Claims

This disclosure relates to cleansing compositions having particular utility as a metallic stain remover from hard surfaces such as porcelain, comprising an oxidant capable of oxidizing the metal in a practical time such as the metallic ions ferric, stannous, cupric and mercuric and non-metallic oxidants such as hydrogen peroxide, a fluoride solubilizer and a halide promoter, said composition having a pH of 0.5–5. Additives such as detergents, perfumes, fillers, colorants, etc. may be included provided they do not adversely affect the stain removing properties of the composition. Although aluminum pot marks are most often encountered in normal household cleaning, said cleansers are effective against other metallic stains such as iron, tin, magnesium, etc.

3,754,942

**RUST PREVENTIVE COATING COMPOSITION**

Ebrahim Moradian, 102 Windsor East, Thibodaux, La.

Continuation-in-part of Ser. No. 113,087, Feb. 5, 1971, abandoned. This application June 15, 1972, Ser. No. 263,292  
Int. Cl. C09d 5/08

U.S. Cl. 106—14

7 Claims

A protective coating for metals is provided which is both resistant to corrosion and flexible. The protective coating comprises, by weight, about 10–60 percent of a high melting point micro crystalline wax, 2.5–25% of a mixture of paraffinic and naphthenic oils, 0.01–15% of an alkali metal sulfonate, 16–50 percent of an asphaltite, 2–25% of a drying oil, 2–5 percent of a high molecular weight naphthenic acid having an average molecular weight in the range from about 290 to 420, and 3–60 percent of a solvent. Metallic particles, such as aluminum paste and coloring agents can also be employed.

3,754,943

**DISPOSABLE PATTERN, COMPOSITION FOR MAKING SAME AND METHOD OF INVESTMENT CASTING**

Paul Solomon, Highland Park, Ill., assignor to Yates Manufacturing Co., Chicago, Ill.

Filed Sept. 30, 1971, Ser. No. 185,374  
Int. Cl. C08h 9/06

U.S. Cl. 106—38.8

8 Claims

A disposable pattern material for investment casting processes incorporating cyanuric acid and a thermoplastic material; and an investment casting process utilizing a disposable pattern material incorporating cyanuric acid.

3,754,944

**LIQUID BOTTOM PLATE DRESSINGS**

Trevor Hardy, Nechells, England, assignor to Fosco International Limited, Birmingham, England

Continuation-in-part of Ser. No. 29,642, April 17, 1970, abandoned. This application July 22, 1971, Ser. No. 165,317  
Claims priority, application Great Britain, Dec. 8, 1969, 58,922/69; Dec. 8, 1969, 58,923/69  
Int. Cl. B28b 7/36

U.S. Cl. 106—38.27

7 Claims

Liquid bottom plate dressings consist of water, a water soluble silicate and an MgO source, the proportion of MgO to sil-

icate being sufficient to convert all the silicate to forsterite ( $2\text{MgO} \cdot \text{SiO}_2$ ), and the water being sufficient to dissolve all the silicate.

3,754,945

**REFRACTORY LAMINATE BASED ON NEGATIVE SOLS OR SILICATES AND POLYCATIONIC ORGANIC COMPOUNDS**

Earl P. Moore, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 49,908, June 25, 1970, abandoned. This application June 1, 1971, Ser. No. 148,958  
Int. Cl. C04b 35/14

U.S. Cl. 106—38.35

13 Claims

A rapid process for forming a refractory laminate on the surface of a support structure which comprises dipping the structure in a bath comprising a sol of negatively charged colloidal particles of an inorganic substance and/or a solution of an alkaline ionic silicate to form a coating on the surface, contacting the coated surface with a polycationic organic setting agent to firmly set the negative sol or silicate solution. This procedure is repeated until a laminate of the desired thickness is built up on the surface. In order to increase the rate of laminate build-up particulate refractory material can be included in the bath and/or the coated surface can be stuccoed between dips. Interaction between the negatively charged colloidal particles or silicate and the polycationic organic setting agent results in the polymerization of the colloid or silicate and aggregation of particles and thereby the immobilization of the coatings. This technique makes it possible to successively apply and set coatings to build ceramic laminates in very short times without intermediate drying and without sloughing of coats. The process is particularly suited for making expendable, refractory shell molds for precision investment casting of metals by the so-called "lost wax" technique.

3,754,946

**REFRACTORY LAMINATE BASED ON NEGATIVE SOLS OR SILICATES AND NON-POLYMERIC ORGANIC CATIONIC NITROGEN-CONTAINING COMPOUNDS**

Earl P. Moore, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 1, 1971, Ser. No. 148,964  
Int. Cl. C04b 35/14

U.S. Cl. 106—38.35

14 Claims

A rapid process for forming a refractory laminate on the surface of a support structure which comprises dipping the structure in a bath comprising a sol of negatively charged colloidal particles of an inorganic substance and/or a solution of an alkaline ionic silicate to form a coating on the surface, contacting the coated surface with a non-polymeric nitrogen-containing cationic organic setting agent to firmly set the negative sol or silicate solution. This procedure is repeated until a laminate of the desired thickness is built up on the surface. In order to increase the rate of laminate build-up particulate refractory material can be included in the bath and/or the coated surface can be stuccoed between dips. Interaction between the negatively charged colloidal particles or silicate and the cationic organic setting agent results in the polymerization of the colloid or silicate and thereby the immobilization of the coatings. This technique makes it possible to successively apply and set coatings to build refractory laminates in very short times without intermediate drying and without sloughing of coats. The process is particularly suited for making expendable, refractory shell molds for precision investment casting of metals by the so-called "lost-wax" technique.



3,754,947

**LITHIUM ALUMINO SILICATE COMPOSITION HAVING LOW IRON CONTENT**

George M. Burkert, Morganton; H. Edward Uhland, and Ricardo O. Bach, both of Gastonia, all of N.C., assignors to First National City Bank, New York, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,715  
Int. Cl. C04b 33/00; C01b 33/26, 33/32

U.S. Cl. 106—39 R

12 Claims

Lithium alumino silicate compositions having a low iron content, suitable for use in the glass and ceramic industries, are prepared by calcining a mixture of (a) a lithium alumino silicate-containing ore containing a high content of iron, such as spodumene, with (b) predetermined proportions of lithium carbonate or lithium hydroxide. Carbon dioxide is released and driven off where lithium carbonate is employed and water is released and driven off where lithium hydroxide is employed. The finished compositions have low contents of iron with weight ratios of  $\text{Li}_2\text{O}$  to iron (calculated as  $\text{Fe}_2\text{O}_3$ ) of the order of at least 50.

3,754,948

**REFRACTORY COMPOSITIONS**

Malcolm Donald Ash, Wirral, England, assignor to Morganite Ceramic Fibres Limited, Wirral, England

Filed Aug. 19, 1970, Ser. No. 65,086

Claims priority, application Great Britain, Aug. 21, 1969, 41,811/69

Int. Cl. C04b 35/16

U.S. Cl. 106—55

3 Claims

Refractory insulating compositions which comprise mineral wool and ceramic fibre in admixture. Up to 60 percent by weight of the composition preferably can be mineral wool for low temperature applications; at higher temperatures a higher proportion of ceramic fibre is needed. The compositions may be mixed with carriers, binders and/or stiffeners.

3,754,949

**PROTECTIVE COATING FOR MATERIALS EXPOSED TO MOLTEN ALUMINUM AND ITS ALLOYS**

Elton S. Gamble, Trumbull, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Oct. 12, 1971, Ser. No. 188,611

Int. Cl. C04b 35/02, 35/54

U.S. Cl. 106—56

8 Claims

A composition which may be used as a coating on articles to be placed in molten aluminum comprising a refractory material consisting essentially of tri-calcium phosphate, aluminum oxide powder, magnesium orthoborate, kaolin clay and calcined kaolin clay. The composition may optimally contain graphite to increase the ease of application of the composition to the articles upon the addition of water to form an aqueous suspension.

3,754,950

**THERMAL TREATMENT OF ELECTROMELTED REFRACTORY MATERIALS**

Giacomo Ceva, Venezia, Italy, assignor to Refradige S. p. A., Milano, Italy

Filed July 9, 1971, Ser. No. 161,268

Claims priority, application Italy, July 13, 1970, 27345 A/70

Int. Cl. C04b 35/18, 35/48

U.S. Cl. 106—57

4 Claims

A process is disclosed for imparting an increased corrosion resistance to electromelted refractory materials of the AZS type (alumina, zirconia, silica) comprising crystalline phases and one vitreous phase, the process being characterized in that the refractory material is subjected to a controlled thermal treatment at temperatures between 1300°C and 1600°C.

The starting material has a chemical composition, expressed in oxides, within the following weight ranges:  $\text{Al}_2\text{O}_3 = 45-65\%$ ,  $\text{ZrO}_2 = 10-40\%$ ,  $\text{SiO}_2 = 12-20\%$ ,  $\text{Na}_2\text{O} = 0.8-1.4\%$ , corresponding to the following weight ranges of the individual phases: Corundum = 30-60%, Baddeleyite = 10-40%, Mullite = 0-40%, vitreous phase = 15-25%.

3,754,951

**PERICLASE REFRACTORY GRAIN**

Richard L. Coatney, Pleasanton, Calif., assignor to Kaiser Aluminum &amp; Chemical Corporation, Oakland, Calif.

Filed July 26, 1971, Ser. No. 165,919

Int. Cl. C04l 35/04

U.S. Cl. 106—58

10 Claims

A high purity periclase ( $\text{MgO}$ ) refractory grain of exceptionally high strength results when the subsidiary constituents of the grain are controlled so that in addition to lime ( $\text{CaO}$ ) and silica ( $\text{SiO}_2$ ) compounds, particularly dicalcium silicate, there are present brownmillerite and/or dicalcium ferrite, to the exclusion of other iron and aluminum compounds.

3,754,952

**METHOD OF OBTAINING CHEMICAL RESISTANT CONCRETE**

Vsevolod Petrovich Kirilishin, spusk Zhanny Lyaburb, 6, kv. 4, Odessa, and Nikolai Ivanovich Khitarov, ulitsa Malaya Yakimanka, 3, kv. 11, Moscow, both of U.S.S.R.

Filed July 15, 1970, Ser. No. 55,232

Int. Cl. C04b 35/14, 35/16

U.S. Cl. 106—84

3 Claims

Disclosed herein is a method of obtaining chemical resistant concrete, the essence of the method consisting in that use is made as starting components of the concrete binder, of high-silica alkaline glass with a silica modulus in excess of 6, and quartz sand comminuted into particles with a specific surface of at least 1,000  $\text{cm}^2/\text{gr}$ .

3,754,953

**AQUEOUS HYDRAULIC CEMENT COMPOSITION HAVING IMPROVED RETARDATION TO SET AND USE THEREOF IN HIGH TEMPERATURE ENVIRONMENTS**

Robert C. Martin, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 42,569, June 1, 1970, Pat. No. 3,662,830.

This application Dec. 23, 1971, Ser. No. 211,662

Int. Cl. C04b 7/02

U.S. Cl. 106—90

2 Claims

In a method of cementing at relatively high ambient temperatures employing an aqueous hydraulic cement slurry, the improvement comprising admixing therewith an effective amount of both (1) a salt of lignosulfonic acid and (2) boric acid or a borate whereby a synergistic retarding effect on the setting rate of the slurry is attained without any accompanying adverse effects.

3,754,954

**ALTERING THE PROPERTIES OF CONCRETE BY ALTERING THE QUALITY OR GEOMETRY OF THE INTERGRANULAR CONTACT OF FILLER MATERIALS**

Lester H. Gabriel, Sacramento, and Wilfred Willis, San Francisco, both of Calif., assignors to Gabriel-Willis Associates, San Francisco, Calif.

Division of Ser. No. 886,556, Dec. 19, 1969, Continuation-in-part of Ser. No. 792,370, Jan. 21, 1969, abandoned. This application Aug. 10, 1971, Ser. No. 170,490

Int. Cl. C04b 7/02

U.S. Cl. 106—97

11 Claims

A method for preparing and molding concrete so as to impart great strength per weight, minimize or otherwise alter shrinkage and creep, reduce porosity and give a superior as-

3,754,957

**ENHANCEMENT OF THE SURFACE CHARACTERISTICS OF CARBON FIBERS**

Melvin L. Druin, West Orange; George R. Ferment, Dover, and Velliyur N. P. Rao, North Plainfield, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 20, 1970, Ser. No. 65,454

Int. Cl. C08h 17/08, 17/10

U.S. Cl. 106—307

15 Claims

An improved process is provided for modifying the surface characteristics of a carbonaceous fibrous material (either amorphous carbon or graphitic carbon) and to thereby facilitate enhanced adhesion between the fibrous material and a matrix material. The fibrous material is continuously passed at a relatively rapid rate through a heating zone containing a minor quantity of gaseous molecular oxygen under conditions found suitable for bringing about the desired surface modification. Composite articles of enhanced interlaminar shear strength may be formed by incorporating the fibers modified in accordance with the present process in a resinous matrix material.

3,754,958

**AMMONIUM SALT TREATED SULFONATED PHTHALOCYANINES**

Vito Albert Giambalvo, Middlesex, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed May 8, 1972, Ser. No. 250,892

Int. Cl. C08h 17/14

U.S. Cl. 106—308 N

12 Claims

A copper phthalocyanine pigment having improved body in a wide variety of vehicle formulations is prepared by treating a partially sulfonated copper phthalocyanine, which contains red and/or green shade unsulfonated copper phthalocyanine together with the sulfonated copper phthalocyanine, with a salt of a primary, secondary, or tertiary alkyl, cycloalkyl, aralkyl, cyclized alkyl or cycloalkyl amine or quaternary ammonium compound having a total of about four to about 18 carbon atoms attached to each nitrogen, in an aqueous medium at a temperature between about 20°C. and about 100°C., the pH of the treated pigment being between about 4 and about 7.

3,754,955

**PHTHALOCYANINES**

Jean Andre Paul Klenzle, 1 rue du Plessis; Michel Ernest Antoine Huille, 7 rue Ribot, both of Creil, and Louis Antoine Cabut, 40 rue Pierre Semard, Nogent sur Oise, all of France

Filed Nov. 22, 1971, Ser. No. 201,202

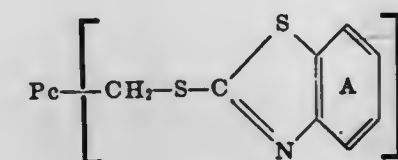
Claims priority, application France, Nov. 20, 1970, 7041758

Int. Cl. C08h 17/14

U.S. Cl. 106—288 Q

6 Claims

Phthalocyanine compounds of the formula:



in which Pc is a phthalocyanine residue, the benzene nucleus A is unsubstituted or substituted by at least one alkyl group having up to 4 carbon atoms and n represents a whole number from 1 to 8; phthalocyanine pigment mixtures containing such a compound; process for the stabilisation of phthalocyanine pigments which comprises incorporating therein at least one compound of formula (I); and paints, lacquers, enamels, inks and plastic materials coloured by means of phthalocyanine pigment mixture containing a compound formula (I).

3,754,956

**TREATMENT OF OXIDE PIGMENTS**

George Geoffrey Durrant; Michael Hugh Gamon, and Nigel John House, all of Grimsby, England, assignors to Laporte Industries Limited, London, England

Filed Mar. 2, 1971, Ser. No. 120,373

Claims priority, application Great Britain, Mar. 13, 1970, 12,300/70

Int. Cl. C09c 1/36

U.S. Cl. 106—300

15 Claims

The wetting and dispersion characteristics of titania pigments in plastic materials is improved by treating the pigment with from 0.1-60.0 percent by weight of a polylactone having terminal hydroxy groups, the polylactone being in liquid form or in solution.

3,754,960

**HIGHLY PLASTICIZED QUIVERY PLASTIC MATERIAL WITH REPLENISHING FRICTION SURFACE AND METHOD OF PRODUCING THE SAME**

Maurice W. Hart, Jr., 601 W. 27th St., Coral Gables, Fla.

Filed July 1, 1971, Ser. No. 158,958

Int. Cl. B44c 1/08

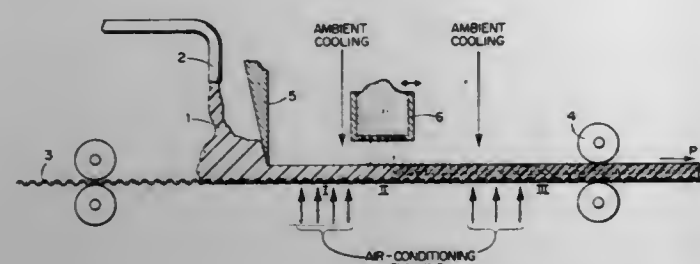
U.S. Cl. 117—9

4 Claims

This disclosure relates to a novel highly plasticized quivery plastic member as of polyvinyl chloride, containing friction



particles, such as sand or the like, mechanically temporarily trapped, but not wettingly secured, within a gradually cured



surface of the member, with the particles being adapted, upon abrasion of the member, to dislodge out of said surface in a replenishing manner.

3,754,961

# METHOD OF PREVENTING THE CAKING OF HARDENED OIL COATED PARTICLES

Ryuzo Ueno, Nishinomiya; Tetsuya Miyazaki, Itami, and Shigeo Inamine, Nishinomiya, all of Japan, assignors to Ueno Fine Chemical Industries, Ltd., Osaka, Japan

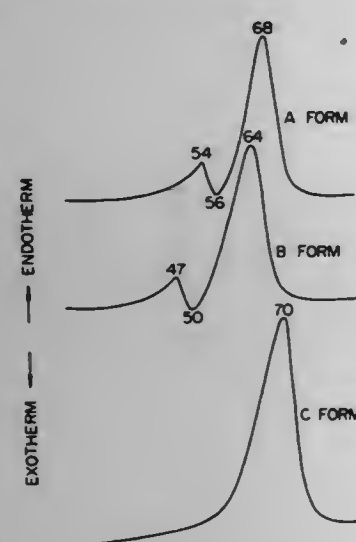
Filed July 21, 1971, Ser. No. 164,717

Claims priority, application Japan, July 24, 1970, 45/64294

Int. Cl. B44c 1/06; B44d 5/08

U.S. Cl. 117-16

6 Claims



A method of preventing the caking of hardened oil coated particles which comprises allowing particles consisting of a core material coated with a coating agent predominantly of a hardened oil having a melting point of 45°-85°C., to stand for at least 20 hours at a temperature exceeding 25°C. but lower than the softening point of the hardened oil to thereby stabilize the crystal structure of the hardened oil and thereafter adding to the coated particles a caking inhibitor, in an amount of 0.3-5 percent by weight based on weight of the coated particles.

3,754,962

# DEVELOPMENT OF ELECTROSTATIC IMAGES

Richard A. Berlier, and Robert T. Ritchie, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1970, Ser. No. 100,229

Int. Cl. G03g 13/08, 15/08

U.S. Cl. 117-17.5

5 Claims

Improved development of electrostatic images having features such as broad solid fill, continuous tone or low contrast is obtained by a two step process involving overdevelopment followed by selective cleaning. The overdevelopment is accomplished through the use of a development electrode that is

either grounded or is biased to a polarity opposite to the polarity of the electrostatic image so as to enhance the deposition of toner onto the electrostatic image by creating an erected, uni-directional development field. This development field places toner uniformly on solid areas, proportionally on gray areas, in large amounts on low contrast image areas and also generally on background areas. The thus overdeveloped

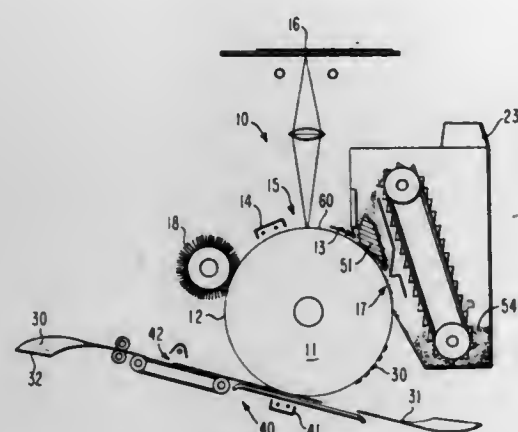


image is removed from the development field thereby establishing a bi-directional imaging clearing field that is directed toward desired image areas and away from background areas. A selective cleaning system such as a cascade of electrostatically attractive particles, is passed over the overdeveloped image in the presence of the image clearing field to selectively remove toner from background areas without equally removing toner from the image areas.

3,754,963

# SURFACE FOR IMPRESSION DEVELOPMENT IN ELECTROPHOTOGRAPHY

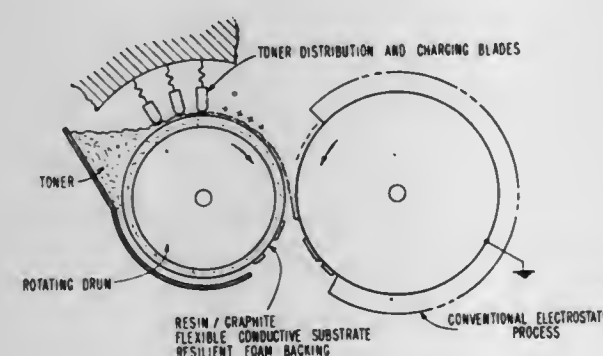
Leo S. Chang, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1970, Ser. No. 100,980

Int. Cl. G03g 13/08

U.S. Cl. 117-17.5

3 Claims



In an impression development process for electrophotography, toner particles and an electrostatic image are brought into contact; the toner particles are transported by means of a developer surface which is resilient, electrically conductive, rough, and triboelectrically remote from the toner; mutually interrelated moving means are used to move said developer surface and said latent electrostatic image into contact at zero relative peripheral speed.

3,754,964

# PROCESS FOR THE CONTINUOUS OPTICAL BRIGHTENING OF ACYLATED CELLULOSE FIBRE MATERIAL

Marcel Seuret, Melbourne, Australia, and Willi Leutenegger, Bottmingen/Basel-land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y., by said Leutenegger

Continuation-in-part of Ser. No. 871,561, Nov. 5, 1969, abandoned, which is a continuation of Ser. No. 573,184, Aug. 18, 1966, abandoned. This application Feb. 26, 1971, Ser. No. 119,044

Int. Cl. C09k 3/00

U.S. Cl. 117-33.5 T

16 Claims

A process for the continuous optical brightening of incompletely and completely acylated cellulose fiber material comprising impregnating the material with a solution of at least one optical brightener in a non-aqueous solution of a water-soluble organic solvent which solution also contains at least 80 percent by volume of a water-insoluble organic solvent.

3,754,965

# METHOD FOR MAKING AN ELECTROPHOTOGRAPHIC PLATE

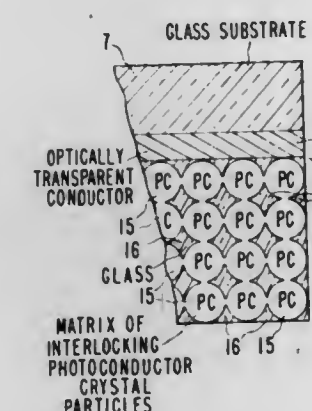
John B. Mooney, Saratoga, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Apr. 5, 1971, Ser. No. 131,021

Int. Cl. B44d 1/46; G03g 5/00, 7/00

U.S. Cl. 117-34

6 Claims



In an electrophotographic camera, a photon image to be recorded is focused through an optically transparent substrate and transparent electrode onto the back surface of a photoconductive layer. The charge-retentive surface of an electrophotographic recording paper is disposed adjacent the photoconductive layer and the conductive backing of the paper is connected to an electrode for impressing a charge transfer potential across the photoconductor layer and the charge-retentive layer of the paper. When the potential is impressed across the photoconductor, electrons liberated in the photoconductor by the photon image to be recorded are transferred to the charge-retentive surface of the recording paper to form a charge image of the object to be recorded. The charge image is subsequently developed by applying charged toner particles to the image for developing same. The photoconductive layer comprises a substantially continuous layer of an interlocked matrix of crystals of active photoconductive material coated and bound together with a lead sealing glass interstitially disposed of the interlocking crystal matrix. The resultant photoconductive layer has improved strength and resistance to abrasion while producing acceptable photographic images. The photoconductive layer is produced by heating a stratum including particles of lead sealing glass together with particles of preactivated photoconductive material in the presence of a molten solvent and proportions of one or more activators.

3,754,966

# TRANSFER ELEMENTS AND PROCESSES

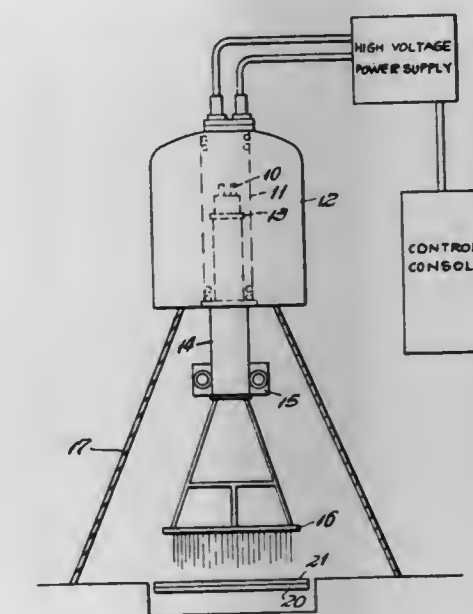
Douglas A. Newman, Glen Cove; Alfred M. Vogel, Malverne, and Allan T. Schlotzhauer, Glen Cove, all of N.Y., assignors to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Continuation-in-part of Ser. No. 692,113, Dec. 20, 1967, abandoned. This application Oct. 22, 1970, Ser. No. 82,969

Int. Cl. B41m 5/10

U.S. Cl. 117-36.1

8 Claims



Process for making novel pressure-sensitive carbons and ribbons having a resinous binder material comprising preparing a liquid composition containing a liquid polymerizable polyvinyl ester of a polyhydric alcohol, a non-volatile, non-drying oleaginous material and an imaging material, coating the liquid composition as a thin layer on a support and subjecting the thin layer to a uniform application of high intensity electron radiation for a brief period of time to cause the resin precursor to polymerize and form a thin, dry, pressure-sensitive resinous ink layer.

3,754,967

# METHOD OF ADHERING SILICONE RUBBER TO METAL SURFACES USING SALTS

Thomas W. Greenlee, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed June 18, 1971, Ser. No. 154,645

Int. Cl. B44d 1/40; B32b 15/08

U.S. Cl. 117-49

10 Claims

The adhesion to metal surfaces of room temperature vulcanizable silicone rubber curable through condensation of silicon-bonded hydroxyls with silicon-bonded alkoxy radicals is improved by contacting the metal surface with aqueous solutions of sodium ammonium or potassium salts of chlorides, iodides, bromides, bicarbonates, sulfates, dihydrogenphosphates, monohydrogenphosphates, tetraborates, perchlorates, nitrates or nitrites, rinsing the surface, drying, thereafter applying the room temperature vulcanizable silicone rubber to the treated surface and allowing it to cure.

3,754,968

# PROCESS FOR PRODUCING EROSION AND WEAR RESISTANT METAL COMPOSITES

Barry David Reznik, Brooklyn, N.Y., assignor to DeWiant Corporation, Detroit, Mich.

Division of Ser. No. 828,702, May 28, 1969. This application Sept. 10, 1971, Ser. No. 179,538

Int. Cl. B44d 1/14; C23c 17/00

U.S. Cl. 117-46 CA

4 Claims

Erosion and wear resistant metal composites are disclosed that comprise a metal alloy substrate and a coating composi-



tion bonded to said substrate; the coating composition consisting essentially of nickel, chromium, boron, silicon and titanium carbide in the following percentages by weight of the coating composition:

nickel	14% to 80%
chromium	0.5% to 10%
boron	0.2% to 5%
silicon	0.3% to 8%
titanium carbide	6% to 82%

A process is disclosed for producing the composites wherein a first coating containing all of the foregoing metals are applied via a slurry coating technique followed by drying, heating and pressing steps and thereafter a second slurry coating step is used wherein the metal ingredients of nickel, chromium, boron and silicon are applied followed by drying and heating steps.

3,754,969

# METHOD OF ADHERING ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER TO METAL SURFACES

Thomas W. Greenlee, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed June 18, 1971, Ser. No. 154,644  
Int. Cl. B44d 1/40; B32b 15/08

U.S. Cl. 117-49

9 Claims

The adhesion to metal surfaces of room temperature vulcanizable silicone rubber curable through condensation of silicon-bonded hydroxyls with silicon-bonded alkoxy radicals or silicon-bonded hydrogen atoms is improved by contacting the metal surface with acetic acid, formic acid, propionic acid, butyric acid, benzoic acid, toluic acid, metal salts thereof and ammonium salts thereof, removing any excess acid or salt from the surface along with any extraneous materials formed during the contacting, drying the surface and thereafter applying the room temperature vulcanizable silicone rubber to the treated surface and allowing it to cure.

3,754,970

# METHOD OF PLATING BERYLLIUM ARTICLE WITH ZINC

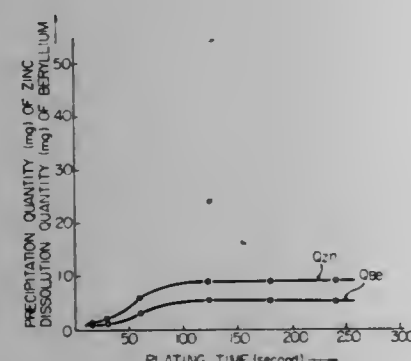
Junichiro Kawada, Tokyo, and Nobuo Sato, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki-shi, Japan  
Filed July 2, 1971, Ser. No. 159,408

Claims priority, application Japan, Oct. 29, 1970, 45/094656

Int. Cl. C23c 3/00

U.S. Cl. 117-50

11 Claims



Beryllium article is chemically plated with metallic zinc with a high fixedness and uniformity by treating same with an aqueous acid solution containing zinc cation (Zn<sup>++</sup>) and fluorine anion (F<sup>-</sup>) and having a zinc content of 0.35 to 14 percent by weight.

3,754,971  
UREA SILICON PRODUCT AND USES THEREOF  
Enrico J. Pepe, and James G. Marsden, both of Amawalk, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

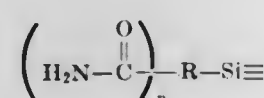
Division of Ser. No. 759,524, Sept. 12, 1968, Pat. No. 3,671,562, Continuation-in-part of Ser. No. 729,895, May 17, 1968, abandoned. This application Apr. 14, 1972, Ser. No. 244,280

Int. Cl. B32b 17/10, 27/06; C071 7/02

U.S. Cl. 117-72

3 Claims

This invention relates to urea containing silicon compounds of the formula



and the uses thereof, particularly as coupling agents on glass and to the similar use of substituted urea containing silicon compounds.

3,754,972

# PHOSPHATE ESTERS AND THEIR USE AS ADHESIVE PROMOTERS

Robert de Majistre, Natrona Heights; Gordon M. Parker, Lower Burrell, and Robert Sirkoch, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 29, 1971, Ser. No. 129,113

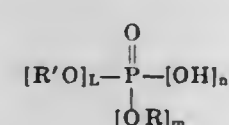
Int. Cl. B44d 1/50

U.S. Cl. 117-72

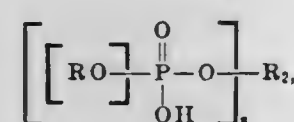
10 Claims

A novel class of phosphate esters having a formula comprising either:

(A)

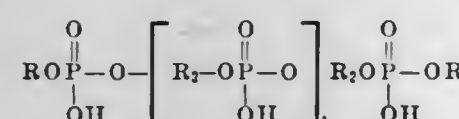


(B)

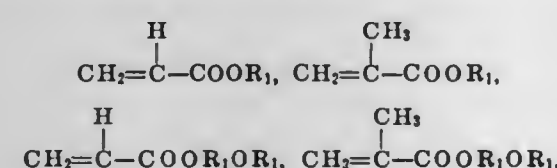


or

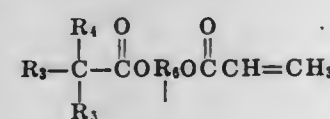
(C)



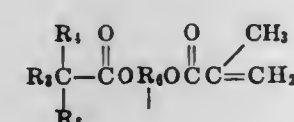
wherein R is selected from the group consisting of



an unsaturated hydrocarbon radical,

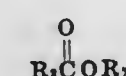


or

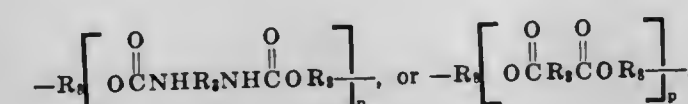


wherein R<sub>1</sub> is an alkylene radical, R<sub>2</sub> is an alkyl radical or hydrogen, R<sub>3</sub> is an alkyl radical or hydrogen, R<sub>4</sub> is an alkyl radical or hydrogen, R<sub>5</sub> is an

alkyl radical or hydrogen, and R<sub>6</sub> is a trivalent organic moiety, and R' is selected from the group consisting of an alkyl radical and



wherein R<sub>1</sub> is R<sub>1</sub>OR<sub>1</sub>, or R<sub>1</sub>, and R<sub>2</sub> has the formula:



wherein R<sub>3</sub> is -R<sub>1</sub>[OR<sub>1</sub>]<sub>n</sub>, R<sub>4</sub> is OR<sub>1</sub> or R<sub>6</sub>, or R<sub>6</sub>(COOR<sub>1</sub>)<sub>n</sub>, R<sub>5</sub> is alkylene, arylene or aralkylene, p is from 0 to 30, y is from 0 to 20, n is either 1 or 2, L is either 0 or 1, and n + m + L = 3, b is 3 to 5, and z is from 2 to 5, and t is from 0 to 5; is useful as an adhesion promoter for substrates coated with actinic light-sensitive coatings and ionizing irradiation-sensitive coatings.

3,754,973

# AZIDOFORMATE-ISOCYANATE COMPOUNDS AND THEIR USES

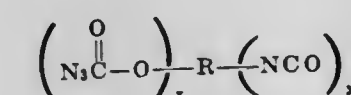
Harold M. Spurlin, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 860,034, Sept. 22, 1969, Pat. No. 3,676,466. This application Aug. 26, 1971, Ser. No. 175,410  
Int. Cl. B32b 15/08; C07c 17/00; B32b 17/10

U.S. Cl. 117-72

5 Claims

Disclosed are azidoformate-isocyanate compounds of the formula



where R is a polyvalent organic radical and x and y are integers from 1 to 100. The use of said azidoformate-isocyanate compounds to modify polymers, cross-link polymers, and adhere polymers to substrates selected from siliceous materials, metals and other polymer substrates is disclosed. Also disclosed are rubber tires reinforced with polyester tire cord which has been modified with an azidoformate-isocyanate compound.

3,754,974

# METHOD AND AGENT FOR PREVENTING COATING FILMS FROM PEELING

Nobuyoshi Hirota, Nagasaki-shi, Nagasaki-ken, Japan

Continuation-in-part of Ser. No. 876,582, Nov. 12, 1969, abandoned. This application Dec. 22, 1971, Ser. No. 211,060  
Int. Cl. B44d 1/14, 1/34

U.S. Cl. 117-75

15 Claims

An anti-peeling agent containing a mixture of 1. a substance whose molecule is partly composed by a functional atomic group reactive to the epoxy and the hydroxyl group or both, in film forming molecules, and which forms a chemical bond between two identical or different coating films and 2. an organic solvent which is capable of permeating rapidly through the surface of a film to be coated in completely cured condition and to activate it. The substance (1) is selected from (a) organosilane compounds containing in one molecule more than two different kinds of functional groups and (b) derivative compounds prepared by the reaction of an alkoxide com-

pound or organic complex compound of titanium or aluminum with an epoxy resin which is cross-linked therewith. The invention also relates to a method for preventing subsequently applied overcoating films from peeling by application of the anti-peeling agent to coated iron and steel surfaces.

3,754,975

# DEPOSITION MATERIALS AND METHOD

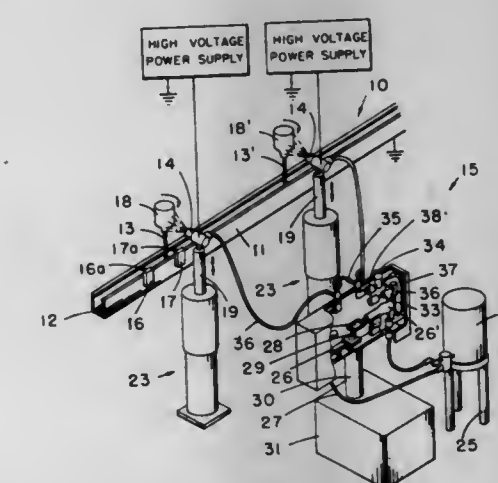
Lester L. Spiller, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Continuation of Ser. No. 797,329, Jan. 13, 1969, abandoned. This application June 28, 1971, Ser. No. 157,745

Int. Cl. B05b 5/00

U.S. Cl. 117-93.4 R

17 Claims



A method of depositing a metallic material onto a non-metallic substrate by depositing electrostatically charged particles of an admixture or solution including a thermally decomposable metal salt and a combustion retarding solvent to the non-metallic substrate. The non-metallic substrate is heated to an elevated temperature prior to the transference of the admixture to the substrate. The combustion retarding constituent of the admixture tends to partially decompose and vaporize at the elevated temperature of the non-metallic substrate and the metal salt tends to thermally decompose depositing a metallic material onto the non-metallic substrate. If the substrate is heated to a sufficiently high temperature, the metallic material tends to diffuse into a non-metallic substrate such as glass to thereby alter the color of the substrate.

The solution to be formed into electrostatically charged particles contains a metal salt and a combustion retarding solvent.

3,754,976

# PEEN PLATING

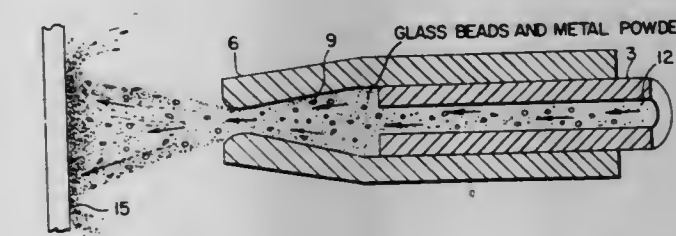
Alfred J. Babecki, Oxon Hill, and Carl L. Haehner, Laurel, both of Md., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 6, 1971, Ser. No. 205,047

Int. Cl. B44d 1/02

U.S. Cl. 117-105

10 Claims



A process for metal plating which comprises spraying a mixture of metallic powder and small peening particles at high velocity against a surface, said velocity being sufficient to impact and bond said metallic powder onto said surface.



In the case of metal surfaces, the process has as one of its advantages providing mechanical working (hardening) of the surface simultaneously with the metal plating.

3,754,977

# METHOD OF SPRAYING GLASS FIBER AND RESINS ONTO SUBSTRATE WHICH ELIMINATES NECESSITY OF ROLLING

Jay A. Lankheet, Holland, Mich., assignor to Glamour Pools by Aztec, Wyckoff, N.J.

Filed Oct. 16, 1970, Ser. No. 81,573

Int. Cl. B44d 1/08, 1/26, 1/22

U.S. Cl. 117—105.5

9 Claims

An inert, non-absorbent dust is mixed with polyester resin in sufficient quantities that when the mixture is sprayed with fiber glass particles to form a rigid layer of reinforced plastic, the fiber glass particles lay flat without need of rolling.

3,754,978

# DEVITRIFICATION-RESISTANT COATING FOR HIGH-SILICA GLASSES

Thomas H. Elmer, Corning, and Joseph W. Malmendier, Painted Post, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,823

Int. Cl. C03c 17/02, 5/00, 9/00

U.S. Cl. 117—124 A

3 Claims

A devitrification-resistant glaze for high-silica glasses, particularly effective in inhibiting surface devitrification induced by contact with food-ash at elevated temperatures, formed from a coating consisting essentially, in weight percent, of about 25–85 percent  $\text{Al}_2\text{O}_3$  and 15–75 percent  $\text{ZrO}_2$ , and optionally containing up to about 10 percent  $\text{Ta}_2\text{O}_5$ . The coating is preferably applied in the form of an aqueous slurry which is dried and fired to produce a vitreous glaze.

3,754,979

# LINE RESOLUTION IN SCREEN PRINTING

John R. Larry, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 33,875, May 1, 1970, Pat. No. 3,672,934, which is a continuation-in-part of Ser. No. 886,035, Dec. 17, 1969, abandoned. This application Dec. 22, 1971, Ser. No. 211,080

Int. Cl. B44d 1/16; B41m 1/12

U.S. Cl. 117—121

5 Claims

The invention relates to screen and/or substrate surfaces, used in screen printing, having decreased wettability. At least one of said surfaces is coated with a fluorinated organic compound which reduces the surface energy of the treated surface. Such coatings on the screen printing surfaces which contact screen printing pastes result in significant reduction of spreading of the paste on the substrate.

3,754,980

# DEVITRIFICATION-RESISTANT COATING FOR HIGH-SILICA GLASSES

Joseph W. Malmendier, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,824

Int. Cl. C03c 17/02, 5/00

U.S. Cl. 117—124 A

3 Claims

A devitrification-resistant glaze for high-silica glasses, particularly effective in inhibiting surface devitrification at elevated temperatures under highly alkaline conditions, formed from a coating consisting essentially of  $\text{Ta}_2\text{O}_5$  but also containing up to about 85 percent by weight  $\text{Al}_2\text{O}_3$  and up to about 50 percent by weight  $\text{SiO}_2$ . The coating is preferably applied in the form of an aqueous slurry which is dried and fired to produce a vitreous glaze.

3,754,981

# PROCESS FOR FLAMEPROOFING CELLULOSE-CONTAINING FIBRE MATERIAL

Hermann Nachbur, Dornach; Helmut Huber-Emden, Basel; Joerg Kern, Oberwil, Basel-land, and Arthur Maeder, Therwil, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed June 9, 1971, Ser. No. 151,529

Claims priority, application Switzerland, June 11, 1970, 8807/70

Int. Cl. C09k 3/28; D06m 13/32

U.S. Cl. 117—136

9 Claims

A process for the flame-proofing of cellulose-containing fibrous materials by applying to the substrates aqueous preparations containing a self-condensation product of an N-methylolamide of a dialkyl, dihalogenalkyl or dialkenyl phosphonopropionic acid advantageously together with a curable aminoplast precondensate.

3,754,982

# FIREPROOFING COMPOSITION FOR CELLULOSIC MATERIALS

Jay C. Chapin, Marblehead, Mass., assignor to Ventron Instruments Corp., Scientific Chemicals Division, Beverly, Mass.

Filed Jan. 11, 1971, Ser. No. 105,629

Int. Cl. C09k 3/28; D06m 13/26

U.S. Cl. 117—137

3 Claims

Cellulosic fibers or fabrics of a bleached or pastel shaded coloring when impregnated with additives for imparting unique characteristics, such as fire retardancy, and subjected to temperatures such as are encountered in drying and curing operations, generally exhibit definite and permanent discoloration. Such discoloration can be avoided or minimized if the treated cellulosic fibrous substrates have hydrazine or derivatives thereof incorporated into the additive prior to a heat treatment operation. For example, if an aqueous composition being applied to rayon or other cellulosic material consists essentially of an inorganic nitrogen-phosphorus polymeric resinous flame-proofing reaction product and hydrazine, the impregnated fabric, when dried and subject to a heat curing operation, shows little or no discoloration.

3,754,983

# ARTICLES COATED WITH WAX COMPOSITION AND METHOD OF MAKING

Vernon D. Parker, Lawrence, Kans., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Jan. 28, 1971, Ser. No. 110,661

Int. Cl. B27k 3/34

U.S. Cl. 117—148

7 Claims

Novel high-melting wax compositions are prepared by heat-curing a mixture of petroleum wax, an olefin-vinyl ester copolymer and an aluminum polyalkoxide. Novel coating methods utilizing the new wax compositions are also disclosed.

3,754,984

# SILICA SOL COMPOSITIONS AND USE FOR COATING

Charles C. Payne, Chicago, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Division of Ser. No. 111,619, Feb. 1, 1971, Pat. No. 3,689,431.

Filed Feb. 14, 1972, Ser. No. 226,315

Int. Cl. D21h 1/10

U.S. Cl. 117—152

6 Claims

Silica sol compositions especially useful for coatings are prepared by homogenizing an aqueous silica sol with a silica powder. The compositions are particularly useful for improving the frictionizing of paper.

3,754,985

# PROCESS FOR MAKING A SINTERED PHOTOCONDUCTIVE BODY

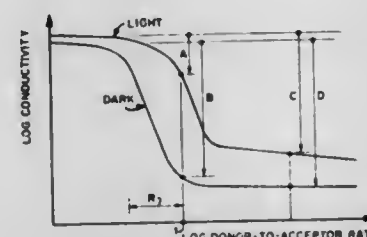
Guy A. Marlor, Los Altos, and John B. Mooney, Saratoga, both of Calif., assignors to Photophysics, Inc., Mountain View, Calif.

Filed Apr. 5, 1971, Ser. No. 130,983

Int. Cl. C23c 11/00, 13/00

U.S. Cl. 117—201

11 Claims



A process for making a sintered photoconductive body comprising growing cadmium sulfide crystals in the presence of hydrogen chloride gas to provide donor doping of the resultant crystals, pulverizing the donor crystals and measuring the chlorine content of the resultant pulverized donor doped material, mixing a quantity of copper with the donor doped material to provide acceptor doping, the quantity of copper being in a selected ratio to the quantity of chlorine, and finally, sintering the mixture to form the sintered photoconductive body.

3,754,986

# ORGANIC SEMICONDUCTORS

Evelio A. Perez-Albuern, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 851,088, Aug. 18, 1969, Pat. No.

3,634,336. This application Apr. 23, 1971, Ser. No. 137,059

Int. Cl. H01b 1/06

U.S. Cl. 117—201

14 Claims

Organic semiconductors are described having an electron donating cation which is a Group VIa element derivative of a polycyclic aromatic hydrocarbon and an inorganic or organic electron-accepting anion. These materials are generally soluble in ordinary solvents and have resistivities between  $10^{-3}$  and  $10^9$  ohm-cm. They are useful in conducting coatings, fibers, etc.

3,754,987

# METHOD OF PRODUCING AREAS OF RELATIVELY HIGH ELECTRICAL RESISTIVITY IN DIELECTRIC SUBSTRATES

Andrew J. Purdes, Madison, Ill., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 788,019, Dec. 30, 1968,

abandoned. This application June 4, 1971, Ser. No. 150,201

Int. Cl. B44d 1/18, 1/20

U.S. Cl. 117—212

28 Claims

Areas of relatively high electrical resistivity in a dielectric substrate, such as doped barium titanate, may be produced by first forming a relatively porous substrate which may be handled without breaking, as by prefiring the substrate, masking selected portions of the substrate with a material such as a photoresist material which will vaporize during final firing of the substrate, contacting the substrate with a solution of a first reactant, immersing at least a portion of the substrate in a solution of a second reactant which will react with the first reactant to precipitate in situ in a portion of the substrate a transition metallic compound which is insoluble in the solutions and which is adapted to increase the electrical resistivity of the said portion of the substrate, and thereafter firing the substrate at a temperature on the order of  $1,300^\circ - 1,450^\circ\text{C}$ . to

reduce the porosity of the substrate and to incorporate the insoluble compound into the lattice of selected portions of the substrate. The starting material may be a lanthanum doped barium titanate, for example, the solution of the first reactant may be an aqueous solution of a compound such as ammonium hydroxide, and the solution of the second reactant may be an aqueous solution of an iron compound such as ferric chloride which reacts with the ammonium hydroxide to precipitate in situ ferric hydroxide which, when fired, produces a high resistivity area.

3,754,988

# QUANTUM STATE MEMORY

Frank S. Barnes, Boulder, Colo., assignor to Patent Technology International, Inc., New York, N.Y.

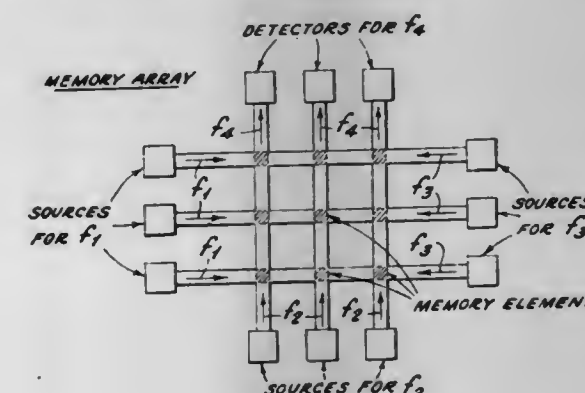
Division of Ser. No. 692,425, Dec. 21, 1967, Pat. No.

3,567,371. This application Nov. 20, 1970, Ser. No. 91,440

Int. Cl. B44d 1/18; B32b 31/00; G02b 5/14

U.S. Cl. 117—212

9 Claims



A quantum state memory is described made up of a matrix suitable for conducting electromagnetic radiation along the paths of the matrix to the intersecting points. A suitable material is located at the intersecting points characterized by two quantum states which may be generated by atoms, molecules, or ions in liquids, solids, or gases. The switching between the quantum states is accomplished by subjecting the material at the intersecting points to electromagnetic radiation at two frequencies, in one case, and at a single frequency in the opposite case. Detection means are provided to determine the quantum state.

3,754,989

# ELECTRICAL RESISTOR COATED WITH FLAME-PROOF COATING COMPOSITION

Lawrence G. Bockstie, Jr., Bradford, Pa., assignor to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 724,271, April 25, 1968, Pat. No.

3,598,617. This application Dec. 1, 1970, Ser. No. 94,198

Int. Cl. H01c 7/00

U.S. Cl. 117—219

6 Claims

An electrical resistor coated with a coating composition comprising a) an at least partially hydrolyzed tetraalkyl orthosilicate, b) aluminum oxide, c) titanium dioxide, d) silicon dioxide, and e) a suspension agent, wherein said titanium dioxide and said suspension agent are added to the composition as dry particles having agglomerates greater than about 1 micron in size, and wherein the alkali metal content of said coating composition is such that, upon curing, a coating prepared from said composition contains f) less than about 0.05% Na, g) less than about 0.05 K, h) less than about 0.01% Li, i) less than about 0.001% Cs, and j) less than about 0.001% Rb, all percentages being in terms of the oxides of the respective alkali metals.

# ERRATUM

For Class 117—126 GB see:  
Patent No. 3,755,009



3,754,990

**CLEANING OF FERROUS METAL SURFACES**

Fred Norman Teumac, Charlotte, N.C., and James Scott Scruggs, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 704,265, Feb. 9, 1968, Pat. No. 3,627,687.

This application Feb. 22, 1971, Ser. No. 117,806

Int. Cl. C23g 1/18, 1/26; B08b 9/08

U.S. Cl. 134—2

4 Claims

The invention is based on the discovery that upon adding a polyamine having intralinear amino groups to an aqueous alkaline solution of an ammoniated or aminated polycarboxylic acid chelating agent, a new and improved metal cleaning solution is provided. Upon bringing such cleaning solution into contact with a ferrous metal surface having hardness and/or iron oxide scale, and copper, thereon and the solution being maintained at a temperature above about 155°C. for a time sufficient to dissolve all the hardness and iron oxides, the copper is dissolved and neither precipitates from solution nor deposits on the ferrous metal surface.

3,754,991

**METHOD OF CLEANING USING A WATER-WASHABLE TACKY ELASTOMER**

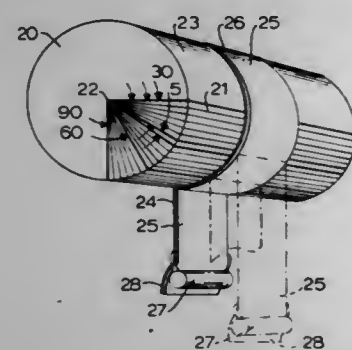
Homer C. Amos, 1086 Marshall Way, and Edward T. Strickland, 171 Luring Dr., both of Palm Springs, Calif.

Division of Ser. No. 46,967, June 17, 1970, Pat. No. 3,682,690, which is a continuation-in-part of Ser. No. 612,547, Jan. 30, 1967, abandoned, which is a continuation-in-part of Ser. No. 488,166, Sept. 17, 1965, abandoned. This application May 17, 1972, Ser. No. 254,223

Int. Cl. B08b 7/00

U.S. Cl. 134—4

6 Claims



Upon a base is a film of water-washable tacky elastomer, having a modulus of elasticity (Young's modulus) of about 1 to 100 p.s.i., and an internal viscosity of about 1000 to 20,000 poises or expressed in minutes by another test method, of from 0.1 to 800 minutes. The elastomer is a hydrophobic, water-insoluble elastic solid with low creep, typically made from such materials as polyvinyl chloride, copolymer of vinyl chloride and vinyl acetate, polyurethane, or polysulfide; often a plasticizer compatible therewith is employed to obtain the desired physical qualities. The film coated base is usable to embed solid particles such as dirt, dust, and hair in the film by contacting the film with the article to be cleaned. Water washing is used to remove the embedded particles from the elastomer without substantially affecting its tackiness.

3,754,992

**TRAVELING PNEUMATIC CLEANER AND METHOD**

Charles D. Lee, Jr., Charlotte, N.C., assignor to Parks-Cramer Company, Fitchburg, Mass.

Filed May 7, 1971, Ser. No. 141,338

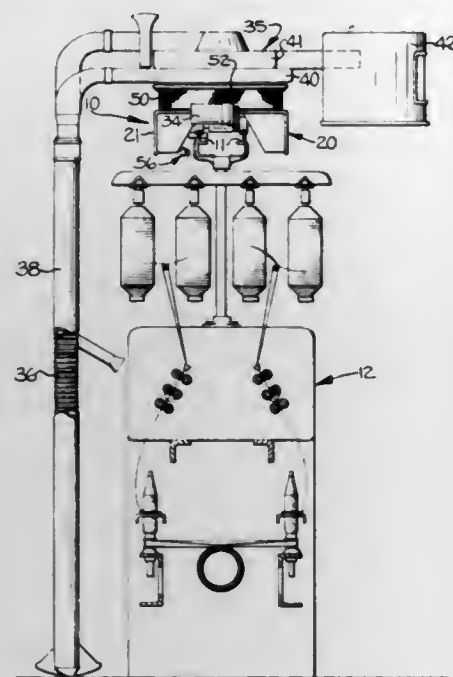
Int. Cl. A47J 5/14; B08b 5/04

U.S. Cl. 134—21

21 Claims

A method and apparatus for removing lint and the like from an elongate textile machine such as a spinning frame wherein a housing is traveled back and forth above and along the

machine while a flow of air through the housing and a tube depending therefrom is induced. Travel of the housing and tube is such that the tube passes along aisle space to one side of the machine and, when the housing approaches an end portion of the machine, is rotated about a substantially vertical axis over-



lying the machine and passes around the end of the machine to a position in aisle space to the opposite side thereof. Continuing movement of the housing and tube back and forth above and along the machine subjects both sides of the machine to pneumatic cleaning.

3,754,993

**LIQUID-SOLID PARTICLE OR LIQUID-GAS-SOLID PARTICLE CONTACTING METHOD**

Yutaka Oguchi, Tokyo, and Junichi Kubo, Kawasaki, both of Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

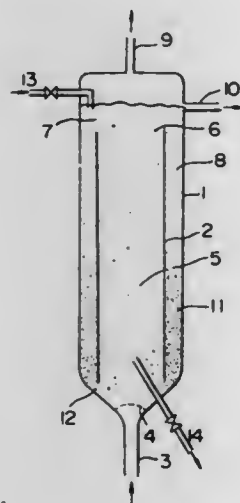
Filed June 17, 1970, Ser. No. 46,862

Claims priority, application Japan, June 21, 1969, 44/48674

Int. Cl. B08b 3/04; C10g 23/08

U.S. Cl. 134—25 R

8 Claims



A novel liquid-particulate solid or liquid-gas-particulate solid contacting method which comprises causing a liquid and a particulate solid or a liquid, a gas and a particulate solid which have contacted each other in a contact zone while ascending through the contact zone in substantial motion to overflow into an overflow zone, allowing the particulate solid to freely drop through a precipitation zone in succession to the overflow zone and recycling the particulate solid to below the contact zone.

3,754,994

**FORMING TANK FOR LEAD-ACID BATTERY PLATES**

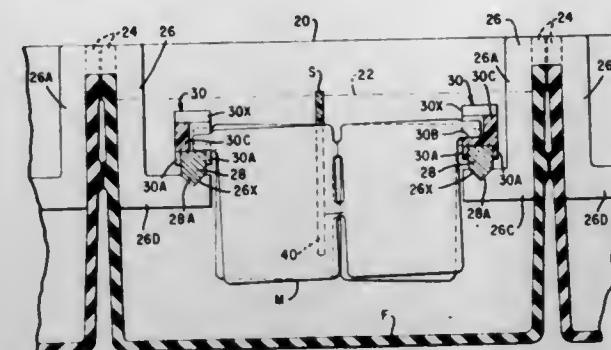
Anthony Roach, San Leandro, Calif., assignor to Eltra Corporation, Toledo, Ohio

Filed May 24, 1972, Ser. No. 256,322

Int. Cl. H01m 35/18

U.S. Cl. 136—34

5 Claims



A tank for electrically forming battery plates for a lead-acid storage battery is disclosed wherein the lugs of a double plate either positive or negative are placed in electrical contact with one horizontal bar of lead alloy in spaced groups and held in insulated position on a second horizontal bar on the opposite side of the tank during the forming operation. Supporting elements for the horizontal bars making contact with the plate lugs are made of different sizes cooperating with a slot in the upper edge of the tank to compensate for the plates of various dimensions having different power capacities.

3,754,995

**HIGH TEMPERATURE FUEL CELL**

Herbert Kleinschmager, Eppelheim, Germany, assignor to Brown, Boveri & Cie AG, Postfach, Mannheim, Germany

Filed May 16, 1972, Ser. No. 253,861

Claims priority, application Germany, May 19, 1971, P 21 24 814.6

Int. Cl. H01m 27/00

U.S. Cl. 136—86 R

3 Claims

A high temperature fuel cell is disclosed. The fuel cell is of the kind wherein a porous electrolyte body of compressed zirconium dioxide —  $ZrO_2$  — is admixed with additives of alkaline earth metal oxide or rare earth metal oxide. An anode layer of metallic nickel is deposited on a first surface of the electrolyte body which has a rough surface configuration. In accordance with the invention, a cathode layer is deposited on a second surface of the electrolyte body, the cathode layer being formed from a mixture of tin oxide —  $SnO_2$  — and antimony oxide —  $Sb_2O_3$  —, the amount of antimony oxide in the mixture ranging between about 7 and 30 mole percent.

3,754,996

**DUCTILE AMPULE DEFERRED ACTION BATTERY**

Gilbert R. Snyder, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 28, 1972, Ser. No. 266,958

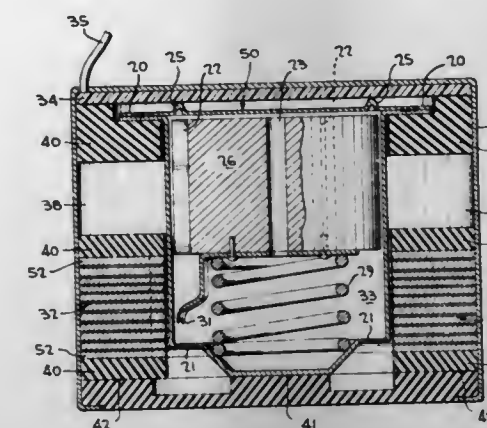
Int. Cl. H01m 17/06

U.S. Cl. 136—90

15 Claims

A ductile ampule deferred action battery for use in fuses and other projectiles which is actuated internally by the set back forces of acceleration from a gun or other impelling means. This battery comprises an ampule that contains a weight attached to a spring, said weight and said spring having their principle axis parallel to the acceleration vector such that upon acceleration said weight depresses said spring causing the cutter attached to the weight to pierce the ductile ampule. This ampule and battery assembly will not break upon dropping or activate upon dropping because (1) the ampule is made out of the ductile material, (2) the weight spring combination immersed in the electrolyte acts as a dash-pot and the loading imparted to the weight upon dropping and normal

handling is not sufficient to overcome the dash-pot forces exerted upon the weight and cause the weight to move enough such that the cutter can pierce the ampule. The ampule is used



3,754,997

**ELECTRIC BATTERY CELL WITH A PLASTIC TOP HAVING A SPRING PRESSURE SEAL**

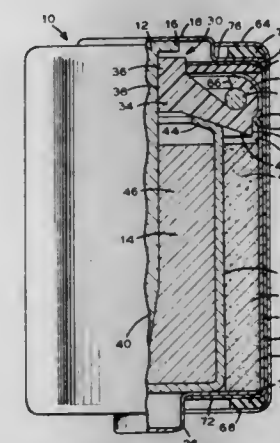
Robert E. Ralston, Spring Valley, N.Y., assignor to P. R. Malloy & Co., Inc., Indianapolis, Ind.

Filed June 16, 1971, Ser. No. 153,494

Int. Cl. H01m 21/00

U.S. Cl. 136—107

18 Claims



An electric cell with a plastic top closure as a circular disc that has a peripheral co-axial and concentric plastic border ring with a pre-stressed convoluted metal spring ring disposed within the plastic ring to establish permanent radially outward pressure against the plastic border ring, which is crimped over the metal ring by the crimped end of the container can. The spring convolution serves additionally as a rigid backing element for an additional pressure force on the plastic border ring, to prevent or limit unsealing effects that could arise from cold flow and creepage of the plastic ring.

3,754,998

**SILVER OXIDE-ZINC PRIMARY CELL WITH MAGNESIUM OXIDE**

Robert P. Hamlen, Scotia, and Elihu C. Jerabek, Delmar, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 838,066, July 1, 1969. This application

Jan. 21, 1971, Ser. No. 108,557

Int. Cl. H01m 17/00

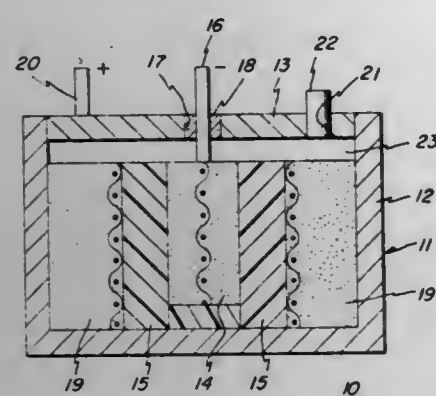
U.S. Cl. 136—102

1 Claim

A silver oxide-zinc primary cell is disclosed which comprises a casing, a zinc anode positioned in the casing, a separator on each side of the anode, a silver oxide cathode on each side of the anode adjacent each separator and spaced from the



anode, and magnesium oxide powder contained within the cell. A method is disclosed for activating such a cell which does not contain the magnesium oxide powder which comprises mixing together 5 to 40 weight percent of magnesium oxide powder in an aqueous alkaline electrolyte thereby forming a pourable electrolytic solution, filling the assembled cell with the electrolytic solution, and allowing the viscosity of the



solution to increase prior to discharging the cell. A method is also disclosed for forming such a cell wherein magnesium oxide powder is added to the cell during assembly, and the assembled cell is filled with an aqueous alkaline electrolyte prior to use. In both of these methods upon activation of the previously assembled cell, a high viscosity electrolytic solution results thereby preventing silver migration to the anode and other cell components.

3,754,999

## RADIOISOTOPIC GENERATOR

Veit Merges, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft Mit Beschränkter Haftung, Munich, Germany

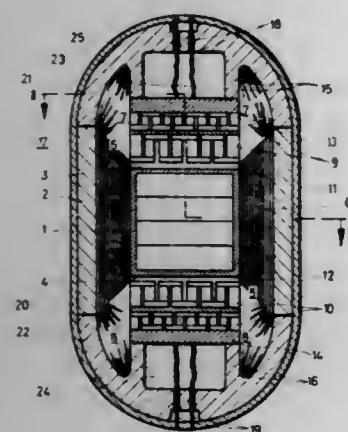
Filed Nov. 7, 1969, Ser. No. 874,820

Claims priority, application Germany, Nov. 23, 1968, P 18 10 528.7

Int. Cl. G21h 1/10

U.S. Cl. 136—202

5 Claims



A radioisotopic or radionuclide generator comprises a radioisotope as a heat source and sealed within a thin-walled metal cylinder. Thermoelectric energy converters are arranged in heat transfer relation with the metal cylinder, and a thermal insulation surrounds the metal cylinder and the energy converters. The heat source, the energy converters and the thermal insulation are sealed within a thick-walled metal safety capsule whose exterior surface may be provided with a coat of depleted uranium to absorb gamma rays. The thick-walled sealing capsule has a central cylindrical portion and two hemispheric end portions welded or otherwise integral with the central cylindrical portion. The hemispheric ends of the capsule are designed as heat bridges for the energy converters. The thermal insulation is in the form of a cylinder whose mid-portion comprises a plurality of thin radially spaced metal foils of high thermal reflecting power, the spaces between the

metal foils being highly evacuated. The end portions of the heat insulating cylinder comprise fibrous heat-insulating material, such as quartz cotton wool.

3,755,000

## ELECTRODES AND FUEL CELLS

Philippe Demange, Chatenay-Malabry, France, assignor to Société Générale de Constructions Electriques et Mécaniques (Alsthom), Paris, France

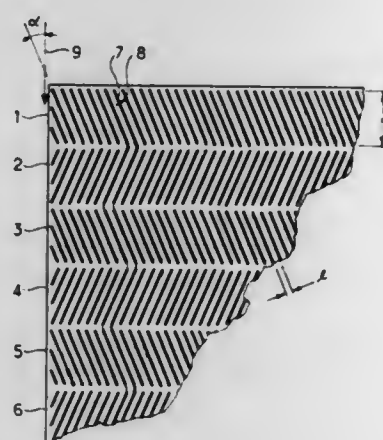
Filed Dec. 1, 1971, Ser. No. 203,773

Claims priority, application France, Dec. 12, 1970, 70/43603

Int. Cl. H01m 27/00

U.S. Cl. 136—86 D

14 Claims



An improved electrode structure wherein the electrode is a non-porous embossed sheet. The electrode surface contains a plurality of projections arranged in bands. Each band occupies an area and the top and bottom of the band are substantially parallel to one of the margins and substantially perpendicular to the direction of contemplated fluid flow across the electrode. Each band of projections is an array of parallel elongated ridges inclined to said direction of fluid flow. The angle of said inclination is such that  $d \sin \alpha = ne$ , wherein  $d$  is the distance between said top and bottom of said band,  $e$  is the distance between two adjacent ridges, and  $n$  is a whole number. The angle of inclination must also fall between 15° and 30°. The invention also includes a fuel cell comprising a stack of said electrodes.

3,755,001

## METHOD OF MAKING SEMICONDUCTOR DEVICES WITH SELECTIVE DOPING AND SELECTIVE OXIDATION

Else Kooi, and Johannes Arnoldus Appels, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 8, 1971, Ser. No. 160,654

Claims priority, application Netherlands, July 10, 1970, 7010206

Int. Cl. H01l 7/54

U.S. Cl. 148—1.5

19 Claims

A method of manufacturing a semiconductor device having an inset oxide pattern obtained by local oxidation, which pattern is bounded only partly by a doped surface zone. According to the invention a first mask is provided on the semiconductor surface after which etching is carried out so that a free-projecting edge of said mask is formed by underetching. During the local doping of the etched surface the masking provided by said edge is used directly or indirectly after which the oxide pattern is provided.

3,755,002

## METHOD OF MAKING PHOTOCONDUCTIVE FILM

Tadaaki Hirai, Koganei; Eiichi Maruyama, Kodaira, and Kiyohisa Inao, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

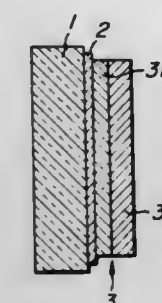
Filed Apr. 11, 1972, Ser. No. 242,949

Claims priority, application Japan, Apr. 13, 1971, 46/23086

Int. Cl. H01l 7/36

U.S. Cl. 148—1.5

11 Claims



An n-type film consisting of a group II - VI compound is evaporated on a transparent electrode, and heat-treated in an atmosphere containing group VI element or an inert gas. On this n-type film, a p-type film consisting of a vitreous material such as Se, Te and As is deposited to form a heterojunction, photoconductive film.

The above procedure enables the enhancement of the photosensitivity of a film more than three times as large as that of the conventional one.

3,755,003

## METHOD OF PREPARING AND USING CONCRETE REINFORCING ELEMENTS

Bert E. Palm, Mentor, and Victor V. Germano, Mentor-on-the-Lake, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Division of Ser. No. 58,153, July 24, 1970, Pat. No. 3,682,718.

This application May 11, 1972, Ser. No. 252,206

Int. Cl. C23f 7/26

U.S. Cl. 148—6.2

2 Claims

Concrete reinforcing elements are coated prior to their use with concrete. The coating comprises a pulverulent metal in intimate mixture with the residue from a composition containing an organic component plus a hexavalent-chromium-providing substance. The coating provides excellent corrosion resistance for the reinforcing elements and further affords enhanced adhesion for concrete to the coated element.

3,755,004

## METHOD FOR PRODUCING ULTRA FINE-GRAINED MICROSTRUCTURE IN FERROUS ALLOYS

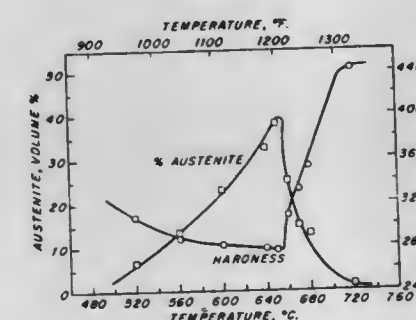
Robert L. Miller, North Huntingdon Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 21, 1971, Ser. No. 182,331

Int. Cl. C21d 7/14, 9/46

U.S. Cl. 148—12

14 Claims



Ferrous alloys containing up to about 25 percent Ni, 15 percent Mn, 1.2 percent C, 0.5 percent N are cooled to form a

martensitic or bainitic structure. The material is then worked to an extent sufficient to remove the principal nucleating effect of the prior austenite boundaries and other microstructural interfaces, so that when subsequently heated into the multiphase region, recrystallization occurs by random nucleation of extremely fine austenite crystals throughout the material. Exceptionally fine equiaxed grains in the micron and sub-micron range are achieved, thereby providing unique combinations of both increased strength along with increased ductility and increased notch toughness.

3,755,005

## METHOD AND DEVICE FOR CONTROLLING GAS CUTTING OPERATION

Hidehiko Hayasaki, and Eiji Kawakami, both of Tokyo, Japan, assignors to Kabushiki Kaisha Tanaka Seisakusho, Tokyo, Japan

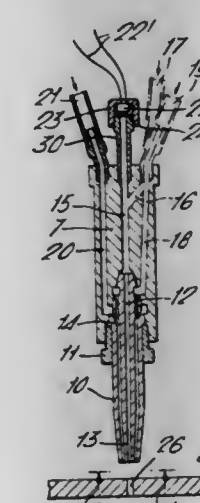
Filed Jan. 21, 1972, Ser. No. 219,629

Claims priority, application Japan, Sept. 13, 1971, 46/70362

Int. Cl. B23k 7/10

U.S. Cl. 148—9 R

11 Claims



A method and device for controlling a gas cutting operation comprising a photosensitive element provided at a location on the gas cutting device in alignment with the path of cutting oxygen and its ejection vent to accept light emanating from the oxidation reaction portion of the cutting flame. The photosensitive element produces an electric output voltage when the luminous output from the oxidation reaction at the gas cutting impinges onto the element. The output voltage varies according to the variation of the intensity of the luminous output. The gas cutting device is controlled in response to the electric output voltage of the photosensitive element to stop running or to stop the supply of gases according to a predetermined program.

3,755,006

## DIFFUSED JUNCTION GAP ELECTROLUMINESCENT DEVICE

Horace Craig Casey, Jr., Summit, and Lars Christian Luther, Basking Ridge, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 28, 1971, Ser. No. 193,606

Int. Cl. H01l 7/44

U.S. Cl. 148—33

7 Claims

p-n junctions for electroluminescent devices are produced in GaP and related semiconductors by diffusing zinc into an n-type wafer. The diffusion takes place in a sealed capsule with ZnP<sub>2</sub> as the zinc source. The ZnP<sub>2</sub> is included in the capsule in an amount which entirely evaporates during diffusion. When the n-type wafer also includes oxygen as a dopant, the emission of red light is enhanced by a subsequent heat treatment in a zinc-free atmosphere. In the absence of oxygen doping, green light is emitted.



3,755,007

**STABILIZED PERMANENT MAGNET COMPRISING A SINTERED AND QUENCHED BODY OF COMPACTED COBALT-RARE EARTH PARTICLES**

Mark G. Benz, Burnt Hills, and Donald L. Martin, Elnora, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1971, Ser. No. 130,108  
Int. Cl. H01F 1/02

U.S. Cl. 148—101

8 Claims

A process for producing a novel cobalt-rare earth intermetallic permanent magnet material having a substantially stable magnetization at ambient temperatures above room temperature. A sintered cobalt-rare earth intermetallic product, in bulk or particulate form, is provided. The product is brought to quench temperature  $T_q$  ranging from about 750° C to 950° C and then it is fast cooled from said quench temperature  $T_q$  at a rate no less than about 75° C per minute to about room temperature.

3,755,008

**PROCESS FOR ENHANCING MAGNETIC PROPERTIES OF METAL POWDER BY HEAT TREATING WITH SALT**

John E. Ehrreich, Wayland, and Adrian R. Reti, Cambridge, both of Mass., assignors to Graham Magnetics, Inc., Graham, Tex.

Filed Mar. 24, 1971, Ser. No. 127,851  
Int. Cl. H01F 1/02

U.S. Cl. 148—105

7 Claims

A process for enhancing the magnetic properties of small particulate ferromagnetic powders, e.g. particles below the critical diameter for which an untreated particle's domain-boundary energy equals its magnetostatic energy, the process comprising heat treating said particles. In the more favorable embodiments of the invention, the particles are heated in intimate association with a particulate refractory material which serves as a shield for effectively preventing excessive sintering of the metal particles.

3,755,009

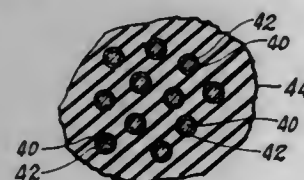
**GLASS FIBER REINFORCED ELASTOMERS**

William E. Uffner, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 6, 1971, Ser. No. 140,768  
Int. Cl. C03C 25/02

U.S. Cl. 117—126 GB

11 Claims



This invention is addressed to the improvement in the bonding relationship between glass fibers and elastomeric materials in the manufacture of glass fiber reinforced elastomeric products wherein individual glass fibers are coated, or bundles of glass fibers are impregnated with a polymer blend composition comprising an acrylonitrile-butadiene-styrene terpolymer, a copolymer of vinyl chloride and vinylidene chloride and a terpolymer of butadiene-styrene-vinyl pyridine.

3,755,010

**TANDEM SCAN HARDENING OF PIPE**

Louis J. Moliterno, Girard, Ohio, assignor to Ajax Magnethermic Corporation, Warren, Ohio

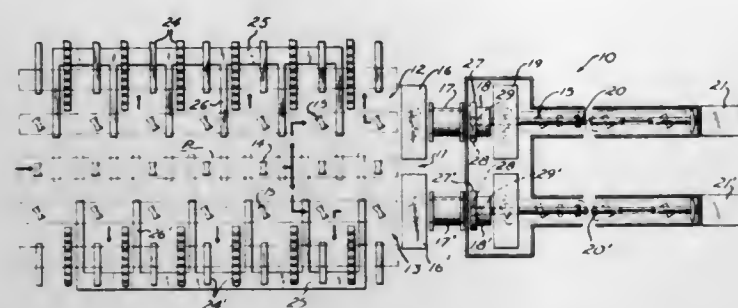
Filed Sept. 8, 1971, Ser. No. 178,590  
Int. Cl. C21D 1/42, 9/14

U.S. Cl. 148—153

9 Claims

There is disclosed herein two induction scan hardening and tempering lines wherein pipe is moved axially one way

through an induction coil and quench for hardening and in the opposite direction through the coil for tempering, as phases of predetermined cycles. A single supply conveyor sequentially conveys new pipes to a position adjacent to the hardening



lines, and transfer means alternately deposit a pipe first on one hardening line and then the other. Automatic control means control the cycles in such manner as to cause the cycles to overlap whereby fully treated pipe is discharged at intervals substantially less than the time consumed by a single cycle.

3,755,011

**METHOD FOR DEPOSITING AN EPITAXIAL SEMICONDUCTIVE LAYER FROM THE LIQUID PHASE**

Hans Peter Kleinknecht, Bergdietikon, and Alfred Heinrich Oberholzer, Zurich, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed June 1, 1972, Ser. No. 258,634  
Int. Cl. H01J 7/38

U.S. Cl. 148—171

4 Claims

An epitaxial layer of a semiconductive material is deposited on a substrate in a furnace boat having a well and a cup-shaped piston fitting in the well with the piston having a small hole in its top end. A heated solution of the semiconductive material dissolved in a molten metal solvent is provided in the well. The piston is pressed down against the solution to force some of the solution through the hole in the piston onto the top end of the piston. As the solution passes through the hole in the piston the solution is scraped clean of contaminants. The substrate is placed against the cleaned portion of the solution on the top end of the piston and the solution is cooled to deposit an epitaxial layer of the semiconductive material onto the substrate.

3,755,012

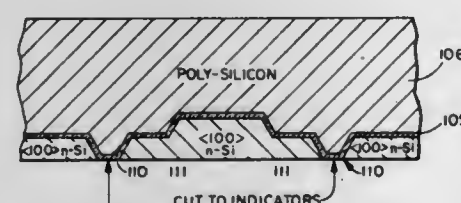
**CONTROLLED ANISOTROPIC ETCHING PROCESS FOR FABRICATING DIELECTRICALLY ISOLATED FIELD EFFECT TRANSISTOR**

William Lloyd George, Scottsdale, and James Brian Price, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 19, 1971, Ser. No. 126,231  
Int. Cl. H01J 7/50, 7/00, 1/14

U.S. Cl. 148—175

8 Claims



There is disclosed an improved junction field effect transistor with dielectric isolation as opposed to isolation by PN junction techniques. The use of the dielectric isolation lowers parasitic capacitance and permits the use of a single gate for the control of the current from the source to the drain of the device. The use of a single gate and the dielectric isolation prevents this parasitic capacitance and the concomitant

reduction of the frequency response of the device by eliminating the need for a large area second gate which generates the unwanted parasitic capacitance. In the two gate embodiment of the subject invention, the second gate area is minimized so as to minimize the parasitic capacitance. The gain of the subject device is increased by internally connecting the two gates with a deep diffused region therebetween. There is further disclosed a method for making junction field effect transistors such that the channel width is accurately controlled.

3,755,013

**LIQUID SOLUTION METHOD OF EPITAXIALLY DEPOSITING A SEMICONDUCTOR COMPOUND**

Laszlo Hollan, Sevres, France, assignor to U.S. Philips Corporation, New York, N.Y.

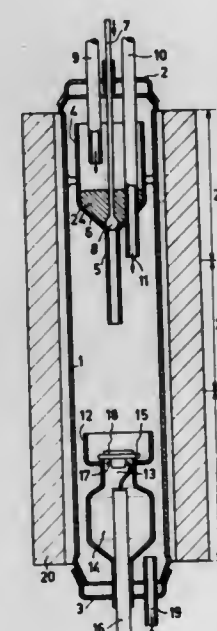
Filed Apr. 1, 1971, Ser. No. 130,151

Claims priority, application France, Apr. 2, 1970, 7011879

Int. Cl. H01J 7/38; B01J 17/20; B05r 3/02

U.S. Cl. 148—172

9 Claims



The invention relates to a method of epitaxially depositing a semiconductor compound from a saturated solution on a substrate. The temperature at the interface substrate-saturated solution is equal to the temperature at which the saturated solution is prepared in a part of the reactor situated above the substrate by leading vapour of a component of the compound over another component of the compound which serves as a solvent.

3,755,014

**METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE EMPLOYING SELECTIVE DOPING AND SELECTIVE OXIDATION**

Johannes Arnoldus Appels; Maria Magdalena Mathilda Paffen; Else Kool, and Peter Johannes Philippus Gerardus Simons, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 8, 1971, Ser. No. 160,652

Claims priority, application Netherlands, July 10, 1970, 7010207

Int. Cl. H01J 7/44, 7/54

U.S. Cl. 148—187

8 Claims

A method of manufacturing a semiconductor device having an inset oxide pattern and a doped zone which is present below said pattern and does not adjoin the surface. According to the invention, only one thin layer is used which masks both against doping and against oxidation. Via a first window the

zone is first provided in said layer after which the window is enlarged and the pattern is formed by an oxidation treatment within the enlarged window, during which oxidation the zone is driven inwards.

3,755,015

**ANTI-REFLECTION COATING FOR SEMICONDUCTOR DIODE ARRAY TARGETS**

Rowland W. Redington, and S. Morry Blumenfeld, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,608  
Int. Cl. H01J 7/38

U.S. Cl. 148—188

6 Claims

A method is described for increasing the minority carrier collection efficiency of a semiconductor camera tube target structure by forming a region of increased conductivity and an anti-reflective coating simultaneously on the light-admitting surface of the target structure. For example, a doped glass is deposited to a quarter wavelength thickness and then heated to diffuse the dopant into the silicon substrate. The resultant is an  $n^+$  layer underlying a one quarter wavelength thick  $\text{SiO}_2$  anti-reflection coating.

3,755,016

**DIFFUSION PROCESS FOR COMPOUND SEMICONDUCTORS**

Malcolm J. Russ, Scottsdale, and Edwin Coats, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 20, 1972, Ser. No. 236,012  
Int. Cl. H01J 7/44

U.S. Cl. 148—189

6 Claims

There is disclosed a method of manufacturing compound semiconductor devices under ambient pressure conditions. The process includes heating a source of dopant material selected from the group consisting of the II-VI compounds and III-V compounds together with a semiconductor substrate selected from the group consisting of III-V compounds and II-VI compounds to a predetermined temperature while passing an inert gas, preferably nitrogen, thereover. Thereafter forming gas (95 percent  $\text{N}_2$  - 5 percent  $\text{H}_2$ ) is passed over the source material and the substrate to effect reduction of the source material; a deposition of dopant ions on the semiconductor substrate; and diffusion of the dopant ions therein. In accordance with preferred embodiment of the invention line oxide is used as the source material for substrates of  $\text{GaAs}$ ,  $\text{GaAs}_{1-x}\text{P}_x$  and  $\text{GaP}$ . The process permits the use of a single temperature operation for deposition and diffusion. The donor ions present in the source material do not diffuse readily enough into the compound semiconductor substrates to affect the doping concentration provided by the acceptor ions.

3,755,017

**METHOD OF DIFFUSING AN IMPURITY INTO A SEMICONDUCTOR BODY**

Bernard Joseph Coughlin, Crawley, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 10, 1972, Ser. No. 216,430

Claims priority, application Great Britain, Jan. 11, 1971, 1,193/71

Int. Cl. H01J 7/44

U.S. Cl. 148—189

9 Claims

Method of diffusing vapor impurity into semiconductor body comprising providing impurity source and semiconductor body in separate open-ended vessels, inserting vessels in furnace and heating semiconductor body to diffusion temperature range before initiating diffusion on significant scale, and diffusing impurity into semiconductor body. Also, product made by method.



3,755,018

**COMPOSITION AND PROCESS FOR INHIBITING CORROSION OF NON-FERROUS METAL SURFACED ARTICLES AND PROVIDING RECEPTIVE SURFACE FOR SYNTHETIC RESIN COATING COMPOSITIONS**

Russell C. Miller, Chicago, Ill., assignor to J. M. Eltzroth & Associates, Inc., Schaumburg, Ill.

Filed Apr. 26, 1971, Ser. No. 137,682

Int. Cl. C23f 7/26

U.S. Cl. 148—6.21

4 Claims

Compositions and a process are provided for inhibiting corrosion of non-ferrous metal surfaces and for producing a surface to which synthetic resin coating compositions will adhere so that the resultant coatings have satisfactory impact and bending resistance, together with resistance to creeping corrosion between the metal and the dried resin coating.

3,755,019

**SOLID PROPELLANT COMPOSITIONS CONTAINING PLASTICIZED NITROCELLULOSE AND ALUMINUM HYDRIDE**

Chester W. Huskins, Huntsville, Ala.; Clay D. Howard, Pulaski, Tenn., and Orval E. Ayers, Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 13, 1963, Ser. No. 265,592

Int. Cl. C06d 5/06

U.S. Cl. 149—18

5 Claims

1. A solid propellant composition consisting essentially of a cured intimate mixture of from about 5% to about 25% by weight powdered aluminum hydride; from about 30% to about 70% by weight of an oxidizing agent selected from the group consisting of ammonium perchlorate, sodium perchlorate, potassium perchlorate, ammonium nitrate, potassium nitrate, and sodium nitrate; and from about 15% to about 70% by weight of plasticized nitrocellulose.

3,755,020

**INCENDIARY COMPOSITION CONTAINING LITHIUM AND A GELLED HYDROCARBON CARRIER**

Robert L. Durfee, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 18, 1968, Ser. No. 722,492

Int. Cl. C06b 15/00

U.S. Cl. 149—20

5 Claims

An incendiary composition containing lithium in a liquid hydrocarbon carrier.

3,755,021

**NITRIC ESTER EXPLOSIVE COMPOSITION CONTAINING FUME REDUCING AGENT**

Vladimir Sujansky, Melbourne, Australia, assignor to ICI Australia Limited, Melbourne, Victoria, Australia

Filed June 5, 1972, Ser. No. 259,604

Claims priority, application Australia, June 28, 1971, 5238

Int. Cl. C06b 3/02

U.S. Cl. 149—103

8 Claims

A gelatin explosive composition of matter containing liquid explosive nitric ester material characterised in that said composition comprises an amount of at least one fixative or fume reducing agent sufficient to reduce the volatility or fluidity of said nitric ester material.

3,755,022

**PROCESS FOR TRACING LOCATION MARKS ON A CANVAS BASE**

Jean Chretien, 2 bis rue Francisque Jonard, Oullins, and Andre Thomasset, 5 Boulevard du 11, Novembre 1918, Villeurbanne, both of France

Filed Apr. 6, 1971, Ser. No. 131,613

Int. Cl. B29c 27/30

U.S. Cl. 156—1

9 Claims

The invention is concerned with a new process for tracing location marks on a canvas 4 which is to be used in the production of a rug or a tapestry.

The canvas 4 is fitted on to the pegs 2 of a plate 1, to re-establish the correct geometry of the meshes of the canvas. Then, a thin sheet 5 carrying a pattern is applied to the canvas. A top-plate 8 presses the sheet against the canvas.

This procedure permits the precise positioning of each mark 6 on the corresponding threads of the canvas 4.

3,755,023

**TECHNIQUE FOR ETCH POLISHING SINGLE RARE EARTH CRYSTAL SYNTHETIC GARNET**

David Christopher Miller, Millington, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 9, 1971, Ser. No. 206,529

Int. Cl. H01l 7/50, 7/62

U.S. Cl. 156—2

8 Claims

A technique for etch polishing single crystal synthetic garnet involves etch polishing the crystal in hot phosphoric acid saturated with steam. The described technique significantly enhances reproducibility and results in crystals manifesting an amplitude of surface undulations of  $\pm 0.25$  microns or less with a frequency of 100 or greater.

3,755,024

**METHOD FOR FIXING A LINING**

Basile Pierre Grapin, 3 Grande Rue, 91, Saintry-Sur-Seine, France

Filed July 19, 1971, Ser. No. 163,694

Claims priority, application France, July 20, 1970, 7026609

Int. Cl. C09j 3/12

U.S. Cl. 156—57

10 Claims

Method for fixing a lining to a surface of a fur, leather, hide, skin or animal fibre article, comprising bringing the surface of the lining and the surface of the article in face-to-face relation, spraying an adhesive latex on at least one of these surfaces at room temperature and pressing the two surfaces together.

3,755,025

**PRODUCTION OF DOUBLET BLANKS FOR SIMULATED DIAMONDS**

Harry S. Jones, Monmouth Beach, N.J., assignor to Chrom-Tronics, Inc., New York, N.Y.

Filed Jan. 17, 1972, Ser. No. 218,564

Int. Cl. B32b 31/00; B28d 5/00; C04d 39/00

U.S. Cl. 156—61

11 Claims

Improved process for the production of doublet blanks suitable for facetting into simulated diamonds by providing a first slab of a high dispersion, high refractive index material, such as strontium titanate or lithium niobate, of a thickness about equal to the thickness of the pavilion of a gem stone to be cut therefrom; providing a second slab of a material which is harder than the material of said first slab, and is substantially transparent with respect thereto such as white spinel or white sapphire; providing at least one of said first and second slabs of a surface area and dimensions equivalent to at least two finished faceted stones; rendering one major surface each of both of said slabs substantially flat surfaces; adhering such flat surfaces together; and cutting out individual gem sized doublets suitable for facetting from said adhered slabs.

3,755,026

**METHOD OF MAKING A SEMICONDUCTOR DEVICE HAVING TUNNEL OXIDE CONTACTS**

John H. Reynolds, Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

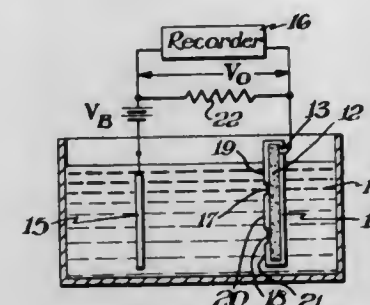
Division of Ser. No. 767,173, Oct. 14, 1968, abandoned. This

application Apr. 1, 1971, Ser. No. 130,521

Int. Cl. H01l 7/50; B01k 3/00

U.S. Cl. 156—17

4 Claims



Semiconductor devices are provided which utilize space charge layers at the surface of a semiconductor to which contact is made through a sufficiently thin portion of an otherwise highly insulating material. The insulating material is thinned down by etching back to a width such that electrons are able to cross it by tunneling.

3,755,027

**METHOD OF MANUFACTURING A GAS DISCHARGE PANEL AND PANEL MANUFACTURED BY SAID METHOD**

Johannes Andries Arnoldus Gilsing, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

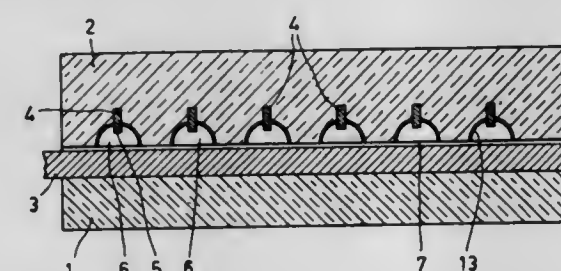
Filed Nov. 10, 1971, Ser. No. 197,277

Claims priority, application Netherlands, Nov. 19, 1970, 7016929

Int. Cl. B44d 5/00; B29d 3/00

U.S. Cl. 156—67

7 Claims



A gas discharge panel of which one or both panel plates are provided with cavities in the bottoms of which a conductor extends, which cavities and conductors are pressed in the softened material of the panel plate by means of a pressure plate in which cores in the form of balls or rods are secured, which cores comprise in the free end a groove in which the conductors are provided, which conductors remain behind in the panel plate after impression.

3,755,028

**METHOD FOR MANUFACTURING NON-WOVEN TEXTILE ARTICLES**

Dennis E. Wood, Penfield, N.Y., assignor to Curlator Corporation, East Rochester, N.Y.

Continuation of Ser. No. 47,029, June 17, 1970, abandoned,

Division of Ser. No. 691,544, Dec. 18, 1967, Pat. No.

3,535,187. This application Oct. 8, 1971, Ser. No. 187,859

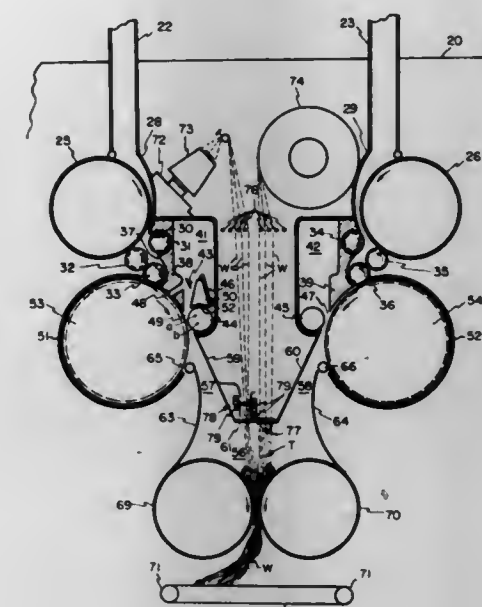
Int. Cl. B32b 19/00

U.S. Cl. 156—62.2

8 Claims

In this process various materials are fed into a condensing chamber between two rotary condensers to form a composite nonwoven product. Staple fibers may be formed into two

separated mats from which the fibers are combed by lickerins into two separate air streams for delivery to the condensing chamber; and continuous filaments may be fed between the fibers to the condensers, and intermingled, in the nip between the condensers, with the staple fibers to form a non-woven and



continuous filament composite; or a powdered binder may be fed into the condensing chamber to form a two-type non-woven and powdered-binder composite; or staple fibers may be fed by three separate air streams into the nip between the condensers to form a three-type non-woven product.

3,755,029

**PROTECTIVE COATED THERMAL INSULATION**

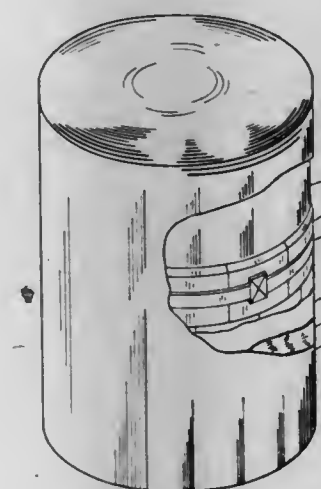
Wayne Philip Ellis, Radnor; George Washington Elkins Foster, Jr., Penlynn, both of Pa., and James Roy Allen, Wilmington, Del., assignors to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 811,290, March 28, 1969, abandoned. This application Nov. 17, 1971, Ser. No. 199,805

Int. Cl. F16l 59/12

U.S. Cl. 156—71

6 Claims



A composite thermal insulation and protective coating for storage vessels, processing equipment, piping, ducting, and the like comprising mastic coated thermal insulation is constructed by securing to the vessel, pipe, or duct wall a first inner layer of insulation material and a second outer layer of a continuous self-supporting weather resistant flexible mastic coating; said first and second layers being tied to the vessel,



pipe, or duct by alternating inner and outer bands. The structural support of said bands in combination with the unusual tensile strength and elastomeric properties of said weather barrier mastic coating permits a completely insulated, weather proofed structure without the necessity of embedding a reinforcing membrane in said mastic with considerable savings in labor and material costs.

3,755,030

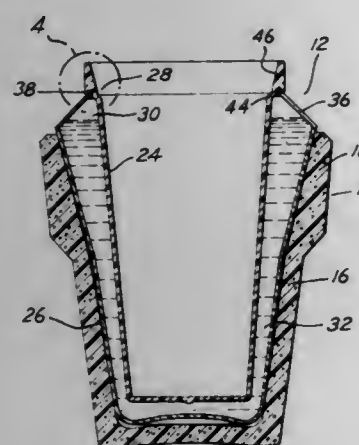
# METHOD OF MAKING A COOLING CONTAINER BY FRICTION WELDING

Donald W. Doman, Janesville; Kenneth M. Douglas, Sun Prairie; Leroy W. Mason, and Lawrence K. Sauey, both of Baraboo, all of Wis., assignors to Flambeau Products Corporation, Baraboo, Wis.

Filed Oct. 13, 1971, Ser. No. 188,889

Int. Cl. B29c 27/08; B65d 11/16

U.S. Cl. 156—73



A product and process relating to the formation of a slush mug assembly are provided according to this invention. The slush mug is utilized to chill liquid beverages and the like for prolonged periods in relatively warm temperatures. The product and process particularly relate to a spin-welded joint for sealing a container to retain a refrigerant between the walls of the container.

3,755,031

# PANEL AND METHOD OF MAKING IT

Frank A. Hoffman; Melvin L. Buchanan, and Carl J. Dunbar, all of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed Oct. 13, 1971, Ser. No. 188,799

Int. Cl. B29c 19/00; B32b 5/18

U.S. Cl. 156—79

8 Claims



A panel construction and method of making it employing a flexible skin having a rigid block bonded thereto. A groove extends across said block with its apex terminating at said skin whereby said skin is foldable along the axis of said apex for forming the panel construction into the desired configuration.

3,755,032

# METHOD OF MAKING A HIGH PRESSURE HOSE OF A SINGLE LAYER OF UNTWISTED TEXTILE REINFORCED RUBBER

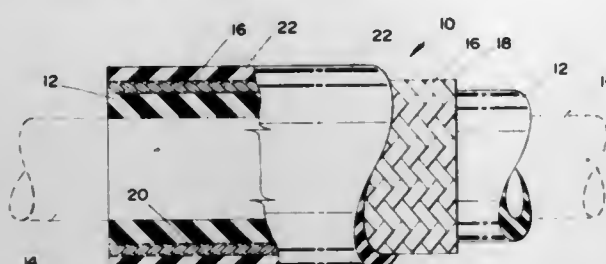
Charles D. Higbee, Arvada, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Jan. 25, 1971, Ser. No. 109,321

Int. Cl. B29c 27/00; B31c 00/00; B32b 00/00

U.S. Cl. 156—86

1 Claim



1 Claim

A heat setting polymeric hose having a high pack, textile reinforcement that shrinks at a temperature at least equal to the heat setting temperature of the polymeric. A method of fabricating a hose by twining a heat shrinkable and generally untwisted textile reinforcement around a heat curable polymeric tube; applying an adhesive and heat setting polymeric cover over the reinforcement; and heat setting or curing the polymeric while simultaneously shrinking the reinforcement to a predetermined position within the hose.

3,755,033

# METHOD OF AND APPARATUS FOR PRODUCING HEMS ON CLOTH ARTICLES BY MEANS OF ADHESIVE

Ronald W. Emus, Greer, S.C., assignor to Southern Machinery Company, Green, S.C.

Filed May 14, 1971, Ser. No. 143,383

Int. Cl. D03d 47/50

U.S. Cl. 156—88

4 Claims

A predetermined or sensed length of fabric, such as towel-ing, is delivered to a position between fixed and movable devices having parts which, upon engaging the fabric, have the capability of forming and folding it to produce industry standard hems. The fabric is severed between hem portions so that one hem is developed on the trailing end of one article while simultaneously a second hem is developed on the leading end of the next article. A part of the folding means also has the capability of depositing adhesive within the second fold of each hem to secure the hem without stitching after the application of pressure.

3,755,034

# METHOD FOR MAKING A HOLLOW FIBER SEPARATORY ELEMENT

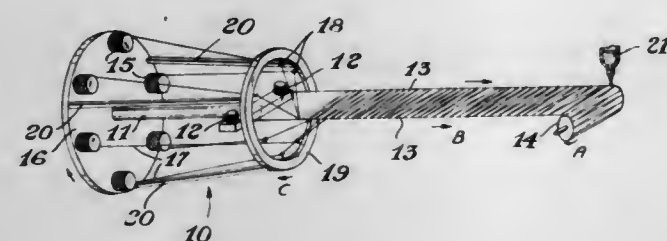
Henry I. Mahon, Walnut Creek; Gene C. Doss, Brentwood; David B. Vang, Walnut Creek, all of Calif., and David A. Gavin, Miami, Fla., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 118,598, Feb. 25, 1971, abandoned. This application Dec. 10, 1971, Ser. No. 206,793

Int. Cl. B32b 1/08; B31c 13/00; B65h 81/00

U.S. Cl. 156—169

11 Claims



A moving belt of hollow fibers is prepared by winding a continuous length of hollow fiber (or fibers) transversely around a

pair of moving guide members. The moving fiber belt is convolutely wound upon an axis generally transverse to the direction of movement of said belt to form a fiber bundle. A band of solidifiable resin is applied to at least one transverse section of the hollow fiber bundle and subsequently solidified (cured) to form a tube sheet. The separatory element is then prepared by cutting the tube sheet in a plane generally perpendicular to the bundle axis to form a tube sheet face portion having open fiber ends terminating therein.

3,755,035

# ARTICLE, MOLD AND METHOD OF MAKING ARTICLE

Mark W. Olson, Allendale, and Walter F. Silva, Riverdale, both of N.J., assignors to Uniroyal, Inc., New York, N.Y.

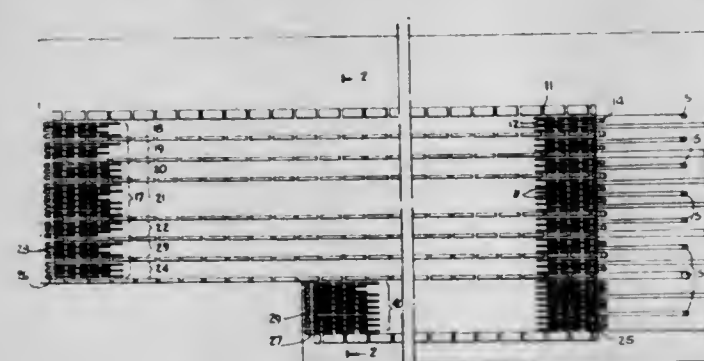
Division of Ser. No. 827,209, May 23, 1969, Pat. No.

3,635,623. This application Feb. 22, 1971, Ser. No. 117,723

Int. Cl. B32b 31/20

U.S. Cl. 156—173

2 Claims



A method for making an electrical heater in a mold having parallel ribs and grooves comprises moving a sheet of plastic material into the grooves of the mold, positioning a heater member in the grooves over the plastic material and moving a second sheet of plastic material into the grooves over the heater member in each case using sufficient heat to move said sheets of plastic material into the grooves.

3,755,036

# NON-WOVEN ARTICLES MADE BY COATING FILAMENTS WITH BINDER AND DRYING THE BINDER UNTIL NON-MIGRATORY BEFORE PROVIDING FILAMENT-TO-FILAMENT CONTACT

Elmer Gordon Paquette, Madison, and Karl Russell Guenther, Stoughton, both of Wis., assignors to Bjorksten Research Laboratories, Inc., Fitchburg, Wis.

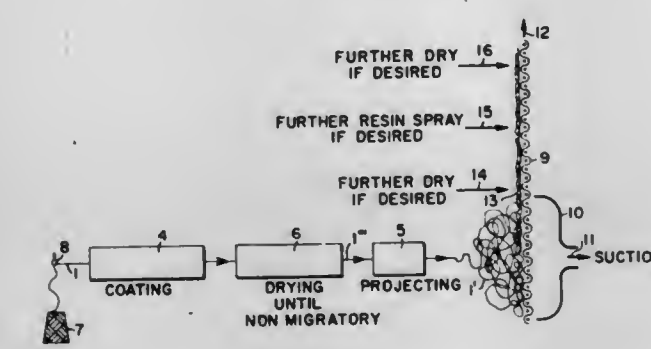
Continuation-in-part of Ser. No. 876,005, Nov. 12, 1969, Pat. No. 3,616,002. This application Oct. 14, 1971, Ser. No.

189,125

Int. Cl. D04h 3/08

U.S. Cl. 156—180

4 Claims



This invention deals with non-woven articles made from continuous filaments, including garments and porous sheet

materials. In the past, non-woven products have suffered the handicap of a stiff and "boardy" feel. We coat continuous yarn or filaments with binder while preventing substantial filament-to-filament contact and they dry them sufficiently that the binder becomes non-migrating before the filaments are deposited on a screen or mold on which the fibers are brought into contact with each other and bonding takes place. This method is particularly suitable for making garments of elastomeric fibers, not easily handled in ordinary production machinery. Another generally applicable advantage is that the resultant products are exceptionally flexible and that the articles produced do not split into stratified binder-rich and-poor areas, but are uniformly bonded throughout.

3,755,037

# METHOD OF MAKING A FIBER REINFORCED RACKET

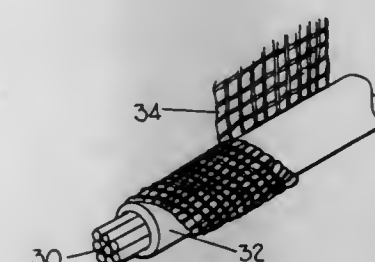
John R. Erwin, 6634 E. Sonnyvale Rd., Paradise Valley, Ariz.; Anthony F. Staub, and Norman T. Staub, both of Dayton Scale Model Company 2661 Culver Ave., Dayton, Ohio

Filed Jan. 18, 1971, Ser. No. 107,304

Int. Cl. B65h 81/00; A63b 49/00

U.S. Cl. 156—185

4 Claims



Racket having frame including an oval head portion and a handle portion integrally formed by a tubular member composed of helically wound fibers of high tensile strength embedded in a hardened binder and having a pre-formed reinforcing member defining the base of the oval head portion and bonded on opposite sides to the tubular member, the handle portion being defined in part by generally parallel extending portions of the tubular member surrounded by a grip.

Method of making a tubular article by helically winding high tensile strength fibers about a core provided with a substantially fluid tight casing; the core is removed and the wound casing is placed in a mold, a binder for the fibers is added, the interior of the casing is supplied with fluid under pressure, and the binder is hardened.

3,755,038

# METHOD OF MAKING STRUCTURAL MATERIAL

Susanne Klara Atteck, 39th St. Pauls Ave., Kenton, Harrow, England

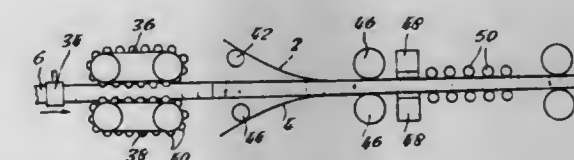
Continuation-in-part of Ser. No. 854,853, Sept. 3, 1969, abandoned.

Filed May 12, 1971, Ser. No. 142,514

Int. Cl. B32b 3/12

U.S. Cl. 156—197

8 Claims



The specification describes the preparation of a structural material which consists of a filling of substantially sinusoidally



curved strips of sheet material, sandwiched between layers of sheet material, and bonded to these outer layers. The material may be in the form of a single or multi-layer sandwich and is made using at least one rotating member having formers projecting therefrom to deform initially parallel strips into substantially sinusoidal conformation.

3,755,039

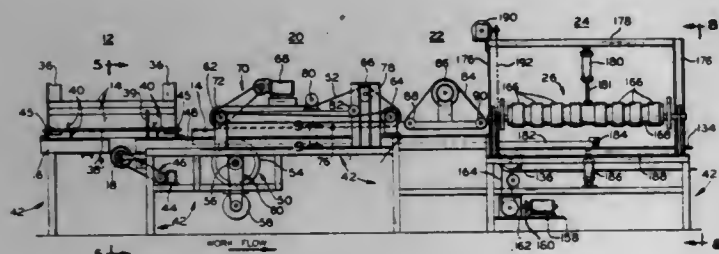
# METHOD OF SLITTING AND JACKETING CYLINDRICAL BODIES

Rupert Douglas Terry, Toledo, Ohio, assignor to Johns-Manville Corporation, New York, N.Y.

Filed Apr. 26, 1971, Ser. No. 137,356  
Int. Cl. B31c 5/00; B65h 81/00; F16i 9/16

U.S. Cl. 156—187

4 Claims



Tubes are contacted by belts on the upper portion of their outer surface to advance the tubes along a path paralleling their longitudinal axes with the lower well being slit and a guide subsequently being engaged to position the tube with its slot paralleling an edge of a sheet of jacketing material advanced toward the tube and positioned adjacent thereto whereby belts acting normal to the path of the tubes contact the upper portion of their outer surface to roll the tubes about their longitudinal axes to engage the sheet jacketing material wrapping it about the tube being rolled thereover.

3,755,040

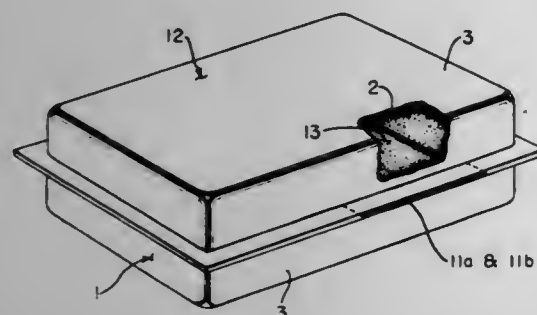
# CONTAINER FOR LIQUID HYDROCARBONS

Keith D. Robinson, Mogadore, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 15, 1971, Ser. No. 134,167  
Int. Cl. B29c 1/14

U.S. Cl. 156—242

4 Claims



A container suitable for liquid hydrocarbons which comprises an internal pinched seam container having a hydrocarbon barrier as an inner liner. The container is prepared by releasably attaching first and second curable flexible sheets over the apertures of first and second concave molds, shaping the sheets by applying a pressure differential between the surface of each sheet facing its associated mold; after shaping the first sheet, providing an aperture therein through an aperture in the corresponding mold; adhering the peripheries of the two

sheets together, before or after shaping the first sheet, and providing an opening in one of the sheets; curing the sheets after shaping to form a pinched seam container; removing the container from the molds; turning the container inside out through the provided opening therein; and sealing the said provided opening.

3,755,041

# BAG MAKING MACHINE WITH ADJUSTABLE GEARS

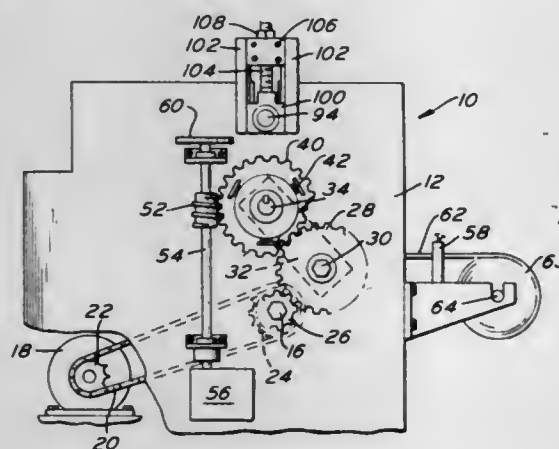
Hercules Membrino, 1934 Arch St., Philadelphia, Pa.

Continuation-in-part of Ser. No. 136,862, April 23, 1971, which is a continuation-in-part of Ser. No. 874,523, Nov. 6, 1969, Pat. No. 3,616,095. This application Dec. 9, 1971, Ser. No. 206,475

Int. Cl. B32b 31/00

U.S. Cl. 156—515

7 Claims



A machine for making bags from strips of thermoplastic material whereby the strip, either longitudinally overfolded or tubular, is passed from a supply roll over an impression roller where it is momentarily contacted by a heated blade means, which severs and seals along a line of seal to form the bags. The heated blade means is preferably in the form of an integral unit having two oppositely-extending blade portions. The blade means is rotated to bring the blade portions into alternate contact with the strip so that one complete rotation of the blade means forms two bags. The blade means is mounted on a shaft which is actuated by an elliptical gear assembly so that there is a variation in the speed of rotation of the blade means. Between the elliptical gear assembly and the shaft on which the blade means is mounted is a simple manual worm assembly to vary the rotational speed of the blade means as desired, and, thereby, various sizes of bags can be produced.

3,755,042

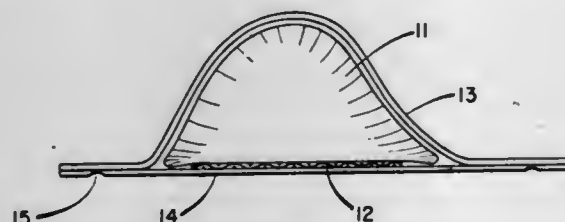
# STERILE PACKAGING METHOD FOR SURGICAL DEVICES

Gordon W. Robertson, Larkin Twp., Midland County, and Lee H. Breasbols, Tittabawassee Twp., Saginaw County, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sept. 15, 1971, Ser. No. 180,798  
Int. Cl. A61l 1/00; B65b 31/02; B29c 24/00

U.S. Cl. 156—245

4 Claims



Method of sterile packaging of a surgical device comprising heat forming a sheet of Teflon FEP to form a blister having

shape and dimensions of the device, placing the device in the blister, covering it with a second sheet of Teflon FEP, heat sealing the edges of the package and dry heat sterilizing the packaged device.

3,755,043

# ELECTRET HAVING IMPROVED STABILITY

Yuriko Igarashi; Haruko Kakutani, both of Tokyo; Masayasu Suzuki, Fukushima; Makoto Fukuda, Fukushima, and Takao Abe, Fukushima, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

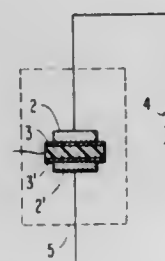
Filed Sept. 10, 1970, Ser. No. 71,167

Claims priority, application Japan, Nov. 14, 1969, 44/90757; Sept. 10, 1969, 44/71254

Int. Cl. B29c 19/02

U.S. Cl. 156—272

5 Claims



In a process for the production of an electret composed of a high molecular weight base material by applying to the base material a high D. C. potential at a high temperature, cooling the material while continuing the application of the potential, and then removing the electric potential, the improvement which comprises covering the opposite surfaces of the base material before polarizing the base material with thin films of a different high molecular weight material having a higher electrical insulating property than that of the base material prior to the application of the electric potential.

3,755,044

# ADHESIVE COMPOSITIONS AND METHOD OF APPLICATION

Hans-Georg Sebel, Dusseldorf, Germany

Filed June 25, 1971, Ser. No. 156,954

Claims priority, application Germany, June 27, 1970, P 20 31 881.4

Int. Cl. B32b 31/00

U.S. Cl. 156—289

7 Claims

An aqueous dispersion adhesive composition for preventing sliding or riding up of stacked packaged articles having coverings of paper, cardboard or pasteboard comprising an aqueous dispersion containing from 3 percent to 60 percent by weight based on the total composition, of an adhesive dispersible in water with surface-active agents selected from the group consisting of paraffins having a melting point range between 40° C to 100° C, polyalkylenes having from two to eight carbon atoms in the alkylene and average molecular weights of between 2,000 and 25,000, and mixtures thereof, and the method of preventing sliding or riding up of packaged articles which comprises interspersing between said packaged articles, a layer of said aqueous dispersion adhesive composition.

3,755,045

# PACKING TAPE BINDING MACHINE

Masaho Takami, 1-15, Aza Kitaura, Nishi Tomatsu, Amagasaki, Japan

Filed May 7, 1971, Ser. No. 141,158

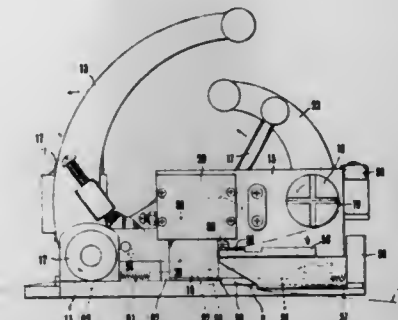
Int. Cl. B32b 31/00

U.S. Cl. 156—366

9 Claims

A packing tape binding machine has a pressing device for pressing one end portion of the tape against the upper surface of a base plate, a heater for fusing, and an elevating body for

holding the other end portion of the tape on said fusing heater and severing said tape while pressing the other end portion of the tape as it is cut on the one end portion of the tape positioned on the base plate. A tape winder is driven by a handle for winding the tape on a packing. A rack-driven tape welding



heater for melting the opposed upper and lower surfaces of the end portions of the tape is provided which can be advanced between the upper and lower end portions of the tape as the elevating body commences to descend when severing the other end portion of the tape and then withdrawn, the movement of the heater being controlled by a timer.

3,755,046

# METHOD AND APPARATUS FOR COATING CYLINDRICAL PAPER PRODUCTS WITH A PLASTIC MATERIAL

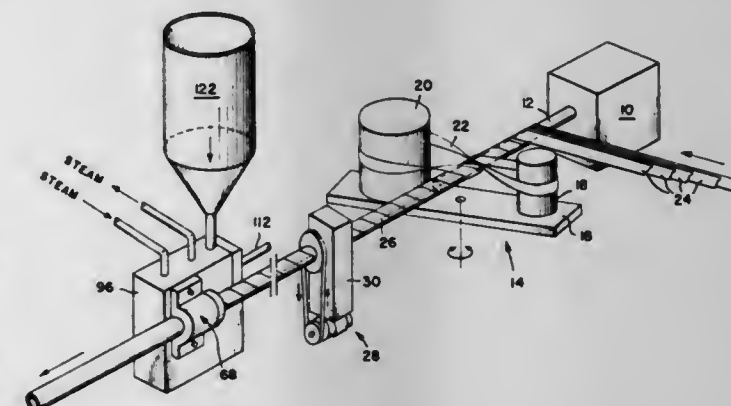
Joseph T. Yovanovich, Rosemont, Pa., assignor to Milton Berger, Philadelphia, Pa., a part interest

Filed Aug. 3, 1971, Ser. No. 168,677

Int. Cl. B65h 81/04; B31c 3/00

U.S. Cl. 156—429

11 Claims



Method and apparatus are provided for continuously forming webs of paper stock freshly coated with adhesive into spiral tubing, reducing the tubing to a predetermined size before the adhesive dries, and thereafter extruding plastic material about the tubing for uniformly coating the same.

3,755,047

# ELECTROCARDIOGRAM MOUNTING APPARATUS

Paul U. Larson, 6214 Washington Ave., St. Louis, Mo.

Filed July 12, 1971, Ser. No. 161,731

Int. Cl. B32b 31/00

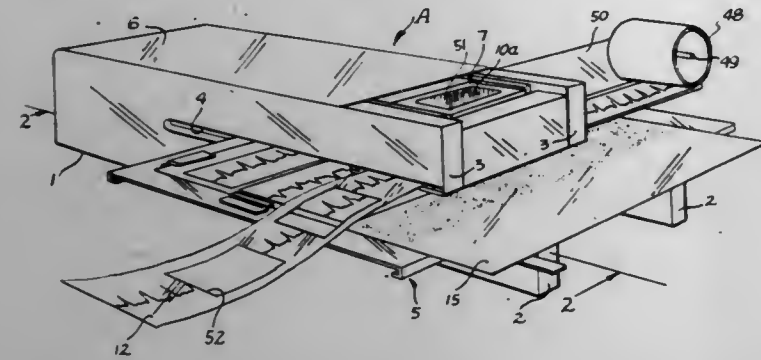
U.S. Cl. 156—510

18 Claims

In an apparatus for mounting portions or segments of an electrocardiographic tape upon a medical history record sheet, the sheet is fixedly supported upon a shiftable platen, with the electrocardiographic tape being transversely moved there-across in a superposed relationship until that portion of the tape which depicts a significant graphical segment of the heartbeat is focused in a viewer, at which time a punch and die combination function to sever that segment of the tape and



immediately deposit it upon the surface of the record sheet. In the process of performing this function, the record sheet is shiftable in both the lateral and longitudinal directions until that surface portion of the sheet to which a segment of the



tape is to be mounted is to be mounted is arranged directly under the punch, at which time the punch may be actuated either electrically, mechanically, or manually, to sever the tape and immediately affix that severed segment to the record sheet.

3,755,048

#### APPARATUS FOR USE IN SEMICONDUCTOR CLEANING AND TRANSFERRING PROCESSES

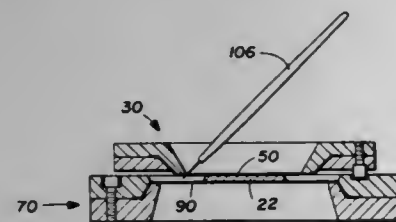
Wolfgang Curt Schubert, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 3, 1970, Ser. No. 25,491

Int. Cl. B23q 3/00; H01r 43/00

U.S. Cl. 156—541

4 Claims



In a method of cleaning and transferring semiconductors, a paper chip transfer member is glued to a plurality of beam lead chips while the chips are secured to a sapphire disk by a layer of wax. Then, the wax is melted to release the chips, and the chips are cleaned by immersing the chips and the transfer member in a wax solvent. After the cleaning step, the chips are secured to a polyester chip receiving member by the simultaneous application of heat and pressure. The transfer member is then released from the chips by immersing the transfer member, the chips and the receiving member in a glue solvent. Finally, the chips are cleaned by immersing the chips and the receiving member in another solvent.

3,755,049

#### DEVICE FOR REMOVING TWO THIN LAYERS SITUATED ON EACH OTHER

Arnoldus Willem Jan Leloux, Dedemsvaart, Netherlands, assignor to Industriële Onderneming Wavin N.V., Zwolle, Netherlands

Filed Sept. 24, 1971, Ser. No. 183,320

Claims priority, application Netherlands, Sept. 30, 1970, 7014402

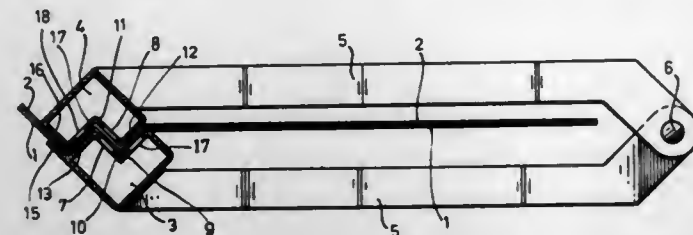
Int. Cl. B32b 35/00; B23p 19/04

U.S. Cl. 156—584

4 Claims

A device for removing two thin flexible thermoplastic layers of a tubular foil from each other comprising a first elongated member with a W-shaped cross section and a second elongated complementary member with a W-shaped cross section, whereby both members have a first aperture lying opposite

each other in the cooperative state of the members, each member being provided with a second opening being situated



at different sides of the first aperture, the lower of the elongated members for supporting the foil having a projecting elongation.

3,755,050

#### REFLECTIVE BICYCLE PEDAL TREAD

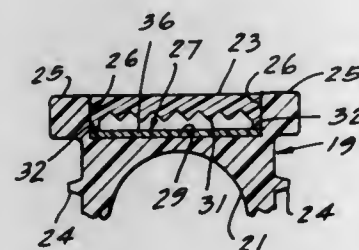
Gerald Golden, Highland Park; Charles V. Wrobel, Jr., Arlington Heights, and Walter Dian, Downers Grove, all of Ill., assignors to Excel Incorporated, Franklin Park, Ill.

Filed May 4, 1971, Ser. No. 140,148

Int. Cl. G05g 1/14

U.S. Cl. 161—2

2 Claims



Reflective type of bicycle pedal tread having an outwardly facing plane surface extending along the pedal tread and an acrylic plastic reflector of the reflex type extending along the surface, and maintained in position on the surface with its reflective surface exposed for the entire length of the reflector. The reflector is sealed by a plastic sealing strip one form of which may be made from an acrylonitrile-butadiene-styrene copolymer, and capable of sealing the reflector and extruded with the pedal tread during extruding of the vinyl pedal tread to be a part of the pedal tread.

3,755,051

#### HIGH-LOFT, NONWOVEN PANELING MATERIAL AND COVERING

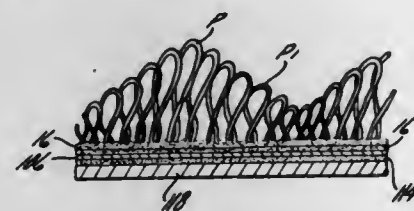
Robert J. Stumpf, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 78,004, Oct. 5, 1970, Pat. No. 3,705,063. This application June 12, 1972, Ser. No. 261,695

Int. Cl. D04h 3/00, 11/00

U.S. Cl. 161—63

20 Claims



A paneling material comprising a laminated construction having a layer of adhesive and a multiplicity of elements looped outwardly from the layer and a layer of nonflexible material, such as plywood, plastic or the like, laminated to the adhesive layer; and a method of making the paneling material by first embedding a web of elements in an open pattern of adhesive, bonding the elements in the adhesive, consolidating the adhesive into a continuous backing layer while looping the

elements outwardly from the adhesive backing, and laminating the nonflexible material to the adhesive backing. In certain instances, a second pattern of adhesive may be applied to the first pattern of adhesive in general registry therewith prior to the consolidation step. Also a barrier layer may be interposed between the nonflexible material and the adhesive backing. Also, the invention includes a new use for a high-loft non-woven material, namely: as a wall covering material.

3,755,052

#### DECORATIVE PLASTIC TRIM STRIP

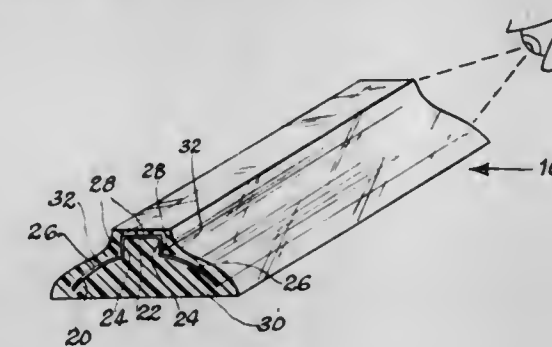
Max Dressler, Glencoe, Ill., assignor to Protective Treatments, Inc., Dayton, Ohio

Filed May 10, 1971, Ser. No. 141,829

Int. Cl. B44f 1/02; B32b 15/08

U.S. Cl. 161—4

3 Claims



A decorative plastic trim strip in which a formed metal surface foil is embedded in a light-transmitting plastic sheath. The foil is provided with a colorant stripe on part of its surface to produce contrasting color effects. The surface of the plastic sheath is shaped differently from the confronting surface of the formed foil to change the apparent width of the foil when viewed through the sheath.

3,755,053

#### DECORATIVE PANEL FOR USE AS A BULLETIN BOARD OR DISPLAY PANEL

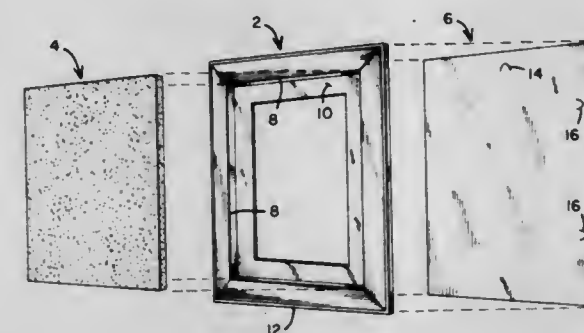
David K. Lindahl, St. Paul, Minn., assignor to Romac Industries, Inc., Minneapolis, Minn.

Filed May 17, 1971, Ser. No. 144,087

Int. Cl. B32b 1/04; E04c 2/20

U.S. Cl. 161—44

8 Claims



A decorative panel for use as a bulletin board or as a display panel on which decorative objects may be placed. The device is light weight and sturdy yet is economical to construct and is attractively designed. In the preferred embodiment, the frame is formed of plastic and is of unitary construction and has a first wall about the inner periphery of one side thereof formed by recessed shoulders and a second wall projecting from the outer periphery of the other side thereof and extending beyond said recessed shoulders. A burnt cork panel board is glued within the confines of said first wall to the front side of said recessed shoulders. The burnt cork panel board has a thickness equal to or less than the depth of said recessed shoulders in order to prevent damage to the edges thereof when the board is being handled. A cardboard backing is

glued within the confines of the second projecting wall to the back side of said recessed shoulders to provide stability to the board.

3,755,054

#### RESIN BONDED GLASS FIBER FENCE

Jonas Medney, 3504 Woodward St., Oceanside, N.Y.

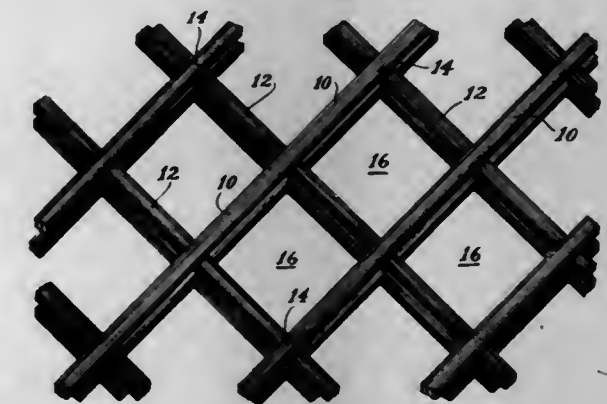
Continuation of Ser. No. 780,014, Nov. 29, 1968, abandoned.

This application July 19, 1971, Ser. No. 163,992

Int. Cl. B32b 5/12

U.S. Cl. 161—57

1 Claim



An interlocked glass fiber structure suitable for use as a fence material is disclosed.

3,755,055

#### NON-WOVEN NEEDLED PILE FABRIC AND METHOD FOR ITS MANUFACTURE

Herbert Lochner, Kempen, Germany, assignor to Cik Chemische Industrie Kempen GmbH

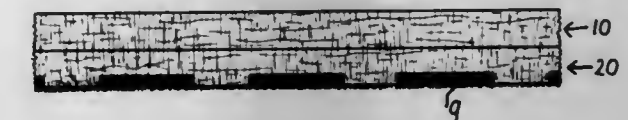
Filed Feb. 22, 1971, Ser. No. 117,626

Claims priority, application Germany, Feb. 24, 1970, P 20 08 439.3

Int. Cl. D04h 11/00

U.S. Cl. 161—62

5 Claims



A needed, non-woven pile fabric comprises a non-woven backing fabric and a non-woven face fabric. The face fabric has its face side printed with an ornamental pattern of pigment color. The backing fabric and the face fabric are needed together so that the fibers of the backing fabric penetrate through the face fabric and mingle with the fibers of the face fabric to form a pile on the face side of the face fabric. The ornamental pattern is thereby imparted with a soft three-dimensional appearance.

A method is also disclosed for producing the non-woven pile fabric. According to the method, a web of a non-woven backing fabric is placed in face-to-face relationship with a web of non-woven face fabric having a decorative pattern of pigment color printed on its face side, with the printed face side of the face fabric facing away from the backing fabric. The two webs are then needed from the free or uncovered side of the backing fabric in a direction towards the face side of the face fabric so that the fibers of the backing fabric penetrate through the face fabric and mingle with the fibers of the printed face fabric to form a pile layer on the printed face side. The backing fabric and the face fabric may be of a single color or of blended colors.



3,755,056

**CELLULAR INSULATION FOR USE WITH LOW TEMPERATURE LIQUIDS**

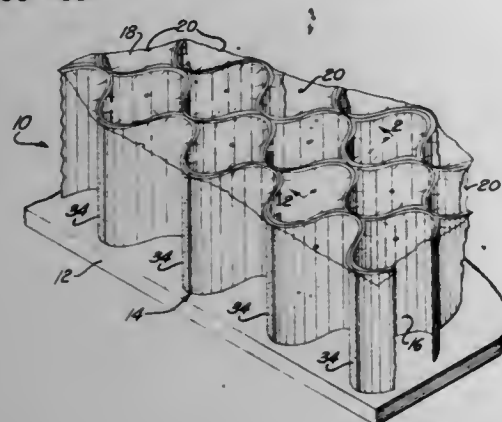
Jay L. McGrew, Littleton, Colo., assignor to Martin Marietta Corporation, New York, N.Y.

Filed Oct. 16, 1970, Ser. No. 81,400

Int. Cl. B32b 3/02, 3/12; B65d 25/18

U.S. Cl. 161-68

7 Claims



Capillary insulation for low temperature liquids in which a cellular structure defines a plurality of discrete cells enclosed by a capillary cover with capillary openings communicating with each cell. The cell walls and the cover are designed to minimize the effects of strains imposed thereon by providing an excess of material both in the walls and the cover thereby permitting them to deflect without adversely affecting operation of the insulation. The cell walls are formed in an S-shaped configuration and the cover is dimpled to provide the desired excess material. The capillary openings are reinforced by a toroidal rib extending around each opening.

3,755,057

**SYNTHETIC FUR**

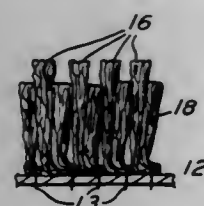
Howard L. Scott, 56th St. and Lancaster Ave., Philadelphia, Pa.

Filed Aug. 23, 1971, Ser. No. 173,885

Int. Cl. D03d 27/00; D04h 11/00

U.S. Cl. 161-67

6 Claims



A synthetic fur product and method of making such product which comprises coating synthetic hair fibers with a heat-settable composition containing a hardening and adhesive agent in aqueous media, either with or without the addition of separate water-proofing agents, flame-retardant agents, softening agents, and the like, and then applying heat to the coated hair to set the coated hair in the selected condition. Then the treated hair fibers are formed into long and short hair wefts, the two lengths and "belly" hair. The wefts are then stitched or otherwise adhered to a backer. In another form, only one length of hair fiber is used to form the wefts and these are stitched to a woven mat which has been treated similarly to the wefts.

3,755,058

**CARPET SEAMING TAPE**

Alexander Winkler, North Hollywood, Calif., assignor to Bruck Industries, Inc., Los Angeles, Calif.

Filed June 11, 1970, Ser. No. 45,432

Int. Cl. B32b 15/02

U.S. Cl. 161-88

8 Claims

A carpet seaming tape comprising a tape base with yarns thereon and having a layer of adhesive thereover with a plu-

rality of spaced apart rows of adhesive formed thereon and extending longitudinally along the tape. The yarns have a heat sealant emulsion rolled onto their backs. The layer and rows of adhesive are melted upon the application of heat, and the



heat sealant maintains the adhesive above the tape base so as to be available for securement to the carpet. The backs of two adjacent portions of carpet are then pressed against the tape and are bonded thereto providing a seamless appearance.

3,755,059

**HIGH IMPACT STRENGTH IN GRAPHITE FIBER LAMINATES**

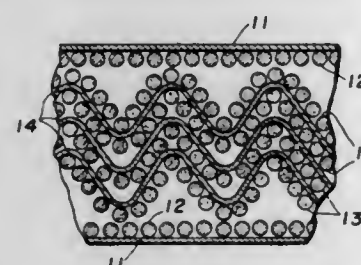
John D. Calfee, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 26, 1971, Ser. No. 137,499

Int. Cl. B32b 15/00

U.S. Cl. 161-93

8 Claims



A laminar composite of high impact and shearing resistance comprises layers of graphite fiber, glass fiber, and corrugated metal foil in an arrangement which resists spalling, inter-laminar shearing, and multipoint failure due to shock wave transmission.

3,755,060

**STRUCTURAL SHAPES HAVING IMPROVED PHYSICAL PROPERTIES**

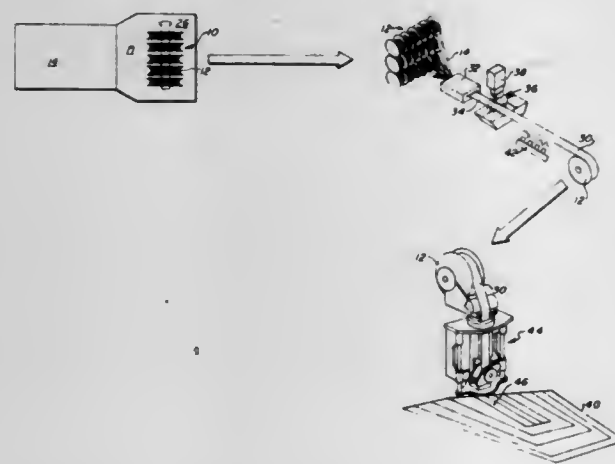
Ronald E. Bullock, Fort Worth, Tex., assignor to General Dynamics Corporation, Ft. Worth, Tex.

Filed Aug. 16, 1971, Ser. No. 171,993

Int. Cl. B32b 3/00

U.S. Cl. 161-143

2 Claims



A method is disclosed for the fabrication of highly strengthened structural shapes and tectonic components which are particularly useful in the construction of aircraft, missiles and aerospace vehicles.

3,755,061

**PREPREG TAPE**

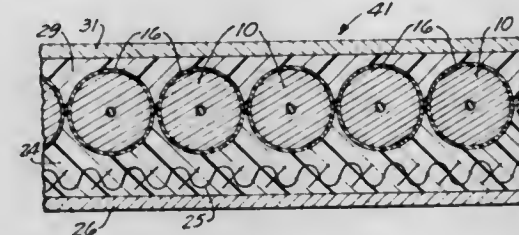
Joseph N. Schurb, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 649,167, June 27, 1967, abandoned. This application Oct. 12, 1970, Ser. No. 80,207

Int. Cl. B32b 5/08; D04h 5/00

U.S. Cl. 161-143

7 Claims



A prepreg tape incorporating collimated large-diameter monofilaments, such as boron monofilaments. Prior to incorporation in the tape the monofilaments are individually precoated with resin composition that does not flow when the tape in which the monofilaments are embedded is subjected to a useful molding operation. In one embodiment, the matrix resin composition of the tape comprises a preformed film and the coated monofilaments are pressed into the film.

3,755,062

**FABRIC FORMED BY HEAT SEALING, SHRINKING AND FOAMING BACKING**

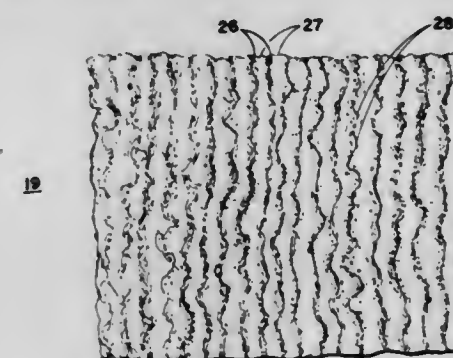
Henry G. Schirmer, Spartanburg, S.C., assignor to W. R. Grace &amp; Co., Duncan, S.C.

Filed July 21, 1971, Ser. No. 164,549

Int. Cl. B32b 7/04, 3/00

U.S. Cl. 161-146

2 Claims



A non-woven rug, or the like, is formed by heat sealing a covering material at spaced intervals to a plastic backing and thereafter shrinking the backing to bulk the facing fabric. The heat sealing of the facing fabric to the backing causes a partial loss of orientation in the seal area therein bringing about a bulking or crinkling of the backing. The backing is preferably of a thermoplastic material having a foaming agent incorporated therein which is foamed after the completion of the heat sealing and heat shrinking procedures. Also included in the disclosure are the features of the backing fabric independently, i.e., incorporation of a foaming agent into a plastic which is extruded and thereafter heat sealed and/or stretch oriented and shrunk prior to the activation of the foaming agent to foam the fabric.

3,755,063

**THERMOFORMABLE LAMINATED STRUCTURES**

David H. Massey, Glencoe, Ill., and Robert B. Anderson, Edina, Minn., assignors to Xox Corporation, Lombard, Ill.

Continuation-in-part of Ser. No. 796,738, Feb. 5, 1969, abandoned. This application Mar. 9, 1970, Ser. No. 17,573

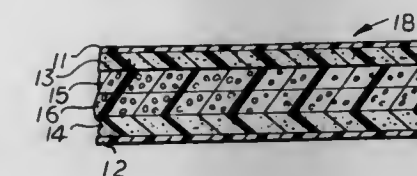
Int. Cl. B32b 5/18, 3/00

U.S. Cl. 161-161

8 Claims

A thermoformable essentially rigid structural sandwich laminate of thermoplastic polymeric material having a cellular

core member and a pair of exterior non-cellular skin members of thermoplastic material of normal density adhesively united to the surfaces of the core member, wherein each of the elements which form the skin and core members respectively maintain their structural integrity within the laminate in subsequent thermoforming. The cellular core member may be either a single element or may be formed of a plurality of elements or laminae each of which may be of the same or of different densities. A process of preparing the thermoformable laminate is provided which comprises adhesively uniting and adhering to the outer planar surfaces of the cellular core member, sheets of non-cellular thermoplastic material and in-



cludes the steps of adhesively uniting the several elements or laminae that make up a core member of a composite construction.

The invention also relates to a process for the manufacture of relatively rigid formed items from said laminate by thermoforming of the aforesaid laminate by the application of heat under controlled conditions followed by the application of differential pressure to said laminate, the heat being applied through the exterior non-cellular thermoplastic surfaces of the laminate to modify the thickness, density and cell structure of the cellular core member under controlled thermoforming conditions.

3,755,064

**WATER INSOLUBLE POLYMERIC WEB STRUCTURES AND FILAMENTS CONTAINING ENCAPSULATED COMPONENTS**

Theodore Maieron, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Division of Ser. No. 723,285, April 22, 1968, which is a continuation of Ser. No. 659,857, Aug. 11, 1967, abandoned.

This application May 25, 1971, Ser. No. 146,804

Int. Cl. D01f 1/02; D04h 1/04; B01j 13/00

U.S. Cl. 161-174

10 Claims

The present disclosure is directed to formation of self-supporting, three dimensional, water-insoluble, polymeric web structures containing encapsulated components. The webs are composed of randomly associated joined monofilaments of water-insoluble polymers, said monofilaments ranging in average diameter from about 1 to 10 microns, usually from about 2 to 7 microns, on/or in which are located encapsulated components, e.g., coloring agents, perfumes, or other scents, e.g., insect sex attractants, agricultural chemicals, insecticides, pesticides, etc. Any water-insoluble web-forming polymer, including compatible polymer mixtures, can be used provided that said polymers are capable of having a self-supporting web structure, the randomly associated individual monofilaments of which are self-supporting when spanning a gap of at least 1 inch. The web-forming polymer solutions or dispersions can be dispensed from various types of dispensing systems and equipment, e.g., from spray guns, portable aerosol cans, etc., to provide a novel and advantageous way of dispensing agricultural treating agents or other encapsulated materials onto plants or other desired repositories or locations without interfering therewith, viz., with plant growth or metabolic processes thereof.

According to a preferred embodiment, the disclosure is also directed to aerosolizable formulations comprised of the polymer (or polymers) forming the web structure, a solvent (or mixture of solvents) used to dissolve the polymer, a propellant (or mixture of propellants) to propel the polymer solution from the aerosol dispensing device, and the encapsulated material which becomes imbedded in or adherent to the



polymeric filaments upon formation of the web. Other optional ingredients, e.g., a plasticizer(s) can be included in the aerosolizable formulations to impart increased tackiness to the web over extended time periods.

3,755,065

# OXIDIC SOLDER SEALING COMPOSITIONS AND THEIR USE IN FORMING LAMINATES

Theodor L. Chvatal, Vienna, Austria, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 11, 1971, Ser. No. 142,399

Int. Cl. C03c 27/00; C09j 1/00; B32b 17/06

U.S. Cl. 161—192

13 Claims

An oxidic solder sealing composition is provided which is suitable for selectively joining relatively high expansion glasses, ceramics and metals to each other and in combination. The solder compositions comprise a binary admixture of vanadium pentoxide,  $V_2O_5$ , and silver oxide,  $Ag_2O$ , in the mole ratio ranging from 0.3 to 3.5  $Ag_2O:1.0 V_2O_5$ , and more particularly in the molar ratio of 0.5 to 3.0  $Ag_2O:1.0 V_2O_5$ . These solder compositions may be used in the form of rods, frit or powder, paste with conventional fugitive binders or solvents or as an aqueous suspension, such as in concentrated ammonia. In preparing these compositions,  $AgNO_3$  is mixed with finely divided  $V_2O_5$  and then the two components are fused together. Subsequently, the fused mass is cooled and thereafter may be ground into a powder. Laminates and sealed surfaces are prepared from the binary solder compositions.

3,755,066

# BONDING

Alan D. Rose, Oadby, England, assignor to Bitumen Industries Limited, Slough, Buckinghamshire, England  
Division of Ser. No. 796,447, Feb. 4, 1969, Pat. No. 3,574,024, which is a continuation-in-part of Ser. No. 531,599, March 3, 1966, abandoned, which is a continuation-in-part of Ser. No. 359,097, April 13, 1964, abandoned. This application May 21, 1970, Ser. No. 48,601

Int. Cl. B32b 15/04; H05b 3/10, 3/54

U.S. Cl. 161—217

6 Claims

This invention relates to a means for bonding windows into automobile bodies. A bonding strip comprising a curable synthetic polymeric material having an electrical conductor running therethrough is used.

3,755,067

# ASBESTOS FIBER EXTENDED PHENOLIC ADHESIVES

Adolph Schnabel, Ringoes, N.J., assignor to Johns-Manville Corporation, Greenwood Village, Colo.

Filed Oct. 13, 1971, Ser. No. 189,001

Int. Cl. B32b 21/02; C08g 51/24, 51/18

U.S. Cl. 161—262

10 Claims

Processed asbestos fiber is utilized as a viscosity and thixotropy control agent in an improved water-resistant phenolic resin, wood laminating adhesive. An alkaline catalyst, pressure-digested lignocellulose and secondary extenders such as wheat flour may also be incorporated in the composition.

3,755,068

# REGENERATION OF CHLORINE DIOXIDE FOR PULP TREATMENT

William H. Rapson, Scarborough, Ontario, Canada, assignor to Erco Envirotech Ltd., Islington, Ontario, Canada

Filed Feb. 26, 1971, Ser. No. 119,294

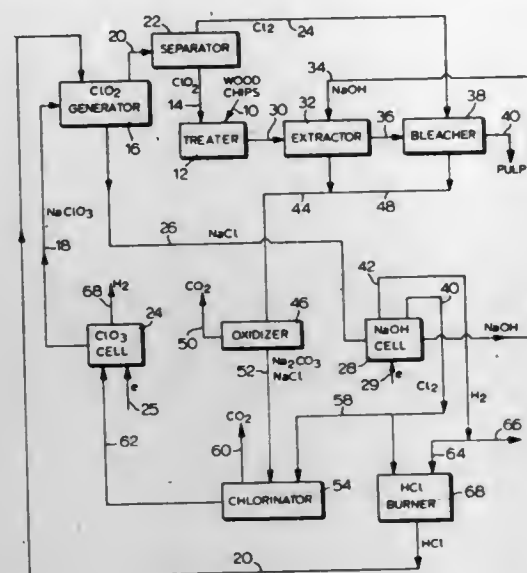
Int. Cl. D21c 11/00, 11/12

U.S. Cl. 162—30

31 Claims

Alkali metal carbonate in aqueous solutions of alkali metal carbonate and alkali metal chloride is chlorinated using chlorine or hydrogen chloride. A typical aqueous solution is oxidized waste pulping and bleaching liquor from a process for pulping cellulosic fibrous material using a chlorine dioxide

treatment followed by sodium hydroxide. Another typical aqueous solution is that formed from the precipitate of



evaporation of a white liquor obtained in a Kraft recovery operation.

3,755,069

# HIGHLY STABLE RESIN COATED PAPER PRODUCTS AND METHOD OF MAKING SAME

Irvin H. Crawford, Hamlin; Roger E. Democh, and Robert J. Baron, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 14, 1970, Ser. No. 98,055

Int. Cl. D21h 1/34

U.S. Cl. 162—135

6 Claims

Novel high stability resin coated paper products comprising a core or base of resin stabilizer and/or antioxidant containing paper overcoated with one or more conventional resin layers which are stabilized by migration of the stabilizer or antioxidant from the paper core into the resin layers after application thereof are disclosed. An improved process for making such highly stable resin coated paper products comprising the steps of incorporating the migrating resin stabilizer or antioxidant into the paper core or coating it on the paper core and subsequently overcoating the same with conventional resinous overlayers is also disclosed.

3,755,070

# PAPER SIZED WITH CARBOXY-FUNCTIONAL SILICONES

Alvin E. Bey, and James R. Heffel, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 847,742, Aug. 5, 1969. This application

Aug. 19, 1971, Ser. No. 173,280

Int. Cl. D21h 3/62

U.S. Cl. 162—164

6 Claims

A sizing agent for paper is disclosed which is a siloxane copolymer containing about 0.1 to 50 mole percent of carboxy-functional siloxane units. Paper sized with this siloxane has enhanced resistance to wetting. Sizing can be accomplished by either internal sizing processes (wet end) or surface sizing processes (dry end).

3,755,071

# PAPER SIZED WITH CARBOXY-FUNCTIONAL SILICONES

Alvin E. Bey, and James R. Heffel, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 847,742, Aug. 5, 1969. This application

Aug. 19, 1971, Ser. No. 173,279

Int. Cl. D21d 3/00; D21h 3/62

U.S. Cl. 162—184

3 Claims

A sizing agent for paper is disclosed which is a siloxane copolymer containing about 0.1 to 50 mole percent of carboxy-

y-functional siloxane units. Paper sized with this siloxane has enhanced resistance to wetting. Sizing can be accomplished by either internal sizing processes (wet end) or surface sizing processes (dry end).

3,755,072

# STRAINER DEVICE FOR CELLULOSE DIGESTER

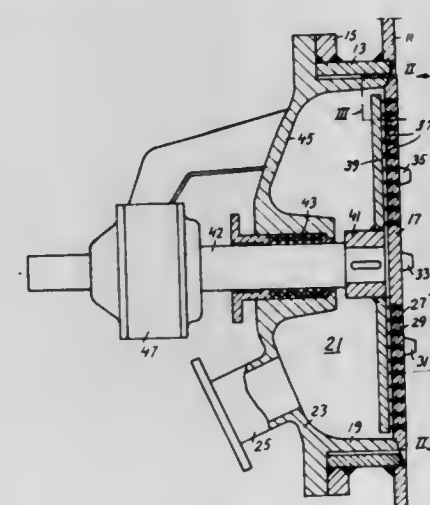
Bengt Sven Erik Ostberg, and Gustav Hilding Ortqvist, both of Karlstad, Sweden, assignors to Kamyr Aktiebolag, Karlstad, Sweden

Filed Oct. 23, 1970, Ser. No. 83,459

Int. Cl. D21c 7/14

U.S. Cl. 162—251

4 Claims



A strainer device for separating liquid from a suspension of fibrous material in a cellulose digester. The strainer plate consists of flat annular members separated by concentric slots. Rhombic shaped cleaning members attached to a rotary shaft move in the slots to keep them open and push back particles tending to clog them.

3,755,073

# HYBRID LASER PLASMA TARGET - NEUTRAL BEAM INJECTION FUSION SYSTEM

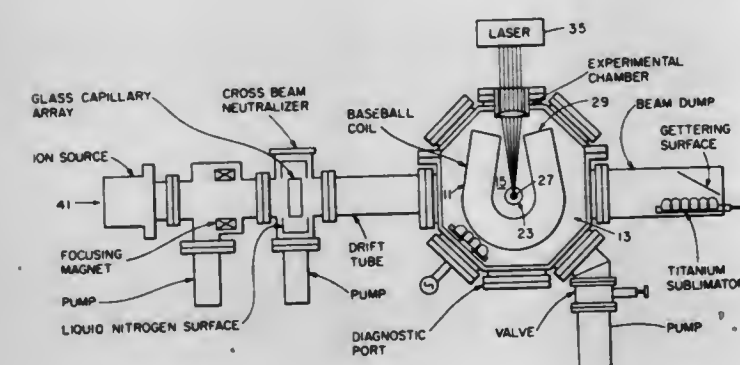
Alan F. Haught; Donald H. Polk, both of Glastonbury; James C. Woo, Andover, and Walter J. Fader, Glastonbury, all of Conn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed June 21, 1971, Ser. No. 155,012

Int. Cl. G21b 1/02

U.S. Cl. 176—1

14 Claims



This invention relates to a method for creating a high density plasma by heating in a vacuum a pellet located within a magnetic field to produce a dense, magnetically confined, relatively warm plasma of ions and electrons, and injecting thereto an energetic neutral beam to form a high temperature, stable, magnetically confined, steady-state plasma.

3,755,074

# METHOD FOR SEPARATING PARTICLES

Sidney Langer, San Diego (La Jolla), Calif., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Apr. 25, 1968, Ser. No. 724,244

Int. Cl. G21c 19/34, 19/44

U.S. Cl. 176—16

7 Claims

A method for fueling nuclear reactors and thereafter separating groups of irradiated fuel prior to reprocessing of the groups. The method includes forming at least two groups of nuclear fuel particles. At least one of the groups is then coated with pyrocarbon while the remaining groups of particles are coated with material which includes a layer of silicon carbide. The coated groups of particles are then mixed with graphite and a graphite matrix fuel body is formed. A nuclear reactor is fueled with the fuel body and the fuel body is removed from the reactor after being irradiated. The fuel body is then exposed to oxidizing conditions sufficient to oxidize the graphite matrix and the pyrocarbon coating of one group without oxidizing the silicon carbide layer of the other groups. The intact silicon carbide groups of particles are then separated from the other groups of particles for reprocessing apart from the other groups of particles.

3,755,075

# CONDENSER-TYPE GAS COMBINER

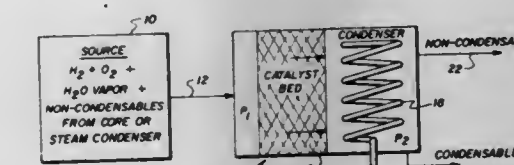
James O. Henrie, Hidden Hills, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Mar. 25, 1970, Ser. No. 22,633

Int. Cl. B01j 9/02

U.S. Cl. 176—37

8 Claims



A condenser-type gas combiner, intended primarily for use with nuclear reactors, wherein hydrogen and oxygen are recombined at low pressures using a condenser as a driving force to transport the hydrogen and oxygen gases through a catalytic bed.

3,755,076

# NUCLEAR POWERED ENERGY CONVERSION SYSTEM

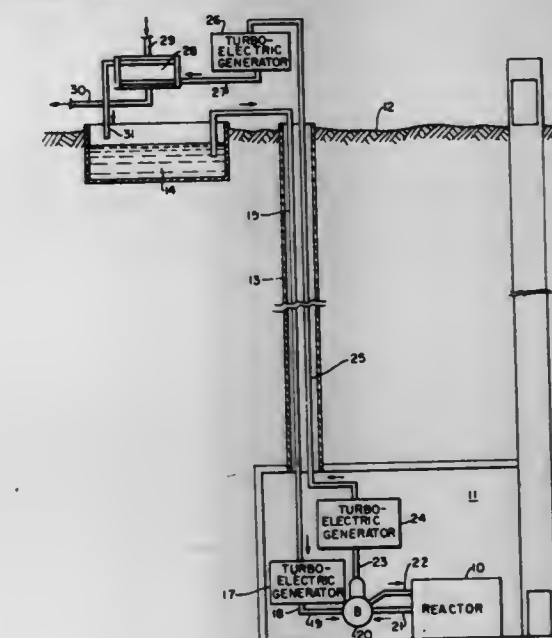
Thayer Lindsley, 660 Madison Ave., New York, N.Y.

Filed Dec. 3, 1971, Ser. No. 204,572

Int. Cl. G21d 5/00

U.S. Cl. 176—39

3 Claims



An energy recovery system employing a remotely positioned underground nuclear generator and associated heat and hydrodynamic conversion means.



3,755,077

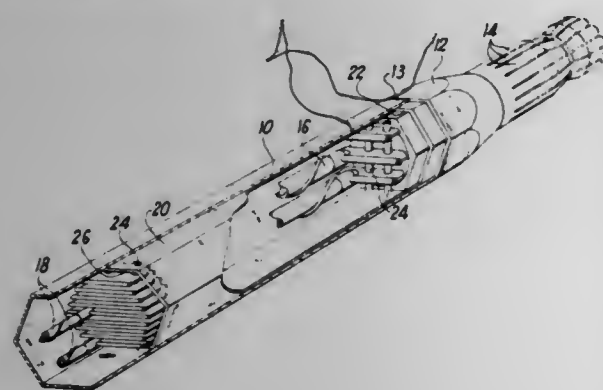
## NUCLEAR FUEL ASSEMBLY

Jean-Claude Agranier, Cornillon-Confoux, and Andre Chalony, Aix-en-Provence, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France  
Filed Sept. 14, 1970, Ser. No. 71,998  
Claims priority, application France, Sept. 17, 1969, 6931617

Int. Cl. G21c 3/32

U.S. Cl. 176-78

5 Claims



A fastening system for retaining a compact bundle of fuel pins longitudinally in the fluid coolant guide shroud of a nuclear fuel assembly comprises two parallel rods attached transversely to a tube retained by the shroud and contained therein, parallel rails which slide on the rods and split tubes which each slide on a rail and slide thereon and in the plugs of the fuel pins of a same layer to retain the pins on the rail. The guide members are retained by the shroud.

3,755,078

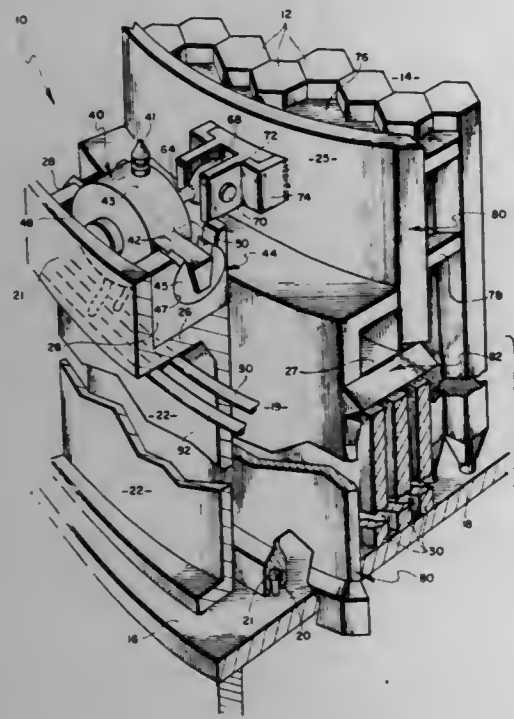
## SEGMENTED HYDRAULIC CORE CLAMP

Allen M. Stelle, Calabasas, Calif., assignor to North American Rockwell Corporation, Pittsburgh, Pa.  
Filed Dec. 27, 1971, Ser. No. 211,900

Int. Cl. G21c

U.S. Cl. 176-87

10 Claims



A clamping device for nuclear reactor cores wherein a plurality of hydraulic cylinders act directly to open or close a tilting segment core clamp, the clamp exerting a radial inwardly directed force of constant magnitude on the reactor core yet is releasable upon reversing the direction of fluid on a piston within the hydraulic cylinders thereby releasing the fuel elements within the core.

3,755,079

## NUCLEAR REACTOR PLANT WITH INTEGRAL ENTOMBMENT

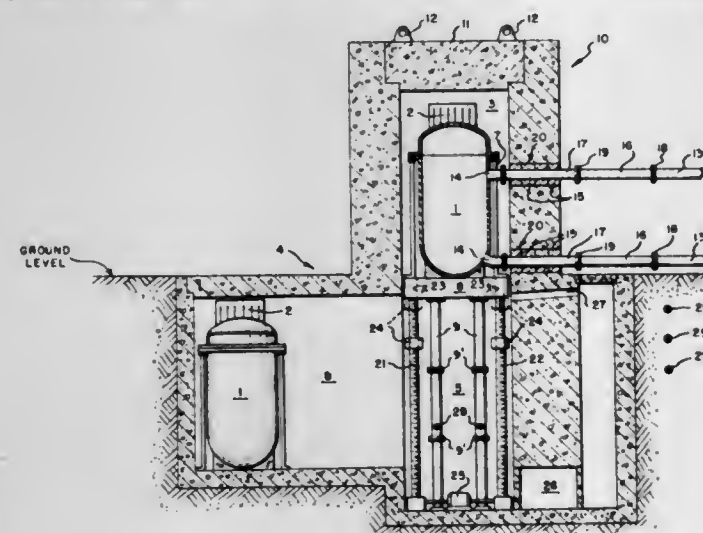
Albert A. Weinstein, Bronx, N.Y.; Fernand R. Nakache, Palos Verdes Estates, Calif., and Harry Soodak, Hastings-on-Hudson, N.Y., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 12, 1969, Ser. No. 884,408

Int. Cl. G21c 13/00

U.S. Cl. 176-87

21 Claims



A nuclear reactor installation comprising a shield structure having a reactor chamber and a burial chamber communicating with the reactor chamber, and means operating within the shield structure for moving the pressure vessel at the expiration of its operational life from the reactor chamber into the burial chamber.

3,755,080

## MICROBIAL CONVERSION OF NAPHTHALENE BASE HYDROCARBONS

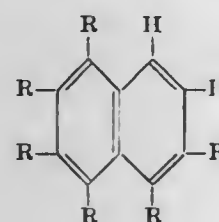
Eugene H. Wegner, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.  
Continuation of Ser. No. 697,598, Jan. 18, 1968, abandoned.  
This application Aug. 24, 1970, Ser. No. 66,629

Int. Cl. C12d 1/00

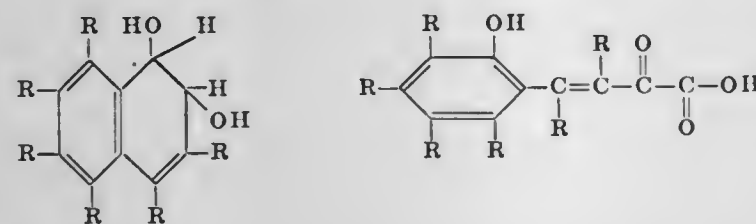
U.S. Cl. 195-28 R

6 Claims

Naphthalene base hydrocarbons of the general formula



are converted to compounds of the general formulas



wherein each R is selected from hydrogen, methyl and ethyl radicals, by contacting said hydrocarbon with an aqueous metal salts medium containing Nocardia species bacteria assigned the numerical designation NRRL 3385 in the presence of an oxygen source.

3,755,081

## PROCESS FOR PREPARING L-SERINE

Hideaki Yamade, Kyoto, Japan, assignor to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan  
Filed Feb. 19, 1971, Ser. No. 117,124  
Claims priority, application Japan, May 6, 1970, 45/37923  
Int. Cl. C12d 1/00, 13/06

U.S. Cl. 195-29

13 Claims

The present invention relates to a process for synthesizing L-serine. More particularly, the present invention relates to a process for preparing L-serine, which is characterized by condensing glycine and formaldehyde in the presence of threonine-aldolase (E.C. 4.1.2.5) derived from a microorganism.

3,755,082

## METHANOL-ASSIMILATING PROPAGATION OF MICROBIAL CELLS

Gyozo Terui, Nobuo Takada, and Hidekazu Sawada, all of Osaka, Japan, assignors to Gyozo Terui, Osaka, Japan  
Filed Nov. 10, 1971, Ser. No. 197,437  
Claims priority, application Japan, Dec. 11, 1970, 45/110957

Int. Cl. C12b 1/00

U.S. Cl. 195-49

5 Claims

A strain belonging to the new species *Pseudomonas methanolica* is aerobically cultured in a nutrient medium containing methanol as a substrate and the propagated microbial cells are recovered from the culture liquor.

3,755,083

## METHOD FOR RECOVERING UROKINASE FROM URINE CONTAINING THE SAME

Leo J. Novak, New Carlisle, Ohio, assignor to Rand Laboratories, Inc., Metairie, La.  
Filed Aug. 30, 1971, Ser. No. 176,315

Int. Cl. C07g 7/026

U.S. Cl. 195-66 B

8 Claims

A method for recovering urokinase from urine containing the same is disclosed which comprises:

- forming a slurry of the urine at a pH between about 3.0 and 6.0 with a non-reactive, water insoluble mineral adsorbant having a large particle surface area and a surface pH between about 3.0 and 5.5;
- recovering the urokinase-containing adsorbant from the slurry;
- recovering the urokinase from the urokinase-containing adsorbant in the form of an aqueous solution of urokinase; and
- recovering the urokinase from the solution.

3,755,084

## PROCESS FOR THE PREPARATION OF APOENZYME

Joseph Feder, 935 Mulberry Ln., St. Louis, Mo., and Linda R. Garrett, 110 E. Clinton, St. Louis, Mo.  
Filed June 23, 1971, Ser. No. 156,129

Int. Cl. C07g 7/02

U.S. Cl. 195-66 R

8 Claims

Metal is removed from metal containing (metallo) enzyme by providing a solution of the metallo enzyme and a chelating agent for the metal of the metallo enzyme, passing the solution through a column of a hydrophilic water insoluble, cross-linked dextran polymer gel, which gel retards the passage of metal-chelating agent complex but does not retard the passage of enzyme and recovering enzyme substantially free from metal. Metallo enzymes which can be employed are protease enzyme such as neutral protease obtained from bacillus organisms. Suitable chelating agents include 1,10-phenanthroline.

3,755,085

## PREVENTION OF ENZYME DEACTIVATION BY CHLORINE

Fred Tivin, Springfield Twp., and Eugene Zeffren, Wyoming, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio  
Filed Sept. 30, 1970, Ser. No. 76,994

Int. Cl. C07g 7/02

U.S. Cl. 195-68

2 Claims

Enzyme deactivation during fabric laundering in water is prevented by using the enzyme in combination with a chlorine scavenger which is capable of reacting with residual chlorine in the water.

3,755,086

## DIAGNOSTIC METHOD UTILIZING SYNTHETIC DEOXYRILIONUCLEOTIDE OLIGOMER TEMPLATE

Edgar Philip Heimer, Cedar Grove, N.J., assignor to Hoffmann-LaRoche, Inc., Nutley, N.J.  
Filed Feb. 9, 1971, Ser. No. 114,059

Int. Cl. G01n 3/14

U.S. Cl. 195-103.5 R

11 Claims

A diagnostic method for the detection of virus-related neoplastic disease states is described. This method involves employing synthetic nucleotide oligomers hybridized with RNA-type polymers as a template for assaying RNA-dependent DNA polymerase activity. RNA-dependent DNA polymerase activity has been found to be specifically characteristic of several neoplastic disease states including human leukemia. In a preferred embodiment the instant method employs synthetic thymidylic acid oligomers (d-pT) hybridized with polymeric ribonucleotide rA.

3,755,087

## COMBINATION OCTANE NUMBER CONTROL OF DISTILLATION COLUMN OVERHEAD AND BLENDING CONTROL

Walter A. Bajek, Lombard, and James H. McLaughlin, LaGrange, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 868,459, Oct. 22, 1969, Pat. No. 3,647,635. This application Dec. 22, 1971, Ser. No. 210,943. The portion of the term of this patent subsequent to Mar. 7, 1989, has been disclaimed.

Int. Cl. B01d 3/42

U.S. Cl. 196-100

18 Claims

A fractional distillation column operating as gasoline splitter is controlled by measuring the octane number of the column overhead fraction and adjusting the reflux to the column in response to the octane number. The octane measurement is effected by an analyzer comprising a stabilized cool flame generator with servo-positioned flame front which provides a real time output signal indicative of a sample octane number. The output signal is utilized to control reflux to maintain a given octane number in the overhead and to provide a control means for downstream blending of the overhead make.

3,755,088

## INTERNALLY INTERCONNECTED MULTI-STAGE DISTILLATION SYSTEM

Asriel Osdor, Tel Aviv, Israel, assignor to Hydro Chemical & Mineral Corp., New York, N.Y.

Continuation-in-part of Ser. No. 847,103, Aug. 4, 1969, Pat. No. 3,627,646. This application Dec. 4, 1970, Ser. No. 95,215

Int. Cl. B01d 1/22, 1/26, 3/00, 3/10

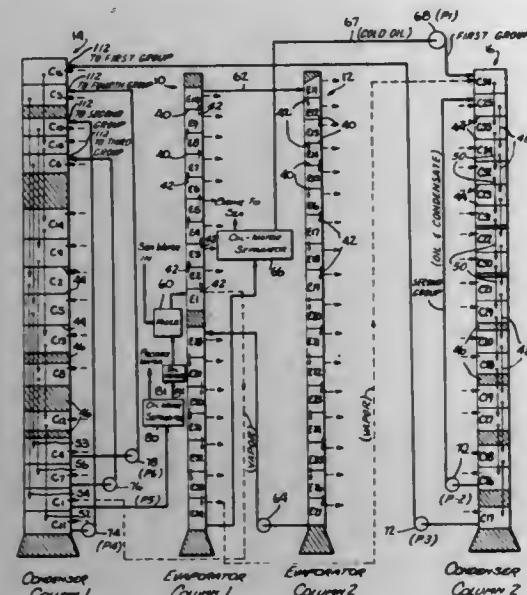
U.S. Cl. 202-173

14 Claims

Evaporator and condenser arrangements for multi-stage systems formed from continuous tubular columns and transverse plates. In the condensers, elongated partition plates cooperate with segments of the column wall to define internal liquid passageways between spaced condensers. In the



evaporators, the transverse plates are shaped to define wells and trap forming partitions. Arrangements are described for



achieving interspersal of condenser groups with minimum pumping and minimum use of column height.

### 3,755,089 METHOD OF GOLD PLATING

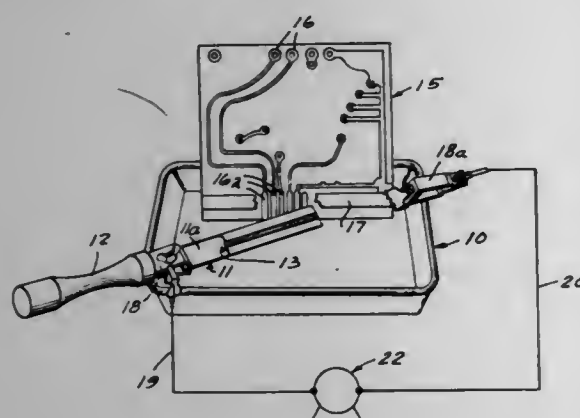
Felix R. Rapids, Chicago, Ill., assignor to Rapid Electroplating Process, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 2,982, Jan. 15, 1970, abandoned. This application Nov. 18, 1971, Ser. No. 200,045

Int. Cl. C23b 5/48, 5/24; B23p 1/02

U.S. Cl. 204—15

6 Claims



Method of gold plating particularly suited for the gold plating of localized conductive areas such as contacts on printed circuit boards, wherein the surface to be plated is first cleaned and activated without any current being applied by rubbing onto said surface a non-displacement type of gold electrolyte solution carried by absorbent material forming part of a gold applicator assembly that includes a gold anode. A plating current is then passed through said electrolyte solution during continued rubbing to effect the plating of gold on said surface as the cathode. The preferred electrolyte is a water solution of an alkali metal gold cyanide containing substantially no free cyanide or alkali metal cyanide in excess of the cyanide bound to the gold present in said water solution. The method is self-indicating in that so long as the plating maintains a superficial dark or brownish coloration throughout the plating cycle, the gold electrodeposit is of satisfactory quality and is firmly adherent, whereas if the gold electrodeposit exhibits a clear gold color, or if no plating takes place, that indicates a poor or broken plating connection in the plating circuit. Rubbing of the electrodeposit with the applicator during the plating operation, if there are poor or broken plating connections, quickly removes the superficial dark coloration of the elec-

trodeposit and imparts thereto a clear gold color of substantially the same clarity of gold color as that of the gold applicator used. If this occurs, it is only necessary to correct the bad plating connection and continue plating.

### 3,755,090 METHOD OF PROVIDING A SURFACE OF A STEEL SUBSTRATE WITH AN ALUMINUM COATING

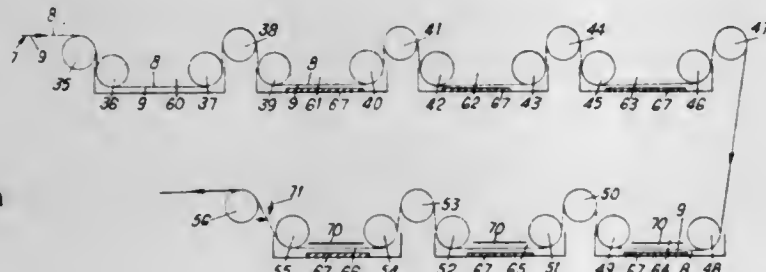
Albert Edward Jackson, Gwernaffield Mold, and Ernest Wynne Williams, Mold, both of England, assignors to British Steel Corporation, London, England

Continuation-in-part of Ser. No. 814,145, April 7, 1969, abandoned. This application Mar. 27, 1972, Ser. No. 238,287

Int. Cl. C23b 5/52, 5/04; C23c 7/00

U.S. Cl. 204—34

19 Claims



The invention concerns a method of providing a surface of a steel substrate with an aluminum coating consisting essentially of the steps of electrolytically coating the said surface with a layer of iron, wetting the iron layer with a film of an aqueous solution consisting essentially of water and an alkali metal silicate, coating the said wetted layer of iron with a layer of aluminum powder which forms an alloy with the steel substrate when heat treated at a temperature of 502°–600° C, compacting the said layers to the surface of the steel substrate at a temperature below the sintering temperature whereby the particles of aluminum powder in the compacted layer thereof are compacted to each other and to the steel substrate without sintering occurring, and heat treating the compacted steel substrate at a temperature of 502°–600° C over a period of time whereby sintering and bonding of the particles to each other and to the steel substrate occurs, the said iron layer serving to control nucleation of said alloy during the heat treatment and having a thickness varying from a minimum of about 0.5 micron when the heat treatment is at 502° C to a minimum of about 3.5 microns when the heat treatment is at 600° C.

### 3,755,091 PROCESS FOR REDUCING DISCOLORATION OF ELECTROCHEMICALLY TREATED CHROMIUM PLATED FERROUS METAL STRIP

Lowell W. Austin, Weirton, W. Va., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed June 19, 1969, Ser. No. 834,872

Int. Cl. C32b 11/00; C23b 5/48, 5/06

U.S. Cl. 204—35 N

11 Claims

Discoloration of ferrous metal strip electroplated with metallic chromium in a continuous electroplating line at high line speeds and then electrochemically treated to deposit a nonmetallic chromium containing film thereover is reduced by intimately contacting the metallic chromium plated strip with an aqueous solution of a water soluble hexavalent chromium compound prior to the electrochemical treatment. The aqueous solution preferably has a composition which is substantially the same as the chromium electroplating electrolyte. The invention is especially useful in producing tin free ferrous metal container stock having a composite protective coating including an undercoating of 0.1–0.5 microinch of metallic chromium and an overcoating containing chromium oxide.

### 3,755,092 METHOD OF INTRODUCING IMPURITIES INTO A LAYER OF BANDGAP MATERIAL IN A THIN-FILM SOLID STATE DEVICE

Jovan Antula, Munich, Germany, assignor to Max-Planck-Gesellschaft zur Foerderung der, Goettingen, Germany

Filed Aug. 3, 1970, Ser. No. 60,531

Claims priority, application Germany, Aug. 1, 1969, P 19 39 267.7

Int. Cl. C23i 17/00

8 Claims

U.S. Cl. 204—35 N

A method of manufacturing a thin-film solid state devices comprising a body of bandgap-material, preferably aluminium oxide, sandwiched between two conductive electrodes and containing between about  $10^{18}$ – $10^{20}$  impurity atoms per  $\text{cm}^3$ , said impurity atoms being selected from the group of Cu, Cd, Zn, Ag, Ni, and I. The preferred method of manufacture comprises the steps of providing an electrically conductive substrate, forming a layer of bandgap material on said substrate, said layer having an effective thickness between about 15 and 300 Angstrom units, introducing into said layer ions of said impurity material by exposing a surface of said layer opposite to said substrate to a fluid (which may be a liquid or a gas under reduced pressure) containing ions of said impurity material, applying a voltage across said layer, said voltage having a polarity and magnitude such that said ions are accelerated and drawn into said layer without forming a deposit of said impurity material on said exposed surface, and providing electrodes on said substrate and said exposed surface.

### 3,755,093 METHOD FOR THE ANODIZATION AND RESIN-COATING OF ALUMINOUS ARTICLES

Yasuo Suematsu, Amagasaki, Japan, assignor to Shinto Paint Co., Ltd., Amagasaki, Japan

Filed Mar. 22, 1972, Ser. No. 236,988

Claims priority, application Japan, Mar. 31, 1971, 46/19523

Int. Cl. C23b 5/52, 9/02

11 Claims

U.S. Cl. 204—37 R

A method for treating the surface of an aluminous article is provided which comprises conducting the electrolysis with the aluminous article as the anode and in a single electrolytic bath containing

1. at least one strong acid known per se for the anodization of an aluminous material;
2. at least one polybasic organic acid; and
3. at least one cationic type resin prepolymer or precondensate in an aqueous system wherein said cationic type resin prepolymer or precondensate is anionized at least partly, so that the anodization and electrodeposition of the resin prepolymer or precondensate are effected on the surface of the aluminous article in said single bath.

### 3,755,094

#### ANODE COMPOSITIONS

Edgar J. Seyb, Oak Park; Melvyn B. Kalt, Royal Oak, and Hyman Chessin, Birmingham, all of Mich., assignors to M & T Chemicals Inc., New York, N.Y.

Division of Ser. No. 830,851, June 5, 1969, abandoned. This application Nov. 5, 1971, Ser. No. 196,206

Int. Cl. C23b 5/06; B01k 3/06

U.S. Cl. 204—51

9 Claims

In accordance with certain of its aspects, this invention relates to novel processes and to a lead base alloy suitable for anode production consisting essentially of lead and tin and at least one metal selected from the group consisting of tellurium, thallium, and cadmium and containing 90–99 percent by weight of lead, 1–7 percent by weight of tin, and at least one metal selected from the group consisting of tellurium, thalli-

um, and cadmium in an amount of 0.005–5.0 percent by weight sufficient to bring the total weight of the lead base alloy anode to 100 percent.

### 3,755,095 COMPOSITION AND METHOD FOR SUPPRESSING SPRAY IN ELECTROLYTIC PROCESS

William A. Boycott, Jr., Windsor, Ontario, Canada, assignor to Udyllite Corporation, Warren, Mich.

Filed Mar. 29, 1971, Ser. No. 129,135

Int. Cl. C23b 5/06

U.S. Cl. 204—51

7 Claims

A method for the electroplating of metals is described wherein incorporated into the plating bath is a sufficient amount of metallic ions to be electroplated and a quantity of hydrophilic particles sufficient to suppress spraying of electrolyte during electrolysis.

### 3,755,096 BRIGHT ACID TIN PLATING

Frank Passal, Detroit, Mich., assignor to M & T Chemicals Inc., Greenwich, Conn.

Filed July 1, 1971, Ser. No. 159,035

Int. Cl. C23b 5/14, 5/46

U.S. Cl. 204—54 R

19 Claims

This invention relates to the electrodeposition of tin; acid tin plating compositions, acid tin plating baths; to processes for the electrodeposition of bright tin in the presence of glacial acrylic acid, at least one non-ionic alkoxylated wetting agent, and as a novel brightener, the reaction product of hexan-2,5-dione and a compound selected from the group consisting of homocyclic aromatic aldehydes and 5-membered ring heterocyclic aldehydes, wherein the aldehyde group is bonded directly to the aromatic ring, conjugated aromatic ring or 5-membered ring heterocyclic group, said ring or group being otherwise inertly substituted or unsubstituted; to said novel brighteners; and a method of producing said novel brighteners.

### 3,755,097 NOVEL PROCESS FOR ELECTRODEPOSITING ZINC

Richard P. Cope, Jr., New City, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Oct. 27, 1971, Ser. No. 193,203

Int. Cl. C23b 5/10

U.S. Cl. 204—55 Y

14 Claims

There is disclosed a process for electrodepositing zinc involving the use, as brightening additives, of complex mixtures containing salts of di-(1-benzyl-3-carboxyl-1,2-dihydropyridyl-2) ether and the salts of the corresponding sulfides and polysulfides. The use of the latter additives leads to the preparation of zinc coatings characterized by their excellent smoothness, brightness, luster and adherence.

### 3,755,098 CONTROL OF THE IMPURITY CONTENT OF ZINC SULPHATE SOLUTIONS

Graeme Alexander Major, and Ian George Matthew, both of Tasmania, Australia, assignors to Electrolytic Zinc Company of Australasia Limited, Melbourne, Victoria, Australia

Filed May 13, 1971, Ser. No. 143,195

Claims priority, application Australia, May 25, 1970, PA-1316

Int. Cl. C23b 5/12; C22d 1/22

U.S. Cl. 204—55 R

2 Claims

A process for controlling the build-up of undesirable ions in an electrolytic zinc plant circuit, comprises a step in which solution from said circuit is treated with a neutralising agent selected from the group consisting of limestone, calcium car-



bonate, zinc oxide, calcined zinc sulphide, calcined zinc sulphide concentrate, ammonia, ammonium hydroxide, dolomite, lime, calcium oxide, and calcium hydroxide, at a temperature in the range 65° C to the boiling point of the solution at atmospheric pressure, so as to precipitate substantially the whole zinc content thereof in a form in which the content of said undesirable ions is substantially lowered; and a step in which the zinc values contained in the precipitated zinc compounds are returned to the said zinc plant circuit. The undesirable ions are selected from the group consisting of  $\text{Cl}^-$ ,  $\text{NO}_3^-$ ,  $\text{NO}_2^-$ ,  $\text{NH}_4^+$ ,  $\text{ClO}_4^-$ ,  $\text{ClO}_3^-$ , and the ions of the elements Mn, Mg, Cd, Co, Ni, Na, K, Cr, V, Se, Te, Sn, As, Sb, In, and Fe.

3,755,099

## LIGHT METAL PRODUCTION

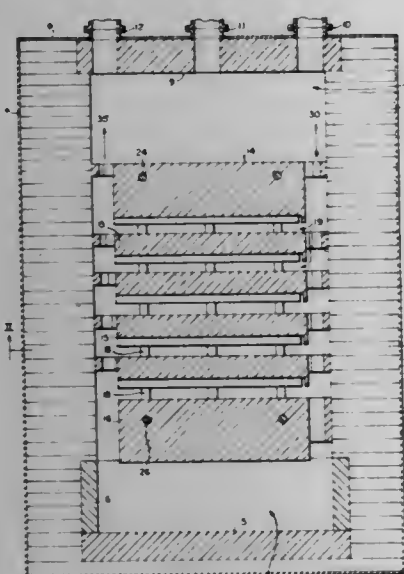
Warren E. Haupin, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 8, 1971, Ser. No. 178,611

Int. Cl. C22d 3/00, 3/12, 3/08

U.S. Cl. 204—64 R

10 Claims



Aluminum or magnesium is produced electrolytically from the light metal chloride dissolved in molten halide of higher decomposition potential, in a cell which includes at least two opposed electrodes providing at least one inter-electrode space therebetween, while maintaining an effective anode-cathode distance less than  $\frac{1}{4}$  inch.

3,755,100

## METHOD FOR PRODUCING ACRYLAMIDE FROM ACRYLONITRILE

Donald G. Eppe, Oaklawn, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed June 9, 1972, Ser. No. 263,745

Int. Cl. C07b 29/06; C07c 103/08, 103/12

U.S. Cl. 204—74

2 Claims

Dilute aqueous solutions of acrylonitrile, the pH of which is adjusted to 10–14, may be electrolyzed using A.C. current and copper electrodes to produce acrylamide.

3,755,101

## PROCESS FOR THE PREPARATION OF SALIGENOL

Michel Rakoutz, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Nov. 18, 1971, Ser. No. 200,050

Claims priority, application France, Nov. 19, 1970, 7041498

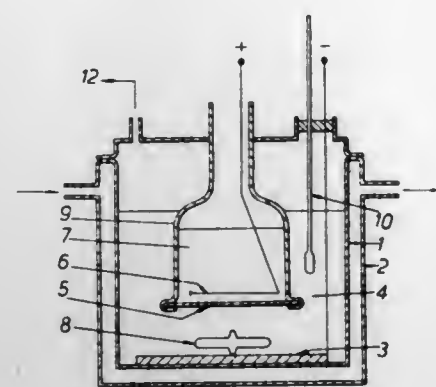
Int. Cl. C07b 29/06; C07c 29/00

U.S. Cl. 204—75

8 Claims

Saligenol is obtained by electrochemical reduction of salicylic acid in a cell in which the anolyte and catholyte are

separated from each other by a cation exchange membrane



and in which the catholyte initially consists of water, a cosolvent, salicylic acid and a quaternary ammonium salt.

3,755,102

## PROCESS FOR TREATING INDUSTRIAL WASTES

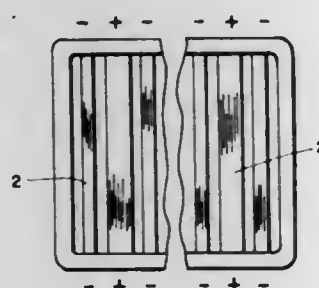
Simon Bastacky, 6604 Dalzell Pl., Pittsburgh, Pa.

Filed Mar. 20, 1970, Ser. No. 21,377

Int. Cl. C01g 1/02, 1/10; B01k 3/06

U.S. Cl. 204—92

7 Claims



A process for treating industrial wastes containing sulphuric acid and metal constituents comprising subjecting the wastes to a cell equipped with a plurality of alternately positioned positive and negative aluminum electrodes and charging the electrodes. A solid residue forms which can be further reduced by an ignition step. The aluminum electrodes are one of, or a combination of, rows of pipe, flat plates, or corrugated plates.

3,755,103

## CONDITIONING DIAPHRAGMS IN CHLOR-ALKALI CELLS

Morris P. Grotheer, and Edward H. Cook, Jr., both of Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed July 30, 1971, Ser. No. 167,804

Int. Cl. C01d 1/06

U.S. Cl. 204—98

6 Claims

An improved process is described for the production of alkali metal hydroxides and elemental chlorine which comprises passing substantially saturated sodium chloride brine solutions through a diaphragm type chlor-alkali cell consisting essentially of a cell enclosure, an anode having an electrically active surface on an electrically conductive substrate metal, and a formamious metal cathode, the anode and cathode being separated by porous diaphragm containing asbestos wherein the brine solution has been acidified to a pH of less than 2 and continuing the passage of the acidified brine into the cell at least until the hydrogen content of the chlorine produced at the anode is less than 0.5 percent by weight. The improved process results not only in purer chlorine product, but also

higher current efficiencies and maintainance of the desired head of anolyte liquor of more readily accomplished.

3,755,104

## PROCESS FOR THE RECOVERY OF MOLYBDENUM AND RHENIUM FROM SULFIDES BY ELECTROLYTIC DISSOLUTION

Paul R. Kruesi, 14255 Braun Rd., Golden, Colo.

Filed Mar. 2, 1971, Ser. No. 120,339

Int. Cl. B01k 1/00; C22b 3/00

U.S. Cl. 204—94

5 Claims

A pollution-free process for the dissolution in an acidic media of molybdenum sulfides with the formation of soluble molybdenum and rhenium ions followed by the recovery of these ions from solution in the electrolyte media, the process characterized by certain critical conditions, these being the use of:

1. an alkali metal and/or alkaline earth metal chloride electrolyte;
2. an acidity range of about 10 percent HCl to pH 2.5;
3. an electrolyte temperature range of about 50° C to 105° C; and
4. an anode current density up to about 500 amperes/ft<sup>2</sup>.

3,755,105

## VACUUM ELECTRICAL CONTACTS FOR USE IN ELECTROLYTIC CELLS

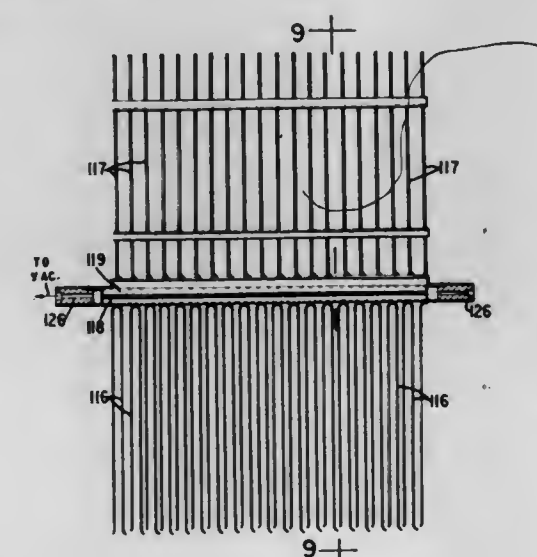
Georg Messner, Latemar Strasse 7, Munich, Germany

Filed June 28, 1971, Ser. No. 157,380

Int. Cl. C01b 11/26

U.S. Cl. 204—95

9 Claims



Electrical contact is made between two electronic conductors by applying a vacuum on the spaces between the said electronic conductors, particularly useful when the conductors are made of different materials, and are used as mono and bipolar connectors in electrolytic cells, and method of making good electrical connections between two metals.

3,755,106

ELECTROLYTIC OXIDATION OF  $\text{Sb}_2\text{S}_3$ 

Bernard J. Schelner; Roald E. Lindstrom, both of Reno, Nev., and Thomas A. Henric, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed May 15, 1972, Ser. No. 232,606

Int. Cl. C01b 13/14

U.S. Cl. 204—96

3 Claims

$\text{Sb}_2\text{S}_3$  is converted to  $\text{Sb}_2\text{O}_3$  by electrolysis of a slurry of sulphide in an aqueous solution containing alkali metal chloride, alkali metal bromide, or a mixture of the two.

3,755,107

## ELECTROLYTIC ANODE

Carl D. Keith, Summit; Alfred J. Haley, Jr., Florham Park, and Robert M. Kero, Cranford, all of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Continuation-in-part of Ser. No. 786,407, Dec. 23, 1968, Pat. No. 3,616,329. This application Nov. 21, 1969, Ser. No. 878,953. The portion of the term of this patent subsequent to Oct. 26, 1988, has been disclaimed.

Int. Cl. C01d 1/06

U.S. Cl. 204—98

5 Claims

An improved anode for the electrolysis of brine is comprised of a corrosion resistant valve metal substrate and a thin adherent exterior coating consisting essentially of ruthenium oxide and a carbide, the carbide being inert to the electrolysis environment. An especially effective anode has a coating of ruthenium oxide and boron carbide.

3,755,108

## METHOD OF PRODUCING UNIFORM ANOLYTE HEADS IN THE INDIVIDUAL CELLS OF A BIPOLAR ELECTROLYZER

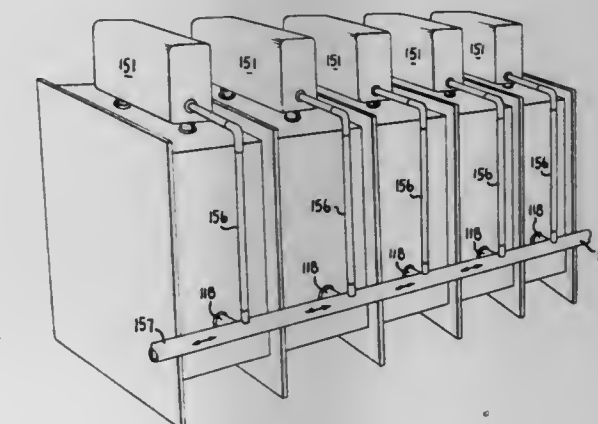
Carl W. Raetzsch, and Hugh Cunningham, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 55,693, July 17, 1970. This application Aug. 12, 1971, Ser. No. 171,231

Int. Cl. C01d 1/06

U.S. Cl. 204—98

2 Claims



A bipolar electrolyzer adapted for the electrolysis of aqueous solutions of alkali metal halides is disclosed, as well as methods of operating the electrolyzer. The electrolyzer includes means to maintain a uniform head of anolyte in all of the individual cells, such as by extending pipe means, external of the cells to minimize current leakage and independent of the feed means, to connect the cells below the level of anolyte in each cell.

3,755,109

## ELECTROLYSIS OF ALKALI METAL CHLORIDES

Karl Opp, Heidelberg; Ewald Wygasch, Ludwigshafen, and Gotthard Csizi, Bad Duerkheim, all of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Apr. 21, 1971, Ser. No. 136,213

Claims priority, application Germany, Apr. 27, 1970, P 20 20 480.2

Int. Cl. C01d 1/08

U.S. Cl. 204—99

4 Claims

Disturbances occurring in chloride-caustic cells using the amalgam method are caused by felty coatings which form on the bottom of the cells. These disturbances can be avoided by treating the mercury (after it has left the decomposer and be-



fore or after it has entered the electrolytic cell) with an aqueous solution which contains chlorine and/or ferric chloride.

**3,755,110**  
**PROCESS FOR THE RECOVERY OF MERCURY FROM THE BRINE FILTER SLUDGE OBTAINED IN THE ELECTROLYSIS OF ALKALI METAL CHLORIDES BY THE AMALGAM PROCESS**

Ewald Wygasch, Ludwigshafen, and Guenther Weiss, Wachenheim, both of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

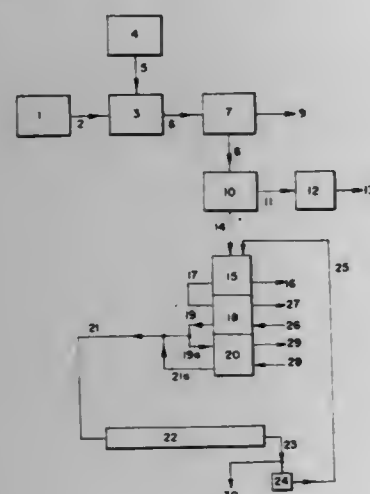
Filed Mar. 15, 1971, Ser. No. 124,170

Claims priority, application Germany, Mar. 18, 1970, P 20 12 754.2

Int. Cl. C01d 1/16; B01k 3/00

U.S. Cl. 204—99

6 Claims



Process for the recovery of mercury from the brine filter sludge of alkali-chlorine cells.

The brine filter sludge is treated with solutions containing active chlorine for the extraction of mercury or its compounds. Insoluble impurities are filtered off, and the resulting mercuric filtrate is passed to the electrolytic cell where the dissolved mercury is reduced to metal at the cathode under the operating conditions of the cell.

Metallic mercury may also be recovered from the filtrate with the aid of sodium amalgam.

**3,755,111**  
**ELIMINATION OF FLOATING SLIME DURING ELECTROLYTIC REFINING OF COPPER**  
Nils Folke Rune Lindstrom, Skelleftehamn, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden  
Filed May 25, 1971, Ser. No. 146,850  
Claims priority, application Sweden, May 28, 1970, 7380/70  
Int. Cl. C22d 1/16; B01k 3/06  
U.S. Cl. 204—108  
6 Claims

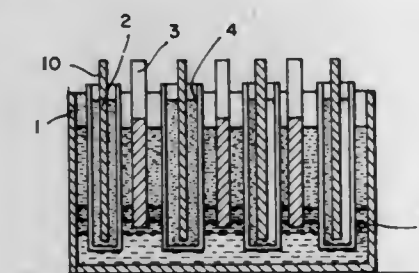
A method for eliminating floating slime in the electrolytic refinement of copper. The method uses a novel electrolyte which contains specific quantities of trivalent arsenic, pentavalent arsenic and pentavalent antimony; the arsenic contents being obtained and maintained by direct addition of the substances to the solution, or by increasing the arsenic content in the anode.

**3,755,112**  
**ELECTROWINNING OF COPPER**  
Gerald F. Fountain, Casa Grande; John P. Pringle, Allen, and James T. Lewis, Plano, all of Tex., assignors to Capital Wire and Cable Company, Plano, Tex.  
Filed Feb. 1, 1972, Ser. No. 222,644  
Int. Cl. C22d 1/16; B01k 3/06  
U.S. Cl. 204—108  
7 Claims

A novel electrode is provided which is particularly useful as an anode in an electrowinning system for the electrodeposi-

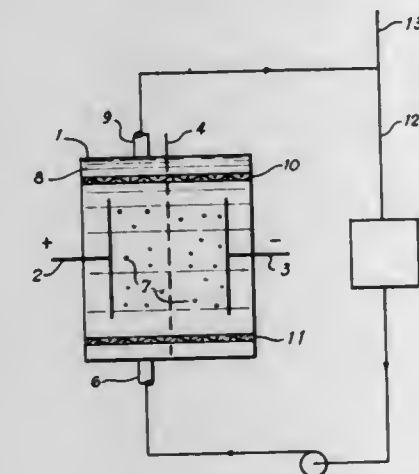
tion of copper from acid solution. This novel electrode is an alloy of lead and bismuth containing from 95 to 70 parts by weight lead with corresponding proportions of 5 to 30 parts by weight bismuth. The use of this electrode as an anode in conjunction with conventional cathodes in an electrowinning process for copper results in cathode deposited copper having a purity of at least 99.99 percent, and a lead content of no greater than 20 parts per million.

**3,755,113**  
**METHOD FOR ELECTROREFINING OF NICKEL**  
Ivan Dimitrov Entshev; Nikola Tzanov Kuntshev; Gueorgui Alexandrov Haralamplev, all of Plovdiv, and Dimitar Andreev Petrov, Slatitza, all of Bulgaria, assignors to NIIZM, Plovdiv, Bulgaria  
Continuation-in-part of Ser. No. 798,772, Feb. 12, 1969, abandoned. This application Oct. 20, 1971, Ser. No. 191,040  
Int. Cl. C22d 1/14  
U.S. Cl. 204—113  
8 Claims



Method for electrorefining of nickel at high current densities wherein the process is carried out by use of reverse current with a duration of the reversal electrode polarity of 3.0 to 8.0 percent of the total current period and a frequency of reversal of the poles of two to six times in a minute. The process is preferably carried out at a temperature of the solution of 50° to 80°C and with an electrolyte consisting substantially of nickel from 70 to 100 gr/l, as NiSO<sub>4</sub>; sodium chloride from 40 to 80 gr/l; sodium sulphate from 40 to 70 gr/l; and boric acid from 3 to 20 gr/l. The electrolyte is continuously agitated during the process; the process may advantageously be practiced at high current densities by apparatus capable of thoroughly and continuously circulating the electrolyte.

**3,755,114**  
**DECREASING THE METALLIC CONTENT OF LIQUIDS BY AN ELECTROCHEMICAL TECHNIQUE**  
Michael Tarjanyi, North Tonawanda, and Murray P. Strier, Amherst, both of N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.  
Filed Apr. 14, 1971, Ser. No. 133,923  
Int. Cl. C02b 1/82; C02c 5/12  
U.S. Cl. 204—114  
13 Claims



A method for decreasing the metallic content of a solution which comprises passing an electric current through a solution

containing metallic material, which solution is contained as the electrolyte in a cell, said cell having at least one positive and one negative electrode, between which the current is passed, and wherein the electrolyte also contains a bed of particles, distributed therein, such that the porosity of the bed is from about 40 to 80%, porosity being defined as

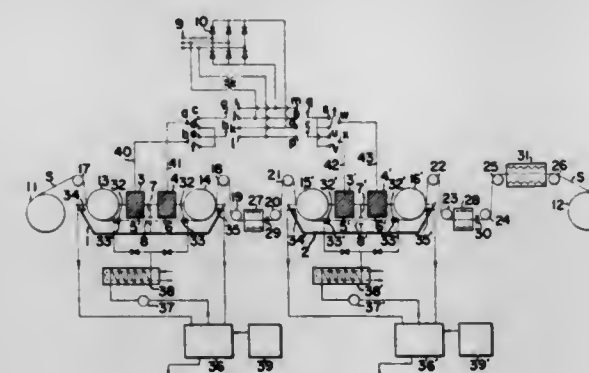
$$\left(1 - \frac{\text{volume of particles}}{\text{volume of cell wherein the particles are distributed}}\right) \times 100$$

The electrolysis of the electrolyte is continued until the desired reduction in the metallic content thereof is obtained.

**3,755,115**  
**METHOD OF MANUFACTURING ALUMINIUM ELECTRODE FOIL FOR ELECTROLYTE CAPACITORS**  
Arend Van Herwijnen, and Pieter Marten Vogel, both of Centurbaan, Zwolle, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.  
Filed Dec. 28, 1970, Ser. No. 102,098  
Claims priority, application Netherlands, Jan. 2, 1970, 7000002  
Int. Cl. C23b 1/00, 3/02  
U.S. Cl. 204—129.75  
5 Claims

Enlargement of the effective surface of aluminum foil for electrolytic capacitors by electrolytical etching in the aqueous solution of 1-5 mol/l of an alkali halogenide and 1-5 mol/l boric acid at a pH of between 0 and 2.5. 2.5

**3,755,116**  
**PROCESS FOR THE PRODUCTION OF ALUMINUM BASE OFFSET PRINTING PLATES**  
Shiro Terai, Nagoya; Toshio Suzuki, Kasugai, and Yoshikatsu Hayashi, Nagoya, all of Japan, assignors to Sumitomo Light Metal Industries Limited, Tokyo, Japan  
Filed Apr. 5, 1972, Ser. No. 241,202  
Claims priority, application Japan, Apr. 17, 1971, 46/24817  
Int. Cl. C23b 3/02, 1/00  
U.S. Cl. 204—129.95  
19 Claims



This invention relates to a process of producing an aluminum base offset printing plate including a step wherein the surface of an aluminum base sheet is roughened or grained electrolytically by treating with alternating electric current at a current density of a selected range in an aqueous electrolyte containing hydrogen chloride as the primary etching agent and in the presence of one or more anti-corrosive agents chosen from some selected primary alkyl amine, secondary alkyl amines and tertiary alkyl amines, either un-substituted or substituted by carboxyl or hydroxyl on the alkyl group(s), al-

kylene diamines, alkyl aldehydes, alkanolic acid amides, urea, chromic acid and known ionic surface-active agents. The presence of the anti-corrosive agent results in an improved uniformity of the grain particle size and prevents the dark colored aluminum smutt from depositing on the grained surface. The electrolytically graining treatment may continuously be performed with a continuous aluminum strip when an electrolytic cell of a particular arrangement as shown in the accompanying drawings is employed and when the treatment is effected in the presence of a mono-alkanol amine, di-alkanol amine, tri-alkanol amine or non-ionic surface active agent derived from polyethylene-glycol as the anti-corrosive agent under particularly more favorable etching conditions.

**3,755,117**  
**COATING STAINLESS STEELS**  
Anthony Christopher Hart, Dudley, England, assignor to The International Nickel Company, Inc., New York, N.Y.  
Filed Feb. 10, 1971, Ser. No. 114,357  
Claims priority, application Great Britain, May 26, 1970, 25,215/70; Jan. 11, 1971, 1,245/71  
Int. Cl. C23b 5/50; C23f 17/00; C23b 9/00  
U.S. Cl. 204—140  
10 Claims

Films or coatings on stainless steel produced by immersion in solutions of chromic acid are electrolytically treated to increase the coating's resistance to abrasion. In the electrolytic treatment, the coated stainless steel is made the cathode in a bath of an aqueous solution of chromic acid.

**3,755,118**  
**PROCESS FOR PREPARING LOGANIN AND ANALOGS THEREOF**  
John Joseph Partridge, Jr., 77 Orange Rd., Montclair, N.J., and Milan Radoje Uskokovic, 7 Windermere Rd., Upper Montclair, N.J.  
Filed Jan. 5, 1970, Ser. No. 845  
Int. Cl. C07c 47/8; B01j 1/10  
U.S. Cl. 204—158 R  
6 Claims

The present invention relates to a process for the preparation of loganin and analogs thereof. Loganin and analogs thereof are useful in the preparation of alkaloids.

**3,755,119**  
**ARTICLE ELECTROCOATED WITH ADHESIVELY BONDABLE ACRYLIC RESIN CONTAINING BIS-UREA**  
Gerhard Josef Pietsch, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.  
Filed Apr. 29, 1971, Ser. No. 138,834  
Int. Cl. B01k 5/02; C23b 13/00  
U.S. Cl. 204—181  
3 Claims

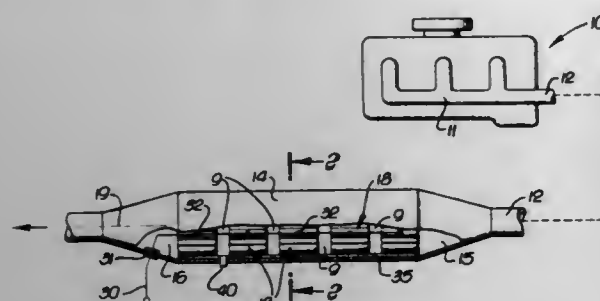
There are provided both (1) a method for increasing the adhesiveness of electrodeposited acrylic resin coatings to epoxy or polyurethane adhesives which comprises incorporating into said acrylic resin either a bis-urea or an epoxy compound prior to electrodeposition and (2) the resultant coated articles.

**3,755,120**  
**INTERNAL COMBUSTION ENGINE EXHAUST CATALYTIC REACTOR, WITH ELECTRICAL CHARGE MEANS**  
Robert W. Kinser, Ogden, Utah, assignor to New Products Corporation, Ogden, Utah  
Filed Feb. 3, 1972, Ser. No. 222,755  
Int. Cl. F01n 7/00, 3/08  
U.S. Cl. 204—164  
11 Claims

Internal combustion engine hot exhaust gas flow is treated to reduce the oxide content and increase the O<sub>2</sub> content of the gases by



a. effecting intimate contact of the hot gaseous flow with confined copper containing strip material, and



b. electrically energizing the material at high voltage during said contact.

3,755,121

**ELECTROPHORESIS KIT AND SYSTEM**

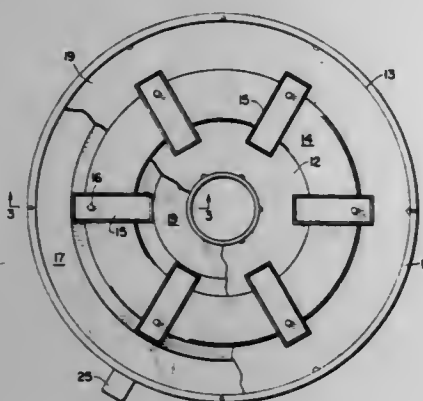
Charles A. Schlutz, 7081 N.W. 10th Pl., Plantation, Fla.

Filed Oct. 25, 1972, Ser. No. 300,810

Int. Cl. B01k 5/00

U.S. Cl. 204—180 G

7 Claims



An electrophoresis kit and system is provided wherein a base unit containing the electrodes and spaced apart buffer chambers and the test samples are contained in the bridges in a corresponding lid in contact with the buffer chambers. The test samples are poured into molding bridge chambers in the base unit, the lid placed thereon, transferring the test sample to the lid, and the lid replaced to make electrical contact with the spaced bridge chambers in the base. Registration means are provided for correctly positioning the lid with respect to the base for operation of the electrophoresis apparatus. The kit may assume a variety of shapes, such as rectangular or circular, and the entire assembly is preferably made of molded consumable plastic material so as to be disposable. The invention includes the method of assembly and operation of the electrophoresis unit.

3,755,122

**METHOD FOR INDUCING AGGLOMERATION OF PARTICULATE IN A FLUID FLOW**

James R. Melcher, Lexington, and Kenneth S. Sachar, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 25, 1971, Ser. No. 109,615

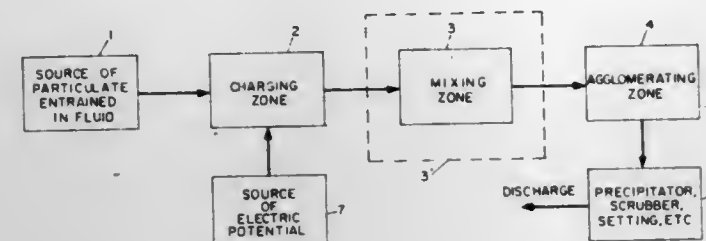
Int. Cl. B03c 5/00; C02b 1/78

U.S. Cl. 204—186

5 Claims

A method of facilitating removal of particulate from a fluid stream whereby individual particles of the particulate are agglomerated to form larger and therefore more easily removable particles. The particulate is passed through a zone which contains electric charging regions disposed at locations transversely spaced across the fluid stream and adapted to charge the particulate. Charge regions are alternately charged across

the stream; that is, contiguous charge regions contain oppositely polarized electric fields, thereby to create transverse to the stream small regions where the particulate is charged positive, say, immediately adjacent to regions where it is



charged negative. The thusly charged particles are then mixed to bring the oppositely charged particles into close proximity, one with the other, and small particles of the particulate agglomerate upon larger particles. The agglomerated particulate is then precipitated or otherwise removed from the fluid.

3,755,123

**METHOD FOR SPUTTERING A FILM ON AN IRREGULAR SURFACE**

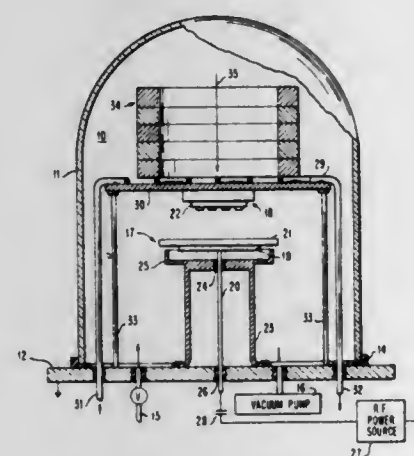
Pieter D. Davidse, Maarn, Netherlands; Joseph S. Logan, and Fred S. Maddocks, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 742,297, July 3, 1968, abandoned. This application Mar. 30, 1971, Ser. No. 129,419

Int. Cl. C23c 15/00

U.S. Cl. 204—192

7 Claims



A film of substantially uniform thickness is sputtered on an irregular surface of a substrate by inducting a negative voltage on the surface of the film as it is deposited. Controlling the negative voltage results in deposition of a dielectric film that has good edge coverage properties.

3,755,124

**TAG ION CELL**

Martin S. Frant, Newton, and James Fowler, Watertown, both of Mass., assignors to Orion Research Incorporated, Cambridge, Mass.

Filed Feb. 11, 1972, Ser. No. 225,415

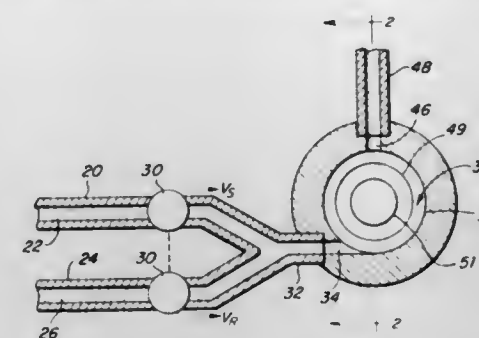
Int. Cl. G01n 27/18

U.S. Cl. 204—195 R

11 Claims

A system for making electrochemical measurements in a flow stream, which system employs reagent addition to a sample stream and a pair of ion-sensing electrodes responsive respectively to the ion of interest and the tag ion in the mixed

stream. The electrodes are so disposed in an electrode chamber that the system is unaffected by the presence of any



air bubbles in the mixed stream, or variations in flow rate of the mixed stream.

3,755,125

**ELECTROCHEMICAL GAS ANALYZER**

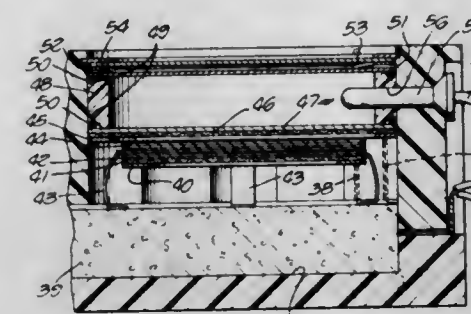
Manuel Shaw, Los Angeles, and Wayne E. Perkins, Arleta, both of Calif., assignors to Envirometrics Inc., Marina del Rey, Calif.

Filed Jan. 14, 1971, Ser. No. 106,431

Int. Cl. G01n 27/28

U.S. Cl. 204—195 P

21 Claims



An apparatus for analyzing the proportion of a selected gas in a mixture of gases wherein gas detector elements are adapted to be removably plugged into an electrical analyzer for converting the electrical currents produced by such detectors into readings of proportions of the selected gases including compensating for the detection of multiple gases by one detector through the use of another detector responsive to less than all of such multiple gases to produce a reading of the proportion of the other gases. The detector comprises a unitary assembly of an electrolytic cell of uniquely simple construction with a membrane separating the cell from the chamber through which the gas mixture is passed and an electrolyte reservoir in full communication with the cell.

3,755,126

**SYSTEM FOR DETERMINING AMOUNT OF AN ELEMENT DISSOLVED IN A MOLTEN METAL**

Donald C. Misener, Ottawa, Ontario; Donald K. Faurschou, Kanata, Ontario; James C. Pope, Ottawa, Ontario, all of Canada, and Richard Hadden, Paisley, Scotland, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed July 15, 1970, Ser. No. 54,937

Claims priority, application Canada, Dec. 24, 1969, 70,847

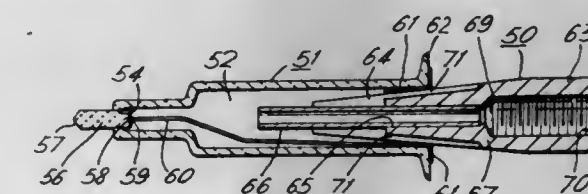
Int. Cl. G01n 27/00, 27/26, 27/46

U.S. Cl. 204—195 S

42 Claims

A probe is provided for determining the amount of dissolved gas, (e.g. oxygen) in a molten metal (e.g. steel). It includes a disposable tip including three essential elements. The first element is a solid electrolyte which retains its ionic conduction properties and which does not exhibit substantial electronic conduction properties at the temperature of the molten metal. The electrolyte is a compact which has been individually formed by a technique which includes first pressure

compacting and then sintering a free flowing mixture of the solid electrolyte and a suitable fugitive binder and preferably also a small amount of a suitable high temperature binder. The second element is a heat-resistant, substantially electrically non-conductive tube. The compact, which has a relative density, of about 70 percent, and which has an axial depression therein, is disposed and secured at one open end of the heat-resistant tube. The third element is at least one electrically conductive metallic element in intimate electrical contact with the electrolyte. Preferably, the disposable tip includes, and is disposed in, a fourth element, namely a plug which is formed of heat-resistant, substantially electrically non-con-



ductive material, the plug being provided with a longitudinally extending aperture therethrough. Preferably also, the tip includes a fifth element, namely a tube formed of a structurally rigid, electrically conductive metal which secures the plug in one of its open ends. The tube has a major portion of its length non-degradable in the molten metal being tested. The tip is associated with a structurally rigid, heat-resistant, electrically conductive lance, to provide a mechanical assembly of the probe tip and the lance so that a component of the lance then is also in electrical contact with the electrically conductive metallic element which is in intimate electrical contact with the solid electrolyte, and also to provide the connection to a source of the reference gas.

3,755,127

**APPARATUS FOR ELECTROCHEMICAL MACHINING**

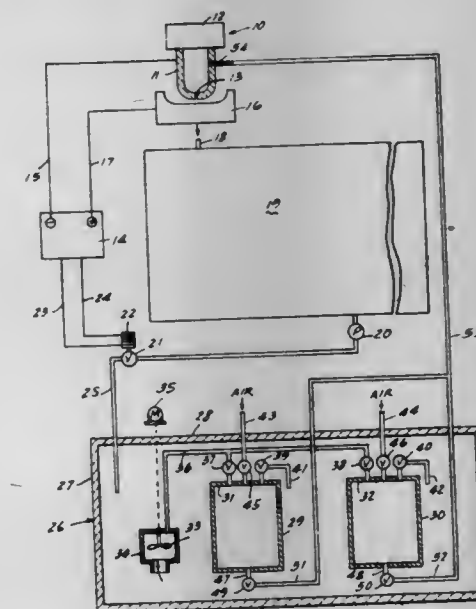
Roger K. Tyler, Redford, and Jack New, Garden City, both of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 13, 1972, Ser. No. 243,772

Int. Cl. B23p 1/00, 1/04

U.S. Cl. 204—224 M

5 Claims



Apparatus for electrochemical machining of metals utilizing a highly conductive electrolyte wherein a self-contained electrolyte circulating system is provided for each machine or pair of machines, and electrical isolation is maintained between this self-contained electrolyte circulating system and the main supply system during the machining operation to prevent electrical interaction between a substantial number of machines which are supplied from the same source of electrolyte.



3,755,128

**ELECTROLYSIS SYSTEM AND METHOD**

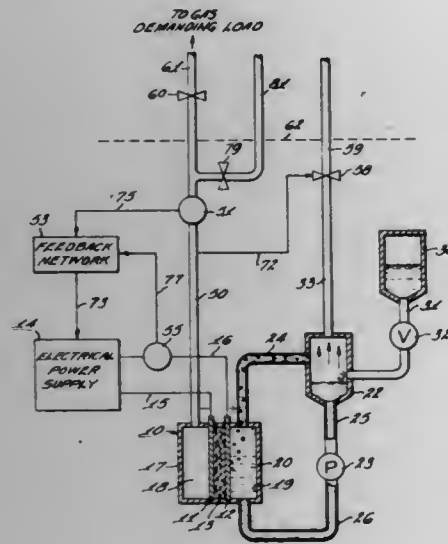
Warren E. Herwig, Greenfield, Wis., assignor to Isotopes, Inc., Westwood, N.J.

Filed Sept. 15, 1970, Ser. No. 72,250

Int. Cl. B01k 3/00; C01b 13/04

U.S. Cl. 204-230

5 Claims



An electrolysis apparatus and method including means for decomposing an electrolyte into one or more gas products, and also including means responsive to the pressure or flow condition of one of the product gases for controlling the electrical input to the electrolysis cell whereby to match the gas generation rate and the gas demand rate in the electrolysis system. Electrical power cost of the electrolysis process, a major operating expense, will be reduced if the gas generation rate responds to the demand rate.

3,755,129

**MACHINE TABLE FEED CONTROL SYSTEM FOR ELECTROLYTIC GRINDING MACHINES**

Yasuo Suzuki, and Tomoyoshi Mikoshiba, both of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

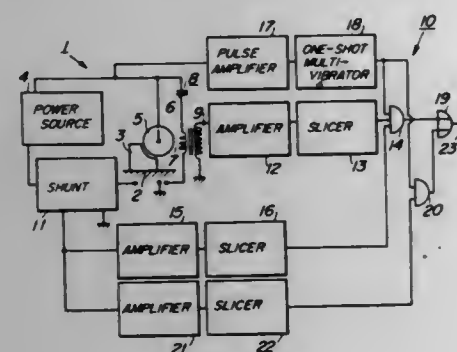
Filed Mar. 31, 1972, Ser. No. 240,031

Claims priority, application Japan, Apr. 2, 1971, 46/19695

Int. Cl. B23p 1/12; B01k 3/00

U.S. Cl. 204-225

2 Claims



In electrolytic grinding machines where a working voltage is applied between grinding wheel and workpiece, the feed speed of the machine table is very important, and an inappropriate speed inconsistent with prevailing working conditions would result in the reduction of working efficiency and working precision and a degraded surface roughness, as well as being prone to short-circuit between the grinding wheel and workpiece.

In this specification, a machine table feed control system for automatically controlling the feed speed of the machine table

to an optimum speed consistent to prevailing working conditions is disclosed.

3,755,130

**ELECTROLYTIC CELL APPARATUS FOR THE DESTRUCTION OF ODOROUS IMPURITIES IN A GAS STREAM**

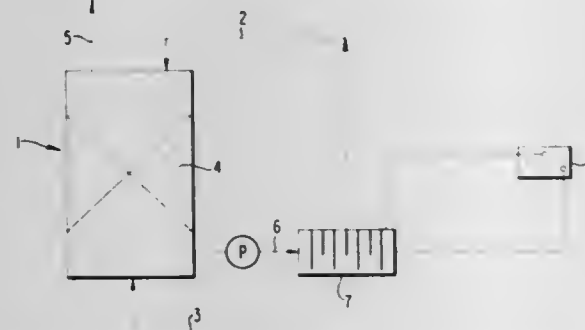
Ernest R. Zabolotny, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,641

Int. Cl. B01k 3/00; C22d 1/02

U.S. Cl. 204-237

4 Claims



In combination with a contact zone for the mass transfer of pollutant or odorous materials from a gas stream to an aqueous acid stream containing Co(III), the Co(III) oxidizing the pollutant or odorous materials and itself becoming reduced to Co(II), there is provided electrolytic regeneration apparatus for the continuous electrolytic regeneration of Co(II) to Co(III). Pollutant or odorous materials are also continuously destroyed at the electrodes of the electrolytic regeneration apparatus.

The electrolytic regeneration apparatus comprises a Co(III) and acid-resistant container to receive the Co(III)-acid stream with lead anodes and cathodes supported in the interior of the container which contact the Co(III)-acid stream during electrolytic regeneration of Co(III) and pollutant destruction. The area of the anodes is such that upon the passage of electrical current through the electrolytic apparatus the regeneration of Co(III) from Co(II) in the aqueous acid stream is the predominant reaction therein.

3,755,131

**APPARATUS FOR ELECTROLYTIC PURIFICATION OF HYDROGEN**

Harold Shalit, Drexel Hill, Pa., assignor to Atlantic Richfield Company, Philadelphia, Pa.

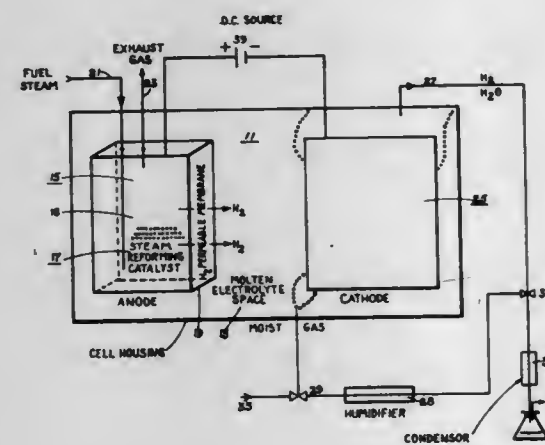
Division of Ser. No. 807,865, March 17, 1969, Pat. No.

3,577,329. This application Jan. 20, 1971, Ser. No. 108,192

Int. Cl. C22d 3/02; B01k 3/00

U.S. Cl. 204-246

5 Claims



An improved process and apparatus for the production of hydrogen of high purity whereby a carbonaceous fuel is

reformed to produce hydrogen and said hydrogen is recovered economically from said reforming operation through the use of an electrolytic process using chemical energy of the reforming process to reduce electrical energy needed and wherein a moist gas is added to the electrolyte to facilitate the electrolytic recovery of hydrogen at the cathode.

3,755,132

**FLUID BELT ELECTROPHORESIS APPARATUS**

Alexander Kolin, and Stephen Jay Luner, both of Los Angeles, Calif., assignors to Regents of the University of California, Berkeley, Calif.

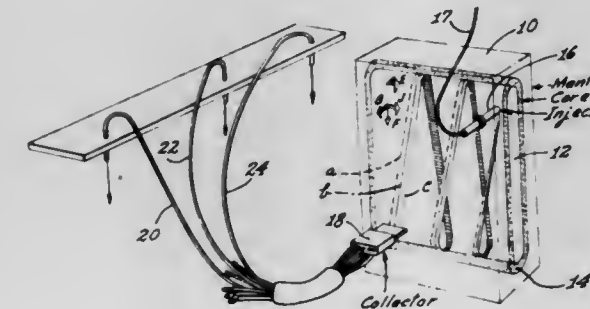
Continuation of Ser. No. 50,650, June 29, 1970, abandoned.

This application Nov. 8, 1971, Ser. No. 196,283

Int. Cl. B01k 5/00

U.S. Cl. 204-299

13 Claims



A stabilized electrophoretic apparatus is provided for free continuous flow electrophoresis for separating fractions of a chemical or biological substance, and for the injection and measuring the mobilities thereof. The apparatus provides for the injection of the material to be processed into a fluid belt of an electrolyte buffer solution to form a streak, with the fluid belt on sheath and the streak being moved in a particular direction by the combined reaction of electric current flowing through the buffer solution and a magnetic field. An electric field is provided substantially perpendicular to the direction of movement of the fluid belt, and this field causes electrophoretic migration of the charged particle components of the streak, thereby defining them from their normal course. The apparatus is constructed to incorporate a window so that an optical path may be established through the fluid belt, so that the electrophoretic mobilities of the charged particles may be readily observed and measured. This optical path also provides for a servo control of the apparatus, as will be described.

3,755,133

**DEVICE FOR EXPOSING SMALL ROLLABLE BODIES TO SPUTTERING**

John Edwin Greenlay, Montreal; Bruce Denis William Pulling, Otterburn Heights, and Arthur Francis Morton, St. Hubert, all of Quebec, Canada, assignors to Northern Electric Company, Limited, Montreal, Quebec, Canada

Filed June 3, 1971, Ser. No. 149,442

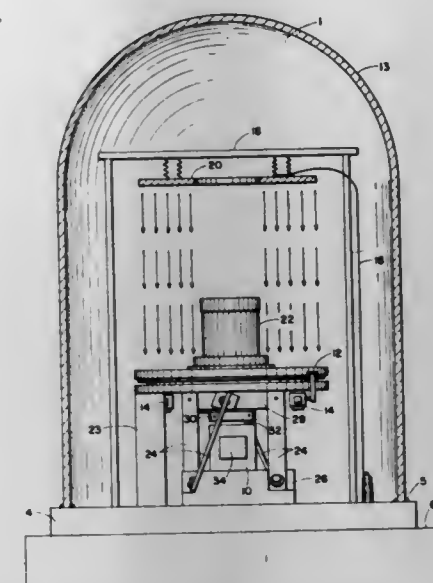
Int. Cl. C23c 15/00

U.S. Cl. 204-298

15 Claims

Cylindrical ceramic blanks are fed endwise down grooves in a vibratory table and simultaneously caused to revolve about their axes, while subjected to the deposition of material sputtered from above. The endwise movement can be stopped by closing gates at the end of the grooves, in order to prolong exposure to sputtering. The blanks are loaded in a central hopper of a round table vibrated by a torsional vibrator of the type used for tangential feeders. The grooves are offset from the radial direction so that the vibration of the table will impart slight outward impulses to the blanks, which are addi-

tionally led forward by a slight downward slant of the grooves. The grooves are semicylindrical and a few per cent larger in



diameter than the blanks in order to produce a smooth rolling motion.

3,755,134

**ELECTRODIALYSIS APPARATUS**

Leo H. Francis, Burlingame, Calif., and Gerald J. Treleven, Stevens Point, Wis., assignors to Patent Technology, Inc., San Francisco, Calif.

Division of Ser. No. 811,187, March 27, 1969, Continuation-

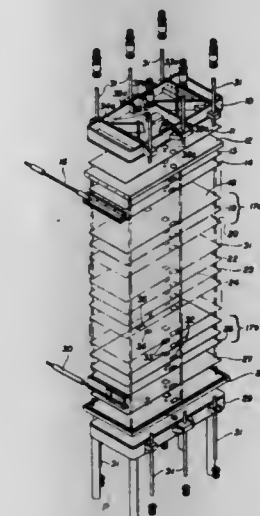
in-part of Ser. No. 404,658, Oct. 19, 1964. This application

May 21, 1970, Ser. No. 39,368

Int. Cl. B01d 13/02

U.S. Cl. 204-301

2 Claims



Electrodialysis apparatus for reducing the mineral salt content of liquid materials having dispersed organic constituents (e.g., whey). Means are provided for controlling certain factors during the course of an operating cycle, including the applied stack voltage and the resistivity of the concentrating solution, together with the selection of membranes to provide low working membrane resistance, whereby demineralization of such materials is made more efficient, with savings in processing costs.

3,755,135

**ELECTRIC DEMINERALIZING APPARATUS**

Allan M. Johnson, 7423 Balcolm Ave., Reseda, Calif.

Filed Jan. 20, 1971, Ser. No. 107,997

Int. Cl. B01d 13/02

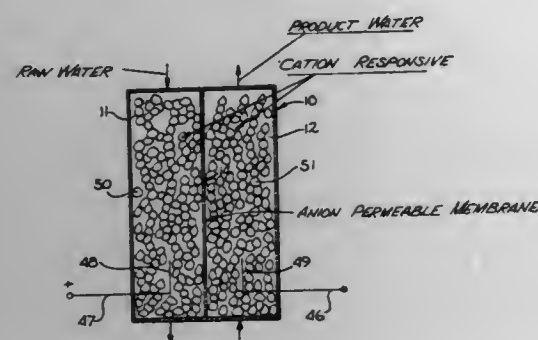
U.S. Cl. 204-301

18 Claims

An electric demineralizing apparatus and method in which porous electrodes of the same composition are located in



compartments on opposite sides of an ion permeable membrane and the electrolyte flows through the electrodes and along the membrane. When a D.C. potential is applied across



the electrodes, waste water is produced in one compartment and product water is produced in the other compartment. The D.C. power source drives electrons into one set of electrodes and extracts electrons from the other set of electrodes.

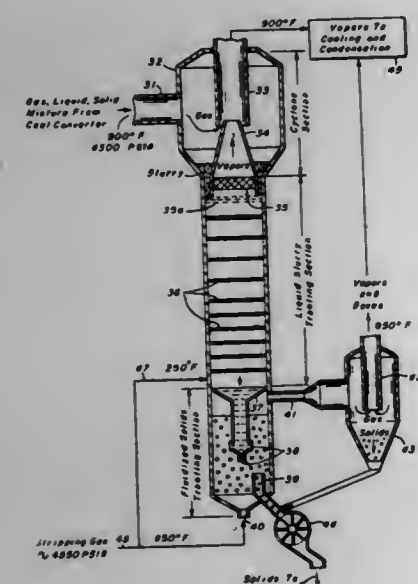
### 3,755,136 SYSTEM FOR REMOVING SOLIDS FROM COAL LIQUEFACTION REACTOR EFFLUENTS

Marvin C. Fields, Wilkins Township, Allegheny County, and James L. Meyer, Monroeville Borough, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.  
Filed Mar. 12, 1971, Ser. No. 123,510

Int. Cl. C10g 1/00

U.S. Cl. 208—8

24 Claims



This is a process for separating liquid and solids from coal liquefaction reactions by vaporization with hot, hydrogen-rich gas.

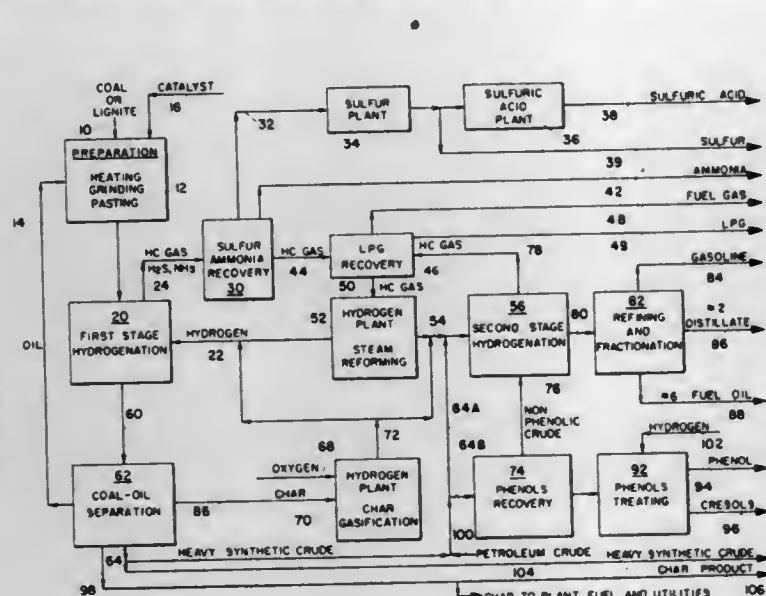
**3,755,137  
MULTI-STAGE EBULLATED BED COAL-OIL HYDROGENATION AND HYDROCRACKING PROCESS**  
Seymour C. Schuman, Princeton, N.J., assignor to Hydrocarbon Research, Inc., New York, N.Y.  
Continuation of Ser. No. 18,383, Feb. 13, 1970, abandoned, and a continuation of Ser. No. 784,967, Sept. 5, 1968, abandoned, and a continuation of Ser. No. 638,663, May 15, 1967, abandoned, and a continuation of Ser. No. 410,485, Nov. 12, 1964, abandoned. This application Mar. 24, 1971, Ser. No. 127,800

Int. Cl. C10g 1/08

U.S. Cl. 208—10

A process for converting solid carbonaceous materials into valuable chemicals by hydrogenating a slurry of the solid

material with a pasting oil in a reaction zone containing an ebullated catalytic bed at temperatures in the range from about 750–950°F. and a total pressure in the range from about 1,000 to 4,000 psig, separating the reaction effluent into gaseous materials, char, pasting oil, and a heavy synthetic crude,



freeing the crude from the phenolic compounds contained therein and further hydrogenating said synthetic crude in a second stage catalytic reaction zone to produce a light synthetic crude and wherein a portion of the products of the process are used to supply some of the hydrogen requirement of the system.

**3,755,138  
LUBE OILS BY SOLVENT DEWAXING AND HYDRODEWAXING WITH A ZSM-5 CATALYST**  
Nai Yuen Chen, Hopewell Township, Mercer County, and William E. Garwood, Haddonfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 56,652, July 20, 1970, abandoned, which is a continuation-in-part of Ser. No. 865,470, Oct. 10, 1969, Pat. No. 3,700,585. This application Dec. 10, 1971, Ser. No. 206,888

Int. Cl. C10g 13/04

U.S. Cl. 208—33

5 Claims

A two-step or combination process for preparing low pour point lube oils is set forth. The process involves subjecting a lube stock to a mild solvent dewaxing step, so as to obtain high quality waxes and a lube stock having an intermediate pour point; recovering the waxes and subjecting said intermediate pour point lube stock to a hydrowaxing step over a crystalline aluminosilicate of the ZSM-5 type to obtain a product having a pour point of 0°F and lower.

**3,755,139  
ASPHALT MANUFACTURE**  
Gordan A. McClaren, Houston, Tex., and John W. Gibson, Oakland, Calif., assignors to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 880,629, Nov. 28, 1969, Pat. No. 3,607,722. This application May 19, 1971, Ser. No. 144,950

Int. Cl. C10g 3/02

U.S. Cl. 208—44

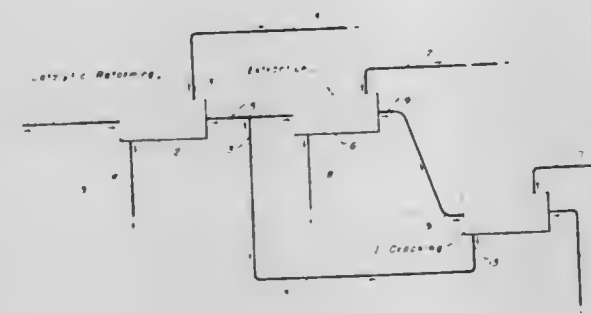
7 Claims

An asphalt flux having improved rheological properties is prepared from a straight run asphalt residue by means of catalytic hydrogenation under moderate conditions.

**3,755,140  
SIMULTANEOUS PRODUCTION OF AROMATIC HYDROCARBONS AND ISOBUTANE**  
Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
Filed Aug. 11, 1971, Ser. No. 170,801  
Int. Cl. C10g 37/10

U.S. Cl. 208—62

6 Claims

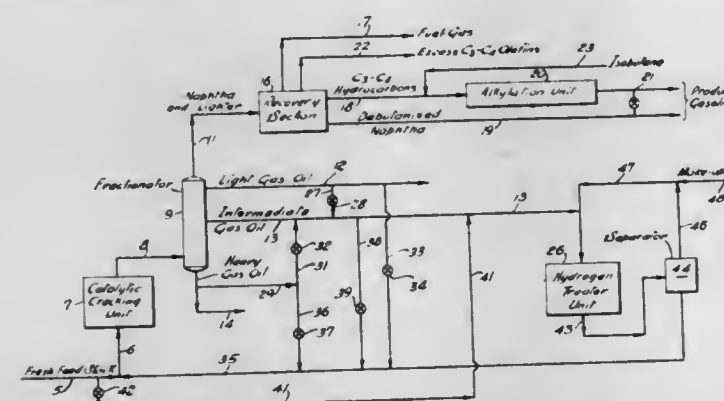


A naphtha boiling range charge stock is converted into aromatic hydrocarbons and isobutane via a combination process involving catalytic reforming, separation and hydrocracking. The catalytic reforming is effected at low-severity conditions to maximize the reaction of naphthene dehydrogenation while simultaneously decelerating the dehydrocyclization and cracking of paraffinic hydrocarbons. Following separation of an aromatic concentrate, the remaining saturated hydrocarbons are subjected to a particular hydrocracking technique which results in exceedingly high yields of isobutane.

**3,755,141  
CATALYTIC CRACKING**  
Douglas J. Youngblood, Groves; James H. Colvert, Chatterton, and Gerald V. Nelson, Nederland, all of Tex., assignors to Texaco, Inc., New York, N.Y.  
Continuation-in-part of Ser. No. 687,283, Dec. 1, 1967, abandoned. This application Feb. 11, 1971, Ser. No. 114,721  
Int. Cl. C10g 37/06

U.S. Cl. 208—56

8 Claims

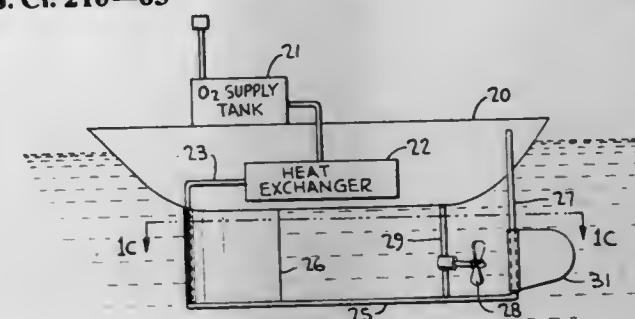


A process for the production of high octane motor gasoline stocks by catalytic cracking in which a distillate charge stock boiling above about 400°F is subjected to catalytic cracking in a catalytic cracking unit at limited per pass conversion not exceeding 80 volume percent of the charge stock, 430°F + gas oil product of the catalytic cracking operation is subjected to hydrogen treatment to lower its polycyclic aromatic content, as indicated by ultraviolet absorption to a concentration approximating that of the fresh charge stock to the catalytic cracking unit, and liquid effluent of the hydrogen treatment step is passed to the catalytic cracking unit as part of the feed thereto, producing exceptionally high yields of high octane naphtha suitable as motor gasoline blending stock.

**3,755,142  
PROCESS AND APPARATUS FOR THE PURIFICATION OF A NATURAL BODY OF WATER**  
William Whipple, Jr., 395 Mercer Rd., Princeton, N.J.  
Filed May 21, 1971, Ser. No. 145,766  
Int. Cl. C02c 5/04

U.S. Cl. 210—63

32 Claims



Process and apparatus for purification of pollutants in a natural body of water includes the introduction of pure oxygen into the water and thereafter agitating the water super-saturated with oxygen so as to effectively disperse the treated water and cause it to be mixed with the untreated water. The oxygen may be introduced directly into the body of water to be treated or into a tank whereafter the treated water is discharged into the water and subsequently agitated.

**3,755,143  
METHOD FOR REARRANGING THE STRUCTURES OF CRUDE OIL OR CRUDE OIL FRACTIONS**  
Takuji Hosoi, Tokyo; Koichi Washimi, Fukushima; Masaaki Takahashi, Tokyo; Ryoichi Takahashi, and Shinpei Gomi, both of Tokyo, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan  
Filed Apr. 23, 1970, Ser. No. 31,419

Claims priority, application Japan, Apr. 25, 1969, 44/31494  
Int. Cl. C10g 37/06

U.S. Cl. 208—67

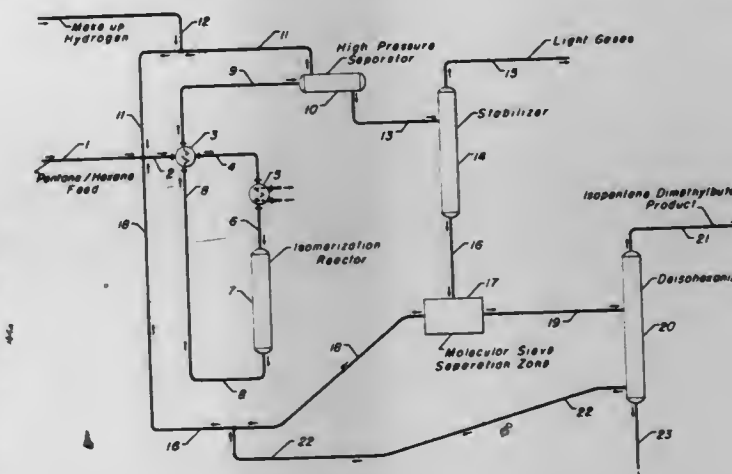
10 Claims

A process for producing useful intermediate products from crude oil or crude oil fractions comprising pyrolysis by contacting the crude oil with high temperature steam to produce a mixture of volatile hydrocarbons and polycyclic aromatic tars and subsequently reacting the tars with hydrogen or an olefin is disclosed.

**3,755,144  
HYDROCARBON ISOMERIZATION AND SEPARATION PROCESS**  
George F. Asselin, Mt. Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.  
Filed Oct. 13, 1971, Ser. No. 188,792  
Int. Cl. C10g 39/00

U.S. Cl. 208—95

5 Claims



A process for isomerizing and separating a low octane C<sub>5</sub>-C<sub>8</sub> hydrocarbon charge stock to provide a branched



hydrocarbons product in which the charge stock is contacted with an isomerization catalyst in an isomerization zone, the effluent from the isomerization zone is separated, in a sorption zone employing a molecular sieve sorbent, into a branched hydrocarbons stream and a normal hydrocarbons stream; the branched hydrocarbons stream is fractionated, and a methyl-pentanes-free stream of branched hydrocarbons is recovered from the fractionation step as the product of the process.

3,755,145

**LUBE OIL HYDROCRACKING WITH ZSM-5 ZEOLITE**  
Bernard A. Orkin, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 17, 1971, Ser. No. 125,409

Int. Cl. C10g 13/02, 37/02

U.S. Cl. 208—111

9 Claims

A process for preparing lube oils characterized by possessing low pour points is set forth. The process involves subjecting a lube stock to a hydrocracking operation utilizing a catalyst mixture comprising hydrogenation components, a conventional cracking catalyst which can be either crystalline or amorphous and a crystalline aluminosilicate of the ZSM-5 type.

3,755,146

**ISOMERIZATION AND HYDROCRACKING OF PARAFFINS**

Jesse R. Harris, and Clifford E. Smith, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 17, 1971, Ser. No. 181,594

Int. Cl. C10g 13/02

U.S. Cl. 208—112

8 Claims

A process for isomerization and hydrocracking of paraffins is provided using as catalyst a hydrogen metal bronze. In one embodiment of the invention a supported catalyst comprising a hydrogen metal bronze is used to promote the isomerization and hydrocracking of paraffins.

3,755,147

**HYDROCARBON CONVERSION PROCESSES AND CATALYSTS FOR USE THEREIN**

Grant A. Mickelson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 856,143, Sept. 8, 1969, Pat.

No. 3,609,099, which is a continuation-in-part of Ser. No.

761,322, Sept. 20, 1968, abandoned, and a continuation-in-

part of Ser. No. 837,340, June 27, 1969, abandoned. This

application May 28, 1971, Ser. No. 148,194

Int. Cl. C10g 23/02; B01j 11/82

U.S. Cl. 208—112

16 Claims

Hydrocarbon conversion processes including hydrocracking, denitrogenation and hydrogenation of improved activity are obtained by the use of catalysts prepared by activating foraminous refractory oxides combined with at least one thermally decomposable and/or oxidizable compound of a catalytically active metal upon calcination while contacting the composite with an accelerated flow of an oxidizing gas at a rate of at least about 2 SCFM per pound of said composite. Further advantage is realized by heating the composite to the prescribed calcination temperature at a controlled gradual rate. It is also generally desirable to assure that the inlet temperature of the oxidizing gas prior to contact with the composite is less than about 500°F.

3,755,148

**HYDROCARBON HYDROGENATION**

Grant A. Mickelson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 837,340, June 27, 1969,

abandoned, which is a continuation-in-part of Ser. No.

761,322, Sept. 20, 1968, abandoned. This application Apr. 1,

1971, Ser. No. 130,493

Int. Cl. C10g 23/02

U.S. Cl. 208—143

11 Claims

Hydrocarbons having at least one point of carbon-to-carbon unsaturation are reacted with hydrogen under hydrogenation conditions including a catalytic combination of at least one molybdenum compound and at least one Group VIII metal or metal compound prepared by impregnating a foraminous refractory oxide support with a highly stable solution of the metal compounds and an acid of phosphorus wherein the impregnating solution has a P/MoO<sub>3</sub> weight ratio of about 0.1 to about 0.25 and an initial pH of about 1 to about 2. Even greater advantage relative to previously available hydrogenation systems is realized when operating on feedstocks containing substantial amounts of organo-nitrogen compounds.

3,755,149

**PROCESS FOR DESULFURIZING PETROLEUM RESIDS**  
Edward M. Kohn, Philadelphia, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed June 9, 1971, Ser. No. 151,568

Int. Cl. C10g 17/08

U.S. Cl. 208—209

4 Claims

A process for desulfurizing vacuum bottoms derived from a residual oil which comprises contacting said bottoms with metallic sodium in the presence of hydrogen, contacting the sludge-containing product thus produced with an aliphatic hydrocarbon, and separating the sulfur and sodium-containing sludge from the hydrocarbon solution of the desulfurized resid. Water washing the separated sludge removes sulfur and sodium, enabling the remaining hydrocarbon portion to be reclaimed.

3,755,150

**HYDROGENATIVE DESULFURIZATION**

Grant A. Mickelson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 837,340, June 27, 1969,

abandoned, which is a continuation-in-part of Ser. No.

761,322, Sept. 20, 1968, abandoned. This application Apr. 1,

1971, Ser. No. 130,508

Int. Cl. C10g 17/00

U.S. Cl. 208—216

11 Claims

A superior hydrogenative desulfurization process includes reacting hydrogen with a hydrocarbon feed under conditions sufficient to promote said reaction and in the presence of a catalytic combination of at least one molybdenum compound and at least one Group VIII metal or metal compound prepared by impregnating a foraminous refractory oxide support with a highly stable solution of the metal compounds and an acid of phosphorus wherein the impregnating solution has a P/MoO<sub>3</sub> weight ratio of about 0.1 to about 0.25 and an initial pH of about 1 to about 2. Even a greater advantage relative to previously available hydrogenative hydrocarbon conversion systems is realized when operating on feedstocks containing substantial amounts of organonitrogen compounds.

3,755,151

**HYDROREFINING FEED STOCK PREPARATION**

George F. Asselin, Mount Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Dec. 21, 1970, Ser. No. 100,104

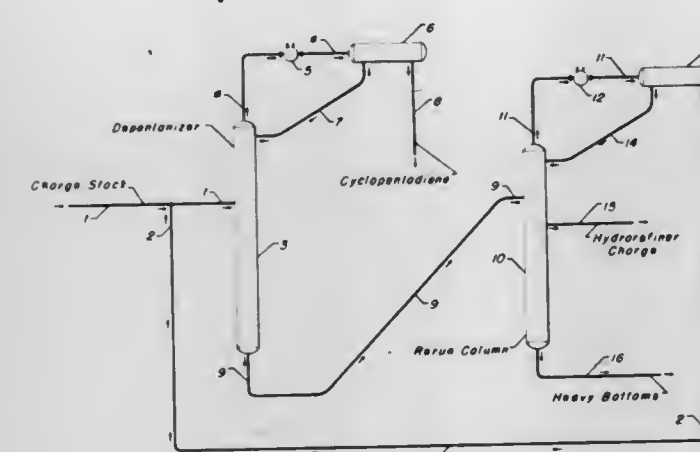
Int. Cl. C10g 17/00

U.S. Cl. 208—255

4 Claims

Pretreatment of a hydrorefining feed stock is effected in a fractionation or distillation facility having a plurality of

separation zones. The feed stock is depentanized to remove cyclopentadiene and lower-boiling hydrocarbons; the bot-



toms, containing cyclopentadiene dimer, is rerun to reject high boiling material as a bottoms, and cyclopentadiene, from the conversion of the cyclopentadiene dimer, as overhead.

3,755,152

**REMOVING CONTAMINANTS FROM ORGANIC MATERIALS**

Graham L. Gulick, Chicago, Ill., assignor to Quvoe Chemical Industries, Inc., Schiller Park, Ill.

Filed Sept. 14, 1970, Ser. No. 72,185

Int. Cl. C10g 25/04

U.S. Cl. 208—307

9 Claims

A treating method is described wherein oils or other organic liquids having contaminants therein which are difficult to separate from the oils are removed by mixing and finely subdividing granules of two different surface active adsorbents, such as an activated carbon adsorbent and a molecular sieve adsorbent, adding the mixed adsorbents to the contaminated oil or the like, and, preferably with high shear mixing and heating, allowing the mixed adsorbents to remove the contaminants, and separating the colloidal sized solid adsorbents from the treated materials in a suitable manner, such as by filtration, for example. Examples of oils able to be treated include non-hydrocarbon oils such as silicone oils as well as hydrocarbon oils such as mineral oils and the like. With this method, it is possible in some instances remove contaminants without removing additives, if desired.

3,755,153

**OLEFIN SEPARATION PROCESS USING COPPER-EXCHANGED TYPE X ZEOLITE**

Donald H. Rosback, Elmhurst, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 865,979, Oct. 13, 1969, Pat.

No. 3,649,176. This application Mar. 1, 1972, Ser. No.

230,995

Int. Cl. C10g 25/04; C07c 7/12

U.S. Cl. 208—310

7 Claims

An improved process for the separation of olefins from a hydrocarbon feed mixture containing olefins, saturates and contaminant aromatics. The improvement basically comprises employing as an adsorbent a copper-exchanged Type X zeolite which has decreased polymerization and isomerization activity and increased olefin selectivity in the presence of aromatics.

3,755,154

**SEPARATION OF HYDROCARBONS FROM MIXTURE THEREOF**

Hiroshi Akabayashi, Tokyo; Satoshi Hoshiyama, Ichikawa, and Shinichiro Takigawa, Funabashi, all of Japan, assignors to Nissan Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

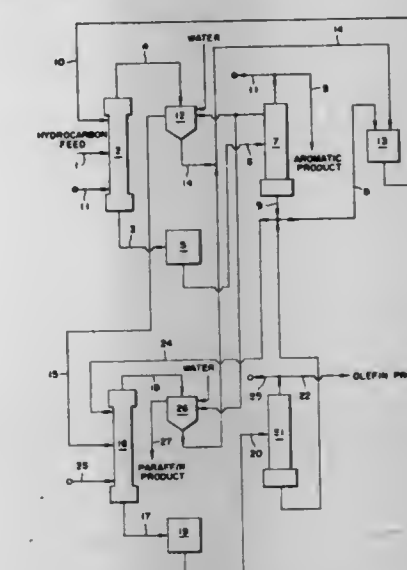
Filed Dec. 7, 1970, Ser. No. 95,826

Claims priority, application Japan, Dec. 10, 1969, 44/98926; June 29, 1970, 45/56701

Int. Cl. C10g 21/00

U.S. Cl. 208—314

3 Claims



A process for separating at least one component of aromatics, olefins, naphthenes and paraffins from a mixed hydrocarbon stock containing the same by means of extraction with solvent characterized in that a solvent system selected from the group consisting of N-acetyl-morpholine, mixed solvent of N-acetylmorpholine and water, N-acetyl-2-pyrrolidone, mixed solvent of N-acetyl-2-pyrrolidone with water, dimethyl sulfoxide, diethylene glycol and other organic solvent is employed.

3,755,155

**SEPARATION OF AROMATICS FROM HYDROCARBON STREAMS**

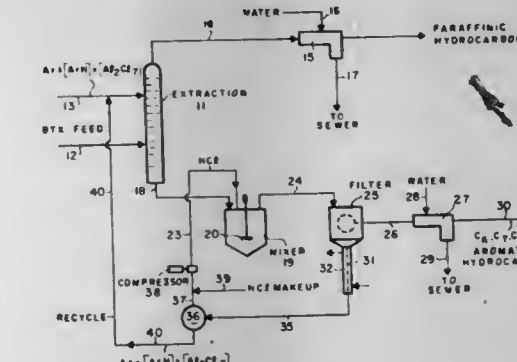
Harry E. Cier, Baytown, Tex., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed July 23, 1971, Ser. No. 165,599

Int. Cl. C10g 21/18

U.S. Cl. 208—331

14 Claims



Aromatic compounds may be separated from paraffin-aromatic mixtures by using a solvent consisting of a solution of an aromatic dissolved in the same aromatic in its protonated form with aluminum chloride, [ArH] [Al<sub>2</sub>Cl<sub>7</sub>], wherein a liquid paraffinic phase and a liquid aromatic phase are formed, separating the phases and adding HCl to the aromatic phase to react with the solvent and adjusting the temperature to form a solid phase having the following formula:





which then may be separated from the aromatic compounds present in the mixture. The aromatic identified as Ar in the above formula is mesitylene, isodurene, pentamethylbenzene, hexamethylbenzene or polynuclear aromatics more basic than the mononuclear aromatic.  $[ArH][AlCl_4]$  may be used as the solvent in a preferred mode.

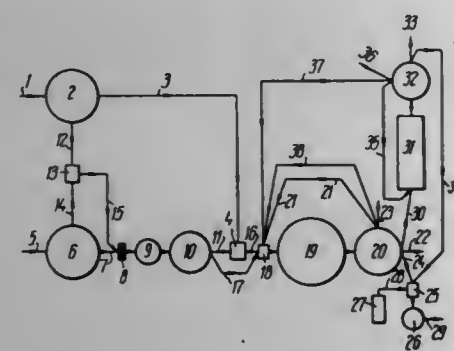
### 3,755,156 METHOD FOR BIOCHEMICAL TREATMENT OF INDUSTRIAL WASTE WATER

Sergel Vasilievich Yakovlev, Festivalnaya ulitsa, 3, kv. 88; Jury Viktorovich Voronov, B. Serpukhovskaya ulitsa, 56, kv. 58; Vladimir Nikolaevich Korenkov, Samarkandsky bulvar, 32, korpus 1, kv. 51, all of Moscow; Alexandr Borisovich Nevsky, poselok Dzerzhinskogo, ulitsa Lermontova, 7, kv. 20, Moskovskaya Oblast; Valentina Andreevna Dobrikova, Gospitalny val 5, korpus 15, kv. 24; Tamara Alexandrovna Karjukhina, Novokuznetskaya ulitsa, 43/16, kv. 61; Ira Nikolaevna Churbanova, I Kuryanovskaya ulitsa, 57, kv. 42, and Jury Mikhailovich Laskov, Kuryanovsky bulvar, 14, kv. 2, all of Moscow, U.S.S.R.

Filed May 4, 1971, Ser. No. 140,205  
Int. Cl. C02c 1/06, 1/40

U.S. Cl. 210—5

11 Claims



A method for biochemical treatment of industrial waste water containing combined oxygen in the form of inorganic compounds of hexavalent chromium, chlorine or mixtures of said compounds, in which said industrial waste water is mixed with municipal sewage containing organic matter and in which said municipal sewage is subject to mechanical purification from contaminants present therein. The mixed water is thereafter fed to an unaerated tank, wherein biochemical reduction of said inorganic oxygen-containing compounds through the use of activated sludge as well as biochemical oxidation of organic matter are effected simultaneously. Biochemical reduction of inorganic oxygen-containing compounds having been effected, the mixed water together with the activated sludge is delivered from the unaerated tank to a settler and the precipitated sludge adapted to said inorganic oxygen-containing compounds is returned to said unaerated tank. The herein-disclosed method provides for treatment of industrial waste water featuring higher concentration of inorganic oxygen-containing compounds of chromium and chlorine as well as for a more intensified process of reduction of said compounds.

### 3,755,157 METHOD OF PRODUCING DRINKING WATER FROM CONTAMINATED GROUND AND SURFACE WATER

Werner Wisfeld, Frankfurt, Main; Hans Wirth, Dortelwell, and Walter Lotz, Frankfurt, Main, all of Germany, assignors to Laboratorium für Adsorptionstechnik GmbH, Frankfurt am Main, Germany

Filed July 22, 1971, Ser. No. 165,282  
Claims priority, application Germany, Oct. 10, 1970, P 20 49 920.1

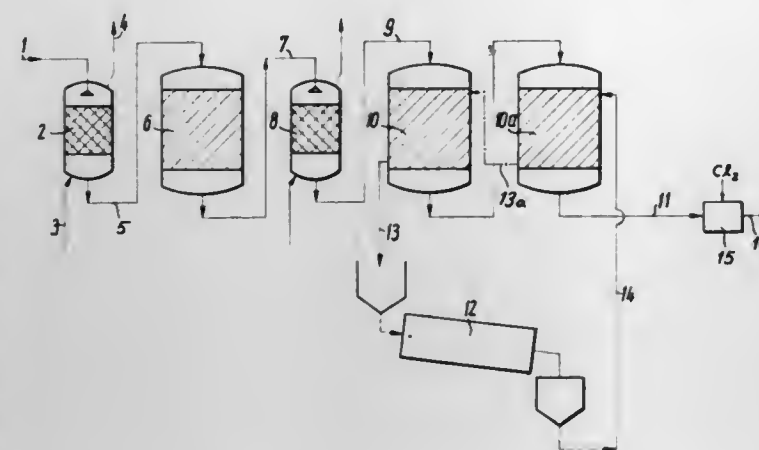
Int. Cl. C02c 5/04, 5/10

U.S. Cl. 210—17

8 Claims

Organically contaminated water containing micro-organisms is purified by first oxygenating the raw water and passing

it through a coarse-particle activated-carbon bed, thereafter further oxygenating the effluent from the first bed and passing it through a second bed, and chlorinate the effluent from the latter. The water traverses the bed with a specific loading of



less than 4 hr<sup>-1</sup>, the chlorine or other disinfectant is added in an amount greater than 0.05 and less than about 0.5 mg/liter of chlorine, and only the second bed is reactivated or regenerated.

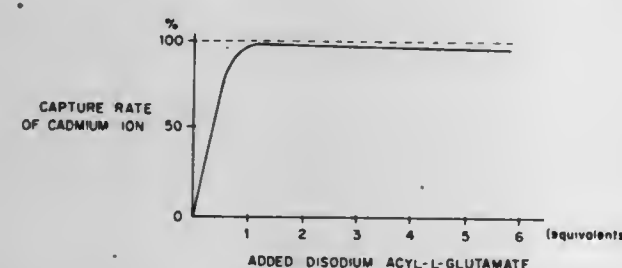
### 3,755,158 PROCESS FOR CAPTURING METAL IONS

Shinichi Inazuka, Tokyo; Masahiro Takehara, and Ryonosuke Yoshida, both of Kanagawa, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 4, 1971, Ser. No. 169,034  
Claims priority, application Japan, Aug. 10, 1970, 45/69916  
Int. Cl. C02b 1/26

U.S. Cl. 210—50

12 Claims



Cations of metals other than the alkali metals may be precipitated practically completely from their aqueous solutions at a pH of 4 or higher by N-acylamino acids whose acyl group is alkanoyl or alkenoyl having seven to 25 carbon atoms, the acylamino group being connected with the carboxyl group by divalent alkylene having one to five carbon atoms. The voluminous precipitates include even more of the metal ions originally present and settle faster in the presence of small amounts of polyhydric alcohols, polyethers, alkali metal silicates, or alkali metal borates. Water polluted with heavy metals can be made potable by this method.

### 3,755,159 FLOCCULATION BY METHYLAMINE-EPICHLOROHYDRIN POLYMER

Daniel Elmer Nagy, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 778,934, Nov. 26, 1968, Pat. No. 3,567,659. This application Dec. 8, 1970, Ser. No. 96,192

Int. Cl. C02b 1/20

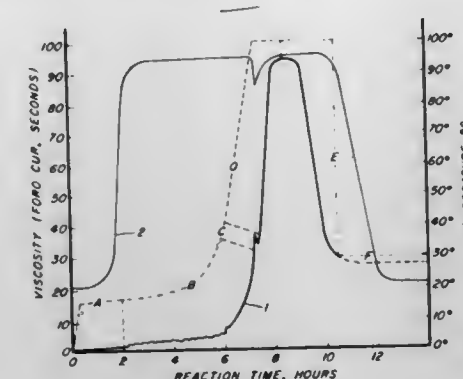
U.S. Cl. 210—54

5 Claims

A cationic, water-soluble, storage-stable, methylamine-epichlorohydrin polymer is prepared by reacting a quantity of a methylamine-epichlorohydrin polymer which is well below its gel point with successively added small amounts of epichlorohydrin until the polymer nears the stage at which it is an irreversible gel, and then reacting the polymer with suffi-

cient methylamine to inactivate substantially all amine-reactive epichlorohydrin residues present. At least the last step of the reaction is performed at a temperature at which a partial depolymerization of the polymer occurs.

Water-soluble polymers of higher molecular weight and



larger dimensions are produced by graft polymerizing one or more water-soluble vinyl monomers upon a hydrophilic water-dispersible cationic poly(hydroxyalkylene) polyamine, which is not necessarily the foregoing polyamine. The polymers are flocculants for suspended solids in sewage and mine effluent water and dry strength agents for paper.

### 3,755,160 PROCESS FOR FLOCCULATING USING A POLY(QUATERNARY AMMONIUM)POLYETHER POLYELECTROLYTE

Edward Witt, Dover, Del., assignor to Polysar International, S.A., Fribourg, Switzerland  
Division of Ser. No. 51,344, June 30, 1970, Pat. No. 3,663,461, which is a continuation-in-part of Ser. No. 763,977, Sept. 30, 1968, abandoned. This application Sept. 29, 1971, Ser. No. 184,964

Int. Cl. C02b 1/20

U.S. Cl. 210—54

12 Claims

Water-soluble poly(quaternary ammonium) polyether polyelectrolyte salts containing quaternary nitrogen atoms in the polymer backbone and chain-extended by ether groups are prepared by treating the polymeric reaction product from an N,N,N',N'-tetraalkyl-hydroxy substituted diamine and an organic dihalide such as a dihaloalkane or a dihalo ether with an epoxyhaloalkane. These polyelectrolytes are used in processes for flocculating particles dispersed in aqueous media, for example, white water clarification, clay flocculation, sewage treatment, and wet-end addition, by adding the polyelectrolyte to the aqueous media in amounts sufficient to flocculate the dispersed particles.

### 3,755,161 TREATMENT PROCESS FOR REMOVAL OF METALS AND TREATING AGENT THEREFOR

Noriyuki Yokota, Ashiya; Shingo Tokuda, Nishinomiya; Yoshiro Ito, Amagasaki, and Hiroshi Takatomi, Osaka, all of Japan, assignors to Osaka Soda Co., Ltd., Osaka, Japan

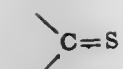
Filed Jan. 5, 1971, Ser. No. 104,160  
Claims priority, application Japan, Feb. 10, 1970, 45/10146, Japan, Feb. 26, 1970, 45/17353, Japan, Feb. 26, 1970, Japan, 45/17354, Japan, April 13, 1970, 45/31412

Int. Cl. B01d 15/00

U.S. Cl. 210—36

7 Claims

A treatment process for removing metals from a gaseous phase or liquid phase metal-containing material using a solid treating agent consisting of a carrier material and a compound deposited thereon, such compound being selected from (a) an organic compound capable of forming a mercaptide compound of a metal, which compound has the —SH radical or an alkali salt thereof in its molecule and may also have a member or members selected from the group consisting of the —N=, —S—, —NH—, —N=N— and —NH—NH— radicals in the same molecule; (b) an organic compound capable of forming a mercaptide compound of a metal, which compound has the



radical in its molecule and also have a member or members selected from the group consisting of the —N=, —S—, —NH—, —N=N—, and —NH—NH— radicals in the same molecule; and (c) an organic compound capable of forming a chelate compound of a metal, which compound has the —OH radical in its molecule and also a member or members selected from the group consisting of the —N= and —NH<sub>2</sub> radicals in the same molecule.

### ERRATUM

For Class 210—63 see:  
Patent No. 3,755,142

### 3,755,162 PROCESS FOR PREPARING A MIXTURE OF CYCLOHEXANONE XIM-CYCLODODECANONE XIM

Hans-Joachim Schultz, Chur Grisons; Ernst Hurlimann, Bar-naus, and Albert Gehring, Tamins, all of Switzerland, assignors to Inventa A.G. für Forschung und Patentverwertung, Zurich, Switzerland

Filed Mar. 3, 1971, Ser. No. 120,757  
Claims priority, application Switzerland, Mar. 13, 1970, 3758/70

Int. Cl. C07c 131/00, 131/02, 131/04  
U.S. Cl. 252—1

Process for preparing a mixture of cyclohexanoneoxime-cyclododecanoneoxime containing at the most 70 parts by weight of cyclododecanoneoxime, by oximation of cyclohexanone and cyclododecanone with hydroxylamine sulfate, which comprises carrying out the oximation in two stages, the first stage being effected at a pH of 3–4.5 and 80°–90°C, and the second stage at a pH of 5–6 and a temperature of 90°–110°C.

### 3,755,163 POWDERED FIRE EXTINGUISHING AGENTS

Richard Broll, Darmstadt, and Gero Heymer, Knapsack near Cologne, both of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Continuation of Ser. No. 830,127, June 3, 1969, abandoned.  
This application Nov. 17, 1971, Ser. No. 199,761

Claims priority, application Germany, June 3, 1969, P 17 71 540.1

Int. Cl. A62d 1/00

U.S. Cl. 252—7

1 Claim  
Powdered fire-extinguishing agents based on ammonium phosphates and substantially containing ammonium polyphosphates with a degree of condensation higher than 50.

### 3,755,164 BEARING COMPOSITION

Jan W. Van Wyk, Kirkland, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 24, 1972, Ser. No. 246,656  
Int. Cl. C10m 7/02

U.S. Cl. 252—12

5 Claims  
A self-lubricating solid bearing having oxidation resistant lubricants of aluminum phosphate, barium fluoride and calcium fluoride, dispersed throughout a matrix of silver containing an additive selected from aluminum oxide, silicon nitride or molybdenum silicide to give a bearing operable at elevated temperatures.



3,755,165

## ALIPHATIC DIISOCYANATE FINISH ADDITIVE

Roop S. Bhakuni, Copley, and Joseph L. Cormany, Jr., Akron, both of Ohio, assignors to The Goodyear Tire and Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 78,251, Oct. 5, 1970. This application Oct. 29, 1971, Ser. No. 193,992

Int. Cl. D06m 13/42

U.S. Cl. 252—8.6

1 Claim

Aliphatic diisocyanates as adhesion promoting agents are added to the finish or spinning composition applied to tire yarn used in making tire reinforcing cord as a means of promoting adhesion between the cord and the rubber when using a conventional R/F/L adhesive.

3,755,166

## GREASE SEALANT

William J. Abbott, Ypsilanti, Mich., and George L. Rathfon, Bradford, Pa., assignors to Witco Corporation, New York, N.Y.

Filed June 28, 1972, Ser. No. 266,889

Int. Cl. C10m 5/14, 7/24

U.S. Cl. 252—11

8 Claims

A viscous resilient deformable grease composition having a penetration of about 250°–350 at 77°F., which develops a protective skin when exposed to air, comprising a lubricating oil having a viscosity range of 100–250 SSU at 210°F., thickened with an organophilic clay such as dimethyldioctodecyl ammonium montmorillonite, and containing a drying oil such as soya oil and a drier such as cobalt naphthenate. After homogenizing, this composition is an effective sealant, particularly for energy absorbing devices as used in automobile bumpers wherein bleeding of hydraulic fluid and moisture penetration are problems.

3,755,167

## COORDINATED COMPLEXES OF NITROGENOUS COMPOUNDS

Ferdinand P. Otto, Woodbury, and Andreas Logothetis, Hadonfield, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 22,398, March 24, 1970, Pat. No. 3,642,847. This application June 10, 1971, Ser. No. 151,959

Int. Cl. C10m 1/40, 1/32

U.S. Cl. 252—33.2

13 Claims

Metal complexes useful as additives in industrial fluids to improve the detergency and neutralizing characteristics thereof are produced by reacting a metal salt of an acid with an organic nitrogen compound. The specific metal complexes of the invention are formed by reacting an alkylene polyamine with an aldehyde, followed by reacting this product with (1) the metal salt and (2) an alkenylsuccinic acid or aldehyde in the order 1, 2 or 2, 1.

3,755,168

## LUBRICANT FOR EXTRUSION OF THERMOPLASTICS

Donald E. Mixon, Bartlesville, Okla., and Estil N. Barnes, Inkster, Mich., assignors to Phillips Petroleum Company, Bartlesville, Okla.

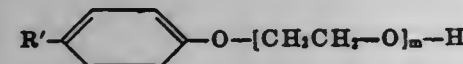
Filed Dec. 3, 1971, Ser. No. 204,709

Int. Cl. C10m 3/34

U.S. Cl. 252—33.4

4 Claims

An external lubricant useful in the extrusion of thermoplastic goods which consists essentially of water, a water-soluble polyol of the formula  $R(OH)_n$  wherein R is a multivalent hydrocarbyl radical having two to five carbon atoms and a valence equal to  $n$ , and  $n$  is the integer 2 or 3, and at least one detergent selected from the group consisting of (a) a nonionic detergent of the formula



wherein R' is an alkyl hydrocarbon radical having eight to 20 carbon atoms and  $m$  has a value in the range of six to 20 and (b) an anionic detergent of the formula



wherein R'' is an alkyl hydrocarbon radical having eight to 20 carbon atoms and M is selected from the group consisting of sodium, potassium and ammonium.

3,755,169

## HIGH MOLECULAR WEIGHT CARBOXYLIC ACID ACYLATING AGENTS AND THE PROCESS FOR PREPARING THE SAME

Charles Wesley Adams, Painesville, and Norman Anthony Meinhardt, Lyndhurst, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Filed Oct. 13, 1970, Ser. No. 80,500

Int. Cl. C10m 1/24, 1/32; C10I 1/18

U.S. Cl. 252—35

23 Claims

Process for preparing high molecular weight polycarboxylic acid acylating agents by contacting chlorine with a reaction mixture comprising (1) high molecular weight monocarboxylic acid and ethylenically unsaturated low molecular weight mono- or polycarboxylic acid acylating agent or (2) high molecular weight aliphatic hydrocarbon, ethylenically unsaturated low molecular weight monocarboxylic acid acylating agent, and ethylenically unsaturated low molecular weight polycarboxylic acid acylating agent. Acylating agents thus produced have utility, for example, as intermediates in the preparation of acylated nitrogen compounds, esters, metal salts, and the like which are useful as additives in lubricants and fuels.

3,755,170

## PREPARATION OF HIGHLY BASIC ALKYLPHENATES AND SULFURIZED ALKYLPHENATES

Lynn C. Rogers, and Mack W. Hunt, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed May 17, 1971, Ser. No. 148,262

Int. Cl. C10m 1/40, 1/38

U.S. Cl. 252—42.7

32 Claims

Process for preparing highly basic alkaline earth metal alkylphenates or sulfurized alkylphenates wherein the process comprises:

- forming an admixture of alkylphenol or sulfurized alkylphenol, nonvolatile diluent oil, volatile process solvent and water,
- adding an overbasing amount of alkaline earth metal in a glycol ether at a temperature from about 20° to about 55° C.,
- adding a neutralizing amount of alkaline earth metal in a glycol ether at a temperature of about 55° to about 100° C., and
- removing the volatile materials by heating. The products are useful as additive agents for lubricating oils.

3,755,171

## LUBRICANT ADDITIVE MIXTURE

Henryk A. Cyba, Evanston, and Robert H. Rosenwald, Western Springs, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed June 18, 1971, Ser. No. 154,619

Int. Cl. C10m 1/20, 1/32

U.S. Cl. 252—51.5 R

4 Claims

Lubricant containing a mixture of a di-(sec-alkylamino)-diphenylpropane or di-(cycloalkylamino)-diphenylpropane and polymeric condensation product of epihalohydrin compound and amine.

3,755,172

## PREPARATION OF OVERBASED NITROGEN-CONTAINING ASHLESS DISPERSIONS

Warren W. Woods, and Mack W. Hunt, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Aug. 2, 1971, Ser. No. 168,423

Int. Cl. C10m 1/32, 1/36

U.S. Cl. 252—51.5 A

16 Claims

An overbased dispersion useful as a lubricating oil additive is prepared by adding a metal alkoxide-carbonate complex to an alcohol or alcohol-aromatic solution of a metal free, oil soluble, neutral or basic dispersing agent containing an acylated nitrogen atom. The dispersing agent is preferably an amide, imide or ester derived from the reaction of a high molecular weight alkenyl carboxylic acid or acid anhydride with an organic nitrogen-containing compound having at least one amino group or hydroxyl group. Concurrently with, or following, addition of the alkoxide-carbonate complex, the complex is hydrolyzed to yield a dispersion of fine particles of metal carbonate. The solvents are then stripped from the dispersion to form a bright, clear composition having a base number of from about 50 to about 250 and useful as an ashless detergent-dispersant additive to lubricating oils.

3,755,173

## ALKENYL HALOLACTONE ESTERS AND ACIDS AND LUBRICANTS CONTAINING THEM

Brian R. Kennedy, San Rafael, and Warren Lowe, El Cerrito, both of Calif., assignors to Chevron Research Corporation, San Francisco, Calif.

Filed Aug. 5, 1971, Ser. No. 169,544

Int. Cl. C10m 1/26, 1/30

U.S. Cl. 252—54.6

15 Claims

Alkenyl halolactone esters of monools and polyols are described. These materials are useful as lubricating oil detergency and/or dispersancy additives.

3,755,174

## PROCESS FOR LUBRICATING METAL WORKING OPERATIONS

Robert T. Trites, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

Filed June 16, 1969, Ser. No. 834,240

Int. Cl. C10m 1/26

U.S. Cl. 252—56 R

3 Claims

A process for lubricating metal working operations involving aluminum, copper and titanium which comprises lubricating such operations with a lubricant comprising a monoester of a dimer of ethylenic monocarboxylic acids having from about 16 to about 22 carbon atoms.

3,755,175

## COMPOSITIONS COMPRISING BORON COMPOUNDS AND POLYPHENYL THIOETHERS

Frank S. Clark, and Loren W. Bannister, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed July 29, 1971, Ser. No. 167,462

Int. Cl. C09k 3/00

U.S. Cl. 252—78

15 Claims

Compositions comprising polyphenyl thioethers, polyphenylethers - thioethers or mixtures thereof and phenylboric acids and/or diphenylborinic acids exhibit improved corrosiveness toward copper and silver without loss of oxidative stability. Such compositions are useful as functional fluids.

3,755,176

## SULFUR-CONTAINING CARBOXYLIC ACIDS AS CORROSION INHIBITORS

Robert E. Kinney, Lawrenceville; Vernon F. Coty, Trenton, and Albert L. Williams, Princeton, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed May 14, 1971, Ser. No. 143,660

Int. Cl. C10m 1/38

U.S. Cl. 252—48.6

9 Claims

Organic compositions comprising a liquid hydrocarbon have improved corrosion inhibiting properties when an alkyl thiohydrocarbyl acid, or amine salt thereof, is present in the composition.

3,755,177

## PROCESS OF MAKING LIQUID ELECTROSTATIC DEVELOPERS CONTAINING GELATIN

Yasuo Tamai, Asaka, Japan, assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 3, 1970, Ser. No. 8,414

Claims priority, application Japan, Feb. 4, 1969, 44/8345

Int. Cl. G03g 9/04

U.S. Cl. 252—62.1

4 Claims

A liquid developer containing a gelatin toner for developing electrostatic latent images is made by cooling an aqueous solution of gelatin to produce a gelatin gel, adding the gelatin gel to a solvent which is miscible with water but is incapable of dissolving the gelatin and mechanically pulverizing to form a dispersion of gelatin. The finely divided gel powder is collected and added to an insulating carrier liquid.

3,755,178

## COMPOSITIONS COMPRISING BORON COMPOUNDS AND POLYPHENYL THIOETHERS

Frank S. Clark, and Loren W. Bannister, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed July 29, 1971, Ser. No. 167,465

Int. Cl. C09k 3/00

U.S. Cl. 252—78

12 Claims

Compositions comprising polyphenyl thioethers, polyphenylethers - thioethers or mixtures thereof and a triphenylborine exhibit improved corrosiveness toward copper and silver without loss of oxidative stability. Such compositions are useful as functional fluids.

3,755,179

## CHEMICAL COMPOSITION

Walter P. Fitzgerald, Jr., San Diego, Calif., assignor to LRC Research and Development Company, Wilmington, Del.

Continuation-in-part of Ser. No. 828,710, May 28, 1969, Pat. No. 3,640,879, which is a continuation-in-part of Ser. No. 791,512, Jan. 15, 1969, abandoned. This application Mar. 2, 1971, Ser. No. 120,327. The portion of the term of this patent subsequent to Feb. 8, 1989, has been disclaimed.

Int. Cl. C11d 7/54

A chemical composition comprising a mixture of alkali and/or alkaline earth metal hypochlorites and, as a stabilizing and/or reinforcing agent, alkali and/or alkaline earth metal pyrosulfates.

U.S. Cl. 252—95

4 Claims

A chemical composition comprising a mixture of alkali and/or alkaline earth metal hypochlorites and, as a stabilizing and/or reinforcing agent, alkali and/or alkaline earth metal pyrosulfates.

3,755,180

## MEANS TO INHIBIT OVERGLAZE DAMAGE BY AUTOMATIC DISHWASHING DETERGENTS

Amory Earl Austin, Colonia, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Feb. 25, 1972, Ser. No. 229,530

Int. Cl. C11d 7/56

U.S. Cl. 252—99

12 Claims

A cleaning composition particularly adapted for washing dishes, glasses and silverware in mechanical devices such as



automatic dishwashers and capable of inhibiting overglaze attack, containing as an essential ingredient, a precipitated silico-aluminate compound.

3,755,181

# **DETERGENT COMPOSITION CONTAINING 1-2 GLYCOL BORATE ESTER**

John Arthur Henricks, 742 N. Oak Park Ave., Oak Park, Ill.  
Filed Mar. 15, 1971, Ser. No. 124,492

Int. Cl. G11d 7/06, 7/12

U.S. Cl. 252—156

1 Claim

Borax forms 1-2-glycol borate esters that are excellent chelating agents in alkaline detergent formulae. These borate esters are used as a replacement for the conventional prior art sequestering phosphates in novel detergent compositions, in order to reduce the danger of eutrophication from the waste waters.

3,755,182

# **NITROGEN GENERATING COMPOSITIONS**

Mervin D. Marshall, Fombell, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Jan. 27, 1972, Ser. No. 221,391

Int. Cl. C09k 3/00; C01b 21/00

U.S. Cl. 252—188.3

4 Claims

Compositions of sodium azide and polyvalent metal sulfates burn when ignited to produce nitrogen.

3,755,183

# **METHOD OF PREPARING SILICATE ADSORBENTS AND DRYING AGENTS AND PRODUCT THEREOF**

Rudolf Fahn, and Richard Amberger, both of Moosburg, Upper Bavaria, Germany, assignors to Sud-Chemie AG, Munich, Germany

Filed July 8, 1971, Ser. No. 160,894

Claims priority, application Germany, July 24, 1970, P 20 36 819.8

Int. Cl. C01b 33/32, 33/26

U.S. Cl. 252—194

4 Claims

Silicate adsorbents and drying agents are prepared by forming precipitation products from aqueous alkali metal silicate solutions and solutions of salts containing di- and trivalent metals. The precipitation product is rendered alkali free and dried. The silicate product contains at least 50 percent by weight silica.

3,755,184

# **CLEANING TEFLON-COATED COOKWARE**

William G. Mizuno, St. Paul, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed June 18, 1971, Ser. No. 154,676

Int. Cl. C11d 7/52

U.S. Cl. 252—171

5 Claims

Teflon-coated cookware is cleaned with a cleansing agent containing a lower chlorocarbon (e.g., trichloroethylene), preferably in admixture with a thickening agent (e.g., aluminum stearate) and a cooking oil.

3,755,185

# **ANHYDROUS HYDROGEN PEROXIDE SOLUTIONS**

Helmut Waldmann, Leverkusen; Wulf Schwerdtel, Koeln, and Wolfgang Swodenk, Odenthal-Globusch, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 29, 1971, Ser. No. 167,530

Claims priority, application Germany, Aug. 1, 1970, P 20 38 320.4

Int. Cl. C01b 15/02

U.S. Cl. 252—186

14 Claims

Anhydrous solutions of hydrogen peroxide, containing about 3 to 60 percent by weight of  $H_2O_2$  in a saturated

nitrogen heterocyclic compound having 4 to 6 ring members and a carbonyl group adjacent to the nitrogen atom are obtained by adding the heterocyclic compound to an aqueous solution of hydrogen peroxide and removing the water, as by distillation. The heterocyclic compound is a lactam or N-acylated structure, N-methyl-pyrrolidone being preferred.

3,755,186

# **TETRAVALENT MANGANESE-CONTAINING STABLE LIQUID, PROCESS AND ARTICLE**

Philip Hine, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 821,109, May 1, 1969, Pat. No. 3,630,739.

This application July 8, 1971, Ser. No. 160,910

Int. Cl. G02b 5/24

U.S. Cl. 252—300

11 Claims

An aqueous, colored, stable liquid containing tetra-valent manganese and a water-soluble addition polymer hydrolyzate prepared by the reduction of potassium permanganate in aqueous media containing a water-soluble addition polymer hydrolyzate, and a photosensitive element containing a light-absorbing layer prepared from the liquid.

3,755,187

# **PREPARATION OF HALOPHOSPHATE PHOSPHORS USING DIGESTION FORMED APATITE**

Rudolph Nagy, Lac du Flambeau, Wis., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 6, 1971, Ser. No. 205,128

Int. Cl. C09k 1/36

U.S. Cl. 252—301.4 P

7 Claims

Apatite-type alkaline-earth metal halophosphate phosphors are prepared by a double digestion process. Unactivated alkaline-earth metal fluoro-apatite is formed by digesting an alkaline-earth metal acid phosphate and a fluoride of the same alkaline-earth metal. The unactivated fluoro-apatite is then digested in a solution containing activators to form activated alkaline-earth metal fluoro-apatite which is further processed to provide the phosphor. An improved apatite crystal structure is obtained by forming the apatite structure before the activators are added and the digesting of acid phosphates and fluorides provide a fast and inexpensive method of forming such an apatite. Preferably, the alkaline-earth metal is calcium and chlorine is added during firing so that a calcium fluoro-chloro-phosphate phosphor is formed.

3,755,188

# **DEHALOGENATION PROCESS**

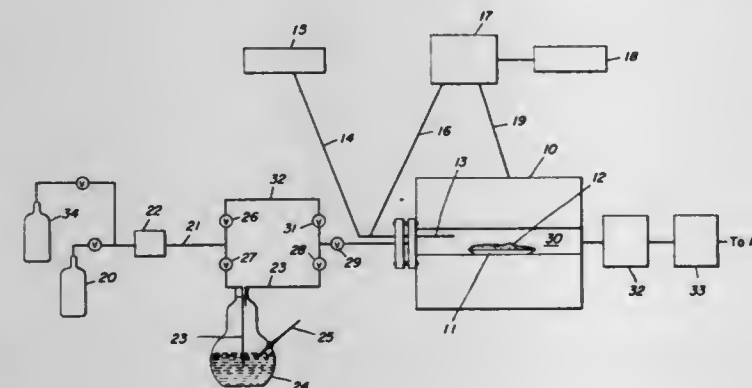
Leonard N. Grossman, and Donald A. Brigham, both of Livermore, Calif., assignors to General Electric Company, San Jose, Calif.

Filed July 17, 1970, Ser. No. 55,744

Int. Cl. G21c 19/42

U.S. Cl. 252—301.1 R

12 Claims



Process for dehalogenation of particulate compositions containing metallic oxyhalides to produce metallic oxides by con-

tacting the compositions in a heated atmosphere containing vaporized alcohol. A second gas including inert gases and active dehalogenating gases can be mixed with the vaporized alcohol. A preferred practice has agitation of the particulate compositions containing metallic oxyhalides during the dehalogenation process. The metallic oxide produced by dehalogenation can be freed from any hydrocarbon residues where desired by a subsequent heating step in a reducing atmosphere. The halide ions from the dehalogenation can be recovered as an acid by passing the dehalogenation atmosphere through water.

3,755,189

# **COMPOSITION FOR THE CONTROL OF OILS FLOATING ON WATER**

Ralph E. Gilchrist, and Jack C. Cox, both of Houston, Tex., assignors to Tenneco Oil Company, Houston, Tex.

Filed Sept. 24, 1971, Ser. No. 183,620

Int. Cl. B01j 13/00

U.S. Cl. 252—316

4 Claims

A composition of matter suitable for the confinement of oil floating on water consisting essentially of a drying oil, a carrier selected from the class consisting of liquid alcohols, ketones and ethers, and a water insoluble metallic soap catalyst. The composition is used to control oil slicks on water by dispersing said composition on the surface of the slick in an amount sufficient to confine the oil slick and thereby allow removal thereof.

3,755,190

# **CAPSULE MANUFACTURE**

Ronald L. Hart, Dayton; Donald D. Emrick, Kettering, and Robert G. Bayless, Yellow Springs, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Nov. 9, 1971, Ser. No. 197,160

Int. Cl. B01j 13/02; B44d 1/02

U.S. Cl. 252—316

12 Claims

A process is disclosed for performing encapsulation, en masse, by an in situ polymerization reaction of polyhydroxy phenolic materials with aldehyde materials. The polyhydroxy phenolic material is provided, for reaction in the system, as a water-soluble complex combined with a highly hydrolyzed form of poly(vinyl alcohol). Liquid-liquid phase separation is accomplished and maintained by increase in the molecular weight of the phenolic/aldehyde reaction product without use of any phase-separation-inducing materials. The poly(vinyl alcohol) serves a dual purpose of controlling the polyhydroxy phenolic/aldehyde polymerization reaction and acting as a sort of toughening additive for the completed capsule wall material.

3,755,191

# **METHOD FOR DIRECT PREPARATION OF ANTI-STAIN PLASTICIZER COMPOSITION**

Paul Mottez, Loison-sous-Lens, and Regis Lejeune, Lens, both of France, assignors to Societe Chimique Des Charbonnages C.d.F. Chimie, Tour Aurore-Paris, France

Filed Nov. 17, 1971, Ser. No. 199,724

Claims priority, application France, Nov. 19, 1970, 7041512

Int. Cl. B01f 1/00; C08f 45/40; C08k 1/36

U.S. Cl. 252—364

4 Claims

Anti-stain plasticizer for polymers, its method of preparation and its use in vinyl polymers. This plasticizer is constituted by a mixture of butyl benzyl phthalate and dibenzyl phthalate, the amount of dibenzyl phthalate in the mixture being comprised between 20 and 60 percent by weight. It is obtained in a single esterification reaction by preparing a mixture of butyl acid phthalate and phthalic anhydride, which is subsequently reacted with benzyl chloride. This plasticizer is used for obtaining polyvinyl chloride or other flexible vinyl polymers having clearly improved anti-stain properties.

3,755,192

# **PRODUCTION OF CATALYST TABLETS**

Walter Rottig, Oberhausen-Sterkrade-Nord, and Hans-Heinrich Saenger, Mulheim/Ruhr-Speldorf, both of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen-Holten, Germany

Continuation-in-part of Ser. No. 714,781, March 21, 1968, abandoned. This application Jan. 20, 1972, Ser. No. 219,495

Claims priority, application Germany, Apr. 1, 1967, R 45649

Int. Cl. B01j 11/06; C10m 7/04, 7/14, 7/26

U.S. Cl. 252—428

7 Claims

Production of catalyst tablets by admixing the catalyst particles, with or without substrate, with graphite and a polyethylene, polypropylene, polyethylene glycol and/or polypropylene glycol; and then tabletizing the mass.

3,755,193

# **PROCESS FOR THE FABRICATION OF NITROGEN CONTAINING PULVERIZED CARBON**

Gunter Luft, Lauf; Gerhard Richter, and Erhard Weidlich, both of Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

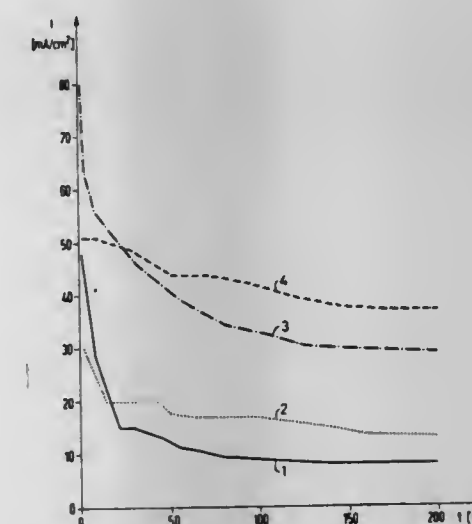
Filed Feb. 4, 1972, Ser. No. 223,548

Claims priority, application Germany, Feb. 22, 1971, P 21 08 417.3

Int. Cl. C01b 31/08

U.S. Cl. 252—422

6 Claims



A process for the fabrication of nitrogen containing pulverized carbon for incorporation thereof as an electrode material for electrochemical cells, particularly fuel cells. A carbonizable, nitrogen containing organic polymer is completely dissolved while being heated in a concentrated salt solution of an inorganic halides or thiocyanate. The resultant highly viscous fluid is carbonized at temperatures between 700° and 1200°C and the resultant product is crushed.

3,755,194

# **HYDROGENATION CATALYST**

Valery Andreevich Avilov, Noginsky Raion, p/o Chernogolovka, ul. Pervaya, 2a, kv. 2; Mikhail Lvovich Khidekel, Noginsky Raion, p/o Chernogolovka, ul. Vtoraya, 1, kv. 3; Olga Nikolaevna Eremenko, Noginsky Raion, p/o Chernogolovka, ul. Tretaya, 2, kv. 1; Oleg Nikolaevich Efimov, Noginsky Raion, p/o Chernogolovka, ul. Pervaya, 12, kv. 1; Alina Grigorievna Ovcharenko, Noginsky Raion, p/o Chernogolovka, ul. Pervaya, 11, kv. 3, and Pavel Semenovitch Chekry, Noginsky Raion, p/o Chernogolovka, ul. Pervaya, 10a, kv. 2, all of Moskovskaya obl., U.S.S.R.

Filed Feb. 12, 1969, Ser. No. 798,773

Int. Cl. B01j 11/12

U.S. Cl. 252—429 R

5 Claims

Hydrogenation catalysts are prepared by forming a complex from equimolar amounts of a platinum group metal halide,



e.g. rhodium trichloride, and a  $\pi$ -bonding aromatic ligand, e.g. aromatic hydrocarbons, alkyl-substituted aromatic quinones, aromatic carboxylic acids, aromatic amino acids, aromatic amino acid peptides and aromatic compounds exhibiting benzenoid-quinoid mesomerism. The complexes are reduced to catalytically active form either during or subsequent to formation.

3,755,195

## SPARK PLUG ANTI-FOULANT

Vincent F. Hnizda, Huntington Woods, Mich., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 785,801, Dec. 20, 1968, Pat. No. 3,615,293. This application July 1, 1971, Ser. No. 158,983. The portion of the term of this patent subsequent to Oct. 26, 1988, has been disclaimed.

Int. Cl. C09k 3/00

U.S. Cl. 252—386

13 Claims

A method of reducing spark plug fouling in spark ignition engines fueled with organomanganese containing gasoline is described. The method features the use in gasoline of a spark plug anti-fouling amount of an organic molybdenum compound.

Molybdenum naphthenate is an example of a useful anti-foulant compound.

3,755,196

## HYDROTREATING CATALYST

Grant A. Mickelson, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 837,340, June 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 761,322, Sept. 20, 1968, abandoned. This application Apr. 1, 1971, Ser. No. 130,515

Int. Cl. B01j 1/182

U.S. Cl. 252—435

20 Claims

Highly active catalysts of molybdenum and Group VIII metals are prepared by impregnating a support with highly stable solutions of the active metal compounds and an acid of phosphorus having a P/MoO<sub>3</sub> weight ratio of 0.1–0.25 and an initial pH of 1 to about 2.

3,755,197

## CATALYST SYSTEM COMPRISING AN ORGANOALUMINUM OR AN ORGANOZINC AND A METAL SALT OF A CARBOXYLIC ACID

Henry L. Hsieh, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 462,122, June 7, 1965. This application Feb. 20, 1969, Ser. No. 801,182

Int. Cl. C08d 1/14

U.S. Cl. 252—431 C

15 Claims

A polymerization catalyst comprising (a) an organometallic compound selected from the group consisting of organoaluminum and organozinc compounds and (b) a metal salt of a carboxylic acid.

3,755,198

## PROCESS FOR ADDING CADMIUM TO SUPPORTED NOBLE METAL DEHYDROGENATION CATALYST

Jan L. Stratenus, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed May 26, 1971, Ser. No. 147,183

Claims priority, application Netherlands, June 9, 1970, 7008386

Int. Cl. B01j 1/112

U.S. Cl. 252—466 PT

3 Claims

Cadmium or zinc is added to a supported noble metal dehydrogenation catalyst by contacting the catalyst with an inert gas containing metallic cadmium or zinc vapors.

3,755,199

## UNREDUCED CATALYST FOR AMMONIA SYNTHESIS AND PROCESS FOR ITS MANUFACTURE

Constantin Stefanescu; Ion Vartolomei; Gheorghe Urziceanu, and Gheorghe Badea, all of Craiova, Romania, assignors to Combinatul Chimic Craiova, Craiova, Romania

Continuation-in-part of Ser. No. 806,737, March 12, 1969, abandoned. This application Aug. 18, 1971, Ser. No. 172,895

Int. Cl. B01j 11/40, 11/22

U.S. Cl. 252—455 R

5 Claims

A catalyst for ammonia synthesis having a high catalytic activity and good physical-chemical characteristics is prepared by gradually melting an iron bar above a steel crucible cooled on the outside with water. The melting is carried out uninterruptedly over a period of 16 minutes by directing onto the melting end of the bar an oxygen stream, e.g. at a pressure of 0.15 atm. An oxidizing melting reaction of the iron occurs which being exothermal has the effect of raising the temperature. The ferrous oxide flows into the crucible and concomitantly are added the promoters, i.e. Al<sub>2</sub>O<sub>3</sub>, K<sub>2</sub>CO<sub>3</sub>, SiO<sub>2</sub>, CaO. An inhomogeneous fluid mass results. The crucible is then closed and oxygen is fed in, producing inside the crucible (over a period of 3 minutes) a pressure of 2 kg/sq cm. Feeding of oxygen is then stopped and the crucible is immediately discharged. The molten mass is cooled, crushed, sized and packed.

3,755,200

## LIQUID STABILIZER SYSTEM FOR POLYVINYL CHLORIDE

Philip H. Rhodes, and Robert L. Ahr, both of Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Feb. 14, 1972, Ser. No. 226,273

Int. Cl. B01j 1/16

U.S. Cl. 252—400

8 Claims

Homogeneous liquid stabilizer compositions are provided which are useful with polyvinyl chloride resins to impart improved antistatic and antifogging properties in addition to stabilizing the resins. The stabilizer solutions are obtained using a specific procedure for blending the individual stabilizer components.

3,755,201

## LAUNDRY PRODUCT CONTAINING MIXED DYE BLUING AGENTS

Robert Henry Trimmer, Edison; William Franklin Gross, Jr., W. Piscataway, and William J. Gangwisch, New Brunswick, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed July 26, 1971, Ser. No. 166,002

Int. Cl. C11d 3/066

U.S. Cl. 252—526

8 Claims

A laundry product, such as a detergent composition, containing a mixture of dyes which results in laundry washed with the detergent being "blued" to a desired extent and with the desired shade of blue. The dyes employed are used in very small quantities, have little effect on the color of the laundry product, if it is in solid particulate form, are stable in alkaline media, such as crutcher mixes, and are readily bleachable by hypochlorite bleaches, so that objectionable overbluing effects need not be obtained on repeated washings. Preferred dyes employed are those of Index Numbers 24410 (Geigy, C.I. Direct Blue 1) and 29120 (Geigy, C.I. Direct Violet 66).

3,755,202

## METHOD FOR REACTIVATION OF OXIDE CATALYSTS

Jakov Rafailovich Katsobashvili, and Galina Mikhailovna Belova, both of Moscow, U.S.S.R., assignors to Institute Neftekhimivhrdkoho Sinteza Imeni A.V. Topchieva, Moscow, U.S.S.R.

Continuation of Ser. No. 728,909, May 14, 1968, abandoned, which is a continuation-in-part of Ser. No. 679,578, Oct. 31, 1967, abandoned, which is a continuation of Ser. No. 411,716, Nov. 17, 1964, abandoned. This application July 1, 1971, Ser. No. 159,042

Int. Cl. B01j 11/04, 11/68

U.S. Cl. 252—417

6 Claims

A method for reactivation of oxide catalysts which have been deactivated by carbonaceous materials deposited thereon in the course of hydrocracking crude oils, coal tars or shale tars and for simultaneously obtaining technical grade hydrogen of 90–95 vol. % purity containing a maximum of 5 percent of carbon monoxide. Catalyst reactivation is effected by a steam-oxygen mixture having a steam-to-oxygen ratio of 7:1 to 10:1, preferably of 9:1, at a temperature of from 600° to 750°C, and under 20–30 atm pressure. Catalyst reactivation yields a gas consisting essentially of carbon dioxide and hydrogen and containing insignificant proportions of H<sub>2</sub>S, CO and CH<sub>4</sub>, the removal of CO<sub>2</sub> and H<sub>2</sub>S from the product gas being effected by absorption with water and an alkaline agent under a pressure of 20–30 atm. The method makes it possible to dispense with the CO conversion step.

3,755,203

## DETERGENT SLURRY COMPOSITIONS

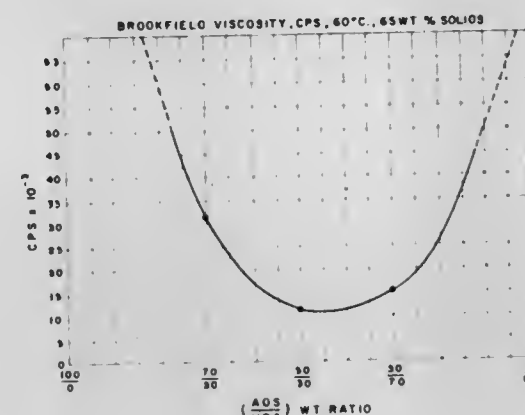
Floyd Edward Bentley, and Harold George Waddill, both of Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 99,081, Dec. 17, 1970, abandoned. This application Apr. 29, 1971, Ser. No. 138,606

Int. Cl. C11d 1/14, 3/065

U.S. Cl. 252—536

4 Claims



A novel detergent slurry composition, also known as a crutcher slurry, comprising alpha-olefin sulfonates is provided by incorporating significant amounts of sulfonated vinylidene-olefins whereby the resulting composition is characterized by reduced viscosity.

3,755,204

## POROUS CERAMIC-EXHAUST OXIDATION CATALYST

Francis J. Sergeys, Kensington, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Oct. 22, 1970, Ser. No. 82,918

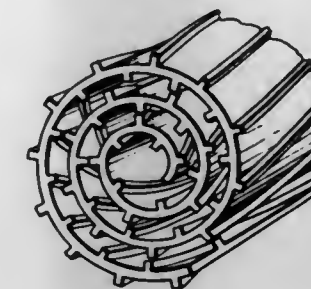
Int. Cl. B01j 11/40, 11/08

U.S. Cl. 252—455 R

4 Claims

Method of preparing temperature resistant exhaust oxidation catalysts suitable for use in land vehicle exhaust systems

comprising a porous ceramic base impregnated with suitable oxidizing agents and the resulting catalysts. The porous



3,755,205

## METHOD OF MAKING A CATALYTIC BED

William A. Duncan, and James A. Murfree, Jr., both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 28, 1972, Ser. No. 238,926

Int. Cl. B44d 1/40, 1/44; B01j 11/06, 11/50

U.S. Cl. 252—458

4 Claims

Method for making a catalytic bed for a gas generator by saturating an inert porous support material with a molybdenum resin and turpentine solution, and decomposing the solution to leave a residue coating on the inert porous support material and thereby form a catalytic bed.

3,755,206

## DETERGENT COMPOSITIONS

Denise Verdier, Le Bourget, France, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,939

Claims priority, application France, Mar. 9, 1970, 7008310; Nov. 9, 1970, 7040196

Int. Cl. C11d 1/14, 1/37, 1/655, 1/831

U.S. Cl. 252—545

9 Claims

A liquid detergent system having a controllable viscosity and clarity, including a water-soluble paraffin sulfonate and a water-soluble, higher alkane, ether sulfate. Control of the viscosity and clarity is accomplished by using a control system comprising a lower aliphatic alcohol and urea.

## ERRATUM

For Class 252—51.5 R see:  
Patent No. 3,755,433

## ERRATUM

For Class 252—363.5 see:  
Patent No. 3,755,529

3,755,207

## VULCANIZABLE EPIHALOHYDRIN POLYMER COMPOSITION

Tetsuo Karatsu, Yokohama, Japan, assignor to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1972, Ser. No. 229,381

Int. Cl. C08g 23/20

U.S. Cl. 260—2 A

11 Claims

A vulcanizable epihalohydrin-polymer elastomer comprising (1) an epihalohydrin-polymer elastomer, (2) at least one metal cyanate selected from the group consisting of cyanates of metals of Groups IA, IB, IIA, IIB and IVB of the periodic ta-



ble, and (3) a functional compound selected from the group consisting of (i) compounds obtained by substituting at least two hydroxyl groups or mercapto groups for hydrogen atoms in a saturated hydrocarbon molecule, (ii) compounds obtained by substituting at least one hydroxyl group and at least one mercapto group for hydrogen atoms in a saturated hydrocarbon molecule, and (iii) compounds obtained by substituting at least one hydroxyl group and for mercapto group and one amino or imino group for hydrogen atoms in a saturated hydrocarbon molecule.

3,755,208

# AVOIDANCE OF CELL COLLAPSE IN AN EXTRUSION PROCESS FOR A COPOLYMER BASED ON A LOW MOLECULAR WEIGHT $\alpha$ -OLEFIN AND POLAR VINYL MONOMER

Herbert A. Ehrenfreund, Madison, Conn., assignor to Haskon, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 706,612, Feb. 19, 1968, abandoned. This application Oct. 23, 1970, Ser. No. 83,644

Int. Cl. C08f 45/00, 47/10

U.S. Cl. 260—2.5 E

2 Claims

Post extrusion cell collapse of vinyl copolymer foams is prevented by incorporation of a small amount of a partial ester of a long chain fatty acid and a polyol.

3,755,209

# FOAMABLE PARTICULATE STYRENE POLYMERS FOR THE PRODUCTION OF MOLDINGS EXHIBITING GOOD DIMENSIONAL STABILITY AND GOOD FUSION

Eckhard Nintz, Ludwigshafen; Hans-Georg Keppler, Weinheim; Ludwig Zuern, Bad Duerkheim, and Erhard Stahnecker, Ziegelhausen, all of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Jan. 31, 1972, Ser. No. 222,327

Claims priority, application Germany, Feb. 3, 1971, P 21 04 867.9

Int. Cl. C08j 1/18

U.S. Cl. 260—2.5 B

2 Claims

The invention relates to foamable particulate self-extinguishing styrene polymers which, on account of their low content of oxyalkylation product of ammonia or amine, are suitable for making foam articles exhibiting good fusion and good dimensional stability, and to a process for their production.

3,755,210

# CELLULAR POLYMERIC MATERIALS

Alfred Gerald Edwards, Stourport-on-Severn, England, assignor to Albright & Wilson Limited, Warwickshire, England

Filed Mar. 10, 1972, Ser. No. 233,730

Claims priority, application Great Britain, Mar. 26, 1971, 7,891/71

Int. Cl. C08g 5/18, 53/08

U.S. Cl. 260—2.5 F

19 Claims

Known polymeric materials can be made by the reaction of a compound of the formula  $R'[-CH_2OR]_a$  or  $R''[CH_2X]_a$  where  $R'$  and  $R''$  are di or trivalent aromatic hydrocarbon or hydrocarbon ether radicals,  $R$  is  $C_{1-4}$  alkyl and  $X$  is Cl, Br or I and  $a$  is 2 or 3 with a phenolic compound. Such polymers can be cured by reaction with hexamethylene tetramine.

If the polymeric compound used comprises both phenol and  $\beta$  naphthol, a cellular polymer may be obtained on curing.

Such cellular polymers may be used for example in high strength light weight load bearing structures.

## 3,755,211 LATEX REINFORCED FLEXIBLE POLYURETHANE FOAM

Hubert J. Fabris, Akron, and Edwin M. Maxey, Kent, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Oct. 7, 1971, Ser. No. 187,527

Int. Cl. C08g 22/44

U.S. Cl. 260—2.5 BE

11 Claims

This invention comprises the production of low density flexible polyurethane foams having improved load carrying capacity by adding to the unfoamed mixture, comprising a polyhydroxy compound, an organic polyisocyanate and water, a polymer in the form of an unfoamed latex of about 30 to 65 percent solids content, the latex polymer having a glass transition temperature of at least 50° C. and having a particle size in the range of from about 200 to 800 angstroms, any other latex polymer particles outside said range being present in minor amounts.

3,755,212

# AIR BLOWN POLYURETHANE FOAMS

James R. Dunlap, and Donald B. Parrish, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 13, 1971, Ser. No. 143,230

Int. Cl. C08g 22/44, 22/10

U.S. Cl. 260—2.5 BD

8 Claims

Air blown polyurethane foams having densities below 15 lbs/ft<sup>3</sup> are prepared from ester-modified polyether polyols, a polyisocyanate and a catalyst for urethane formation, in the absence of a cell control agent.

3,755,213

# POROUS RESIN BONDED PRODUCT

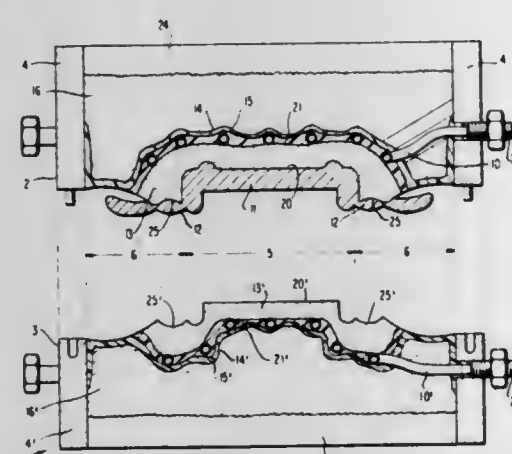
Virgil D. Kendall, Springfield, and Rudolph A. Skrlletz, Marysville, both of Ohio, assignors to Wallace-Murray Corporation, New York, N.Y.

Filed Mar. 22, 1971, Ser. No. 126,942

Int. Cl. C08j 1/14

U.S. Cl. 260—2.5 EP

11 Claims



An improved rigid, porous product and process for making such product are disclosed. The product comprises a particulate material bound by a thermosetting resin and characterized by uniformly distributed and interconnecting porosity. The body initially is made by isostatic pressing of a mixture of the particulate material and resin and, inter alia, the cured body is suitable for use as a die, mold or filtering device.

3,755,214

# THIOPHENE CONDENSATES AS FLAME RETARDANTS FOR POLYURETHANE FOAM

Edward L. Sukman, Fanwood, and Irving Touval, Edison, both of N.J., assignors to M & T Chemicals Inc., Greenwich, Conn.

Filed Nov. 12, 1971, Ser. No. 198,469

Int. Cl. C08g 22/44, 51/52; C07d 63/14

U.S. Cl. 260—2.5 AJ

9 Claims

Condensation products obtained by reacting thiophene with aldehydes or ketones react with bromine or chlorine under relatively mild conditions. The novel products are effective flame retardants for synthetic polymers, particularly polyurethane foams.

3,755,215

# PREPARATION OF OIL-MODIFIED POLYMERS FROM A POLYISOCYANATE COMPOSITION

Bruce Albert Khoury, Wilmington, Del., and Frederic Warren Yeager, Pennsville, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 29, 1971, Ser. No. 203,033

Int. Cl. C08g 22/44

U.S. Cl. 260—2.5 AT

5 Claims

A polyisocyanate composition having beneficial utility in the manufacture of polyurethane foams and other polymer products, and comprising certain proportions of tolylene diisocyanate (TDI), a phosgenation residue component and a specified type of hydrocarbon oil. Also a process for making polyurethane and polyurea products by causing said polyisocyanate composition to react with a polymeric polyol or other suitable active hydrogen-containing compound.

3,755,216

# CYCLIC ETHER POLYMERIZATION PROCESS USING METAL ALCOHOLATE-METAL HYDROCARBYLXANTHATE REACTION PRODUCT CATALYST

Anne C. Udding, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed July 23, 1971, Ser. No. 165,706

Claims priority, application Netherlands, Sept. 16, 1970, 7013718

Int. Cl. C08g 23/14

U.S. Cl. 260—2 A

8 Claims

Cyclic ethers are polymerized in the presence of a catalyst comprising the reaction product of an O-hydrocarbyl xanthate of a divalent metal of Groups I, II, and IV to VIII of the periodic system and an alkoxide of a trivalent metal of Groups III, IV and VIII.

3,755,217

# DIFUNCTIONAL AND TRIFUNCTIONAL POLYSILOXANES AS ADDITIVES TO LATEX FOAM RUBBER

David T. Schrader, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Division of Ser. No. 42,447, June 1, 1970. This application Oct. 14, 1971, Ser. No. 189,401

Int. Cl. C08d 13/08, 13/10

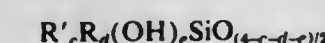
U.S. Cl. 260—2.5 L

2 Claims

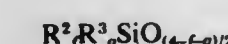
A foam rubber backing for a carpet wherein the foam rubber has therein a trifunctional or difunctional polysiloxane selected from the group having the formulas:



or



or



wherein  $R$ ,  $R'$ ,  $R^3$  are monovalent hydrocarbon radicals,  $R^2$  is a monovalent hydrocarbon radical including a hydroxy radical,  $a$  varies from 0.05 to  $3.3 \times 10^{-5}$ ,  $b$  varies from 2.05 to 2.00,  $c$  varies from 0.05 to  $3.3 \times 10^{-5}$ ,  $d$  varies from 1.91 to 2.00,  $e$  varies from 0.14 to  $9.9 \times 10^{-5}$ ,  $f$  varies from 0.25 to  $1.9 \times 10^{-4}$  and  $g$  has the value of 2.00. The liquid polysiloxane may be added to the rubber latex in the form of an emulsion having a nonionic or anionic type of surfactant therein.

3,755,218

# IONICALLY BONDED BLOCK ELASTOMERIC COPOLYMERS OF A POLYQUATERNARY POLYURETHANE AND HEPARIN

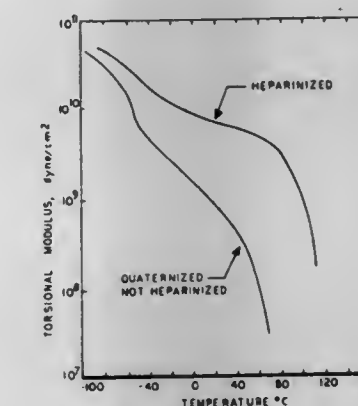
Shiao-Ping Siao Yen, and Alan Rembaum, both of Altadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Aug. 14, 1970, Ser. No. 63,722

Int. Cl. A61k 17/18; C08b 25/00

U.S. Cl. 260—9

12 Claims



A neutral elastomer is prepared by the urethane linking reaction of diisocyanates with tertiary amino diols. The neutral elastomer is quaternized and is then reacted with an anionic polymer such as heparin to form ionically bonded block elastomeric copolymers. The heparin copolymer has non-thrombogenic characteristics. It can be dissolved in solvents and utilized to form a non-clotting coat on the blood lines in kidney machines.

3,755,219

# RESIN BLEND CONTAINING ETHYLENE/VINYL CHLORIDE INTERPOLYMER

Joseph G. Bergomi, Jr.; Dale R. Dill, both of St. Louis, and Paul R. Graham, Ballwin, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 877,486, Nov. 17, 1969, Pat. No. 3,665,060

Filed Feb. 28, 1972, Ser. No. 230,139

Int. Cl. C08f 15/00

U.S. Cl. 260—8

11 Claims

Modified ethylene/vinyl chloride interpolymers blended with unsaturated polybasic carboxylic acid interpolymers useful as pigment binders or adhesives in pigment coating compositions for paper, paperboard and similar materials, said modified interpolymers being used alone or in combination with paper coating starch or protein material.

3,755,220

# CELLULOSIC SHEET MATERIAL HAVING A THERMOSETTING RESIN BINDER AND A SURFACTANT DEBONDER AND METHOD FOR PRODUCING SAME

Bernard Freimark, Claymont, Del., and Richard W. Schafflein, Chadds Ford, Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Oct. 13, 1971, Ser. No. 189,045

Int. Cl. C08g 51/18; D21d 3/00

U.S. Cl. 260—17.3

6 Claims

Cellulosic sheet materials having an improved ratio of wet tensile strength to dry tensile strength comprise cellulosic



fibers; at least one debonder selected from the group consisting of anionic and cationic surface active agents; and a cationic thermosetting resin such as those normally employed to increase the wet strength of paper.

3,755,221

# FAST CYCLING POLYAMIDE MOLDING COMPOSITION WHICH CONTAINS A PARTICULATE NUCLEATING AGENT, AN ALKYLENE DIAMIDE, AND A METAL SALT OF A MONOCARBOXYLIC ACID

Michael John Hitch, Welwyn Garden, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Dec. 30, 1971, Ser. No. 214,415

Claims priority, application Great Britain, Jan. 18, 1971, 2,277/71; Apr. 15, 1971, 9,492/71

Int. Cl. C08g 20/12

U.S. Cl. 260—18 N

14 Claims

A fast-cycling polyhexamethylene adipamide composition containing from 0.001 to 0.5 per cent by weight of an inert nucleant, from 0.01 to 4 per cent by weight of a specified alkylene diamide, and from 0.01 to 2 per cent by weight of a specified metal carboxylate.

3,755,222

# DENSE POLYURETHANE COMPOUNDS WHICH CONTAIN ZEOLITE HAVING A PORE SIZE OF 3 Å

Hermann Gruber, and Horst Weber, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 41,651, May 28, 1970, abandoned. This application Aug. 15, 1972, Ser. No. 280,920

Claims priority, application Germany, June 3, 1969, P 19 28 129.9

Int. Cl. C08g 51/04

U.S. Cl. 260—18 TN

7 Claims

A process is provided for the production of non-cellular polyurethane resins wherein an organic polyisocyanate is reacted with a compound containing at least two hydrogen atoms reactive with NCO groups in the presence of a dehydrated zeolite of the sodium potassium aluminosilicate type having an average molar composition of about  $(0.05 \text{ to } 0.40) \text{ Na}_2\text{O} \cdot (0.50 \text{ to } 0.95) \text{ K}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot (1.9 \pm 0.1) \text{ SiO}_2$  with a molar  $(\text{Na}_2\text{O} + \text{K}_2\text{O}) / \text{Al}_2\text{O}_3$  ratio of about  $(0.9 \pm 0.1):1$ , a crystalline structure identifiable by the most intense X-ray interferences at  $d = 12.3, 8.7, 7.1, 5.5, 4.1, 3.7, 3.4, 3.3, 3.0, 2.9, 2.8 \text{ Å} \pm 0.1 \text{ Å}$ , and a pore size of about 3 Å.

3,755,223

# EPOXY ABLATIVE COATING CONTAINING A SILICONE RESIN, A FIBROUS REINFORCING MATERIAL, AND A NON-ALKALI METAL PHOSPHATE AND BORATE SALT MIXTURE

Samuel L. Engel, Burbank, Calif., assignor to The Dyna-Therm Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 599,376, Dec. 6, 1966, abandoned. This application Dec. 5, 1969, Ser. No. 882,709

Int. Cl. C08g 47/10; B32b 27/38

U.S. Cl. 260—18 PN

24 Claims

An ablativ coating composition and a substrate coating with such composition are disclosed. The composition includes an epoxy resin, a curing agent, a silicone resin, fibrous reinforcing material and a salt mixture containing at least one non-alkali metal inorganic phosphate and borate.

3,755,224

# BIOCIDE FOR PLASTICIZED PVC

John T. Lutz, Jr., Cornwells Heights, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 12, 1971, Ser. No. 123,861

Int. Cl. C08f 45/64

U.S. Cl. 260—23 EP

21 Claims

Vinyl chloride compositions having biocidal properties comprise a vinyl chloride resin and a 3-isothiazolone. Preferably the vinyl chloride compositions are formed by blending the vinyl chloride resin with a liquid plasticizer, such as epoxidized soybean oil, containing the 3-isothiazolone.

3,755,225

# PROCESS FOR PREPARING HOMO- AND COPOLYMERS OF VINYL CHLORIDE IN AQUEOUS EMULSION WITH POST ADDITION OF A WATER-SOLUBLE ETHYLENE OXIDE-ETHYLENE GLYCOL ADDUCT

John K. Pierce, Jr., Baytown, Tex., and Libardo Toro, Rio Piedras, P.R., assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 878,222, Nov. 19, 1969, abandoned. This application Aug. 17, 1971, Ser. No. 172,558

Int. Cl. C08f 3/28

U.S. Cl. 260—23 EM

8 Claims

An aqueous emulsion polymerization process is described for the preparation of vinyl chloride homo- and copolymers which find particular utility as molding resins wherein the emulsifier system comprises, in combination, from 0.05 percent to 3 percent of an alkali metal salt of a sulfated fatty alcohol having from 8–18 C atoms per molecule; and from 0.05 percent to 2 percent of either tallow fatty alcohol or an epoxidized oil of an unsaturated fatty acid, the percentage of each ingredient being based on the weight of the monomer. After the polymerization reaction is substantially completed but prior to spray-drying of the polymerization mixture, there is blended into said mixture from 0.05 percent to 3 percent, by weight of the initial monomer charge, of an ethylene oxide adduct of ethylene glycol having a molecular weight ranging up to about 600. Plastisols of the resin products exhibit excellent dispersion rheologies and air-release properties. Moldings prepared from these resins may, in many instances, be utilized in contact with foodstuffs.

3,755,226

# EPOXY BITUMEN SYSTEM FOR ROAD SURFACING

Paal Christiansen, Nidelbadstrasse 25, Ruschlikon, Zurich, and Johan Spoelder, Seegutstrasse 17, Au, Zurich, Horgen, both of Switzerland

Filed Nov. 24, 1971, Ser. No. 201,967

Claims priority, application Great Britain, Dec. 10, 1970, 58657/70

Int. Cl. C08g 51/52

U.S. Cl. 260—28

13 Claims

The present invention relates to bituminous polycyclopentadiene compositions and their use. In particular, the bituminous polycyclopentadiene compositions of this invention may be used for coating substrates such as asphalt, concrete and metals, for example, steel. The bituminous polycyclopentadiene coating compositions of the invention may be advantageously used for surfacing roadways, walkways and aircraft runways for producing self-levelling floors, for coating pipes and lining tanks, for electrical insulation, and as joint compounds.

3,755,227

# FLAME RETARDED BLOCK COPOLYMERS AND ADDITIVE SYSTEM THEREFOR

Roy A. Gray, and Donnie G. Brady, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 27, 1972, Ser. No. 238,536

Int. Cl. C08f 45/30

U.S. Cl. 260—28.5 A

2 Claims

Flame-retardancy is imparted to ethylene-propylene block copolymers by incorporation therein as the flame-retardant

system a mixture of (A) a chlorinated paraffin, (B) a brominated bis(cycloalkenyl) compound, and (C) antimony trioxide.

3,755,228

# ETHERIFIED CROTONYLIDENEDIUREA RESINS IN EMULSION TEXTILE PRINTPASTES

Eli Levine, Union, N.J., and Robert F. Slinger, Greenville, S.C., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 20, 1971, Ser. No. 135,784

Int. Cl. C08g 51/24

U.S. Cl. 260—29.4 UA

11 Claims

Oil-in-water emulsion textile printpastes are prepared wherein the active amino resin bonding component is etherified trimethylolated crotonylidenediurea.

3,755,229

# FOUNDRY CORE COMPOSITIONS

Calvin K. Johnson, Palos Heights, and Robert A. Laitar, Chicago, both of Ill., assignors to CPC International Inc., Englewood Cliffs, Calif.

Filed July 20, 1971, Ser. No. 164,458

Int. Cl. C08g 51/24, 51/04

U.S. Cl. 260—29.3

5 Claims

A foundry core composition comprising sand and a binder comprising phenolic resolite resin, furfuryl alcohol and a catalyst selected from the group consisting of stannic chloride and stannous chloride.

3,755,230

# STABILIZED POLYACRYLONITRILE COMPOSITIONS WITH SULFUR-PHOSPHORUS CONTAINING MATERIAL

Darrell R. Thompson, Somerville, N.J., assignor to Celanese Corporation, New York, N.Y.

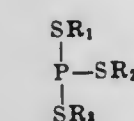
Filed Apr. 22, 1971, Ser. No. 136,621

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 AN

23 Claims

A method of forming stabilized polyacrylonitrile compositions which are particularly suited for the spinning of polyacrylonitrile fibers and films and the compositions produced thereby wherein acrylonitrile polymers containing at least 85 percent acrylonitrile are dissolved in a solvent which is acetonitrile or an acetonitrile—water mixture and which contains as a color stabilizer a compound having the following general formula:



wherein  $R_1$ ,  $R_2$ , and  $R_3$  are monovalent organic radicals which may be substituted or unsubstituted independently selected from the group consisting of alkyl, cycloalkyl, aryl, and combinations thereof. Preferably, the solvent and polymer are purged with nitrogen and the pH of the solvent is adjusted to about 6.0–7.0.

3,755,231

# RUBBERY COMPOSITIONS AND APPLICATIONS THEREOF

John Muir, Woodbridge; John Kavalir, Weston, and Premysl Thomas Dolezal, Sarnia, Ontario, all of Canada, assignors to Shaw Pipe Industries, Ltd., Ontario, Canada

Filed Jan. 21, 1972, Ser. No. 219,820

Claims priority, application Canada, Aug. 3, 1971, 119,622

Int. Cl. C08f 45/52, 45/28

U.S. Cl. 260—28.5 AS

12 Claims

Liquid composition suitable for application to steel surfaces such as pipe interiors, which cure in situ to provide rubbery

3,755,232

# PREVULCANIZATION OF RUBBERS BY HYDROGEN PEROXIDE AND AN ACTIVATOR

Bruce K. Rodaway, Erdington, Birmingham, and Kenneth O. Calvert, Sutton Coldfield, both of England, assignors to Dunlop Holdings Limited, London, England

Filed Sept. 8, 1970, Ser. No. 70,584

Claims priority, application Great Britain, Sept. 12, 1969, 45,017/69; Apr. 29, 1970, 20,499/70

Int. Cl. C08d 7/00, 13/28; C08f 1/88, 27/00

U.S. Cl. 260—29.7 AT

14 Claims

A prevulcanized polymer latex is made by treating an unsaturated polymer in an aqueous medium with hydrogen peroxide and a hydrogen peroxide activator which does not encourage the decomposition of the hydrogen peroxide to produce molecular oxygen under the conditions of the treatment. The prevulcanized polymer latex may be used in latex applications such as in adhesives, coatings, carpet backings, daps, threads, tapes and foams, of which the following is a Specification.

3,755,233

# COMPOSITION COMPRISING ETHYLENE/VINYL CHLORIDE/N-METHYLOL ACRYLAMIDE AND A MINERAL PIGMENT FOR COATING PAPER

William F. Fallwell, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed July 20, 1970, Ser. No. 56,685

Int. Cl. C08f 37/14, 45/06

U.S. Cl. 260—29.6 TA

9 Claims

Composition comprising an aqueous dispersion of ethylene/vinyl chloride/N-methylol acrylamide and a mineral pigment useful for coating cellulosic substrates such as paper and paperboard.

3,755,234

# PROCESS FOR PREPARING GRAFT COPOLYMER EMULSIONS

Kiyoshi Chujo; Shinji Tokuhara; Kazunobu Tanaka; Zenjiro Honda, and Shoji Watanabe, all of Saitama, Japan, assignors to Diacel, Ltd., Higashi-ku, Osaka, Japan

Filed July 27, 1971, Ser. No. 166,567

Claims priority, application Japan, July 31, 1970, 45/67202

Int. Cl. C08g 25/00

U.S. Cl. 260—29.6 WA

8 Claims

Vinyl monomers are graft-copolymerized with the aid of a tetravalent cerium salt as a polymerization initiator in an aqueous polyvinyl alcohol solution. Aqueous emulsions of graft copolymers of high concentration are prepared, which emulsions have a high film-forming property and a smooth consistency, but are free of any lumps.

3,755,235

# POLYTETRAFLUOROETHYLENE EMULSIONS HAVING IMPROVED PROPERTIES

Dario Sianesi, Milan; Giancarlo Bernardi, Canzo, and Gianfranco Veroli, San Donato Milanese, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Jan. 5, 1971, Ser. No. 104,122

Claims priority, application Italy, Jan. 9, 1970, 19183 A/70

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 F

13 Claims

Stabilized polytetrafluoroethylene emulsions particularly suitable for protective coating applications are produced by



adding, to emulsions obtained from conventional emulsion polymerization of tetrafluoroethylene, a perfluoroketone compound. The resulting emulsions are much more resistant to coagulation than are untreated emulsions when subjected to agitation or contacted with ionic materials such as acids and salts. More desirable coatings than heretofore possible, that are less subject to yellow discoloration occurring in conventional coatings and capable of being cast at greater thickness (of up to about 40 microns) without cracking, are obtained therewith.

Concentrated polytetrafluoroethylene emulsions are produced by adding ionic material to the foregoing stabilized emulsions.

3,755,236

# COPOLYMERS OF VINYL SULFONIC ACID SALTS AND ALLYL SULFONIC ACID SALTS

Joseph Emil Puskas, Yardville, N.J., assignor to Sybron Corporation, Rochester, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,858

Int. Cl. C08f 15/02, 37/00

U.S. Cl. 260—29.65 Q

10 Claims

New copolymers have been prepared from the salts of ethenesulfonic acid and the salts of 2-propene-1-sulfonic acid by solution polymerization methods such as batch or delay. The copolymers have been found useful as dispersants for the clays used in paper coating and in latex stabilization.

3,755,237

# VINYL ACETATE-ALPHA OLEFIN COPOLYMER COMPOSITIONS

Philip K. Isaacs, Jerusalem, Israel, and Alexander C. Paton, Bedford, Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Continuation-in-part of Ser. No. 106,287, Jan. 13, 1971, which is a continuation-in-part of Ser. No. 560,784, June 27, 1966, abandoned. This application Mar. 15, 1971, Ser. No. 124,540

Int. Cl. C08f 29/10, 29/50, 45/02

U.S. Cl. 260—29.6 TA

13 Claims

Novel copolymer compositions containing a predominant amount of vinyl acetate copolymerized with about 1 to 20 weight percent of  $C_7$  to  $C_{20}$  straight chain alpha olefin and about 0.1 to 30 weight percent of at least a third comonomer are particularly useful in coating compositions, e.g., paints and adhesives.

3,755,238

# HIGH GLOSS AND LOW BLOCK COATING COMPOSITION CONTAINING PLASTICIZED VINYL RESIN LATEX AND FINELY DIVIDED POLYOLEFIN PARTICLES

Ronald E. Wiita, 7625 Hartman Rd., Rt. 2, Wadsworth, Ohio

Filed Dec. 28, 1970, Ser. No. 102,097

Int. Cl. C08f 45/24

U.S. Cl. 260—29.6 XA

6 Claims

A latex-based coating composition having high gloss and improved block resistance comprising a plasticized vinyl resin latex containing fillers and dispersed therein microfine polyolefine particles. Though these compositions can be coated upon a wide variety of substrates, they are particularly valuable in the preparation of coated acoustical ceiling tiles to produce good gloss and reduce blocking. The invention also includes said acoustical ceiling tiles coated with said coating composition.

3,755,239

# DISPERSANTS FOR DISSOLUTION OF ELASTOMERS IN SOLVENTS

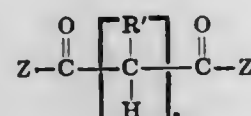
Richard J. Sonnefeld; Carl A. Ura-neck, and Edward J. Kosinsky, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 24, 1971, Ser. No. 146,457

U.S. Cl. 260—33.6 A

7 Claims

A method of facilitating the dissolution of an elastomer in an organic solvent by employing as a dispersant a compound having the general formula



wherein  $x$  is an integer from 1 to 10,  $R'$  is one of hydrogen and a substantially hydrocarbon radical containing at least 50 aliphatic carbon atoms,  $Z$  is selected from the group consisting of OH, OM and OR,  $R''$  being derived from a mono- or polyhydric alcohol, and  $M$  is a monovalent alkali metal or divalent alkaline earth metal.

3,755,240

# THERMOSETTING PULVERULENT BINDER

Wilhelm Lucker, Homburg/Niederrhein, and Helmut Vietz, Kamp-Lintfort, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Filed Dec. 14, 1970, Ser. No. 98,112

Claims priority, application Germany, Dec. 12, 1969, P 19 62 356.4

Int. Cl. C08g 51/28, 53/00

U.S. Cl. 260—33.6 R

6 Claims

Thermosetting pulverulent binders suitable for use in manufacturing foundry molds comprising (a) phenolformaldehyde novolak finely ground with hexamethylene-tetramine, (b) magnesium oxide and (c) mineral oil are prepared by spraying a pulverulent mixture of (a) and (b) maintained in a fluidized state with mineral oil.

3,755,241

# POTTING COMPOUND AND METHOD OF POTTING

Thomas G. Brady, Oneonta, N.Y., assignor to The Bendix Corporation, Sidney, N.Y.

Continuation-in-part of Ser. No. 850,632, Aug. 15, 1969, abandoned. This application June 30, 1971, Ser. No. 158,606

Int. Cl. C08g 51/14, 51/28

U.S. Cl. 260—33.6 UB

10 Claims

A potting compound is used to embed delicate or coordinated instruments within a casing to protect them from shock or vibration which would destroy them or derange them. The essential ingredients of the potting compound are dihydroxypolybutadiene, an extender oil, a microfine polypropylene powder, and an organic diisocyanate. The resulting compound is presumed to have an oil-modified polyurethane structure as a matrix enclosing the polypropylene powder as an integrated, dispersed phase. The compound has high adhesion to practically everything used in potting, requires no interlayer, is flexible at  $-65^{\circ}\text{F}$ . and is heat resistant for short periods at  $260^{\circ}\text{F}$ .

3,755,242

# POLYCARBODIIMIDE PREPOLYMERS

Charles Reich, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 10, 1972, Ser. No. 242,838

Int. Cl. C08g 22/00

U.S. Cl. 260—37 N

27 Claims

A new class of isocyanate-terminated solid, soluble, fusible, storable prepolymers suitable for producing high molecular weight polycarbodiimides; formed from polycarbodiimide-forming polyisocyanate monomers having a melting point below  $200^{\circ}\text{C}$ ., said prepolymers comprising a mixture of linear chains of polycarbodiimides and said monomers, said mixture containing about 2 to 95 percent of the original isocyanate nitrogen in the form of polycarbodiimide. The prepolymer can be in admixture with a catalyst and solvent for said catalyst for further formation or polycarbodiimide.

3,755,243

# DENSE GRAPHITE STRUCTURES

Roger C. Emanuelson, Glastonbury, and Warren Lee Luoma, Manchester, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Division of Ser. No. 789,780, Jan. 8, 1969, Pat. No. 3,634,569.

Filed Mar. 25, 1971, Ser. No. 127,979

Int. Cl. C08g 51/08

U.S. Cl. 260—38

4 Claims

This disclosure describes a graphite composition and a fabrication procedure for producing coolant and/or support plates for acid fuel cells. The composition consists of a graphite powder sized principally in the 50 to 150 micron range with about seven percent of the graphite powder in the range below 50 microns. The process involves a controlled low-pressure heating step and an intermediate temperature full-pressure molding operation. Homogeneous graphite structures of high density with improved structural, thermal, and electrical properties can be provided in a variety of extremely intricate shapes by molding.

3,755,244

# POLYOLEFIN PIGMENT DISPERSIONS

William J. Hart, Glens Falls, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 818,435, April 22, 1969, abandoned. This application June 2, 1971, Ser. No. 149,365

Int. Cl. C08f 45/04, 45/08, 45/14

U.S. Cl. 260—41 R

9 Claims

Non-dusting, granular pigment concentrates which are intimate dispersions of pigment in a low molecular weight polyolefin are described. The pigment dispersions are produced by milling pigment, low molecular weight polyolefin and water to form an aqueous slurry and then solvent granulating the pigment dispersion in the slurry in the presence of a surfactant.

3,755,245

# POLYPROPYLENE COMPOSITIONS CONTAINING GLASS REINFORCEMENT

Walter E. Gloor, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 6, 1971, Ser. No. 169,836

Int. Cl. C08f 45/16

U.S. Cl. 260—41 AG

3 Claims

Compositions are taught comprised of polypropylene and silane treated glass fibers wherein the glass fibers are coupled to the polymer by the use of an organic peroxide and a high molecular weight chlorinated organic compound.

3,755,246

# PROCESS FOR MANUFACTURING POLYVINYL FLUORIDE WITH IMPROVED THERMOSTABILITY

Werner Trautvetter, Hohlsteinstrasse 50, Spich, and Gregor Weisgerber, Kantering 51, Ittenbach, both of Germany

Continuation of Ser. No. 810,387, March 25, 1969, abandoned. This application May 24, 1971, Ser. No. 146,495

Claims priority, application Germany, Mar. 26, 1968, P 17 70 054.8; July 24, 1968, P 17 70 962.5

Int. Cl. C08d 11/04; C08f 3/22

U.S. Cl. 260—45.7 R

15 Claims

Improvements in polyvinyl fluoride obtained by adding iodine or an iodine compound to the vinyl fluoride monomer prior to or during polymerization thereof and for adding iodine or an iodine compound to polyvinyl fluoride. The polymerization is preferably in the aqueous phase above the critical temperature in the presence of azo-bis-isobutyramidine hydrochloride and N-alkyl substituted such compounds as catalyst. The iodine content of the polymer, calculated as iodine, is preferably 0.001 to 1 weight percent based upon vinyl fluoride content.

3,755,247

# ORGANO PHOSPHITE AND NICKEL COMPLEX UV LIGHT STABILIZER SYSTEM

Ronald D. Mathis, Taylors, and James S. Dix, Greenville, both of S.C., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 10, 1972, Ser. No. 216,741

Int. Cl. C08f 45/62

U.S. Cl. 260—45.75 N

10 Claims

The effectiveness of nickel amine complexes of bis-phenol sulfides as ultraviolet light stabilizers for polymers is enhanced by the further presence of a small amount of a phosphite extended t-alkylated bisphenol A.

3,755,248

# POLYIVALOLACTONE COMPOSITION WITH IMPROVED THERMOSTABILITY

Yukio Shimosaka; Sumimichi Ueda, and Shigeru Nakajima, all of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed July 20, 1972, Ser. No. 273,458

Int. Cl. C08g 51/58

U.S. Cl. 260—45.8 N

10 Claims

A polyivalolactone composition is produced by mixing a polyivalolactone with one or more indole derivatives having a boiling point not less than  $260^{\circ}\text{C}$ . The composition has an improved stability against disintegration or decomposition of the polymer molecules at elevated temperatures.

3,755,249

# PERMANENTLY ANTISTATIC AND MELT-SPINNABLE POLYAMIDE COMPOSITIONS

Yutaka Fujita; Takao Ashida; Keiichi Moriyama, and Eiichi Hashimoto, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 29, 1971, Ser. No. 203,030

Claims priority, application Japan, Nov. 27, 1970, 45/104615; June 2, 1971, 46/38467; June 4, 1971, 46/39207; June 16, 1971, 46/43175

Int. Cl. C08g 51/58, 51/00

U.S. Cl. 260—45.75 R

10 Claims

Polyamide compositions having excellent melt-spinnability and durable antistatic property, while fully retaining the favorable properties inherent in polyamides, which comprises



a polyamide containing as an antistatic agent one which comprises (A) a polyalkylene oxide-added secondary alkylamine and (B) a polyalkylene oxide-added tertiary alkylamine, the secondary alkylamine (A) occupying 5 - 50 percent by weight based on the sum weight the above compounds (A) and (B), and the antistatic agent being incorporated in an amount of 1 - 15 percent by weight based on the weight of the polyamide.

3,755,250

# PHENOLIC PHOSPHATE AND PHOSPHITE ANTIOXIDANTS

John C. Wollensak, Bloomfield Hills, and Edward F. Zaweski, Pleasant Ridge, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 780,266, Nov. 29, 1968, Pat. No. 3,683,054, which is a continuation-in-part of Ser. No. 746,760, July 23, 1968, abandoned. This application Apr. 20, 1972, Ser. No. 245,755

Int. Cl. C08f 45/58; C08g 51/58

U.S. Cl. 260—45.85 S

10 Claims

Organic material, especially polypropylene, is stabilized by the addition of mono- or di- (dihydrocarbyl-hydroxyphenyl) alkyl phosphates, phosphites, thiophosphates or thiophosphites, such as 3,5-di-tert-butyl-4-hydroxyphenyl di-n-octadecyl phosphate. Effectiveness is synergistically improved by inclusion of a dialkyl thiodialkanoate such as dilaurylthiodipropionate.

3,755,251

# MANUFACTURE OF POLYETHYLENE TEREPHTHALATE POLYESTER

Joseph Donald Decaprio, Hopewell; Brian Armstead Dementi, Richmond, and Stanley David Lazarus, Petersburg, all of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 28, 1972, Ser. No. 230,085

Int. Cl. C08g 17/08, 51/58

U.S. Cl. 260—45.95 R

9 Claims

The manufacture of linear high-molecular weight film and fiber-forming polyester wherein the reaction of polycarboxylic acid with a polyol takes place in the presence of a catalytic amount of a halogenated phenolic compound to improve processing and end product characteristics.

3,755,252

# CROSS-LINKED ARTICLES AND COATINGS OF VINYL CHLORIDE POLYMERS AND PROCESS FOR THEIR MANUFACTURE

Robert Buning, Troisdorf-Sieglar, and Siegmund Frick, Troisdorf-Oberlar, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Sept. 13, 1971, Ser. No. 180,149

Claims priority, application Germany, Sept. 19, 1970, P 20 46 293.5

Int. Cl. C08f 11/04

U.S. Cl. 260—46.5 R

9 Claims

A process for cross-linking a vinyl chloride polymer which comprises mixing a non-cross-linked vinyl chloride-silane copolymer with an acid catalyst and heating, if necessary. The compositions produced by this process are useful as coatings, fibers or sheets.

3,755,253

# CATALIZATION OF DIAMINODIPHENYLSULFONE CURE OF POLYEPOXIDES WITH AN IMIDAZOLE COMPOUND OR A SALT THEREOF

Kenneth K. Rice, Walnut Creek, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 14,658, Feb. 26, 1970, abandoned. This application Sept. 24, 1971, Ser. No. 183,654 Int. Cl. C08g 30/14

U.S. Cl. 260—47 EN

7 Claims

New adhesive compositions having substantially shortened cure cycles comprise the reaction product of (1) a polyepoxide (2) an aromatic amine such as diaminodiphenylsulfone, and (3) a catalytic amount of an imidazole compound or a salt thereof.

3,755,254

# PROCESS FOR THE PREPARATION OF POLYAMIDOXIMES AND

## POLY(BISBENZIMIDAZOBENZOPHENANTHROLINE) (BBB) TYPE POLYMERS DERIVED THEREFROM

Carl N. Zellner, New Hope, Pa., assignor to Celanese Corporation, New York, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,750

Int. Cl. C08g 20/32, 33/02

U.S. Cl. 260—47 CP

23 Claims

Process for the preparation of polymers which comprises reacting at temperatures of from about 0° to about 250°C. an aromatic diamine with a bis(hydroxamoyl halide)-bis(carboxylic acid) or a derivative thereof to form a polyamidoxime, which may then be subjected to ring closing conditions to form poly(bisbenzimidazobenzophenanthroline) (BBB) type polymers. Formation of the polyamidoxime is preferably conducted in the presence of a solvent, which may or may not also function as an acid-acceptor; if not, then preferably also in the presence of an acid-acceptor. The preferred acid-acceptors are those which are insoluble in the reaction mixture—most preferably melamine. The ring closure may be conducted in the presence of a catalyst at temperatures of from about 0° to about 250°C. or by reaction with an aromatic sulfonyl halide at temperatures of from about 0° to about 90°C. Reactive amine or hydroxamoyl halide terminal groups of the polyamidoximes or BBB type polymers may be reacted with other compounds or polymers which contain groups reactive therewithin order to further extend the polymer chains. In a preferred prior step, aromatic bis(hydroxamoyl halide)-bis(carboxylic acid) reactants are made by the reaction of di-alkyl-dicarboxy aromatic precursors with, e.g., nitrosyl halide. Novel polyamidoximes.

3,755,255

# POLYAMIDES HAVING IMPROVED DYEABILITY PREPARED FROM AROMATIC CARBOXYLIC DISULFONATED COMPOUNDS

John Ewart Lodge, c/o ICI Fibres Limited, Pontypool, England

Continuation-in-part of Ser. No. 764,322, Oct. 1, 1968, abandoned. This application June 9, 1971, Ser. No. 151,554

Int. Cl. C08g 20/20

U.S. Cl. 260—49

5 Claims

Basic dye affinity for polyamides is improved by interpolymerizing defined aromatic carboxylic disulphonated compounds with conventional polyamide monomer.

3,755,256

# AROMATIC POLYSULPHONES CONTAINING PHOSPHORUS COMPOUNDS TO INCREASE MELT STABILITY

Gordon Maxwell Beverly, Welwyn Carden City, England, assignor to Imperial Chemical Industries Limited, Millbank, London, England

Filed Feb. 25, 1972, Ser. No. 229,507

Claims priority, application Great Britain, Mar. 10, 1971, 6,458/71; Jan. 18, 1972, 2,347/72

Int. Cl. C08g 23/00

U.S. Cl. 260—49

6 Claims

A thermoplastic composition comprising (a) 96 to 99.9 percent by weight of at least one aromatic polysulphone and (b) 4 to 0.01 percent by weight of at least one phosphorus compound having the formula Y<sub>3</sub>PQ in which Y is a univalent organic radical which may be the same or different and Q is oxygen or sulphur.

3,755,257

# BAKING ENAMEL VEHICLE COMPRISING THE REACTION PRODUCT OF PHENOL, FORMALDEHYDE AND AN OXAZOLINE

Jerry Hoyt Hunsucker, Terre Haute, Ind., assignor to Commercial Solvents Corporation, New York, N.Y.

Division of Ser. No. 36,680, May 12, 1970, Pat. No. 3,654,229. This application Sept. 30, 1971, Ser. No. 185,430

Int. Cl. C08g 5/06, 9/24

U.S. Cl. 260—57 R

5 Claims

An improved vehicle for the formulation of baking enamels obtained by reacting an oxazoline with a member selected from the group consisting of formaldehyde, and phenol.

3,755,258

# RAPID CURING RESIN COMPOSITIONS COMPRISING A PHENOL-ALDEHYDE CONDENSATION POLYMER MODIFIED WITH AN ACYL HYDRAZIDE

George T. Tiedeman, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed May 25, 1971, Ser. No. 146,784

Int. Cl. C08g 5/18, 9/04

U.S. Cl. 260—59

46 Claims

Described herein are resin products having particular utility as rapid curing adhesives for wood and other materials, and processes for making the resin compositions. These products are made by reacting an aldehyde condensation polymer containing reactive alkylol groups, such as a phenol-formaldehyde condensation polymer, with an acyl hydrazide. When the resulting acyl hydrazide-modified polymers are blended with an appropriate curing agent, such as an aldehyde, the compositions cure very rapidly at ambient temperatures. When pieces of wood or other materials are spread with the preferred resin compositions of this invention and brought into contact with another wood surface the bond strength develops within minutes. The durability, strength and flexibility of the adhesives of this invention under adverse weathering conditions are excellent.

3,755,259

# POLYMERIC LATICES AND SODIUM ALUMINATE

Donald R. Anderson, Oswego, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Jan. 31, 1972, Ser. No. 222,340

Int. Cl. C08f 37/00

U.S. Cl. 260—29.6 M

4 Claims

A coating composition comprising from 1 to 99 percent by weight of sodium aluminate and from 1 to 99 percent by

weight of a water-in-oil emulsion, said emulsion containing dispersed therein from 1 to 35 percent by weight of a finely divided water-soluble anionic vinyl addition polymer.

3,755,260

# OZIDOFORMATE-ISOCYANATE COMPOUNDS AND THEIR USES

Harold M. Spurlin, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 860,034, Sept. 22, 1969, Pat. No.

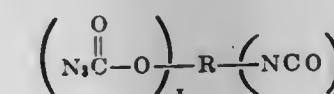
3,676,466. This application Aug. 26, 1971, Ser. No. 175,411

Int. Cl. C08f 27/10; 156 133, 314

U.S. Cl. 260—75 TN

6 Claims

Disclosed are azidoformate-isocyanate compounds of the formula



where R is a polyvalent organic radical and x and y are integers from 1 to 100. The use of said azidoformate-isocyanate compounds to modify polymers, cross-link polymers, and adhere polymers to substrates selected from siliceous materials, metals and other polymer substrates is disclosed. Also disclosed are rubber tires reinforced with polyester tire cord which has been modified with an azidoformate-isocyanate compound.

3,755,261

# CURING OF AMINE CURABLE POLYMERS DIAMINES WITH COMPLEXES OF SELECTED AND ALKALI METAL SALTS

Norman Martin VanGulick, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 1, 1972, Ser. No. 249,714

Int. Cl. C08g 22/00

U.S. Cl. 260—77.5 AM

16 Claims

Amine curable polymers are cured effectively by the use of complexes of 4,4'-methylene dianiline and/or racemic 2,3-di-(4-aminophenyl) butane and selected alkali metal salts including sodium chloride.

3,755,262

# TRANSPARENT HIGH-IMPACT POLYURETHANE PRODUCTS

Edwin C. Slagel, Phoenix, Ariz., assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jan. 15, 1971, Ser. No. 106,877

Int. Cl. C08g 22/06, 17/13

U.S. Cl. 260—77.5 AM

3 Claims

A polyurethane and method of making said polyurethane which is characterized by being transparent and having good heat distortion and resistance to haze and impact.



3,755,263

**DISULFIMIDE ACID-MODIFIED HIGH MOLECULAR WEIGHT POLYAMIDES**

Ferdinand Bodesheim; Gerhard Dieter Wolf, and Gunther Nischk, all of Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 9, 1971, Ser. No. 132,871

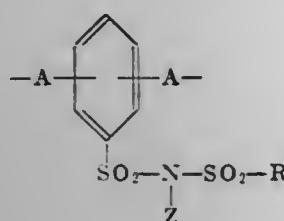
Claims priority, application Germany, Apr. 15, 1970, P 20 17 968.4

Int. Cl. C08g 20/20

U.S. Cl. 260—78 R

11 Claims

High molecular weight aliphatic polyamides containing at least 50 mequiv. per kg of polyamide of units of the formula



The polyamides are useful for the production of filaments and films and show great affinity for basic dyes.

3,755,264

**MALEIC ANHYDRIDE COPOLYMERS AND METHOD OF MAKING**

Anthony J. Testa, Westwood, Mass., assignor to Amicon Corporation, Lexington, Mass.

Filed July 30, 1971, Ser. No. 167,823

Int. Cl. C08f 15/14

U.S. Cl. 260—78.5 R

9 Claims

Copolymer of 99 to 85 mol percent of maleic anhydride with from 1 to 15 mol percent of acrylic acid, vinyl acetate, styrene, or mixtures thereof, and hydrolyzed analogous copolymers of maleic acid or maleic salts are highly effective chelating agents. They are made by slowly combining a solution containing the acrylic acid, vinyl acetate, or styrene and a large amount of free radical initiator with a solution containing the maleic anhydride.

3,755,265

**HIGHLY FLUORINATED POLYURETHANES**

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Eugene C. Stump, Gainesville, Fla., and Stephen Eugene Rochow, Ann Arbor, Mich.

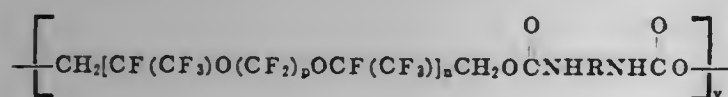
Continuation-in-part of Ser. No. 770,417, Oct. 24, 1968, abandoned. This application Apr. 4, 1972, Ser. No. 241,061

Int. Cl. C08g 22/14

U.S. Cl. 260—77.5 AP

7 Claims

Polyurethanes having the repeating unit:



where

$n$  is an integer of 1 to 12,

$p$  is an integer of 2 to 23,

$y$  is an integer of 1 to 1000, and

$R$  is any radical suitable to link isocyanate groups and is preferably selected from the group consisting of alkylene and halogen substituted alkylene radicals of four to 12 C atoms, substituted and unsubstituted phenylene groups of up to 20 C atoms.

3,755,266

**LACTAM POLYMERIZATION WITH AMIDE INITIATORS**

Markus Matzner, Edison; Walter T. Reichle, Millington; Sui-Wu Chow, and James E. McGrath, both of Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 183,700, Sept. 24, 1971, which is a continuation-in-part of Ser. No. 26,128, April 6, 1970, abandoned. This application Nov. 11, 1971, Ser. No. 197,933

Int. Cl. C08g 20/18

U.S. Cl. 260—78 L

8 Claims

Certain amide compounds based on aromatic amines are utilized as polymerization initiators or activators with alkaline catalysts in the anionic polymerization of lactam monomers so as to provide polymerization systems which may be utilized in a variety of molding operations.

3,755,267

**LACTAM POLYMERIZATION WITH AMIDE INITIATORS**

Markus Matzner, Edison; Walter T. Reichle, Millington; Sui-Wu Chow, and James E. McGrath, both of Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 183,700, Sept. 24, 1971, which is a continuation-in-part of Ser. No. 26,128, April 6, 1970, abandoned. This application Nov. 11, 1971, Ser. No. 197,934

Int. Cl. C08g 20/18

U.S. Cl. 260—78 L

7 Claims

Certain amide compounds based on aromatic amines are utilized as polymerization initiators or activators with alkaline catalysts in the anionic polymerization of lactam monomers so as to provide polymerization systems which may be utilized in a variety of molding operations.

3,755,268

**THIOLACTONE POLYMERIZATION AND CATALYSTS**

Peter E. Fritze, West Millington, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 16, 1972, Ser. No. 263,598

Int. Cl. C08g 23/00

U.S. Cl. 260—79

18 Claims

Thiolactones can be polymerized using as a catalyst, manganese or cadmium ions, in conjunction with an initiator such as water or an organic compound containing a primary hydroxyl or sulfhydryl group. They can also be copolymerized with lactones using the same catalyst/initiator system.

3,755,269

**PRODUCTION OF MERCAPTAN-TERMINATED POLYMERS**

Carl A. Ura-neck, and Richard L. Smith, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 30, 1971, Ser. No. 185,343

Int. Cl. C08f 27/06

U.S. Cl. 260—79.5 NV

10 Claims

Polymers having mercaptan terminal groups are prepared by reacting a polymer-metal reactant with an aromatic thioester to produce a polymer having improved vulcanizate properties.

3,755,270

**THERMALLY STABLE POLYPHOSPHONATES AS FLAME RETARDANTS**

James S. Clovis, and Francis R. Sullivan, both of Warminster, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

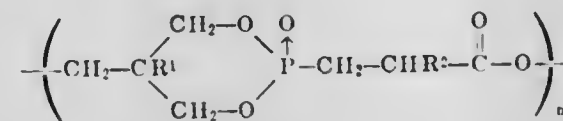
Filed May 3, 1971, Ser. No. 139,948

Int. Cl. C08f 3/42; C08g 17/133

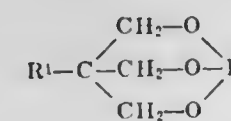
U.S. Cl. 260—80 P

3 Claims

A thermally stable flame-resistant phosphonate polymer of the structure



wherein  $R^1$  is methyl or ethyl,  $R^2$  is hydrogen or methyl and  $n$  is 3 to 100, is formed by the reaction of acrylic or methacrylic acid with an alkyl bicyclic phosphite of the structure



wherein  $R^1$  is as above. The phosphonate polymer is useful in forming flame-resistant acrylic compositions such as molding powders and sheets from mixtures comprising the polymer and methyl methacrylate.

3,755,271

**COMPATIBLE AND REACTIVE VINYL COPOLYMER RESIN**

Donald R. Montgomery, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

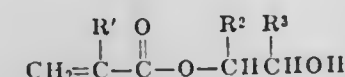
Filed Nov. 19, 1971, Ser. No. 200,569

Int. Cl. C08f 15/40

U.S. Cl. 260—80.75

1 Claim

A terpolymer of vinyl chloride, vinyl acetate and an acrylic ester having the formula:



wherein  $R^1$ ,  $R^2$  and  $R^3$  may be hydrogen and methyl, in which the vinyl chloride mer content is about 50 to about 69 weight percent, based on the terpolymer weight, the acrylic ester mer content is about 2 weight percent to about 18 weight percent, based on the terpolymer weight, and the vinyl acetate mer content is at least 25 weight percent, based on the terpolymer weight, and said terpolymer has an inherent viscosity of about 0.15 to about 0.5, determined at 30° C using 0.2 grams of the terpolymer in a deciliter of cyclohexanone. These terpolymer resins can be employed alone or in admixture with other resins (such as nitrocellulose and polyurethanes) to make useful coatings.

3,755,272

**COPOLYMERIZATION OF  $C_{10-18}$ -OLEFINS AND ACRYLIC ACID OR METHACRYLIC ACID**

Werner Josef Blank, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 1, 1971, Ser. No. 130,529

Int. Cl. C08f 1/60

U.S. Cl. 260—80.78

8 Claims

There is provided an improved process for effecting the copolymerization of  $\alpha$ -olefins and acrylic acid or methacrylic

acid by adding to (A) a non-iso  $\alpha$ -olefin containing from 8 to 30 carbon atoms, or more, at temperatures ranging from about 120° C. to about 200° C., (B) acrylic acid or methacrylic acid monomer in the presence of a free radical initiator and in the absence of both an hydroxy-containing compound and a Friedel Crafts catalyst, the latter monomer being added at a rate whereby not more than 20 percent of monomer other than the  $\alpha$ -olefin, based on the  $\alpha$ -olefin charged, remains as monomer in admixture during addition of said monomer.

3,755,273

**AMPEROMETRIC ANALYSIS METHOD AND APPARATUS FOR CONTROL OF CATALYTIC REACTIONS**

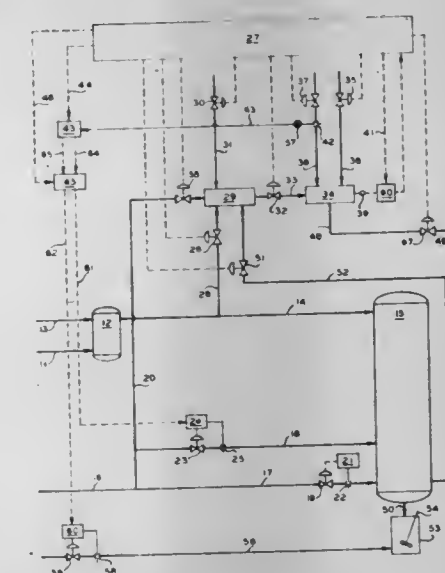
Carl A. Ura-neck, and Richard L. Smith, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 6, 1971, Ser. No. 131,649

Int. Cl. C08d 3/08, 5/02; C08f 27/06

U.S. Cl. 260—83.7

7 Claims



A process is provided for the automatic determination of reactive metal sites in a reaction product and for the automatic introduction of the stoichiometric quantity of coupling or terminating agent required to react with the metal sites in response to the said determination. The process, in another aspect, determines the quantity of catalyst poisons in a feed stream and, in response thereto, introduces the quantity of catalyst required to react with the feed poisons.

3,755,274

**CATALYST AND PROCESS FOR THE PREPARATION OF POLYETHYLENES HAVING A NARROW MOLECULAR-WEIGHT DISTRIBUTION**

Gottfried Piekarski; Anton Hundmeyer; Dieter Kippe, and Sigmund Maier, all of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

Filed May 16, 1972, Ser. No. 253,887

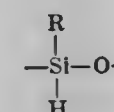
Claims priority, application Germany, May 26, 1971, P 21 26 250.0

Int. Cl. C08f 1/44, 3/06

U.S. Cl. 260—88.2 R

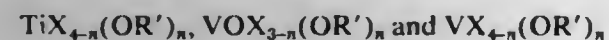
12 Claims

A catalyst for the production of polyethylene and modified polyethylene having a narrow molecular weight distribution comprising the reaction product of (A) a reaction product of one mol of trialkyl aluminum having from two to eight carbon atoms in each of the alkyls with from one to two mols of a polysiloxane having a viscosity of from 5 to 100 cSt (25°C) and monomer units having the formula





where R is alkyl having one to six carbon atoms, cycloalkyl or aryl and (B) a compound of the formulae



where X is a halogen, R' is alkyl having one to eight carbon atoms or cycloalkyl and n has a value between 0.1 and 2, or mixtures of said compounds, as well as a method of producing polyethylene and modified polyethylene having a narrow molecular weight distribution utilizing said reaction product catalyst.

3,755,275

**PROCESS FOR PREPARING AN ALTERNATE COPOLYMER OF BUTADIENE AND ACRYLONITRILE**  
Akihiro Kawasaki; Masanobu Taniguchi; Tsuneto Nishiyama, all of Ichihara-shi, and Hiroaki Ueda, Chiba-shi, all of Japan, assignors to Maruzen Petrochemical Co., Tokyo, Japan

Filed Aug. 27, 1969, Ser. No. 853,499

Claims priority, application Japan, Sept. 5, 1968, 43/63383; Sept. 5, 1968, 43/63385; Dec. 10, 1968, 43/89975; Dec. 26, 1968, 43/94935

Int. Cl. C08d 1/4, 3/02

U.S. Cl. 260—82.5

10 Claims

A new process for preparing an alternate copolymer of butadiene and acrylonitrile by contacting butadiene with acrylonitrile in liquid phase in the presence of the catalyst system comprising aluminum chloride, stannic chloride or zinc chloride as the first component, a vanadium compound or a chromium compound as the second component, and an organic peroxide as the third component.

3,755,276

**PROCESS FOR POLYMERIZING CONJUGATED DIENES**  
Richard C. Oldack, North Canton, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 716,346, March 27, 1968, abandoned. This application Feb. 17, 1971, Ser. No. 116,249

Int. Cl. C08f 27/00, 19/06, 5/00

U.S. Cl. 260—85.1

21 Claims

The process described herein involves a method of converting relatively low molecular weight polymers by postreaction with a mixture of divinyl benzene and a haloalkane having no more than one halogen atom on any carbon atom, in the presence of an alkali metal catalyst, such as butyl lithium to give higher molecular weight polymers having improved cold flow resistance, processibility, green strength, etc. The improvements are much greater than can be effected by postreaction with either divinyl benzene or the haloalkane individually, or by having divinyl benzene present during the copolymerization. The haloalkanes include chloro, bromo, and iodo compounds and can have 1-4 or even more halogen atoms per molecule provided there are no more than one halogen atom on any carbon atom.

3,755,277

**ORIENTED HOLLOW ARTICLES FROM STYRENE-ACRYLONITRILE POLYMER**  
Edward C. Troups, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 14, 1971, Ser. No. 106,588

Int. Cl. C08f 15/04, 15/22

U.S. Cl. 260—85.5 R

8 Claims

Hollow articles such as bottles are produced from styrene-acrylonitrile polymers under orientation conditions to give a high strength product.

3,755,278

**PROCESS FOR THE POLYMERIZATION OF ETHYLENICALLY UNSATURATED MONOMERS**  
Luigi Patron, Venezia, and Luciano Console, Mestre, both of Italy, assignors to Chatillon Societe Anonima Italiana per de Fibre Tessili Artificiali S.p.A., Milan, Italy

Filed Aug. 6, 1971, Ser. No. 169,806

Claims priority, application Italy, Aug. 10, 1970, 28465 A/70

Int. Cl. C08f 3/30, 3/76, 7/02

U.S. Cl. 260—88.7 R

15 Claims

A process is disclosed for the polymerization in bulk or in solution of one or more ethylenically unsaturated monomers wherein the polymerization is conducted in the presence of a catalytic system consisting of:

- an organic hydroperoxide;
- an alkyl or cyclo-alkyl ester of sulphuric or phosphoric acid, wherein the alkyl or cycloalkyl group contains from 1 to 12 carbon atoms; and
- a nucleophilic compound such as an alcoholate of an alkali or alkaline-earth metal, wherein the alkyl radical may have a linear or branched chain having from 1 to 6 carbon atoms, or a hydroxide of an alkali metal fed to the reaction medium in an alcoholic solution or alcoholic solutions of ammonia, of pyridine, or of other nitrogen containing bases such as tetraalkyl-ammonium hydroxide. The polymerization is carried out at a temperature between +50° and -50° C.

3,755,279

**COPOLYMERIZATION OF ALPHA OLEFINS WITH STERICALLY HINDERED ALKENYL AMINES USING ZIEGLER CATALYSTS**

Arthur W. Langer, Jr., Watchung, N.J., and Raymond R. Haynes, Baytown, Tex., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed June 25, 1965, Ser. No. 467,109

Int. Cl. C08f 15/00, 45/66

U.S. Cl. 260—88.1 PN

5 Claims

Alpha-olefins are copolymerized with a sterically hindered alkenyl amine in the presence of an organo-metal-transition metal catalyst (Ziegler-type catalyst). Copolymers are produced having 0.07 to 0.5 weight percent nitrogen in the copolymer.

3,755,280

**DRYING OF ACRYLAMIDE POLYMER GELS**  
Kenneth Worden Saunders, Darien, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 5, 1971, Ser. No. 121,583

Int. Cl. C08f 3/90, 15/02

U.S. Cl. 260—89.7 S

4 Claims

The detoxification of monomeric acrylamide in aqueous polyacrylamide gels containing redox catalyst residuum is accomplished by the addition of less than 2/3 mol of a water-soluble non-toxic sulfite per mol of monomeric acrylamide present. The acrylamide is detoxified by conversion to polymer form.

3,755,281

**CONTINUOUS POLYMERISATION PROCESS**  
Brian James Busby, Victoria, and David Alexander Hughes, New South Wales, both of Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

Filed May 17, 1971, Ser. No. 143,891

Claims priority, application Australia, June 8, 1970, 145970; Dec. 30, 1970, 361970

Int. Cl. C08f 3/22

U.S. Cl. 260—92.8 W

1 Claim

A process of manufacturing particles which process comprises the following steps in combination

- feeding into a closed reactor a nutrient, a recycle of particles from step (c) and optionally adding seed material;
  - allowing the recycled particles to grow into larger particles and separating the resultant particles into sized fractions; and
  - recycling particles of less than a certain predetermined size to step (a) and removing particles larger than a certain predetermined size as product.
- Apparatus wherein this process may be carried out is also described.

3,755,282

**SUSPENSION POLYMERIZATION OF VINYL AROMATIC MONOMERS IN THE PRESENCE OF UNSATURATED CARBOXYLIC ACID**

Harold Austin Wright, Murrysville, Pa., assignor to Sinclair-Koppers Company, Pittsburgh, Pa.

Filed June 29, 1971, Ser. No. 157,848

Int. Cl. C08f 1/11, 7/04

U.S. Cl. 260—93.5 W

4 Claims

The production of polymer beads by a suspension polymerization process in which a vinyl aromatic monomer having a free-radical generating catalyst dissolved therein is suspended in an aqueous medium with the aid of from 0.2 to 1.0 per cent by weight, based on monomer, of a finely divided phosphate suspending agent and heated to cause the monomer to polymerize into polymer beads is improved by the addition to the suspension of at least about 0.0001 per cent by weight based on monomer of an  $\alpha,\beta$ -ethylenically unsaturated carboxylic acid as sole extender. The process of the invention is especially applicable in the preparation of large polymer beads.

3,755,283

**NOVEL POLYMERS AND METHOD OF PREPARING SAME**

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by, and Stanley M. Hirshfield, New City, N.Y.

Filed May 19, 1971, Ser. No. 145,027

Int. Cl. C08f 1/74, 1/76, 3/16

U.S. Cl. 260—93.5 S

6 Claims

Polymers are prepared with terminal functional groups by reacting a compound selected from the group consisting of lithium p-lithiophenoxide and tetrabutylammonium p-lithiophenoxide as an initiator with material such as butadiene. The resulting functionally terminated new polymers are then capable of reacting with coupling agents to form star polymers.

3,755,284

**PROCESS FOR POLYMERIZATION OF CONJUGATED DIENE**

Takeshi Yamawaki; Tetsumi Suzuki, and Seiichi Hino, all of Tokyo, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Aug. 3, 1971, Ser. No. 168,767

Claims priority, application Japan, Aug. 20, 1970, 45/73088

Int. Cl. C08d 3/04, 3/08, 3/12

U.S. Cl. 260—94.3

11 Claims

A conjugated diene is polymerized in the presence of a two-component catalyst wherein the first component has the general formula:



wherein M represents Co, Ni or Fe; M' represents an element of Groups III-V of Series 3-7 of Mendeleev's Periodic Table; and L represents a ligand having an active hydrogen atom; 1 and m are respectively integers of from 1-3; n is an integer of from 5-6; x is an integer of from 0-6; and the valence of M

multiplied by 1 equals the valence of M'F<sub>n</sub> multiplied by m; and the second component is an organometallic compound of a Group II-III metal of Mendeleev's Periodic Table.

3,755,285

**MASS TRANSFER PROCESS**

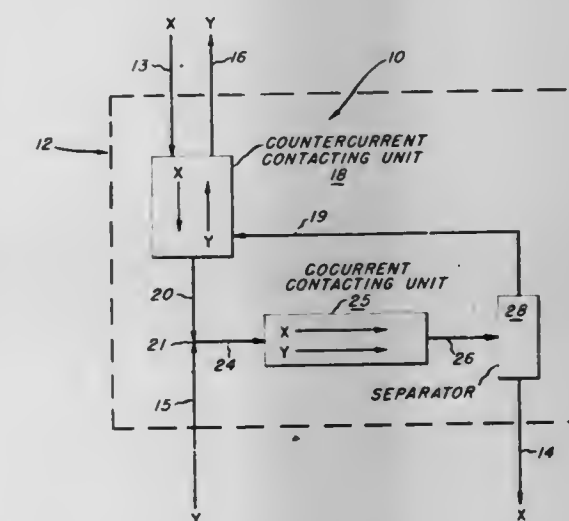
Carlo Piazza, deceased, late of Naperville, Ill. (by Judith B. Piazza, executrix), assignor to Standard Oil Company, Chicago, Ill.

Filed Oct. 1, 1971, Ser. No. 185,754

Int. Cl. C08f 1/88

U.S. Cl. 260—94.9 F

15 Claims



Mass transfer operations between two or more materials which are contacted within a system made up of a combination of selectively arranged sub-contacting units which are so combined as to provide for countercurrent phase contacting while having some cocurrent phase contacting within the combination.

3,755,286

**GLY<sub>3</sub>-ACTH-ACTIVE PEPTIDES**

Bernhard Riniker, Frenkendorf, and Werner Rittel, Basel, both of Switzerland, assignors to Ciba Corporation, Summit, N.J.

Continuation-in-part of Ser. No. 781,952, Dec. 6, 1968,

abandoned, which is a continuation-in-part of Ser. No.

529,259, Feb. 23, 1966, abandoned. This application May 5,

1970, Ser. No. 34,865

Claims priority, application Switzerland, Feb. 26, 1965, 2676/65

Int. Cl. C07c 103/52; C07g 7/00

U.S. Cl. 260—112.5

8 Claims

Peptides whose amino acid sequence differs from that of the ACTH-active peptides containing the first three amino acids of ACTH in that of the serine residues in 1- and 3-position at least that in 3-position is replaced by glycine. These peptides have a stronger and/or longer lasting ACTH-activity than the corresponding peptides containing the natural first three amino acids.



3,755,287

**HETEROCYCLIC DISAZO DYESTUFFS CONTAINING A BRIDGING GROUP AND AT LEAST ONE QUATERNARY AMMONIUM GROUP**

Gert Hegar, Schoenenbuch; Hans-Joerg Angliker, Riehen, and Richard Peter, Basel, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 730,943, May 21, 1968, Pat. No. 3,635,940. This application May 19, 1971, Ser. No. 145,005

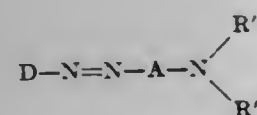
Claims priority, application Switzerland, May 29, 1967, 7532/67

Int. Cl. C09b 33/06; D06p 1/02

U.S. Cl. 260—155

7 Claims

Disazo compounds in which two monoazo dyestuff molecules of the general formula



in which D represents the residue of heterocyclic diazo component, A represents an arylene residue and R' and R'' each represents an alkyl residue, are linked together via their coupling components through a bifunctional bridging group Z which has no dyestuff characteristics and which contains at least one quaternated nitrogen atom. The compounds are used for dyeing synthetic fibers such as polyvinyl chloride and demonstrate good light and washing fastness.

3,755,288

**4,4-ALKYLENE BIS(SEMICARBAZIDE) AND DERIVATIVES THEREOF**

Chester Stephen Sheppard, and Ronald Edward MacLeay, both of Tonawanda, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 556,263, June 9, 1966, Pat. No. 3,585,200.

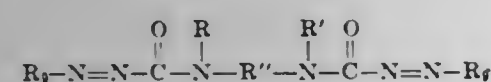
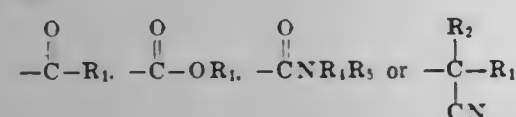
This application June 22, 1970, Ser. No. 59,807

Int. Cl. C07c 107/02

U.S. Cl. 260—174

5 Claims

Disazo compounds of the formula:

where R<sup>9</sup> is

such as N,N'-ethylene bis(2-cyano-2-propylazoformamide), which are useful as polymerization initiators, curing agents and the like.

3,755,289

**2-(PHENYLAZO)-2,4-DIMETHYL AND 2-(PHENYLAZO)-2,4-DIMETHYL-4-ALKOXY VALERONITRILES**

Joji Nagaoka, Tokyo; Kazuhiko Yamashita, Wako; Shin-Ichi Kitashima, and Kenichiro Fukuma, both of Tokyo, all of Japan, assignors to Kansai Paint Co., Ltd., Hyogo-ken and Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Mar. 18, 1971, Ser. No. 125,489

Claims priority, application Japan, Mar. 25, 1970, 45/24393; May 15, 1970, 45/40928

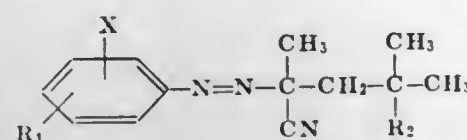
Int. Cl. C07c 107/00

U.S. Cl. 260—192

23 Claims

Photosensitizers useful as photo-polymerization catalysts are 2-(phenylazo)-2,4-dimethyl and 2-(phenylazo)-2,4-

dimethyl-4-alkoxy valeroneitriles represented by the following general formula:



wherein X is a hydrogen atom or a halogen atom; R<sub>1</sub> represents a hydrogen atom, a halogen atom or an alkyl group having one to eight carbon atoms; and R<sub>2</sub> represents a hydrogen atom or an alkoxy group with one to four carbon atoms.

3,755,290

**WATER-SOLUBLE FIBER-REACTIVE SULPHOPHANYLAZO-NAPHTHYL DYESTUFFS CONTAINING AN ALPHA, BETA-DICHLORO- OR DIBROMOPROPIONYLAMINO GROUP**

Rene De Montmollin, Riehen, and Henri Riat, Arlesheim, both of Switzerland, assignors to Ciba-Geigy A.G., Basel, Switzerland

Continuation-in-part of Ser. No. 753,829, July 22, 1968, abandoned, which is a continuation of Ser. No. 608,710, Nov. 1, 1966, abandoned, which is a division of Ser. No. 305,539, Aug. 29, 1963, abandoned, which is a continuation-in-part of Ser. No. 731,097, April 28, 1958, abandoned. This application Nov. 12, 1969, Ser. No. 876,069

Claims priority, application Switzerland, May 7, 1957, 45789/57

Int. Cl. C09b 62/00, 62/04; D06p 3/66

U.S. Cl. 260—196

18 Claims

Fibre-reactive sulphophenylazonaphthylmonoazo dyestuffs containing an α,β-di-chloro- or dibromopropionylamino group. Yield on cotton brilliant dyeings of excellent general fastness-properties especially good fastness to light and excellent fastness to washing.

3,755,291

**PROCESS FOR IMPROVING THE DRY STATE TINCTORIAL STRENGTH OF A WATER SOLUBLE AZO DYE**

Walter R. Demler, Hamburg, and Paul G. Christ, Williamsville, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 598,164, Dec. 1, 1966, abandoned. This application Oct. 15, 1969, Ser. No. 870,763

Int. Cl. C09b 67/00

U.S. Cl. 260—200

7 Claims

A process of preparing water-soluble azo dyestuffs having improved tinctorial strength in the dry state which comprises gradually growing crystals of the dye from a concentrated aqueous inorganic salt solution to form a crystalline mass of the dye, wherein the dye crystals have an average length greater than 40 microns and thereafter separating and drying the crystallized dye.

3,755,292

**CYANOETHYL ETHER OF GALACTOMANNAN GUM**

Robert Nordgren, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Dec. 23, 1969, Ser. No. 887,745

Int. Cl. C07c 47/18

U.S. Cl. 260—209 R

10 Claims

A cyanoethyl ether of a galactomannan gum having a degree of substitution of greater than 1.9 and process of preparing the same at reflux temperatures with the periodic addition of water to the reactants. The product is used in explosives and can be used to thicken some organic solvents.

3,755,293

**THE ANTIBIOTIC MINIMYCIN**

Shiro Shirato; Junsaku Nagatsu; Mitsuo Shibuya, all of Tokyo, and Yoko Kusakabe, Tokorozawa, all of Japan, assignors to Kaken Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 4, 1970, Ser. No. 69,782

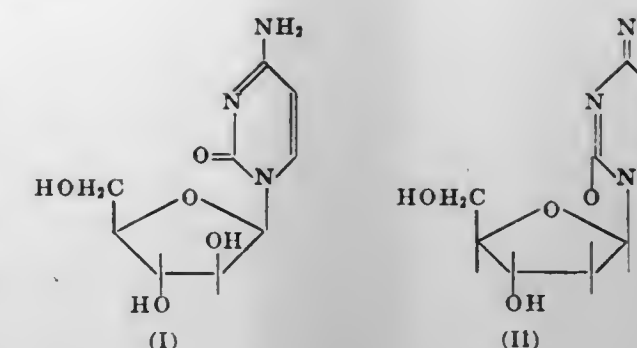
Claims priority, application Japan, Sept. 5, 1969, 44/69949

Int. Cl. C07c 69/20

U.S. Cl. 260—209 R

1 Claim

A novel antibiotic Minimycin characterized by a needle or pillar-like crystal form which is soluble in water and lower alcohols, but which is insoluble in nonpolar organic solvents, has been shown to be active against *Staphylococcus* and *Colibacillus*, which are ordinarily resistant to other antibiotics.



3,755,297

**CONTINUOUS SECONDARY CELLULOSE ESTER PROCESS**

Kenneth C. Campbell; James M. Davis; Gary E. Frye, and Robert E. Woods, all of Rock Hill, S.C., assignors to Celanese Corporation, New York, N.Y.

Filed June 30, 1971, Ser. No. 158,607

Int. Cl. C08b 3/06

U.S. Cl. 260—227

4 Claims

A continuous process for the preparation of a cellulose secondary acetate flake comprising the following steps:

1. slurring cellulose in a lower fatty acid/water slurry;
2. washing said slurry with lower fatty acid and extracting water from the cellulose slurry;
3. adding an effective amount of an acid catalyst;
4. mixing the pretreated cellulose containing the lower fatty acid and catalyst with a lower fatty acid/lower fatty acid anhydride mixture containing excess anhydride and esterifying the cellulose mixture;
5. blending the esterified dope with an aqueous solution of neutralizing salt;
6. desulfating and hydrolysis of the acetylated dope;
7. adding an aqueous neutralizing salt to the hydrolyzed dope; and
8. flash cooling the dope.

3,755,295

**1-(2-AMINO-2-DEOXY-β-D-RIBOFURANOSYL) PYRIMIDINES AND DERIVATIVES THEREOF**

Julien P. Verheyden, and John G. Moffatt, both of Los Altos, Calif., assignors to Syntex Corporation, Republic of Panama

Filed Oct. 24, 1969, Ser. No. 869,355

Int. Cl. C07d 51/52

U.S. Cl. 260—211.5 R

18 Claims

1-(2-Amino-2-deoxy-β-D-ribofuranosyl)pyrimidines and the corresponding 2-aminoacylamido and 2-dipeptidylamido compounds are useful in controlling metabolic processes.

3,755,296

**PROCESS FOR PREPARING 1-β-D-ARABINOFURANOSYL-CYTOSINE AND 2,2'-CYCLOCYTIDINE**

Tadashi Kanai; Kiyomi Kikugawa; Saeko Asakura; Osamu Maruyama; Motonobu Ichino, and Tokuro Nakamura, all of Oita-ken, Japan, assignors to Kohjin Co., Ltd., Tokyo, Japan

Filed July 17, 1970, Ser. No. 55,966

Claims priority, application Japan, July 24, 1969, 44/58517; Dec. 4, 1969, 44/97482; Dec. 4, 1969, 44/97483; Mar. 24, 1970, 45/24744

Int. Cl. C07d 51/52

U.S. Cl. 260—211.5 R

17 Claims

The present invention relates to a novel process for preparing 1-β-D-arabinofuranosylcytosine (spongocytidine) expressed by the general formula (I) and a process for preparing as an intermediate thereof 2,2'-cyclocytidine(2,2'-anhydro-1-β-D-arabinofuranosylcytosine) (II) with good efficiency.

3,755,299

**6-HETEROCYCLIC SUBSTITUTED PENICILLINS**

Jerry A. Weisbach, Cherry Hill, N.J., assignor to Smith Kline &amp; French Laboratories, Philadelphia, Pa.

Filed Aug. 13, 1971, Ser. No. 171,714

Int. Cl. C07d 99/16

U.S. Cl. 260—239.1

7 Claims

6-Heterocyclic α-amino or α-hydroxyacetamido-penicillins are prepared by conventional 6-acylation reactions. The products are antibacterial agents.



3,755,300  
PROCESS FOR THE PREPARATION OF  
BENZODIAZEPINE COMPOUNDS

Ryuji Tachikawa; Hiromu Takagi; Tetsuo Miyadera; Toshiharu Kamioka; Mitsunobu Fukunaga, and Yoichi Kawano, all of Tokyo, Japan, assignors to Sankyo Company Limited

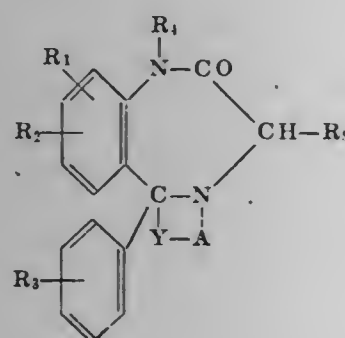
Filed Oct. 22, 1969, Ser. No. 13,919

Claims priority, application Japan, Oct. 24, 1968, 43/77500; Oct. 24, 1968, 43/77504; Apr. 17, 1969, 44/29968  
Int. Cl. C07d 87/54, 91/42, 85/48, 93/01, 93/08, 51/46, 53/06, 27/30

U.S. Cl. 260—239.3 T

4 Claims

A process for the preparation of a benzodiazepine compound having the formula



wherein

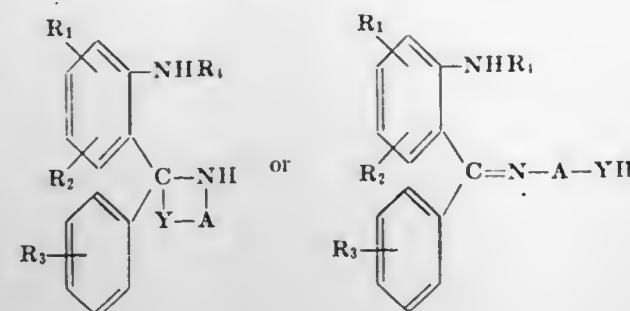
$R_1$ ,  $R_2$  and  $R_3$  may be the same or different and each represents  
hydrogen atom,  
a lower alkyl group,  
a lower alkoxy group,  
a halogen atom,  
hydroxy group,  
nitro group,  
cyano group,  
an acyl group,  
trifluoromethyl group,  
amino group,  
an acylamino group,  
a N-mono(lower alkyl)amino group,  
a N-di(lower alkyl)amino group,  
an acyloxy group,  
carboxyl group,  
an alkoxy carbonyl group,  
carbamoyl group,  
a N-mono(lower alkyl)carbamoyl group,  
a N-di(lower alkyl)carbamoyl group,  
a lower alkylthio group,  
a lower alkylsulfinyl group or  
a lower alkylsulfonyl group;

$R_4$  represents  
hydrogen atom,  
a lower alkyl group,  
a cycloalkyl group,  
an aralkyl group,  
an aryl group or  
phenacyl group;

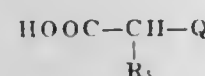
$R_5$  represents  
hydrogen atom or  
a lower alkyl group;

A represents  
an alkylene group which may be straight or branched; and

Y represents  
oxygen atom or sulfur atom which comprises reacting a compound having the formula



wherein  $R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ , Y and A are as defined above or a mixture of these compounds with a reactive derivative of a compound having the formula



wherein Q represents an acid radical of a reactive ester and  $R_5$  is as defined above.

The benzodiazepine compounds are useful as a minor tranquilizer.

3,755,301  
MANUFACTURE OF 11-ALKYL STEROIDS  
John S. Baran, Winnetka, and Chi-Dean Liang, Glenview, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.  
Filed June 23, 1972, Ser. No. 265,802  
Int. Cl. C07c 173/00

U.S. Cl. 260—239.55 R 4 Claims  
11 $\beta$ -Alkyl steroids are advantageously produced from 11-keto-9 $\beta$ -estra-1,3,5(10)-triene-3,17 $\beta$ -diol, which compound is obtained, typically, by rearrangement of 9 $\alpha$ , 11 $\alpha$ -epoxyestra-1,3,5(10)-triene-3,17 $\beta$ -diol or an acylated derivative thereof.

3,755,302  
PROCESS FOR THE PRODUCTION OF 17-MONESTERS OF 17 $\alpha$ , 21-DIHYDROXY-STERIODS AND PRODUCTS THEREOF  
Alberto Ercoli, Milano; Rinaldo Gardi, Carate Brianza, and Romano Vitali, Casatenovo, all of Italy, assignors to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.  
Filed June 22, 1970, Ser. No. 48,481  
Claims priority, application Italy, June 26, 1969, 18717/A69  
Int. Cl. C07c 173/00

U.S. Cl. 260—239.55 R 20 Claims  
This invention relates to an improved process for the preparation of 17-monoesters of 17 $\alpha$ , 21-dihydroxy-20-keto-steroids which consists in carrying out the hydrolysis of corresponding 17,21-cyclic orthoesters in a buffered aqueous-organic medium at a pH from about 4 to about 6. This invention also relates to new 17-esters of 17 $\alpha$ , 21-dihydroxy-steroids having an epoxy group at the 9 $\beta$ , 11 $\beta$ -position, useful as intermediates for the preparation of therapeutically active 17-esters.

3,755,303  
STEROID(16 ALPHA, 17 ALPHA-D)-OXAZOLINES AND  
THEIR PREPARATION

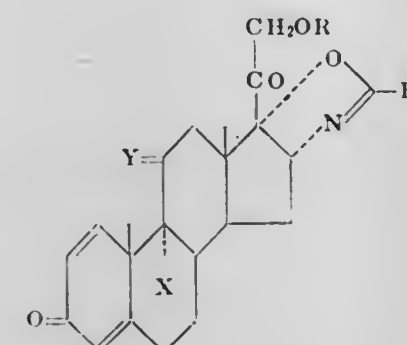
Giorgio Nannasohn, Milan, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy

Filed June 24, 1971, Ser. No. 156,538

Int. Cl. C07c 173/00, 173/10

U.S. Cl. 260—239.55

Steroido[16 $\alpha$ , 17 $\alpha$ -d]oxazolines of the formula



wherein X represents hydrogen or halo; Y represents H(OH) or O; or X and Y together represent a double bond between the carbon atoms in 9 and 11 positions; R represents H or lower acyl; and R' represents lower alkyl.

3,755,304  
SAPOGENOIC ACID DERIVATIVES  
Derek Harold Richard Barton, and Peter George Sammes, both of c/o Department of Chemistry, Imperial College of Science & Technology, London, S.W. 7, England  
Filed Oct. 8, 1970, Ser. No. 79,345  
Int. Cl. C07c 173/00, 173/08

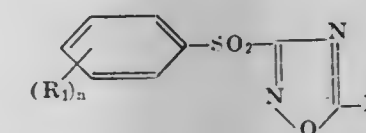
U.S. Cl. 260—239.55 R 13 Claims  
Sapogenoic acids and derivatives thereof are reacted with carbon nucleophiles to introduce the nucleophilic residue into the 16-position. The reaction products can be converted into 16-substituted  $\Delta^{16}$ -pregn-20-ones.

3,755,305  
PROCESS FOR THE PURIFICATION OF CAPROLACTAM  
Hans Helmut Schwarz, Krefeld, and Otto Immel, Krefeld-Uerdingen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany  
Filed Apr. 15, 1971, Ser. No. 134,310  
Claims priority, application Germany, Apr. 22, 1970, P 20 19 431.4  
Int. Cl. C07d 41/06

U.S. Cl. 260—239.3 A 4 Claims  
The invention relates to a process for the purification of  $\epsilon$ -caprolactam prepared by catalytic cyclohexanone oxime rearrangement in the gaseous phase which comprises mixing the crude lactam at a temperature above its melting point with at least one branched aliphatic hydrocarbon, the mixing proportions ensuring the formation of a liquid lactam phase in addition to the hydrocarbon phase, separating off the hydrocarbon phase, recrystallising the dissolved lactam from the hydrocarbon phase by cooling, and subjecting the lactam crystals thus obtained to fractional vacuum distillation.

3,755,306  
3-ARYLSULFONYL-1,2,4-OXADIAZOLES  
Uwe D. Treuner, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.  
Continuation-in-part of Ser. No. 190,692, Oct. 19, 1972, abandoned. This application Sept. 5, 1972, Ser. No. 285,968  
Int. Cl. A61k 27/00; C07d 85/52

U.S. Cl. 260—239.9 11 Claims  
3-Arylsulfonyl-1,2,4-oxadiazoles of the following general formula



are useful as antimicrobial agents, hypoglycemic agents and antiinflammatory agents.

3,755,307  
5-CINNAMOYL-PYRROLE-2-ACETIC ACIDS AND ESTERS  
John Robert Carson, Norristown, Pa., assignor to McNeill Laboratories, Inc., Fort Washington, Pa.  
Filed Jan. 21, 1972, Ser. No. 219,862  
Int. Cl. C07d 27/22

U.S. Cl. 260—240 J 5 Claims  
Compounds of the class of 5-acyl-pyrrole-2-acetic acids useful for their analgetic activity and the corresponding lower-alkyl esters used as precursors thereof.

3,755,308  
NITROFURFURYLIDENEAMINO DERIVATIVE OF OCTAHYDROBENZTHIAZINE-1,1-DIOXIDE AND PROCESS FOR ITS PREPARATION  
Karl Heinrich Mayer, Opladen-Quettingen, and Axel Haberkorn, Wuppertal-Elberfeld, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany  
Filed Apr. 19, 1971, Ser. No. 135,375  
Claims priority, application Germany, Apr. 25, 1970, P 20 20 298.6  
Int. Cl. C07d 93/12

U.S. Cl. 260—240 A 1 Claim  
4-(5'-Nitrofurfurylideneamino)-octahydro-4H-1,4-benzthiazine-1,1-dioxide is obtained from 4-amino-octahydro-4H-1,4-benzthiazine-1,1-dioxide and 5-nitro-2-furfural, or a reactive derivative thereof. The compound has antiparasitic activity, particularly against *Trypanosoma cruzi*.

3,755,309  
2-SUBSTITUTED PYRIDINE DERIVATIVES AND SYNTHESIS THEREOF  
Tohru Takahashi; Hachiro Sugimoto; and Koichiro Ueda, all of Tokyo, Japan  
Filed Nov. 11, 1971, Ser. No. 197,937  
Claims priority, application Japan, July 16, 1971, 46/52412  
Int. Cl. C07d 31/44

U.S. Cl. 260—240 J 9 Claims  
2-[( $\beta$ -(N-acylhomopiperazino) pyridines, the new compound, as well as their salts of pharmacologically acceptable acids and the synthesis thereof. The compounds possess excellent antalgic, anti-phlogistic and anti-edematous effects with low toxicity and so are suitable as medicament. They are orally or parenterally administered to the patients.



3,755,310  
SUBSTITUTED BIS(P-DIALKYLAMINOPHENYL)METHANE PHOTOCONDUCTORS.

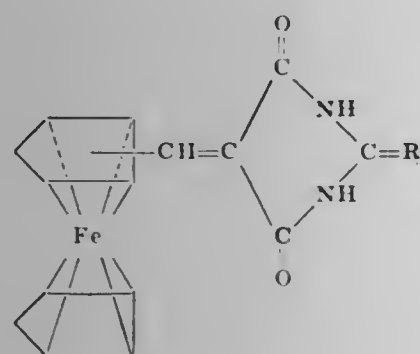
Louis J. Rossi, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.  
Division of Ser. No. 862,923, Oct. 1, 1969, Pat. No. 3,647,431.  
This application May 14, 1971, Ser. No. 143,605  
Int. Cl. C09b 23/14

U.S. Cl. 260—240.9 5 Claims  
Novel organic photoconductors for electrophotographic elements as described. These novel photoconductors are bis-(p-dialkylaminophenyl)methanes having a third substituent comprising an unsaturated alkyl group having two or four carbon atoms wherein an  $\omega$ -carbon atom of the third substituent is fully substituted by aryl group(s), heterocyclic group(s) or combinations thereof.

3,755,311  
FERROCENE DERIVATIVES

Roswitha Zimmer-Galler, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.  
Filed Sept. 19, 1967, Ser. No. 670,018  
Int. Cl. C07d 51/00

U.S. Cl. 260—240 R 4 Claims  
Compounds useful as burning rate catalysts for solid propellants characterized by low volatility and having the formula



are disclosed wherein R is O, NR' and S and each R' is hydrogen, lower alkyl, phenyl, cyano and nitro.

3,755,312  
6-SUBSTITUTED-1, 2,4-PYRIMIDO[4,5-E]THIADIAZINE-1,1-DIOXIDES

Paul L. Anderson, Dover, and Robert E. Manning, Mountain Lakes, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.  
Continuation-in-part of Ser. No. 193,555, Oct. 28, 1971, abandoned, which is a continuation-in-part of Ser. No. 108,221, Jan. 20, 1971, abandoned. This application Dec. 6, 1971, Ser. No. 205,349  
Int. Cl. C07d 99/10

U.S. Cl. 260—243 R 12 Claims  
Substituted 8-amino 1,2,4-pyrimido[4,5-e]-thiadiazines-1,1-dioxides, e.g., 8-amino-3-ethyl-6-methylthio-1,2,4-pyrimido[4,5-e]thiadiazine-1,1-dioxide, are prepared from substituted 4,6-diamino-5-pyrimidine-sulfonamides and are useful as anti-hypertensives.

3,755,313  
PESTICIDAL DERIVATIVES OF O,O-DIALKYL-S-THIOMORPHOLINOCARBONYLMETHYL-THIOPHOSPHATES AND DITHIOPHOSPHATES

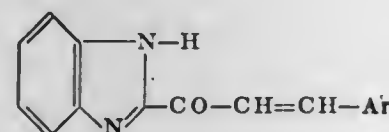
Ernst Beriger, Neuallschwil, Switzerland, assignor to Ciba-Geigy A.G., Basel, Switzerland  
Filed Jan. 17, 1972, Ser. No. 218,552  
Division of Ser. No. 815,522, Apr. 8, 1969, Pat. No. 3,658,800.  
Claims priority, application Switzerland, Apr. 16, 1968, 5552/68

U.S. Cl. 260—243 B 3 Claims  
Phosphates and Thiophosphates containing a special morpholino or isomorpholino residue and having insecticidal, acaricidal and herbicidal properties are disclosed.

3,755,314  
NOVEL 2-ACRYLOYL BENZIMIDAZOLES, THEIR PROCESS OF PREPARATION AND THEIR THERAPEUTIC APPLICATION

Claude P. Fauran, Paris; Jeannine A. Eberle, Chatou; Guy M. Raynaud, Paris, and Janine M. Thomas, Neuilly, all of France, assignors to Delalande S.A., Courbevoie (Hauts-de-Seine), France  
Filed Nov. 26, 1971, Ser. No. 202,637  
Claims priority, application France, Dec. 1, 1970, 7043089  
Int. Cl. C07d 49/38

U.S. Cl. 260—240 J 2 Claims  
A compound of the formula



in which Ar is unsubstituted phenyl, phenyl mono- or di-substituted by halogen, alkoxy having one to six carbon atoms or dimethylamino, 2-furyl, 2-thienyl or 3-pyridyl. The compounds are prepared by reacting 2-acetyl benzimidazole with an aldehyde of the formula ArCHO. The compounds possess hypotensive and diuretic properties.

3,755,315  
2-H-PYRIDO(2,3-A)PYRAZINE DERIVATIVES AND THEIR ACID-ADDITION SALTS

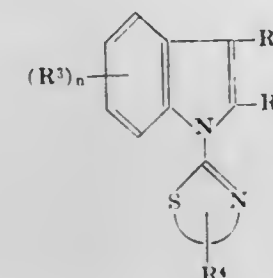
Hideo Kato, Motomachi, Japan, assignor to Hokuriku Seiyaku Co., Ltd., Fukui, Japan  
Filed Aug. 5, 1970, Ser. No. 61,422  
Int. Cl. C07d 51/72, 94/13

U.S. Cl. 260—243 A 9 Claims  
The present invention provides new 2-azaquinolizidine derivatives and their acid-addition salts, which have neurotropic and antihistaminic effects and are valuable as medicaments, as well as a process for the production of these compounds.

3,755,316  
THIAZOLINYL AND THIAZINYL DERIVATIVES OF INDOLES

Venkatachala L. Narayanan, Hightstown, and Rudiger D. Haugwitz, Highland Park, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.  
Filed Oct. 20, 1971, Ser. No. 191,092  
Int. Cl. C07d 93/06

U.S. Cl. 260—243 R 8 Claims  
Thiazolinyl and thiazinyl derivatives of indoles are provided having the structure



and which are useful as anti-inflammatory agents.

3,755,317  
THIOAMIDES OF 4-SUBSTITUTED SYRINGIC ACID AND THEIR PREPARATION

Giorgio Pifferi, Milan, Italy, assignor to I.S.F., S.p.A., Milan, Italy  
Filed Nov. 27, 1970, Ser. No. 93,460  
Claims priority, application Italy, July 31, 1970, 28164 A/70  
Int. Cl. C07d 87/46

U.S. Cl. 260—247.1 2 Claims  
New thioamides of 4-substituted syringic acid are provided, which are characterized with respect to the corresponding amides in that they have a more prolonged effect. The new thioamides herein provided can be used in therapy showing a prolonged ataraxic or tranquilizing action upon the central nervous system without comprising the reflexes and the motorial coordination; furthermore, they show a very low toxicity, a favourable therapeutic coefficient and the absence of collateral effects on the circle.

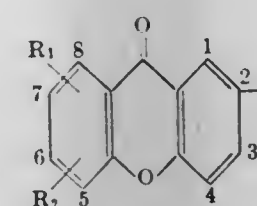
3,755,318  
PROCESS FOR PRODUCING PRIMARY CARBOXYLIC ACID AMIDES

Herbert Eck, Joseph Heckmaier, and Hellmuth Spes, all of Burghausen-Obb., Germany, assignors to Wacker-Chemie GmbH, Munich, Germany  
Continuation of Ser. No. 782,744, Dec. 10, 1968, abandoned.  
This application Apr. 5, 1971, Ser. No. 131,541  
Int. Cl. C07d 87/34

U.S. Cl. 260—247.7 H 4 Claims  
Process for producing primary carboxylic acid amides of the general structure RR'N-CO-CHR''R''' by reacting a ketene having the general formula R''R'''C=CO with an amine having the general structure HNRR', where R and R' are hydrogen, substituted or unsubstituted aryl- or alkyl residues, which can form, together, an alicyclic or a heterocyclic non-aromatic ring, and R'' and R''' can be hydrogen, alkyl- or aryl residues, where the alkyl residues may have up to four carbon atoms, in which the reaction of ketene with amine is carried out in the corresponding carboxylic acid amide at a temperature above the melting point and below the decomposition point of the reaction mixture.

3,755,319  
XANTHONE DERIVATIVES  
David Edmund Bays, London, England, assignor to Allen & Hanburys Limited, London, England  
Division of Ser. No. 90,444, Nov. 17, 1970. This application Mar. 8, 1972, Ser. No. 232,954  
Claims priority, application Great Britain, Nov. 27, 1969, 58121

U.S. Cl. 260—247.5 R 6 Claims  
Xanthone derivatives of the formula:



in which X represents a carboxyl or 5-[1H]-tetrazolyl group; and R<sub>1</sub> and R<sub>2</sub> which may be the same or different each represent a hydrogen atom, an alkyl group containing from 1 to 4 carbon atoms, a nitro group, a halogen atom or a group of the formula —NR<sub>3</sub>R<sub>4</sub> or OR<sub>3</sub> or NR<sub>3</sub>SO<sub>2</sub>R<sub>6</sub>, (in which the groups R<sub>3</sub> and R<sub>4</sub> which may be the same or different each represent a hydrogen atom, a phenyl group, a benzyl group or an alkyl group which may optionally be substituted by an alkoxy group containing from 1 to 6 carbon atoms, a phenoxy group, phenyl group, an amino, alkylamino or dialkylamino group or by one or more hydroxy groups; and in which R<sub>5</sub> is a hydrogen atom or an alkyl group containing from 1 to 6 carbon atoms and R<sub>6</sub> is an alkyl group containing from 1 to 6 carbon atoms); with the proviso that when X represents a carboxyl group R<sub>1</sub> and R<sub>2</sub> do not both represent hydrogen atoms; and pharmaceutically acceptable non-toxic salts and esters of such compounds.

These derivatives have pharmacological activity and in particular inhibit the release of spasmogen mediators from antigen-antibody reactions.

3,755,320  
CONTINUOUS MANUFACTURE OF DICHLOROISOCYANURIC ACID  
Horst Goelz, Schwetzingen, and Hubert Suter, Ludwigshafen, both of Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany  
Filed Nov. 4, 1970, Ser. No. 86,987  
Int. Cl. C07d 55/40

U.S. Cl. 260—248 C 6 Claims  
Continuous manufacture of dichloroisocyanuric acid by reacting cyanuric acid with chlorine aqueous alkaline solution at a specific ratio of the reactor dimensions, under specific conditions of temperature and flow rate of the reaction mixture and at a specific molar ratio of the starting materials. The compound produced by the process of the invention is a valuable intermediate in the manufacture of bleaches, oxidizing agents, detergents and disinfectants.

3,755,321  
2,4,6-TRIPICRYL-S-TRIAZINE  
Joseph Carl Dacons, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.  
Filed Nov. 20, 1968, Ser. No. 779,308  
Int. Cl. C07d 55/12

U.S. Cl. 260—248 CS 5 Claims  
An explosive compound of 2,4,6-tripicryl-s-triazine and its method of preparation.



3,755,322

## DIAMINO-S-TRIAZINES

Roland Winter, Armonk, and Raymond Seltzer, New York, both of N.Y., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

Filed July 15, 1970, Ser. No. 55,240

Int. Cl. C07d 55/20

U.S. Cl. 260—249.6

19 Claims

The disclosure covers diamino-s-triazines which are useful in polymer synthesis, such as polyimides. Also covered are dinitro-s-triazines which can be used as intermediates for the diamino compounds. The diamines are prepared by a condensation of 2-substituted-4,6-dichlorotriazines with diamines or with nitroamines. The product from the latter reaction can be reduced subsequently to diamines.

3,755,323

## TRIAZINYLAMINOALKYL PHOSPHONATES

Edward D. Weil, Hastings-on-Hudson, and Ralph Fearing, Bardonia, both of N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

Filed June 26, 1970, Ser. No. 50,364

Int. Cl. C07d 55/22

U.S. Cl. 260—249.6

5 Claims

Novel triazinylaminoalkyl phosphonates, methods for their preparation as well as for their use in preparing flameproof finishes for textiles are disclosed. These triazinylaminoalkyl phosphonates are found to be low in cost and of minimal toxicity and their use for the flameproofing of textiles provides highly durable finishes.

3,755,324

## 3-(5-NITRO-2-FURYL)-1H-PYRAZOLO[3,4]PYRIMIDINS-4(5H)-ONES

William Hoyle, Bramhall, and Graham Arton Howarth, Handforth, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,531

Claims priority, application Great Britain, Oct. 28, 1969, 52,663/69

Int. Cl. C07d 51/46

U.S. Cl. 260—256.4 F

6 Claims

Compounds of the class of 3-(5-nitro-2-furyl)-1H-pyrazolo[3,4-d]pyrimidin-4(5H)-one have antimicrobial properties and are active ingredients in pharmaceutical compositions and animal feedstuff compositions, an illustrative example is 1,6-dimethyl-3-(5-nitro-2-furyl)-1H-pyrazolo[3,4-d]pyrimidin-4(5H)-one.

3,755,325

## IMIDAZOLIUM QUATERNARY SALTS AND METHODS OF PREPARING THE SAME

Robert L. Clark, Woodbridge, and Arsenio A. Pessolano, Colonia, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 806,719, March 12, 1969, abandoned. This application Aug. 31, 1971, Ser. No. 176,679

Int. Cl. C07d 51/42

U.S. Cl. 260—256.4 N

4 Claims

Imidazolium quaternary salts, specifically 3-(2-loweralkyl-4-amino-5-pyrimidinylmethyl)-1,2-dialkyl substituted imidazolium quaternary salts, having anti-coccidial activity are provided.

3,755,326

## URACIL THIUREAS

Arthur Berger, Skokie, Ill., and Edeltraut E. Borgaes, Sindelfingen, Germany, assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Continuation of Ser. No. 849,890, Aug. 13, 1969, abandoned.

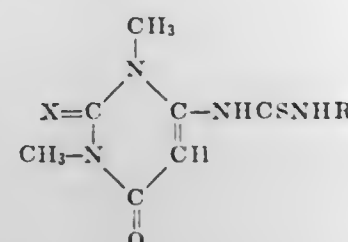
This application Dec. 6, 1971, Ser. No. 205,328

Int. Cl. C07d 51/38

U.S. Cl. 260—256.5 R

12 Claims

Uracil thioureas having the general formula



wherein X is selected from the group consisting of O and S, and wherein R is selected from the group consisting of lower alkyl having from one to four carbon atoms, allyl, methallyl and phenyl. Said compounds are useful as central nervous system anti-depressants.

3,755,327

## 1(HOMO)PIPERAZINYL CARBOXYL ALKYL 2(3H) BENZIMIDAZOLINONES AND 2(3H) BENZOTHIOZOLINONE

Suminori Umio, Kawanishi, Japan, assignor to Fujisawa Pharmaceutical Co., Ltd., Osaka-shi, Japan

Continuation-in-part of Ser. No. 812,448, April 1, 1969, Pat. No. 3,661,921, which is a continuation-in-part of Ser. No. 733,828, June 3, 1968, abandoned. This application Sept. 4, 1970, Ser. No. 69,983

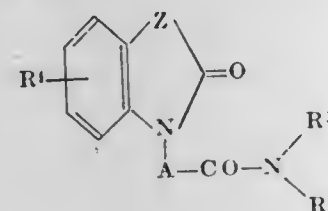
Claims priority, application Japan, June 5, 1967, 42/36113; Sept. 30, 1967, 42/62872

Int. Cl. C07d 51/70

U.S. Cl. 260—268 C

48 Claims

N-substituted and N,N-disubstituted aminocarbonylalkyl compounds of the formula:



wherein

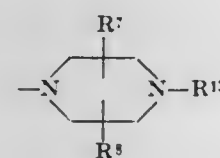
Z is sulfur or lower alkylimino;

A is lower alkylene;

R1 is hydrogen, halogen, lower alkyl, lower alkoxy or trifluoromethyl; and the group of the formula:

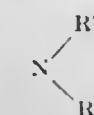


is 1-aziridinyl a 6-membered heterocyclic group selected from 2,3 or 4-hydroxypiperidino, morpholino, and a piperazine group of the formula:



in which R7 and R8 are each hydrogen or lower alkyl and R12 is hydrogen, lower alkyl, hydroxy(lower)alkyl, lower al-

kanoyl(lower)alkyl, lower alkanoyloxy(lower)alkyl, higher alkanoyloxy(lower)alkyl, linoloyloxy(lower)alkyl, lower alkoxy-carbonyl(lower)alkyl, phenyl(lower)alkanoyloxy(lower)alkyl, 2,3,4,5 or 6-tri(lower)alkoxybenzoyloxy(lower)alkyl, phenyl(lower)alkyl, 2,3,4,5 or 6-di(lower)alkoxyphenyl(lower)alkyl, lower alkenyl, lower alkynyl, phenyl or benzoyl; or a 4-lower alkyl-1-homopiperazinyl; provided that R1 is not hydrogen when the group of the formula:



represents a 1-aziridinyl or morpholino.

These compounds exhibit pharmacological activity such as antiinflammatory activity or antiarrhythmic activity.

3,755,328

## PROCESS FOR PREPARING ERGOT ALKALOIDS

Paul Stadler, Biel-Benken Baselland, and Albert Hofmann, Bottmingen, both of Switzerland, assignors to Sandoz Ltd., (A/K/A Sandoz AG), Basel, Switzerland

Continuation-in-part of Ser. No. 27,156, April 9, 1970, abandoned. This application July 19, 1972, Ser. No. 273,114

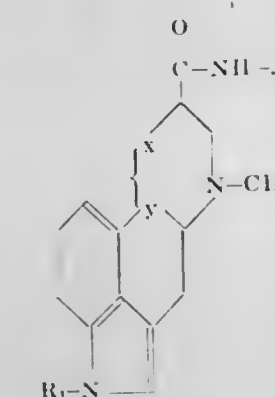
Claims priority, application Switzerland, Apr. 18, 1969, 5895/69; Sept. 2, 1969, 13262/69

Int. Cl. C07d 43/20

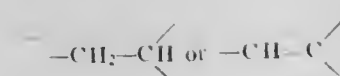
U.S. Cl. 260—268 PE

6 Claims

The invention concerns a novel process for the production of a compound of the formula:



in which  $\bar{x}\bar{y}$  is the group



and

R1 is hydrogen, lower alkyl, allyl or benzyl and

—NH—A is a cyclic polypeptide of the type known in ergot peptide alkaloids. Lysergic acid halides, obtained by reaction with thionyl chloride, phosgene or oxalyl chloride are reacted with a salt of the polypeptide amine in the presence of an acid binding agent.

Many of the above compounds are of known therapeutic value, and can be described as vaso-active and also have activity on the central nervous system.

3,755,329

## NITROGEN-HETEROCYCLYL GOLD(I) COMPOUNDS

Lawrence Graham Vaughan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 715,960, March 26, 1968, abandoned. This application Dec. 22, 1970, Ser. No. 100,797

Int. Cl. C07f 1/12

U.S. Cl. 260—270 R

22 Claims

Disclosed herein are nitrogen-heterocyclylgold(I) compounds wherein the gold is bonded directly, or via a p-phen-

ylene group, to carbon of the heterocyclic nucleus, and a process for their preparation comprising reacting a heterocyclylgold compound with a trihydrocarbyl-phosphorus, -arsenic, or -antimony-gold halide. The compounds are useful for gold plating and for printing electrical circuits.

3,755,330

1- $\alpha$ -HYDROXYBENZYL 3-METHYL, 1,2,3,4-TETRAHYDROISOQUINOLINO-2-CARBONITRILES

William J. Houlihan, and Robert E. Manning, both of Mount Lakes, N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Division of Ser. No. 51,403, May 27, 1970, Pat. No. 3,637,709, which is a continuation-in-part of Ser. No. 663,218, Aug. 25, 1967, Pat. No. 3,565,900. This application Aug. 16, 1971, Ser. No. 172,285

Int. Cl. C07d 35/40

U.S. Cl. 260—283 CN

4 Claims

Compounds are of the class of 1-aryl-3-amino-1,5,6,10b-tetrahydro-3H-oxazolo[4,3-a]isoquinolines, useful as central nervous system stimulants.

3,755,331

## 1-N-LOWER ALKYLPIPERIDYL-1H-PYRAZOLO[3,4-B]PYRIDINES AND PYRIDINOLS

Hoehn, Hans, Tegernheim, and Ernst Schulze, Regensburg, both of Germany, assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed July 15, 1970, Ser. No. 55,250

Int. Cl. C07d 29/26

U.S. Cl. 260—293.6

4 Claims

New 1-N-lower alkylpiperidyl-1H-pyrazolo[3,4-b]pyridines and pyridinols are useful as hypoglycemic agents.

3,755,332

## SUBSTITUTED 4-INDAZOLAMINOQUINOLINES

Jan W. F. Wasley, Ossining, and Abraham Wajnurt, Riverdale, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 818,044, April 21, 1969, abandoned, and a continuation-in-part of Ser. No. 725,176, April 29, 1968, abandoned. This application July 1, 1971, Ser. No. 159,061

Int. Cl. C07d 33/50

U.S. Cl. 260—288 R

16 Claims

Substituted indazolaminoquinolines, acid addition salts thereof as well as N-oxides thereof are anti-inflammatory, anti-hypertensive and anti-malarial agents. Illustrative embodiments are 7-chloro-4-(6-indazolamino)-quinoline and ethyl 7-chloro-4-(6-indazolamino)-quinoline-3-carboxylate.

3,755,333

## PROCESS FOR THE PREPARATION OF VINCAMINE

Csaba Szantay, Lajos Szabo, Gyorgy Kalaus, and Vilmos Simonidesz, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest X, Hungary

Filed May 2, 1972, Ser. No. 249,492

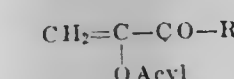
Claims priority, application Hungary, May 7, 1971, R1-430

Int. Cl. C07d 27/54

U.S. Cl. 260—293.53

6 Claims

A new process for the preparation of vincamine and of homologues thereof containing acyl groups of 2 to 6 carbon atoms in the 14-position, wherein 1-ethyl-2,3,4,6,7,12-hexahydroindolo[2,3-a]quinolizine is reacted with an  $\alpha$ -acyloxy-acrylic acid derivative of the formula



(R = C1-5 alkyl) to obtain the corresponding 1-( $\beta$ -acyloxy- $\beta$ -R-oxy-carbonyl-ethyl)-1-ethyl-1,2,3,4,6,7-hexahydro-12H-in-



dolo[2,3-a]quinolizine compound, this is converted by deacylation and reduction into the corresponding 1-( $\beta$ -hydroxy- $\beta$ -R-oxycarbonyl-ethyl)-1-ethyl-1,2,3,4,6,7,12,12b-octahydroindolo[2,3-a]quinolizine; the latter is treated with an oxidizing agent to yield a mixture of the desired vincamine derivative and the 14-epimer thereof. The latter can be epimerized in a known manner; by using silver carbonate as oxidizing agent, the epimerization occurs simultaneously.

3,755,334

## NEW QUATERNIZATION METHOD

Harold Z. Sommer, 610 Lafayette St., Havre de Grace, Md.

Filed June 26, 1970, Ser. No. 50,352

Int. Cl. C07d 29/12

U.S. Cl. 260—293.51

9 Claims

A method for the synthesis of quaternary ammonium compounds and tertiary amines from primary and secondary amines with an alkylating agent and an organic base.

3,755,335

## CERTAIN 1,2,3,5,6,12,13A-OCTAHYDRO-12-OXO-[3,2,1-D,E]PYRIDO-[1,5]-NAPHTHYRIDINES

Claude Thal, Malakoff; Pierre Potier, Bois D'Arcy, and Henri Philippe Husson, Chevreuse, all of France, assignors to Anvar-Agence Nationale de Valorisation de la Recherche, Paris, France

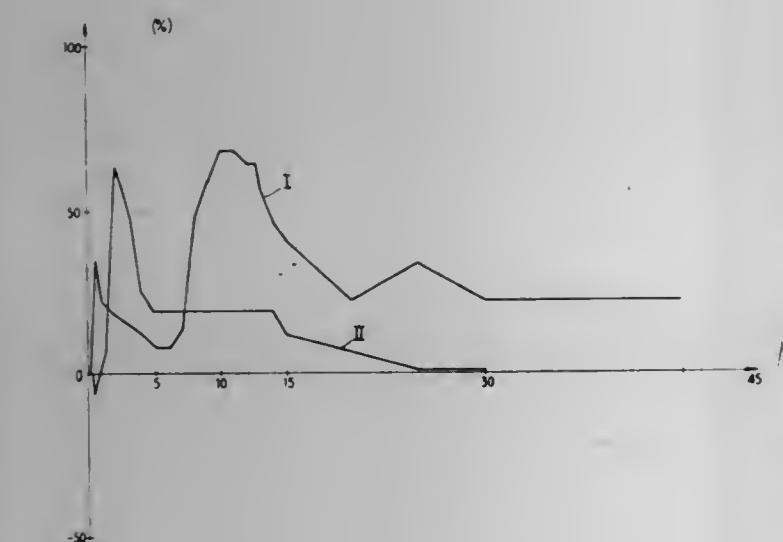
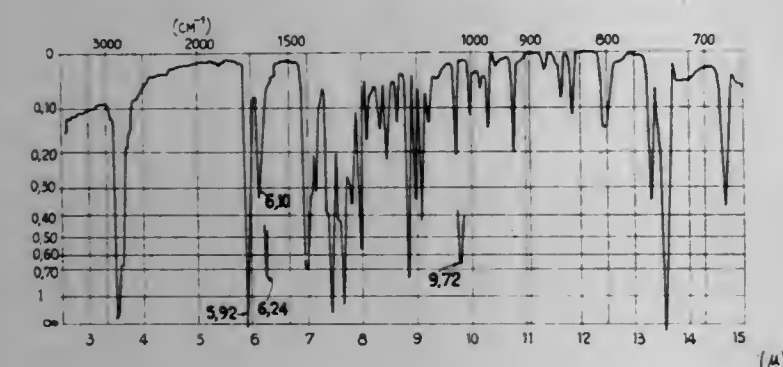
Filed Mar. 17, 1971, Ser. No. 125,029

Claims priority, application France, Mar. 26, 1970, 7010846

Int. Cl. C07d 29/22

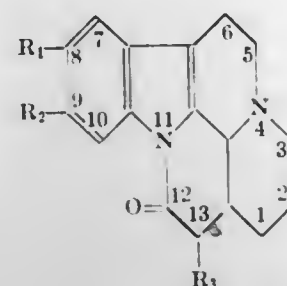
U.S. Cl. 260—293.53

3 Claims



The invention relates to new indole derivatives which are useful therapeutic agents.

Said new derivatives are 1,2,3,5,6,12,13,13a-octahydro-12-oxo-[3,2,1-d,e]-indolo-[3,2,1-i,j]-pyrido-[1,5]-naphthyridines having the general formula



in which R<sub>1</sub> and R<sub>2</sub>, which may be the same or different, are selected from H, OH and OCH<sub>3</sub>, and R<sub>3</sub> is selected from H, Cl, Br and —COCO<sub>2</sub>C<sub>2</sub>H<sub>5</sub>.

3,755,336

## SULFUR-CONTAINING DERIVATIVES OF 2-METHYL-4-HYDROXYMETHYL-5-METHYLENE-PYRIDINE

Gustav Schorre, Darmstadt, Germany, and Herbert Nowak, Altdorf/Uri, Switzerland, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Germany

Continuation-in-part of Ser. No. 735,182, June 7, 1968, Pat. No. 3,625,949. This application July 19, 1971, Ser. No. 164,123

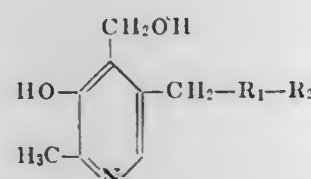
Claims priority, application Germany, June 8, 1967, M 74311; Apr. 18, 1968, P 17 70 222.6

Int. Cl. C07d 31/50, 31/48

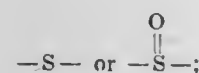
U.S. Cl. 260—294.8 G

12 Claims

For decreasing the blood cholesterol level, ameliorating dysfunctions of the central nervous system and increasing the tolerance of animals to a deficiency of oxygen, compounds of the formula:



wherein  
R<sub>1</sub> represents



and

R<sub>2</sub> represents lower acyl, lower unsaturated alkyl, unsubstituted alkyl and substituted alkyl; with the provision that when R<sub>1</sub> represents —S—, R<sub>2</sub> is other than ethyl,  $\beta$ -chloroethyl or  $\beta$ -hydroxyethyl.

3,755,337

## MANUFACTURE OF 1,1-DISUBSTITUTED-4,4-BIPYRIDYLUM SALTS

John Gerard Carey, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Oct. 20, 1970, Ser. No. 82,503

Claims priority, application Great Britain, Oct. 27, 1969, 52,450/69

Int. Cl. C07d 31/32

U.S. Cl. 260—295 Q

12 Claims

A process for the manufacture of a 1,1'-disubstituted-4,4'-bipyridylum salt which comprises reacting the corresponding

N-substituted pyridinium salt with cyanamide ions, for example provided by an alkali metal cyanamide, and subsequently oxidizing the resulting interaction product, for example by means of an oxidizing agent which is an electron acceptor and which has a redox potential in water more positive than —0.50 volt as compared with the saturated calomel electrode.

3,755,338

## 4-AMINO-6-BROMO-3,5-DICHLOROPICOLINIC ACID COMPOUNDS

Alin H. Gulbenk, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

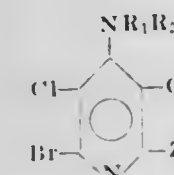
Filed Dec. 17, 1970, Ser. No. 99,304

Int. Cl. C07d 31/36

U.S. Cl. 260—295 R

2 Claims

Compounds corresponding to the formula



wherein R<sub>1</sub> and R<sub>2</sub> independently represents hydrogen or loweralkyl of one to four carbon atoms; Z represents carboxylic acid (—COOH), carboxylic acid amide (—CONR<sub>1</sub>R<sub>2</sub>) wherein R<sub>1</sub> and R<sub>2</sub> independently represents hydrogen or loweralkyl of one to four carbon atoms), carboxylic acid salt (—COOM wherein M represents alkali metal, alkaline earth metal, copper, iron, zinc, cobalt, nickel and ammonium) or carboxylic acid ester (—COOR wherein R represents loweralkyl of one to four carbon atoms) are prepared and are useful as fungicides and algicides.

3,755,339

## ESTERS OF AMINOHALOPYRIDYLOXY ACIDS

Lennon M. McKendry, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

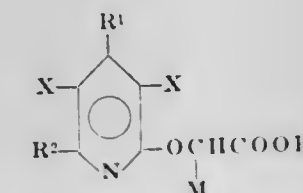
Filed July 26, 1971, Ser. No. 166,308

Int. Cl. C07d 31/36

U.S. Cl. 260—295 R

6 Claims

Compounds corresponding to the formula



wherein X represents chloro, bromo, or fluoro; R represents alkyl of one to 12 carbon atoms or a radical having the formula —(CH<sub>2</sub>)<sub>n</sub>OR<sup>3</sup> wherein n represents an integer of from 2 to 4 and R<sup>3</sup> represents lower alkyl of one to four carbon atoms or phenyl; M represents hydrogen or methyl; R<sup>1</sup> represents hydrogen, loweralkyl of one to four carbon atoms, amino or loweralkylamino of one to four carbon atoms; and R<sup>2</sup> represents hydrogen, X, loweralkyl, amino or loweralkylamino, with the proviso that one of R<sup>1</sup> or R<sup>2</sup> is always amino or loweralkylamino and the other of R<sup>1</sup> and R<sup>2</sup> is always other than amino or loweralkylamino are prepared. These compounds are useful as herbicides and as active agents in compositions used as herbicides.

3,755,340

## AMINO DERIVATIVES OF PYRAZOLOPYRIDINE CARBOXYLIC ACIDS AND ESTERS

Hans Hoehn, Arberstrasse 12, Tegernheim, and Theodor Denzel, Bayreutherstrasse 13, Nurnberg, both of Germany

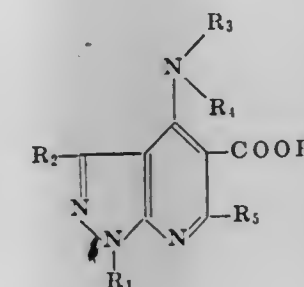
Continuation-in-part of Ser. No. 41,568, May 28, 1970, abandoned. This application Aug. 5, 1971, Ser. No. 169,536

Int. Cl. C07d 31/36

U.S. Cl. 260—295.5 B

22 Claims

New amino derivatives of pyrazolo[3,4-b]pyridine-5-carboxylic acids and esters have the general formula



they are useful as ataractic, analgesic and antiinflammatory agents. In addition, the new compounds increase the intracellular concentration of adenosine-3',5'-cyclic monophosphate.

3,755,341

## PROCESS OF PREPARING PYRIDYL CARBINOLS AND KETONES

Willford L. Mendelson, Philadelphia, Pa., assignor to Smith Kline &amp; French Laboratories, Philadelphia, Pa.

Filed July 8, 1971, Ser. No. 160,934

Int. Cl. C07d 31/32

U.S. Cl. 260—297 R

6 Claims

Process of preparing pyridyl carbinols and ketones by the reaction of a halopyridine, lithium and a carbonyl or nitrile compound in a one step procedure. The pyridyl carbinols and ketones are useful as intermediates for compounds having pharmacological activity, for example antihistamine or bronchodilator compounds.

3,755,342

## CERTAIN 3-MONOSUBSTITUTED-4-THIA-2,6-DIAZABICYCLO[3.2.0]HEPTAN-7-ONES

Karl Heusler, Basel, and Bruno Fechtig, Reinach, Basel-Land, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 23, 1970, Ser. No. 92,297

Claims priority, application Switzerland, Nov. 27, 1969, 17673/69; June 5, 1970, 8465/70

Int. Cl. C07d 99/10

U.S. Cl. 260—306.7

4 Claims

2-R<sub>1</sub>-3-R<sub>2</sub>-4-thia-2,6-diazabicyclo[3.2.0]heptan-7-one compounds, wherein R<sub>1</sub> represents hydrogen or the acyl radical Ac of an organic acid and R<sub>2</sub> represents hydrogen or an optionally substituted hydrocarbon radical are useful as intermediates.

3,755,343

## 4-AROTRIAZOLYL-4'-AROXAZOLYL DIPHENYL DERIVATIVES

Rudolf Anliker, and Peter Liechti, both of Binningen, Switzerland, assignors to Ciba-Geigy AG., Basle, Switzerland

Filed June 16, 1970, Ser. No. 46,824

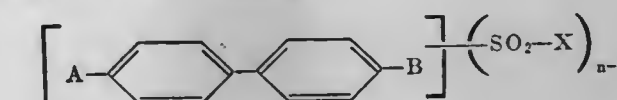
Claims priority, application Switzerland, June 27, 1969, 9868/69

Int. Cl. C07d 85/48

U.S. Cl. 260—307 D

2 Claims

Compounds of the formula





wherein A denotes a benzotriazole, naphthotriazole or acenaphthotriazole radical, B denotes a benzoxazole radical which may contain a condensed-on six-membered carbocyclic ring and wherein the radical A and B may contain substituents, such as halogen, halogenalkyl, alkyl, alkoxy, alkoxylalkyl, aminoalkyl, phenylalkyl; phenyl, carboxylic ester group, cyclohexyl or cyano. In the above formula  $n$  is an integer from 1 to 5 and X represents an optionally substituted amino group or a group —OM, wherein M denotes hydrogen or a salt-forming cation. Said compounds are valuable optical brightening agents.

3,755,344

### 3-OXO-BENZISOX AZOLEMETHYL-(THIONO) THIOLPHOSPHERIC (PHOSPHONIC) ACID ESTERS

Walter Lorenz, Wuppertal-Croneberg; Horst Boshagen, Haan/Rhineland; Ingeborg Hammann, Cologne, and Wilhelm Stendel, Uppertal-Eberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 5, 1971, Ser. No. 186,812

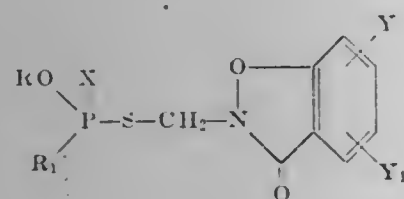
Claims priority, application Germany, Oct. 9, 1970, P 20 49 691.7

Int. Cl. C07d 85/18

U.S. Cl. 260—307 A

7 Claims

3-oxo-benzisoxazolemethyl-(thiono)thiolphosphoric (phosphonic) acid esters of the general formula



in which  
R is an alkyl radical with 1-6 carbon atoms,  
R<sub>1</sub> is an alkyl or alkoxy radical with 1-6 carbon atoms,  
Y and Y<sub>1</sub> each is a hydrogen atom, a halogen atom, a nitro group or an alkyl radical with 1-6 carbon atoms, and  
X is an oxygen or sulfur atom,  
which possess insecticidal and acaricidal properties.

3,755,345

### BISTRIAZOLYL-BISPHENYL-METHANES AND THEIR SALTS

Erik Regel, Wuppertal-Croneberg; Karl Heinz Buchel, Wuppertal-Elberfeld; Robert R. Schmidt, Leverkusen, and Ludwig Eue, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 24, 1970, Ser. No. 75,252

Claims priority, application Germany, Sept. 27, 1969, P 19 49 012.1

Int. Cl. A01n 9/22; C07d 55/06

U.S. Cl. 260—308 R

12 Claims

Bistriazolyl-bisphenyl-methanes, i.e., 3,3'-(fluoro, chloro, bromo, alkyl, aryl and substituted aryl) bistriazolebisphenyl (optionally halo, nitro, cyano, trifluoromethyl, alkyl, alkoxy, alkylthio, alkylsulfonyl, alkylsulfonyl, phenyl, phenoxy, phenylthio, phenylsulfonyl and/or benzyl-substituted)-bistriazolyl-bisphenyl methanes and their salts, possess plant growth influencing, i.e., both growth stimulating and inhibiting and ever herbicidal properties.

3,755,346

### 2,6-BIS(TRIFLUOROMETHYL)-4-NITROBENZIMIDAZOLE

Quentin F. Soper, 2120 W. 38th St., Indianapolis, Ind.

Continuation-in-part of Ser. Nos. 812,449, April 1, 1969, abandoned, and Ser. No. 523,016, Jan. 26, 1966, Pat. No. 3,632,397, said Ser. No. 812,449, is a continuation-in-part of Ser. No. 726,540, May 3, 1968, abandoned. This application

Apr. 28, 1971, Ser. No. 138,343

Int. Cl. C07d 49/38

U.S. Cl. 260—309.2

1 Claim

2-Fluoroalkyl-6-fluoromethyl-4-nitrobenzimidazoles, useful as herbicides, insecticides and nematocides, and as intermediates in the preparation of other pesticides.

3,755,347

### CERTAIN N-THIAZOLYL-UREAS

Jean Claude Guillot, Eauboone; Pierre Poignant, Lyon, and Jacques de Bazelaire de Lesseux, Rueilmalmaison, all of France

Division of Ser. No. 540,192, April 15, 1966, Pat. No.

3,551,442. This application July 20, 1970, Ser. No. 63,970

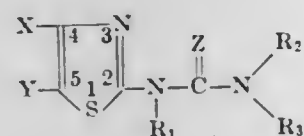
Claims priority, application France, Apr. 6, 1965, 6512116

Int. Cl. C07d 91/34

U.S. Cl. 260—306.8 R

2 Claims

A thiazole derivative having the general formula



(I) and pesticidal compositions containing the same.

3,755,348

### METHOD FOR SYNTHESIS OF AMINO PHOSPHINE SULFIDE ENANTIOMERS

Henry Tolkmith, 305 W. Carpenter, Midland, Mich.; James N. Seiber, 937 Ponderosa Pl., Davis, Calif., and Paul B. Budde, 1109 Mattes, Midland, Mich.

Division of Ser. No. 868,595, Oct. 22, 1969, Pat. No.

3,621,031, which is a continuation-in-part of Ser. No. 604,153, Dec. 23, 1966, abandoned. This application Dec. 14, 1970, Ser. No. 98,191

Int. Cl. C07f 9/24

U.S. Cl. 260—309

1 Claim

Optically active isomers of asymmetrical diamino phosphine sulfides containing a P-imidazolyl radical are resolved and separated.

3,755,349

### ALPHA-SUBSTITUTED BENZYL-IMIDAZOLES

Helmut Timmler; Wilfried Draber; Karl Heinz Buchel, and Manfred Plempel, all of Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 22, 1971, Ser. No. 165,321

Claims priority, application Germany, July 29, 1970, P 20 37 610.7

Int. Cl. C07d 49/36

U.S. Cl. 260—309

9 Claims

1-Benzylimidazoles and 1-benzyl-1,2,4-triazoles bearing both an alkyl, phenyl or cycloalkyl group and a formyl, alkanoyl, aroyl or cycloalkylcarbonyl group on the  $\alpha$ -carbon atom of the benzyl group, as well as the ketals, acetals, oximes and semicarbazones thereof, are antimycotic agents. They are prepared by treating the corresponding  $\alpha$ -halobenzyl com-

pounds with imidazole or 1,2,4-triazole or the corresponding  $\alpha$ -hydroxybenzyl compounds with the appropriate thionyl bisazole. A typical embodiment is the preparation of diphenylacetyl-imidazol-1-yl-methane from 1-bromo-1,1-diphenyl-2-propanone and imidazole.

3,755,350

### SUBSTITUTED 3-PHENYL HYDANTOINS USEFUL AS FUNGICIDES

Michel Sauli, Paris, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Oct. 5, 1971, Ser. No. 186,772

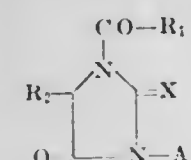
Claims priority, application France, Oct. 6, 1970, 7036084; Aug. 6, 1971, 7128896

Int. Cl. C07d 49/32

U.S. Cl. 260—309.5

9 Claims

The hydantoin derivatives of the formula:



wherein Ar represents phenyl, or phenyl carrying substituents selected from halogen, alkyl, alkoxy and trifluoromethyl, R<sub>1</sub> represents alkoxy or a grouping —NR<sub>3</sub>R<sub>4</sub>, in which R<sub>3</sub> and R<sub>4</sub> represent hydrogen, alkyl or alkenyl, R<sub>2</sub> represents hydrogen or alkyl, and X represents oxygen or sulphur, possess fungicidal properties.

3,755,351

### CARBAMATES OF 2-PHENYLHYDRAZINO-2-IMIDAZOLINES

Knut Zellerhoff, Wuppertal-Elberfeld; Siegmund Schutz, Metzhausen, and Wilhelm Stendel, Wuppertal-Elberfeld, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 19, 1971, Ser. No. 173,290

Claims priority, application Germany, Aug. 22, 1970, P 20 41 734.9

Int. Cl. C07d 49/34

U.S. Cl. 260—309.6

24 Claims

Phenylhydrazino-2-imidazoline derivatives bearing a carbalkoxy, carbocycloalkoxy or carbarylalkoxy group in the N<sup>1</sup>-position are acaricidal agents. The compounds, of which 2-(N<sup>1</sup>-carbethoxy-N<sup>2</sup>-phenylhydrazino)-2-imidazoline is a typical embodiment, are prepared by treating the appropriate phenylhydrazino-2-imidazoline with an alkyl, aryl or cycloalkyl haloformate.

3,755,352

### 1-(4'-METHOXYsulphonyl-PHENYL)-3-(4''-CHLOROPHENYL)-PYRAZOLINE

Siegfried Rosenberger, Riehen; Eduard Troxler, Basel, and Heinrich Hausermann, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 691,209, Dec. 18, 1967, Pat. No. 3,639,419. This application Nov. 30, 1971, Ser. No. 203,416

Claims priority, application Switzerland, Dec. 23, 1966, 18479/66

Int. Cl. C07d 49/10

U.S. Cl. 260—310 D

1 Claim

Novel 1-(4'-methoxysulphonyl-phenyl)-3-(4''-chlorophenyl)pyrazoline is described which has unexpectedly a very good

affinity to cellulose ester fibers and optically brighten these fibers in pure white, free from undesirable greenish or greenish-blue hues even when applied in higher concentrations; compositions containing this novel compound as well as other substances, especially detergents, are also described; and a process for optically brightening cellulose ester and particularly cellulose acetate fibers is also disclosed.

3,755,353

### BASIC DYES OF THE NAPHTHOLACTAM SERIES

Hans Baumann, Ludwigshafen, and Andreas Einwiller, Mannheim, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed July 8, 1971, Ser. No. 160,908

Int. Cl. C07d 27/72

U.S. Cl. 260—326.3

4 Claims

Basic dyes of the naphtholactam series derived from an N-alkoxycarbonyl ethyl naphtholactam and an N-substituted aniline. They dye anionically modified textile material such as polyesters or acrylonitrile polymers blue shades.

3,755,354

### AMIDE ACID AND IMIDO-SUBSTITUTED ORGANOSILANES

Fred F. Holub, and Milton L. Evans, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 821,869, May 5, 1969, Pat. No. 3,576,031. This application Dec. 15, 1970, Ser. No. 98,463

Int. Cl. C07d 27/18, 27/52

U.S. Cl. 260—326 E

7 Claims

Organosilanes are provided having at least one chemically combined aliphatically unsaturated imido organic radical, such as a maleimido-substituted organosilane and a method for making these materials. For example, reaction can be effected between an aliphatically unsaturated dicarboxylic acid anhydride and an aminoorganoalkoxysilane. In certain instances, amido acid precursors of such unsaturated imido-substituted organosilanes also can be made. The aliphatically unsaturated imido-substituted organosilanes of the present invention can be employed to impart improved surface characteristics to cellulosic substrates and to make aliphatically unsaturated imido-substituted organopolysiloxanes.

3,755,355

### PROCESS OF MANUFACTURING N-MERCAPTOMETHYLPHTHALIMIDE

Jules Kalbfeld, 2751 Wright Ave., Pinole, Calif.

Continuation-in-part of Ser. No. 868,627, Oct. 22, 1969, abandoned. This application Aug. 12, 1971, Ser. No. 171,375

Int. Cl. C07d 27/52

U.S. Cl. 260—326 S

4 Claims

A process of manufacturing N-mercaptomethylphthalimide is described herein. The process involves first forming a solution of sodium bisulfide in situ by reacting a sodium compound with hydrogen sulfide in the presence of a solvent. Then, a solution is formed consisting of N-halomethylphthalimide and tetrahydrofuran which is reacted with the sodium bisulfide solution to form N-mercaptomethylphthalimide.



3,755,356

**SUBSTITUTED CROTONIC AMIDE  $\gamma$ -LACTAMS**

John B. Siddall, Palo Alto, Calif., assignor to Zeecon Corporation, Palo Alto, Calif.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 860,086, Sept. 22, 1969, which is a continuation-in-part of application Ser. No. 874,678, Nov. 6, 1969, now Patent No. 3,631,080. This application June 14, 1971, Ser. No. 153,074  
Int. Cl. C07d 27/08

U.S. Cl. 260—326.5 FL

12 Claims

Methods of employing and compositions comprising alkylated lactams for the control of insects.

3,755,357

**2,3-DIHYDRO-5-TRIFLUOROMETHYL-1H-DIBENZO[2,3:6,7]THIEPINO[4,5-c]PYRROLES AS CNS-DEPRESSANTS**

Walter Schindler, deceased, by Hans Blattner and Leonard Gysin, legal representatives, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.  
No Drawing. Filed May 19, 1971, Ser. No. 145,022  
Claims priority, application Switzerland, May 26, 1970, 7,798/70

The portion of the term of the patent subsequent to Jan. 18, 1989, has been disclaimed  
Int. Cl. C07d 27/36

U.S. Cl. 260—326.9

13 Claims

Compounds of the class 2,3-dihydro-5-(trifluoromethyl)-1H-dibenzo[2,3:6,7]thiepine[4,5-c]pyrrole and its 2-alkyl-derivatives and pharmaceutically acceptable acid addition salts have a depressant effect on the central nervous system, they can be prepared from 10,11-bis-(bromomethyl)-2-(trifluoromethyl)-dibenzo[b,f]thiepine and a primary amine; the compounds are active ingredients of pharmaceutical compositions.

3,755,358

**2-[N-(PHTHALIMIDOACETYL)-N-(POLYFLUOROLOWERALKYL)AMINO]BENZOPHENONES**

John G. Topliss, West Caldwell, N.J., assignor to Schering Corporation, Bloomfield, N.J.  
No Drawing. Continuation-in-part of application Ser. No. 811,637, Mar. 28, 1969, now Patent No. 3,641,147, which is a continuation-in-part of application Ser. No. 703,245, Feb. 6, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 650,581, July 3, 1967, now Patent No. 3,429,874, which is a continuation-in-part of application Ser. No. 603,737, Dec. 22, 1966, which in turn is a continuation-in-part of application Ser. No. 520,658, Jan. 14, 1966, both now abandoned. This application May 10, 1971, Ser. No. 142,051  
Int. Cl. C07d 27/52

U.S. Cl. 260—326 N

5 Claims

This invention relates to novel chemical composition of matter useful as intermediates in the preparation of 2-oxo-1,3-dihydro-2H-1,4-benzodiazepines, and the 4-N-oxides thereof, having a polyfluoroloweralkyl radical attached at the 1-position thereof and to the methods for making and using such novel chemical intermediates.

3,755,359

**ANTI-INFLAMMATORY SALICYLIC ACID DERIVATIVES**

Gordon L. Walford, Tsung-Ying Shen, and Bruce E. Witzel, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.  
No Drawing. Original application June 25, 1969, Ser. No. 836,622, now Patent No. 3,682,968, dated Aug. 8, 1972. Divided and this application Nov. 1, 1971, Ser. No. 194,594  
Int. Cl. C07d 27/26

U.S. Cl. 260—326.3

1 Claim

Salicylic acid derivatives and their non-toxic pharmaceutically acceptable salts, esters and amides are claimed. Also encompassed is the treatment of inflammation with said derivatives.

3,755,360

**2,3,4,5-TETRAHYDRO-7H-[1,3]DIAZEPINO-[2,1-a]ISOINDOLES**

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.  
No Drawing. Filed Mar. 23, 1967, Ser. No. 625,296  
Int. Cl. C07d 57/02

U.S. Cl. 260—326.5 B

7 Claims

The compounds are of the class of 7-hydroxy-7-aryl-2,3,4,5-tetrahydro-7H-[1,3]diazepino[2,1-a]isoindoles which are useful as anorectic agents and are prepared by isomerization of the corresponding 11b-aryl-1,2,3,4,5,11b-hexahydro-7H-[1,3]diazepino[2,1-a]isoindol-7-ones.

3,755,361

**POLYHYDROPHENANTHRENE DERIVATIVES**

Philip E. Shaw, Winter Haven, Fla., and Sol J. Daum, Albany, and Robert L. Clarke, Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.  
No Drawing. Continuation-in-part of application Ser. No. 585,762, Oct. 11, 1966. This application Nov. 25, 1969, Ser. No. 879,920  
Int. Cl. A61k 27/00; C07d 71/00

U.S. Cl. 260—327 M

9 Claims

Alkyl polyhydro-2-phenanthrylideneacetates are prepared by interacting the corresponding 2-oxopolyhydro-phenanthrenes with a tri-lower-alkyl  $\alpha$ -phosphono-lower-alkanoate. Said alkyl polyhydro-2-phenanthrylideneacetates are hydrolyzed to the free acid, and then reesterified via the acid chloride with a tertiary-amino-lower-alkanol to give basic esters having cardiotonic activity.

3,755,362

**PROCESS OF MAKING 2,3-DIHYDRO-P-DITHIINS AND THEIR SULFOXIDES AND SULFONES**

Friedrich Asinger, Aachen, and Paul Scherberich, Neu Isenburg, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany  
No Drawing. Filed Nov. 17, 1970, Ser. No. 97,402  
Claims priority, application Germany, Nov. 18, 1969, P 19 57 860.0  
Int. Cl. C07d 73/00

U.S. Cl. 260—327 P

10 Claims

2,3-dihydro-p-dithiins are made by reacting an  $\alpha$ -mercaptotoxo compound or a dimer thereof with an equimolar amount of a thiirane in the presence of an inert organic solvent and in the presence of a base at a temperature between about 0 and 100° C., thereby forming the addition product of the  $\alpha$ -mercaptotoxo compound and the thiirane; and then effecting the cyclization of the said addition product. The thus-formed 2,3-dihydro-p-dithiin may then be oxidized to the sulfoxide or sulfone.

The products are useful as antioxidants in synthetic materials and can be made at higher yields and at higher purity by the above process.

3,755,363

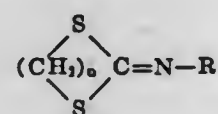
**CYCLIC CYANODITHIOIMIDOCARBONATE AND ITS PREPARATION**

Richard V. Timmons, Marysville and Lawrence S. Wittenbrook, Columbus, Ohio, assignors to The O. M. Scott & Sons Company, Marysville, Ohio  
No Drawing. Filed Sept. 12, 1966, Ser. No. 578,514  
Int. Cl. C07c 69/00

U.S. Cl. 260—327 M

2 Claims

Compounds of the formula



and methods of making and using them.

3,755,364

**3-(N-CARBAMYL-OXIMINO)-SATURATED THIOHETEROCYCLIC COMPOUNDS**

Thomas A. Magee, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio  
No Drawing. Continuation-in-part of application Ser. No. 28,097, Apr. 13, 1970, which is a continuation-in-part of application Ser. No. 839,641, July 7, 1969, now abandoned. This application Feb. 2, 1972, Ser. No. 223,004  
Int. Cl. C07d 63/04, 65/04

U.S. Cl. 260—327 TH

12 Claims

Pesticidally active 3-(carbamyl- and N-substituted-carbamyl-oximino)-saturated heterocyclic compounds have been prepared. These compounds are useful in combating undesirable pests such as insects, acarids, nematodes, viruses, and the like.

3,755,365

**HETEROBICYCLIC COMPOUNDS AND PROCESS FOR THEIR PREPARATION**

Allison F. Fentiman, Jr., Columbus, Ohio, and Jean P. Vité, Beaumont, Tex., assignors to Boyce Thompson Institute for Plant Research, Inc.  
No Drawing. Filed Aug. 12, 1969, Ser. No. 849,494  
Int. Cl. C07d 13/04

U.S. Cl. 260—340.9

2 Claims

New biologically active oxygen-containing heterobicyclic compounds and a method for their preparation. The compounds disclosed herein are substituted 6,8-dioxabicyclo[3.2.1]octanes wherein the 5 position carbon is substituted with a lower alkyl and the 1 and 7 position carbons are substituted with a member of the group consisting of hydrogen and lower alkyl radicals. A simple, one-step process for synthesizing these compounds comprising reacting a lower alkyl vinyl ketone with an allyl alcohol is disclosed.

3,755,366

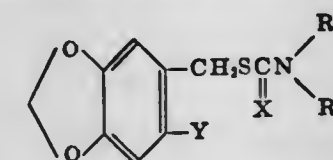
**PIPERONYL CARBAMATE HERBICIDES**

Ryuzo Nishiyama, Kyoto, and Ryohel Takahashi, Takahiro Haga, and Tadaaki Toki, Kusatsu, Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan  
No Drawing. Filed Feb. 22, 1971, Ser. No. 117,699  
Claims priority, application Japan, Feb. 23, 1970, 45/14,833  
Int. Cl. C07d 13/10

U.S. Cl. 260—340.5

11 Claims

Herbicides, having the general formula:



wherein X represents oxygen or sulfur; Y represents hydrogen or halogen and R represents a lower alkyl group, have been prepared and have been found to possess remarkable selective growth controlling properties.

3,755,367

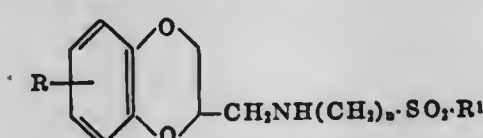
**SUBSTITUTED 1,4-BENZODIOXANES**

Peter Nicholl Green, Liverpool, and Maurice Shaper, Edgeware, England, assignors to Ward Blenkinsop & Company Limited, Wembley, England  
No Drawing. Filed Sept. 24, 1971, Ser. No. 183,684  
Claims priority, application Great Britain, Sept. 24, 1970, 45,671/70  
Int. Cl. C07d 15/12

U.S. Cl. 260—340.3

6 Claims

The invention provides basically 2-substituted 1,4-benzodioxanes having the general formula:



where

R is a hydrogen atom, a halogen atom having an atomic number not exceeding 35 or an alkyl or alkoxy group having from one to six carbon atoms,

R<sup>1</sup> is a saturated aliphatic group having one to eight carbon atoms, and

n is an integer from 2 to 6

and acid addition salts of such benzodioxanes. The compounds exhibit an unusual combination of tranquilizing, taming and aggression-building activity when administered to rats.

3,755,368

**FORMYLATION OF CARBOXYLIC COMPOUNDS WITH CARBON MONOXIDE**

John Huber, Hackensack, N.J., assignor to S. B. Penick & Company, a unit of CPC International, Inc.  
No Drawing. Filed Mar. 1, 1971, Ser. No. 120,039  
Int. Cl. C07d 13/04

U.S. Cl. 260—340.9

9 Claims

A method for the preparation of 2-formyl esters. The method involves the reaction of a carboxylic compound having at least two hydrogen atoms on the carbon atom alpha to the carboxyl group with carbon monoxide, preferably under pressure. The method is particularly applicable to the preparation of 2-formyl-4-ethylenedioxy velerates. These compounds are useful as intermediates in the synthesis of valuable insecticides, e.g., 5-benzyl-3-furylmethyl chrysanthemate.

3,755,369

**CERTAIN PEROXY-CONTAINING 2-OXOTETRAHYDROFURANS**

Yun Ger Chang, Austin, Tex., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.  
No Drawing. Original application Sept. 5, 1968, Ser. No. 757,758, now Patent No. 3,647,822. Divided and this application May 25, 1971, Ser. No. 146,836  
Int. Cl. C07d 5/34

U.S. Cl. 260—343.3

9 Claims

A difunctional hydroperoxide is reacted with either a  $\gamma$ -ketoacylhalide or a 2-arylbzoylhalide, in the presence of a basic reagent in an organic solvent like p-dioxane at a temperature ranging from about 10° C. to about 50° C. at a mole ratio from about 1:2 to about 1:10. The preferred temperature is between about 25° C. and 35° C. and the preferred mole ratio is from about 1:2 to about 1:2.5.

Novel organic peresters are produced which have been found to be excellent initiators in polymerization reactions, such as the polymerization of styrene, vinyl esters, alkyl methacrylates, and the like. These novel peresters have also been found to provide excellent cross-linking agents for polyethylene, polypropylene, and the like.

3,755,370

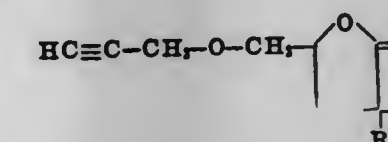
**2-SUBSTITUTED-4-PROPARGYLOXYMETHYL- $\gamma$ -BUTYROLACTONES**

Claude P. Fauran, Guy M. Raynaud and Colette A. Douzon, Paris and Janine M. Thomas, Neuilly-sur-Seine, France, assignors to Delalande S.A., Courbevoie, France  
No Drawing. Filed Aug. 22, 1969, Ser. No. 852,476  
Claims priority, application Great Britain, Sept. 17, 1968, 44,027

U.S. Cl. 260—343.6

4 Claims

A compound of the formula:





in which R is hydrogen, alkyl having 1 to 10 carbon atoms or aryl aliphatic in which the aryl can be substituted by one or more halogens, one or more alkoxy, aliphatic having 1 to 4 carbon atoms or trifluoromethyl. The compound is formed by saponifying and then decarboxylating the corresponding 2-ethoxycarbonyl derivative. The compounds possess anxiolytic, anti-depressive, analgesic and respiratory stimulating properties.

3,755,371

**PROCESS FOR THE PRODUCTION OF LACTONES**  
Nazar S. Aprahamian, West Nyack, N.Y., assignor to Union Carbide Corporation, New York, N.Y.  
No Drawing. Filed July 15, 1970, Ser. No. 55,217

Int. Cl. C07d 7/06, 9/00

U.S. Cl. 260—343

23 Claims

A liquid phase co-oxidation process for the production of lactones comprising admixing, in a nitrile medium, a cyclic ketone, an aldehyde, and an oxygen containing gas; maintaining a ratio of preferably about 6 to about 27 mols of ketone per mol of aldehyde throughout the reaction; and maintaining said mixture at a temperature of preferably about 60° C. to about 110° C.

3,755,372

**ISOFLAVANOID ETHERS**

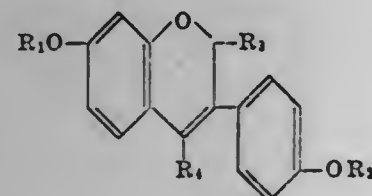
Klaus Irmscher, Josef Kramer, and Hans-Gunther Kraft, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Germany  
No Drawing. Filed Feb. 11, 1971, Ser. No. 114,706  
Claims priority, application Germany, Feb. 13, 1970, P 20 06 505.8

Int. Cl. C07d 7/26

U.S. Cl. 260—345.2

13 Claims

Isoflavanoid ethers of the formula



wherein R<sub>1</sub> and R<sub>2</sub>, which can be identical or different, are isopropyl, tert-butyl, cyclopentyl, or cyclohexyl, R<sub>3</sub> and R<sub>4</sub>, which can be identical or different, are alkyl of 1-4 carbon atoms, possess valuable pharmacological activity, including estrogenic, gonadotropin-inhibiting and anti-fertility activity. They are useful as feed supplements for cattle and poultry to promote growth and weight gain.

3,755,373

**SALTS OF 1-EPHEDRINE AND A D (-)-1-ALPHA-AZIDOFLUOROPHENYLACETIC ACID**

Thore Oskar Verner Rydh, Sodertälje, Sweden, assignor to Astra Lakemedel Aktiebolag, Sodertälje, Sweden  
No Drawing. Filed May 28, 1971, Ser. No. 148,181  
Claims priority, application Sweden, June 2, 1970, 7,612/70

Int. Cl. C07c 117/00

U.S. Cl. 260—349

3 Claims

The process comprises reacting the DL-azidofluorophenylacetic acid in the form of a free acid or a salt thereof and 1-ephedrine or a salt thereof in a liquid reaction medium, in which process the 1-ephedrine is added in an amount of at most 0.6 mole/mole of DL-α-azidofluorophenylacetic acid, into the liquid reaction medium. A substance is added which increases the solubility of the salt of 1-ephedrine and the two optical isomers of α-azidofluorophenylacetic acid and thereby suppresses the precipitation of the 1-ephedrine salt of L(+)-α-azidofluorophenylacetic acid and which substance is

selected from the group consisting of lower alkanols, ethers, lower esters, polyalcohols or impurities occurring in azidofluorophenylacetic acid of poor quality. Thereafter, the D(-)-α-azidofluorophenylacetic acid is selectively crystallized by the addition of seed crystals of this D(-)-α-azidofluorophenylacetic acid 1-ephedrine salt.

3,755,374

**SULPHENYLATED DIHYDROBENZOFURANYL-N-METHYLCARBAMATES**

Gerhard Zumach, Cologne, Engelbert Kühle, Bergisch-Gladbach, and Ingeborg Hammann, and Wolfgang Behrenz, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Filed Sept. 9, 1971, Ser. No. 179,226

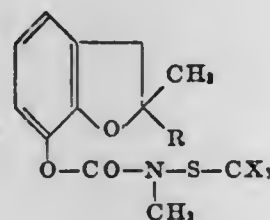
Claims priority, application Germany, Sept. 15, 1970, P 20 45 441.5

Int. Cl. C07d 5/36

U.S. Cl. 260—346.2 R

8 Claims

Sulphenylated dihydrobenzofuranyl - N - methylcarbamates of the general formula



(1)

in which

R is hydrogen or methyl and

X is fluorine, chlorine or bromine,

which possess insecticidal and acaricidal properties.

3,755,375

**PROCESS FOR STABILIZING α-AZIDO CARBONYL COMPOUNDS**

Hans Schubel, Troisdorf, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany  
No Drawing. Filed Apr. 7, 1969, Ser. No. 815,516  
Claims priority, application Germany, Apr. 10, 1968, P 17 68 176.4

Int. Cl. C07d 109/00

U.S. Cl. 260—349

12 Claims

Process for stabilizing α-azido carbonyl compounds comprising adding a metal chelate former in an amount of 0.01 to 5 wt. percent to the α-azido carbonyl compound to be stabilized.

The invention also includes the novel stabilized α-azido carbonyl compounds.

3,755,376

**METHOD OF PRODUCING PHTHALIC ANHYDRIDE**

Robert B. Egbert, Stamford, Conn., assignor to The Badger Company, Inc., Cambridge, Mass.  
Original application Aug. 15, 1967, Ser. No. 660,739, now Patent No. 3,535,345. Divided and this application Dec. 8, 1969, Ser. No. 879,974

Int. Cl. C07c

U.S. Cl. 260—346.4

1 Claim

A process for production of phthalic anhydride by vapor phase oxidation of o-xylene with air wherein at least 80-90% of the product is recovered from the reactor effluent in liquid condensers and the remaining product is recovered by wet process quenching and solids filtration. The reactor is operated at a relatively high pressure, at least about 60 p.s.i.g. and overall power consumption is minimized by utilizing the heat and compression energy in the hot product vent gas to compress and heat the air fed to the reactor.

3,755,377

**TETRAHYDROFURAN-2,3,4,5-TETRACARBOXYLIC ACID DIANHYDRIDE**

Karl Peterlein and Heinz Rempfer, Gladbeck, Germany, assignors to Gelsenberg Aktiengesellschaft, Gelsenkirchen-Horst, Germany  
Filed Dec. 17, 1968, Ser. No. 796,631

Claims priority, application Germany, Dec. 22, 1967, P 16 43 407.4

The portion of the term of the patent subsequent to Oct. 13, 1987, has been disclaimed  
Int. Cl. C07d 5/26

U.S. Cl. 260—346.8

1 Claim

Tetrahydrofuran-2,3,4,5-tetracarboxylic acid dianhydride. The compound is useful for the production of polyesters, polyamides and polyimides, and as a curing agent for epoxy resins.

3,755,378

**PREPARATION OF 3-FUROATE ESTERS**

Bernard Beau Brown, Westfield and John Swidinsky, Newark, N.J., assignors to CPC International Inc.  
No Drawing. Filed Oct. 22, 1970, Ser. No. 83,216

Int. Cl. C07d 5/16

U.S. Cl. 260—347.5

13 Claims

A method for the preparation of 3-furoate esters including the cyclization of levulinic esters in which the keto group is blocked by a ketal or acetal group and in which a 2-formyl group has been reacted with aqueous sodium bisulfite. The furoate esters are useful as intermediates in the preparation of insecticidal materials.

3,755,379

**ANTHRAQUINONE COMPOUNDS**

Henri Riat, Arlesheim, and Arthur Buehler, Rheinfelden, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland  
No Drawing. Filed Jan. 26, 1970, Ser. No. 5,939

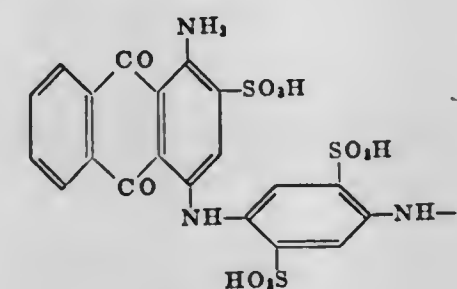
Claims priority, application Switzerland, Jan. 28, 1969, 1,293/69

Int. Cl. C09b 1/34

U.S. Cl. 260—372

1 Claim

Compounds of the formula



wherein X denotes a hydrogen atom or an acyl residue.

3,755,380

**METHOD FOR SEALING HIGH PRESSURE FUEL TANKS AND SEALING COMPOSITION THEREFOR**

James E. Matherly, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.  
No Drawing. Filed Sept. 13, 1971, Ser. No. 180,158

Int. Cl. C08g 51/04

U.S. Cl. 260—37 SB

16 Claims

High pressure fuel tanks are sealed by injecting under pressure into sealant grooves an admixture of an inert permanently plastic non-curing sealing composition with organic peroxide where the amount of organic peroxide is sufficient to alter the flowability of the sealing composition but insufficient to cure the sealing composition to a non-reinjectable material after the organic peroxide has been activated and thereafter heating the fuel tank above the activation temperature of the organic peroxide. A mixture of poly-3,3,3-trifluoropropylmethylsiloxane fluid,

poly-3,3,3-trifluoropropylmethylsiloxane gum, an extending filler, a polytetrafluoroethylene resin and a small amount of an organic peroxide is a particular inert permanently plastic non-curing sealing composition admixture.

3,755,381

**6,7-DIHYDRO-17-HYDROXY-3-OXO-3'H-CYCLO-PROPA[6,7]-17α-PREGNA-4,6-DIENE-21-CARBOXYLIC ACIDS AND SALTS, AND PHARMACEUTICAL PREPARATIONS THEREOF**

Leland J. Chinn, Morton Grove, and John W. Cusic, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 47,914, June 19, 1970. This application Nov. 22, 1971, Ser. No. 201,163

Int. Cl. C07c 173/00

U.S. Cl. 260—397.1

3 Claims

Preparations of the captioned compounds and their unexpectedly potent and selective diuretic activity are disclosed.

3,755,382

**SYNTHESIS OF 17α-(TRIMETHYLSILYL-ETHYNYL)ESTRADIOL**

David F. Crowe, San Jose, and Masato Tanabe, Palo Alto, Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

No Drawing. Filed June 1, 1972, Ser. No. 258,505

Int. Cl. C07c 169/08

U.S. Cl. 260—397.5

25 Claims

Disclosed as new compounds having estrogenic and antifertility activity are derivatives of estradiol which are substituted in the 17α position by hydrocarbylsilylvinyl or hydrocarbylsilylethynyl groups, representative new compounds being 17α-(triethylsilylethynyl)estradiol, 17α-(cis-2'-triethylsilylvinyl)estradiol, 17α-(trans-2'-triethylsilylvinyl)estradiol and 17α(1'-tri-n-propylsilylvinyl)estradiol.

3,755,383

**SULFAMYL-ANTHRANILIC ACIDS**

Peter Warner Feit, Gentofte, and Ole Bent Tvaermose Nielsen, Vanlose, Denmark, assignors to Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,413  
Claims priority, application Great Britain, Apr. 29, 1969, 21,890/69

Int. Cl. C07c 143/80

U.S. Cl. 260—397.7

7 Claims

This invention relates to new 4-substituted 5-sulfamyl-anthranilic acids, and salts and esters thereof, having a pronounced diuretic and saluretic effect; to methods of producing the said compounds; and to pharmaceutical compositions in dosage unit form containing the said compounds as active ingredients.

3,755,384

**TRIALKYSILYL ETHERS OF 17α-ALKYNYL-ESTRA-1,3,5(10)-TRIENE-3,17β-DIOLS AND 11β-ALKYL DERIVATIVES THEREOF**

Edward A. Brown, Wilmette, and Ivar Laos, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Apr. 7, 1971, Ser. No. 132,152

Int. Cl. C07c 169/08

U.S. Cl. 260—397.5

6 Claims

The reaction of 17α-alkynylestra-1,3,5(10)-triene-3, 17β-diols, optionally alkylated at the 11-position, with a trialkylsilyl chloride affords the corresponding trialkylsilyl ethers, which are useful pharmacological agents as evidenced by their potent and long-acting estrogenic and anti-fertility properties.



3,755,385

**PREPARATION OF FATTY ACID ESTER MIXTURES ENRICHED IN UNSATURATES**

James P. Hutchins, Springfield Township, Hamilton County, Ohio, assignor to The Procter &amp; Gamble Company, Cincinnati, Ohio

No Drawing. Filed Mar. 24, 1971, Ser. No. 127,753

Int. Cl. C07c 67/06

U.S. Cl. 260—410.9 R

10 Claims

A process for preparing fatty ester mixtures enriched in unsaturates from natural fats and oils comprising transesterifying said fats and oils with a lower alcohol and selectively extracting the unsaturated fatty acid esters with a two-phase solvent system comprising a hydrocarbon and gamma-butyrolactone ( $\gamma$ -butyrolactone). The esters are useful in foods and paints.

3,755,386

**PROCESS FOR THE CATALYTIC MIXED OLIGOMERIZATION OF 1,3-DIOLEFINS WITH  $\alpha$ -UNSATURATED ORGANIC COMPOUNDS**

Gunther Wilke, Mulheim (Ruhr), and Helmut Bonnemann, Essen (Ruhr), Germany, assignors to Studiengesellschaft Kohle mbH., Mulheim (Ruhr), Germany

No Drawing. Filed Feb. 5, 1971, Ser. No. 113,100

Claims priority, application Germany, Feb. 7, 1970, P 20 05 733.4

Int. Cl. C07c 67/00, 3/10, 69/52

U.S. Cl. 260—410.9 R

5 Claims

Mixed oligomers are prepared by reacting 1,3-dienes with ethylene or ethylenically unsaturated compounds in the presence of a cycloolefin-cobalt complex catalyst.

3,755,387

**VAPOR PHASE TRANSVINYLACTION PROCESS**

Arnold E. Young, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 5, 1969, Ser. No. 847,740

Int. Cl. C07c 67/02; C11c 3/10

U.S. Cl. 260—410.9 N

9 Claims

A transvinylation process which comprises reacting by contacting, in the presence of a noble metal salt catalyst and in the vapor phase at reaction temperature, and acid and a vinyl ester.

3,755,388

**CAGED BORON-NITROGEN COMPOUNDS CONTAINING ESTER SUBSTITUTION**

Jerome H. Ludwig, Cleveland, and Kenneth J. Witsken, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

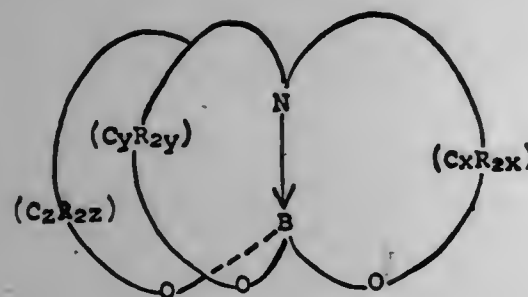
No Drawing. Original application Feb. 23, 1968, Ser. No. 707,809. Divided and this application May 18, 1971, Ser. No. 144,643

Int. Cl. C07c 69/00

U.S. Cl. 260—404

6 Claims

Caged boron-nitrogen compounds having the formula:



Certain of the compounds of this invention contain at least one ring substituent whereas with others at least two of the rings of the compounds are substituted, with at least one of the rings being substituted with a hydroxyalkyl, aminoalkyl, arylalkyl, aryl, ester, amido or ether radical, and at least one of the remaining rings being substituted with one of these radicals or an alkyl radical, but one ring need

be substituted when the substituent is a higher  $C_8-C_{22}$  alkyl radical, a hydroxyl group, a higher  $C_8-C_{22}$  ether or ester, or an alkyl higher ( $C_8-C_{22}$ ) ether or ester. Exemplary of these compounds are 3,7,10-trihydroxymethyl-2,8,9-trioxa-5-aza-1-boratricyclo[3.3.3.0]undecane; 3-methyl-7,10-diphenyl-2,8,9-trioxa-5-aza-1-boratricyclo[3.3.3.0]undecane; and 3-hydroxymethyl-7,10-dimethyl-2,8,9-trioxa-5-aza-1-boratricyclo[3.3.3.0]undecane stearate.

The compounds are useful as antistatic agents in natural and synthetic, polymeric fibers and films, and as color improving agents for fatty acid distillations.

3,755,389

**METHOD OF SEPARATING FATTY ACIDS**

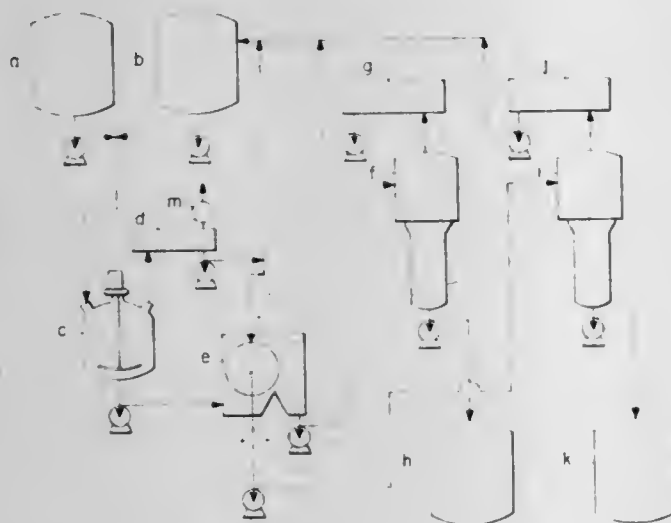
Ted L. Blaney, Forest Park, Ohio, assignor to The Procter &amp; Gamble Company, Cincinnati, Ohio

Filed Dec. 24, 1970, Ser. No. 101,230

Int. Cl. C11c 1/08

U.S. Cl. 260—419

6 Claims



A process for separating saturated fatty acids (predominantly palmitic and stearic) from unsaturated fatty acids (predominantly oleic) comprising the steps of dissolving the fatty acids in methyl formate, cooling the solution to 30° F., and separating the crystallized fatty acids from the solution.

3,755,390

**PROCESS FOR CONTINUOUSLY SEPARATING GLYCERIDES**

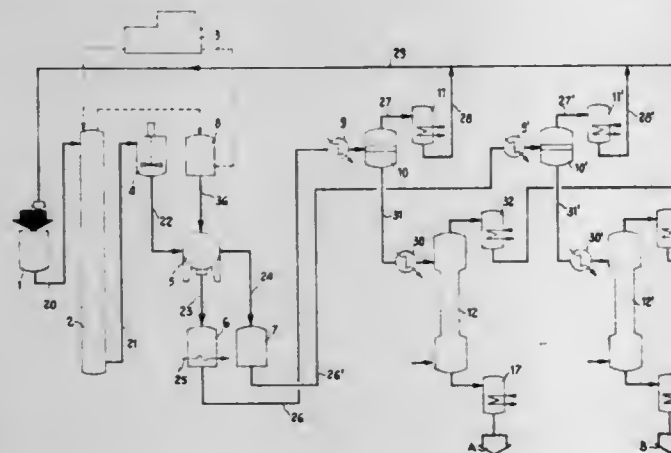
Alberto Viarengo and Raffaele Pasculli, both of 2 Via San Damiano, Milan, Italy

Filed Sept. 3, 1969, Ser. No. 854,925

Int. Cl. C11b 7/00

U.S. Cl. 260—428.5

2 Claims



The invention describes a process for continuously separating glycerides by a low temperature fractionation of a glycerides-solvent mixture, by continuously gravity

feeding such mixture within a cooling environment. The process comprises providing a highly diluted mixture and localized stirring thereof for promoting heat-exchange in horizontal planes therein, while subjecting it to cooling, and filtering and separating crystallized glycerides from the solvent, and an apparatus including said environment and feeding, cooling, stirring and separating means therefor.

3,755,391

**PROCESS FOR THE PRODUCTION OF MANGANIC CARBOXYLATES**

Jean-Noel Marie Bertrand, Tervueren, and Joseph Marie Vaerman, Brussels, Belgium, assignors to Labofina S.A., Brussels, Belgium

No Drawing. Filed Oct. 27, 1971, Ser. No. 193,213

Claims priority, application Belgium, Jan. 4, 1971, 98,261

Int. Cl. C07f 13/00

U.S. Cl. 260—429 R

9 Claims

A process for the production of the manganic salt of an aliphatic carboxylic acid, which comprises treating in liquid phase by an oxygen containing gas, a manganous compound from the group consisting of manganous salt of said carboxylic acid, a manganous salt of a weaker than said carboxylic acid, manganous oxide and manganous hydroxide, in the presence of a ketone having the formula  $R-CO-R_1$ , wherein R is an aliphatic or aromatic radical and  $R_1$  is an aliphatic radical or forms with R a cycloalkane radical, and in the presence of said carboxylic acid of which said manganic salt is a derivative, at a temperature from 50 to 130° C.

3,755,392

**DIHYDROCARBYL (PHENOLATO) TIN CARBOXYLATES**

Toshio Seki, Osaka, Japan, assignor to Nitto Kasei Co., Ltd., Osaka, Japan

No Drawing. Original application May 9, 1967, Ser. No. 637,057, now Patent No. 3,632,551. Divided and this application Mar. 3, 1971, Ser. No. 120,685

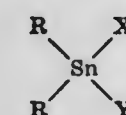
Int. Cl. C07f 7/22

U.S. Cl. 260—429.7

6 Claims

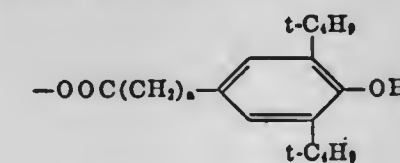
This invention relates to the method for stabilizing synthetic resins against the deteriorating effects of heat and light and comprises incorporating into said resin an inhibiting amount of a compound having the following formula

(I)

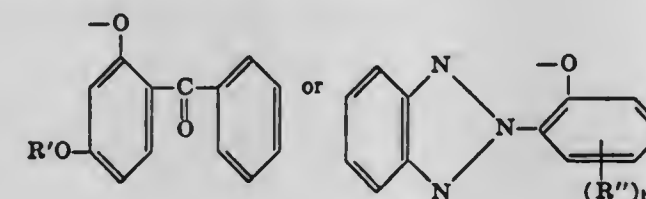


wherein:

- (1) R is selected from the group consisting of alkyl of from 1 to 8 carbon atoms, aryl, and benzyl,
- (2) X is a residue of the formula



- in which a is an integer of from 0 to 2, inclusive, and,
- (3) Y is a residue of the formula



in which R' and R'' are alkyl of from 1 to 8 carbon atoms, and b is an integer of from 0 to 2, inclusive:

3,755,393

**RECOVERY OF RHODIUM FIXED TO BASIC ION EXCHANGERS IN THE FORM OF RHODIUM CARBOXYLATE**

Wilhelm Kniese, Limburgerhof, Hans Juergen Nienburg, Ludwigshafen, Juergen Plueckhan, Beindersheim, Walter Himmele, Walldorf, and Werner Aquila, Ludwigshafen, Germany, assignors to Badische Anilin- &amp; Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,195

Claims priority, application Germany, Sept. 15, 1970, P 20 45 416.4

Int. Cl. C07f 15/00; C22b 3/00

U.S. Cl. 260—429 R

7 Claims

Process for the recovery of rhodium fixed to basic ion exchangers in the form of rhodium carboxylate with simultaneous regeneration of the basic ion exchangers, comprising treating the basic ion exchangers laden with rhodium carboxylate with a mixture of lower alkanols, water and water-soluble aliphatic amines in the presence of molecular oxygen.

3,755,394

**ALKYLENEBISDITHIOCARBAMATE COMPLEX COMPOUNDS**

Robert L. Noveroske, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 39,899, May 22, 1970. This application Apr. 29, 1971, Ser. No. 138,751

Int. Cl. C07f 3/06

U.S. Cl. 260—429.9

8 Claims

Novel complexes of ethylenediamine or polyethylenepolyamines with zinc containing alkylenebisdithiocarbamate are prepared by mixing together a water-soluble alkylenebisdithiocarbamate, water-soluble salts of zinc or zinc and one or more additional metal such as, for example, manganese or iron and ethylenediamine and/or one or more polyethylenepolyamines. The complex compounds are stable and can be used to regulate the growth of plants. They are useful as antifungal agents for the control of such fungi as apple scab fungus, rice blast, grape downy mildew and late blight organisms. They also are useful for promoting the growth of higher plants such as grapes, potatoes and the like.

3,755,395

**ACETYLENIC DERIVATIVES OF ZINC**

Georges Bakassian, and Marcel Lefort, Caluire, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,281

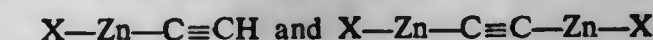
Claims priority, application France, Sept. 16, 1970, 7033557

Int. Cl. C07f 3/06

U.S. Cl. 260—429.9

6 Claims

Solutions of organo-zinc compounds of the formulae:



where X is halogen, made by reaction of an alkyl zinc halide with acetylene, are used for making acetylenic organo-silicon compounds by reaction with compounds containing silicon-chlorine bonds.

3,755,396

**COBALT DICYCLOHEXYLDITHIOPHOSPHINATE AND STABILIZATION OF POLYOLEFINS THEREWITH**

Houston George Brooks, Jr., Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,877

Int. Cl. C07f 15/06; C08f 45/62

U.S. Cl. 260—439 R

1 Claim

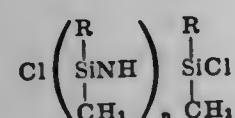
A new compound, cobalt dicyclohexyldithiophosphinate, is disclosed. It is useful for stabilizing polyolefins against deterioration by light and heat.



### 3,755,397 SILYLATING AGENT

Charles A. Roth, Saginaw, and John L. Speier, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.  
No Drawing. Filed June 1, 1971, Ser. No. 148,901  
Int. Cl. C07f 7/10

U.S. Cl. 260—448.2 N 2 Claims  
Silazanes of the formula  $(RCH_2SiNH)_x$  and chlorosilanes of the formula  $R(CH_3)_2SiCl_2$  are mixed at a temperature of below 50° C. in the absence of a catalyst such as Lewis acid, to form chlorosilazanes in which the major product is of the formula



The product is especially suitable for silylating organic compounds such as drugs containing one or more functional groups of the type XH, where X is oxygen, sulfur or nitrogen.

### 3,755,398 SILOXANES COMPOSITIONS AND PROCESSES THEREOF

Richard Paul Bush, Penarth, Glamorgan, Wales, assignor to Midland Silicones Limited, Berkshire, England  
No Drawing. Original application Mar. 24, 1969, Ser. No. 809,950, now Patent No. 3,641,089. Divided and this application Aug. 2, 1971, Ser. No. 168,345  
Int. Cl. C07f 7/02

U.S. Cl. 260—448.2 N 5 Claims  
This disclosure relates to various cyclic siloxane compounds and to processes thereof. These cyclic siloxane compounds are prepared by reacting certain lithium-containing siloxanes with organosilicon materials containing at least one silicon bonded halogen atom per molecule.

3,755,399  
METHOD FOR PREPARING ORGANOPOLYSILOXANE-POLYOXYALKYLENE BLOCK COPOLYMERS  
Siegfried Nitzsche, Ewald Pirson, and Peter Huber, Burghausen, Germany, assignors to Wacker Chemie GmbH, Munich, Germany  
No Drawing. Filed Sept. 13, 1971, Ser. No. 180,155  
Claims priority, application Germany, Sept. 14, 1970, P 20 45 360.5  
Int. Cl. C07f 7/18

U.S. Cl. 260—448.8 R 23 Claims  
A method for preparing organopolysiloxane-polyoxyalkylene block copolymers in which the polyoxyalkylene blocks are bonded to the organopolysiloxane blocks by an Si—O— bond, which comprises reacting in a first stage an organopolysiloxane having silicon-bonded hydroxyl groups with the chlorine atom or atoms of a polyoxyalkylene compound and thereafter reacting the silicon-bonded hydrogen atoms of the reaction product thus formed with the unreacted silicon-bonded hydroxyl groups from the first stage. The block copolymer thus formed are useful as additives to paints, foam stabilizers for polyurethane foams, emulsifiers, lubricants and the like.

### 3,755,400 SYNTHESIS OF CYCLIC ALUMINUM COMPOUNDS

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.  
No Drawing. Filed Dec. 13, 1971, Ser. No. 207,517  
Int. Cl. C07f 5/06

U.S. Cl. 260—448 A 14 Claims  
Nonionic organoaluminum compounds possessing an aluminacyclopentene moiety are formed by mixing (a) alkali metal 1,1-dihydrocarbylaluminacyclopent-3-enide with (b) aluminum trihydrocarbyl or dihydrocarbyl

aluminum hydride in proportions corresponding to at least about 1.3 moles of (b) per mole of (a) in the presence of a suitable Lewis base.

### 3,755,401 PROCESS FOR PREPARING POLYISOCYANATES WHICH INVOLVES SELECTIVE PRECIPITATION OF INORGANIC SALTS

Charles R. Vestal, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio  
Filed Sept. 24, 1970, Ser. No. 75,014  
Int. Cl. C07c 119/04

U.S. Cl. 260—453 P 9 Claims  
Formation of undesired isocyanurates is avoided in preparation of diisocyanates by reaction of organic halide with metal cyanate in the presence of metal halide in aprotic solvent by the improvement of adding a selective solvent to precipitate the inorganic salts before the product mixture is heated sufficiently to initiate trimerization as the aprotic solvent is evaporated off.

### 3,755,402 ESTERS OF CYANIC ACID AND METHOD OF PREPARATION

Ernst Grigat, Cologne-Stammheim, and Rolf Putter, Dusseldorf, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Application Feb. 12, 1968, Ser. No. 704,948, now Patent No. 3,553,244, dated Jan. 5, 1971, which is a continuation of abandoned application Ser. No. 339,333, Jan. 22, 1964. Divided and this application June 16, 1970, Ser. No. 14,844  
Claims priority, application Germany, Feb. 16, 1963, F 39,039; Apr. 3, 1963, F 39,393; Apr. 16, 1963, F 39,422; Aug. 7, 1963, F 40,440  
Int. Cl. A01n 9/22; C07c 119/00, 119/02

U.S. Cl. 260—453 AR 16 Claims  
Cyanic acid esters having the formula  
 $R(O-C\equiv N)_x$

in which R is an alkyl or cycloalkyl radical containing an electron-attracting substituent, an aryl radical, a substituted aryl radical free from the simultaneous presence of sterically hindered substituents in both ortho positions to the corresponding —O—C≡N group or a heterocyclic radical, and x is a whole number from 1 to 6. The esters can be hydrolyzed to the corresponding carbonates which are known compounds.

### 3,755,403 1-CARBAMOYL-N-HYDROXY FORMIMIDATES AND 1-CARBAMOYL-N-CARBAMOYLOXY FORMIMIDATES

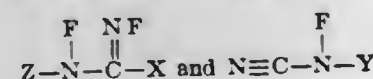
Russell F. Bellina, Claymont, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Filed July 15, 1970, Ser. No. 55,290  
Int. Cl. C07c 119/16

U.S. Cl. 260—453 R 13 Claims  
A class of 1-carbamoyl-N-carbamoyloxy formimidates, such as methyl 1-(dimethylcarbamoyl)-N-(methylcarbamoyloxy)-formimidate, useful in preventing the destructive effects of pests such as insects, ticks, mites and nematodes.

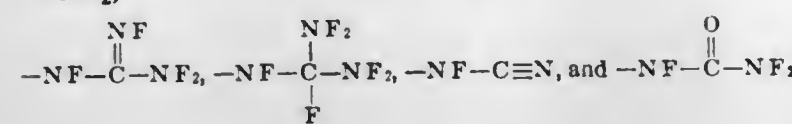
### 3,755,404 NOVEL NITROGEN-FLUORINE COMPOUNDS AND METHODS OF PREPARATION

William Charles Firth, Jr., and Simon Frank, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.  
No Drawing. Filed May 9, 1963, Ser. No. 280,492  
Int. Cl. C07c 69/00, 87/22, 123/00

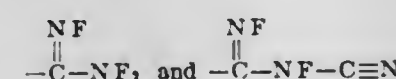
U.S. Cl. 260—453 AL 13 Claims  
1. The process which comprises reacting a reagent selected from the group consisting of



wherein —X is selected from the group consisting of —F, —NF<sub>2</sub>,

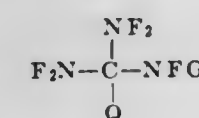


when Z— is F— and wherein —X is —NF—C≡N when Z— is N≡C— and wherein —Y is selected from the group consisting of —F,

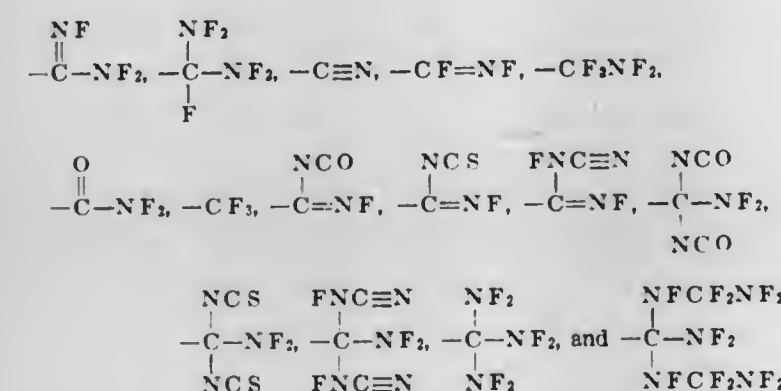


with an additive selected from the group consisting of HNCO, HNCS, and H<sub>2</sub>NC≡N to produce an adduct.

13. A compound having the structural formula



wherein Q is selected from the group consisting of —NCO, —NCS, —NFC≡N, —NF<sub>2</sub>, —NHCF=NF, —NFCF=NF, NCF<sub>2</sub>NF<sub>2</sub>, and —NFCF<sub>3</sub>, and wherein G is selected from the group consisting of



### 3,755,405 TERTIARY POLYFLUOROALKYL HYPOCHLORITES AND PROCESS FOR THE PREPARATION THEREOF

Douglas E. Gould, Boonton, David E. Young, Denville, Lowell Ray Anderson, Parsippany, and William B. Fox, Morris Township, Morris County, N.J., assignors to Allied Chemical Corporation, New York, N.Y.  
No Drawing. Filed Oct. 30, 1968, Ser. No. 772,037  
Int. Cl. C07c 71/00

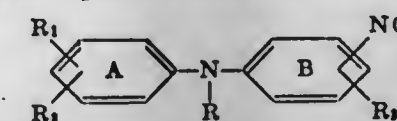
U.S. Cl. 260—453 R 2 Claims  
Tertiary polyfluoroalkyl hypochlorites of the formula:



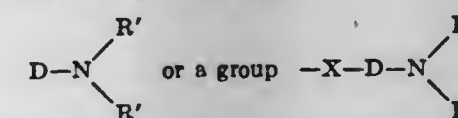
wherein n is 1 or 2, R contains at least four carbon atoms and is an open chain YZ-perfluoroalkyl group when n is 1, R is an open chain YZ-perfluoroalkylene group when n is 2, wherein Y and Z are substituents on the R moiety and are the same or different electronegative groups selected from F, FSO<sub>2</sub>, FSO<sub>3</sub>, NO<sub>2</sub>, perfluoroalkyl, perfluorocycloalkyl and perfluoroaryl, with the proviso that the carbon atom or atoms attached to the —OCl group or groups are each bonded to three other carbon atoms; may be prepared by reacting corresponding tertiary alcohols with chlorine monofluoride (ClF). The novel tertiary polyfluoroalkyl hypochlorites are useful as polymerization initiators, as chlorinating agents, as bleaching agents and are valuable intermediates for the synthesis of other useful compounds.

3,755,406  
ISOTHIOCYANO-DIPHENYLAMINES  
Paul Brenneisen, Basel, Jean-Jacques Gallay, Magden, and Alfred Margot, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.  
No Drawing. Filed July 7, 1969, Ser. No. 839,653  
Int. Cl. C07c 161/04

U.S. Cl. 260—454 4 Claims  
Isothiocyanate-diphenylamines of the formula



wherein the ortho positions, in rings A and B, relative to an —NH— bridge are free from isothiocyano substituents, R represents hydrogen, alkyl of at most 3 carbon atoms or alkenyl of at most 3 carbon atoms, R<sub>1</sub> and R<sub>2</sub> represent, independently of each other hydrogen, middle halogen, cyano, hydroxy, nitro, carboxy, trifluoromethyl, alkyl, alkenyl, alkoxy, alkenyloxy, alkylthio, alkenylthio, each of the latter six groups having at most 5 carbon atoms, alkanoylamino, alkanoyl, alkanoyloxy, alkoxycarbonyl, each of the four last-mentioned groups having at most 6 carbon atoms, dialkylamino having a total of at most 5 carbon atoms, a group



wherein D is alkylene of 2 or 3 carbon atoms, R' represents alkyl of 1 to 3 carbon atoms, the sum of the carbon atoms of D and R' not exceeding 6, and X represents oxygen or sulfur and R<sub>2</sub> represents hydrogen, halogen, nitro, isothiocyano or alkyl of at most 5 carbon atoms, and wherein an isothiocyano group must be in m- or p-position to any hydroxy or carboxy being a substituent of a benzene ring or to the —NR-bridge when R is hydrogen, and, when R, R<sub>1</sub> and R<sub>3</sub> are hydrogen atoms, the group —NCS at ring B is in m- or p-position and any isothiocyano group R<sub>2</sub> is in m-position, are disclosed as novel anthelmintic agents. Their production, their use in the control of helminths and compositions containing them are also disclosed.

### 3,755,407 SULFATION PROCESS FOR SECONDARY ALCOHOLS

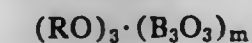
John B. Wilkes, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.  
Filed Feb. 10, 1967, Ser. No. 615,209  
Int. Cl. C07c 141/04

U.S. Cl. 260—459 11 Claims  
Inhibition of the formation of neutral oil by-products occurs in the sulfation of secondary alcohols by chlorosulfonic acid when a secondary alcohol ethoxylate is present with the secondary alcohol to be sulfated. The resulting alcohol sulfates are useful in cleaning, wetting, detergent and emulsifying mixtures.

### 3,755,408 PROCESS FOR THE PREPARATION OF POLYBORIC ESTERS

Giovanni Cuneo, Milan, Italy, assignor to Montecatini-Edison S.p.A., Milan, Italy  
No Drawing. Continuation of application Ser. No. 571,706, Aug. 11, 1966. This application Feb. 10, 1970, Ser. No. 9,118  
Claims priority, application Italy, Aug. 11, 1965, 18,249/65  
Int. Cl. C07f 5/04

U.S. Cl. 260—462 R 5 Claims  
A process for making polyboric esters of the general formula



wherein m is greater or equal to 1 but preferably less than 2 and corresponds to the molar ratio of boron atoms to



RO units, and R is an alkyl radical with 2-6 carbon atoms, a phenyl radical, or a substituted-phenyl radical in which the substituent is constituted of one or more alkyl groups with 1 to 4 carbon atoms. The method involves mixing orthoboric acid and an inert organic liquid with a boiling point higher than 110° C. and subjecting the mixture to a temperature of 80° C.-220° C. to partially dehydrate the orthoboric acid to a boric acid having a B:OH ratio of 1 to a maximum of 2. The polyboric acid is esterified at 80° to 220° C. by means of an aliphatic alcohol with 2-6 carbon atoms, phenol or a substituted phenol wherein the substituent is at least one alkyl compound with 1-4 carbon atoms.

3,755,409

# PREPARATION OF AROMATIC NITRILES BY REACTION OF AROMATIC HALIDES WITH METAL CYANATES AND CARBON MONOXIDE IN THE PRESENCE OF NICKEL OR PALLADIUM CATALYSTS

John F. Harris, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,347

Int. Cl. C07c 121/02

U.S. Cl. 260-465 R

12 Claims

One or two nitrile groups can be introduced onto aromatic (carbocyclic) rings by reaction between halogenated aromatic compounds (other than fluorinated), carbon monoxide and a metal cyanate in the presence of a nickel- or palladium-containing catalyst. For example, benzonitrile can be prepared from chlorobenzene, sodium cyanate and carbon monoxide in the presence of a nickel salt.

3,755,410

# INTERMEDIATES

Harry Allen Albrecht, Towaco, and John Thomas Plati, Rutherford, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

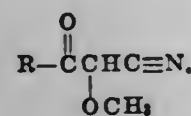
No Drawing. Original application Aug. 6, 1970, Ser. No. 61,785. Divided and application Nov. 13, 1967, Ser. No. 682,551. Divided and application Apr. 6, 1965, Ser. No. 446,068. Again divided and this application Aug. 11, 1972, Ser. No. 279,918

Int. Cl. C07c 121/34

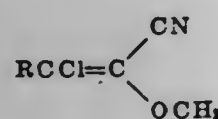
U.S. Cl. 260-465.6

1 Claim

Novel antibacterial N<sup>1</sup>-(4-methoxy-3-alkyl-5-isoxazolyl)-sulfanilamides, N<sup>1</sup>-(4-methoxy-5-alkyl-3-isoxazolyl)-sulfanilamides and their base addition salts with pharmaceutically acceptable bases are described. The N<sup>1</sup>-(4-methoxy-3-alkyl-5-isoxazolyl)sulfanilamides are prepared from the sequential intermediates 4-methoxy-5-alkylisoxazole,



wherein R is hydrogen or lower alkyl, and 5-amino-4-methoxy-3-alkylisoxazole. The N<sup>1</sup>-(4-methoxy-5-alkyl-3-isoxazolyl)sulfanilamides are prepared from the sequential intermediates



wherein R is hydrogen or lower alkyl, and 3-amino-4-methoxy-5-alkylisoxazole.

3,755,411

# HALO- OR OXY-SUBSTITUTED ALIPHATIC DI-OLEFINIC NITRILES

Clive A. Henrick and John B. Siddall, Palo Alto, Calif., assignors to Ziecon Corporation, Palo Alto, Calif.

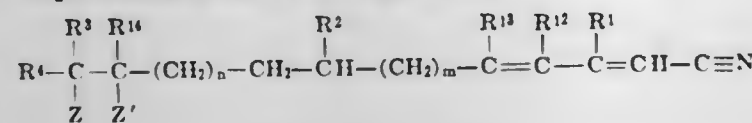
No Drawing. Continuation-in-part of applications Ser. No. 111,650, Ser. No. 111,702, Ser. No. 111,765, Ser. No. 111,766, and Ser. No. 111,770, all Feb. 1, 1971, and Ser. No. 115,725, Feb. 10, 1971, now Patent No. 3,706,733. This application Oct. 8, 1971, Ser. No. 187,897

Int. Cl. C07c 121/30

U.S. Cl. 260-465.6

11 Claims

Aliphatic hydrocarbon tri-olefinic and aliphatic substituted, di-olefinic acids, esters, aldehydes, ketones, thioesters, alcohols, thiols, halides, nitriles, amines, amides and derivatives thereof, intermediate therefor, syntheses thereof, and the control of insects, one embodiment of which is represented by the following formula



3,755,412

# ALKYLATION OF ACETONITRILES

Lubomyr B. Taranko, Scotch Plains, N.J., and Robert H. Perry, Jr., West Concord, Mass., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 635,350, May 2, 1967. This application July 7, 1969, Ser. No. 839,693

Int. Cl. C07c 121/02, 121/66

U.S. Cl. 260-465 R

12 Claims

This invention relates to alkali metal salts of organonitrile carbanions, alkylated organonitrile hydrocarbons and to a process for their formation. The alkali metal salt compositions are prepared by reacting an active organic methylene compound containing at least one nitrile substituent with an aqueous solution of an alkali metal base in the presence of a diorgano sulfoxide. The alkylated compositions can be prepared by reacting the alkali metal salts of the organonitrile carbanions with an organohalide. Alternatively, the alkylated compositions can be prepared in a one-step operation by reacting the organonitrile composition with aqueous alkali metal base and organohalide in the presence of a diorgano sulfoxide, preferably dimethyl sulfoxide.

3,755,413

# 1-CYANOPHENOXY-2-HYDROXY-3-(CYCLO-ALKYL-AMINO)-PROPANES

Herbert Koppe, Werner Kummer, Helmut Stahle, and Karl Zeile, Ingenheim am Rhein, Albrecht Engelhardt, Mainz, and Werner Traunecker, Munster-Sarmsheim, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Filed July 22, 1970, Ser. No. 57,353

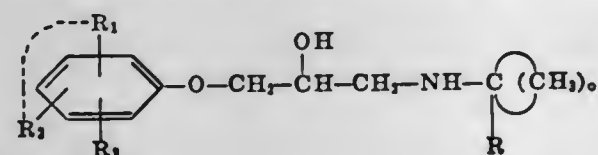
Claims priority, application Germany, July 23, 1969, P 19 37 477.7

Int. Cl. C07c 121/78

U.S. Cl. 260-465 E

6 Claims

Racemic mixtures of a compound of the formula



wherein

R is alkyl of 1 to 5 carbon atoms,

R<sub>1</sub> is cyano, carboxyl, hydroxyl, amino, nitro, trifluoromethyl, alkyl of up to 5 carbon atoms, alkenyl of up to 5 carbon atoms, alkinyl of up to 5 carbon atoms,

3,755,416

# NORACYMETHADOL CARBAMATES

Richard N. Booher, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Jan. 25, 1972, Ser. No. 220,698

Int. Cl. C07c 125/06

U.S. Cl. 260-471 C

5 Claims

Noracymethadol carbamates, analgesically active and useful in treatment of heroin addiction.

3,755,417

# TRIS (4-CHLOROPHENOXY)ACETIC ACID AND ESTERS THEREOF

Charles J. Guinasso, Abington, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,556

Int. Cl. C07c 69/76

U.S. Cl. 260-473 G

2 Claims

The invention concerns novel oxalic monoorthoacid monoesters and their method of preparation. The products are useful as lipid shifting agents.

3,755,418

# FINISHING AGENTS WITH REDUCED FORMALDEHYDE ODOR FOR CELLULOSE CONTAINING TEXTILE MATERIALS

Russell M. H. Kullman, Metairie, John G. Frick, Jr., and Robert M. Reinhardt, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Aug. 23, 1968, Ser. No. 754,969, now Patent No. 3,556,713, dated Jan. 19, 1971. Divided and this application Sept. 18, 1970, Ser. No. 73,629

Int. Cl. C07c 125/06

U.S. Cl. 260-482 C

1 Claim

Finishing agents for fabrics of cellulosic fiber are formed by acetylation of methylol carbamates. The acetoxymethyl agents so formed can be used to produce wash-wear and durable-press cellulosic fabric with little release of formaldehyde during treatment of the fabric.

3,755,419

# PROCESS FOR PREPARING ETHYLENE 1,2-DICARBOXYLIC ACID AND DERIVATIVE THEREOF

Chiyuki Fujii, Yamato, Michimasa Hirata, Tokyo, and Takeo Shinada, Ebina-Machi, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Dec. 10, 1971, Ser. No. 206,921

Claims priority, application Japan, Dec. 24, 1970, 45/117,293, 45/117,295

Int. Cl. C07c 69/60

U.S. Cl. 260-485 R

4 Claims

Ethylene 1,2-dicarboxylic acid or derivatives thereof, is prepared by reacting acetylene with carbon monoxide in the presence of a palladium compound and an amino acid.

3,755,420

# TRIGLYCIDYL ETHER OF TRIHYDROXY BIS-PHENYL ESTER OF ACRYLIC ACID

Donald G. Stoffey, and Henry L. Lee, Jr., San Marino, Calif., assignors to Lee Pharmaceuticals, South El Monte, Calif.

No Drawing. Original application Dec. 28, 1970, Ser. No. 102,044. Divided and this application July 14, 1972, Ser. No. 271,763

Int. Cl. C07c 69/54

U.S. Cl. 260-486 R

4 Claims

Bisphenol-A-bis(2,3-dimethacrylatopropyl ether) and the adduct of methacrylic acid and triglycidyl ether of trihydroxy biphenyl are utilized as binders for dental restorative compositions.

alkoxy of up to 5 carbon atoms, alkenyloxy of up to 5 carbon atoms, alkinylloxy of up to 5 carbon atoms, hydroxyalkyl of up to 5 carbon atoms, alkoxyalkyl of up to 5 carbon atoms, aminoalkyl of up to 5 carbon atoms, dialkylaminoalkyl of up to 5 carbon atoms, alkylamino of up to 5 carbon atoms, cyano(alkyl of up to 5 carbon atoms), alkoxy of up to 5 carbon atoms)carbonyl, alkyl of up to 5 carbon atoms)amino-carbonyl, alkylthio of up to 5 carbon atoms, acyloxy of up to 5 carbon atoms, acylamino of up to 5 carbon atoms, aryl of up to 10 carbon atoms, alkyl of up to 10 carbon atoms, aryloxy of up to 10 carbon atoms, aralkoxy of up to 10 carbon atoms, arylamino of up to 10 carbon atoms or halogen,  
R<sub>2</sub> is hydrogen, halogen, cyano, alkyl of up to 5 carbon atoms, alkoxy of up to 5 carbon atoms or alkenyl of up to 5 carbon atoms,  
R<sub>1</sub> and R<sub>2</sub>, together with each other, are 3,4-methylene-dioxy,  
R<sub>3</sub> is hydrogen, halogen, alkyl of up to 5 carbon atoms or alkoxy of up to 5 carbon atoms, and  
n is an integer from 2 to 7, inclusive,

optically active components thereof, and non-toxic, pharmacologically acceptable acid addition salts of said racemic and optically active compounds, useful as β-adrenergic receptor blocking agents in warm-blooded animals.

3,755,414

# 4,4-DESMETHYL-3,11-DIOXOOLEANA-4,12-DIEN-30-OIC ACIDS AND INTERMEDIATES

John S. Baran, Morton Grove, and Barnett S. Pitzele, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Aug. 18, 1971, Ser. No. 172,903

Int. Cl. C07c 61/36, 69/74

U.S. Cl. 260-468.5

4 Claims

The above-captioned compounds are manufactured from the 3-nor-4,4-desmethyl-4-isopropylidene alkyl esters of 11-oxoolean-12-en-30-oic acid. They are useful as pharmacological, e.g. hypocholesterolemic and hypotensive, agents.

3,755,415

# ADAMANTYL UREA DERIVATIVES

Carl Richter, Kurt Pluss, and Georg Feth, Schaffhausen, Switzerland, assignors to Cilag-Chemie, A.G.

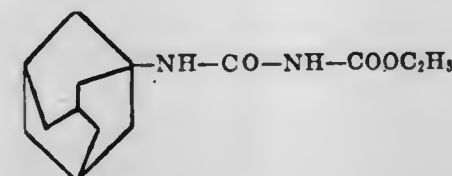
No Drawing. Original application Oct. 28, 1969, Ser. No. 874,084, now Patent No. 3,703,537. Divided and this application Mar. 27, 1972, Ser. No. 243,522

Int. Cl. C07c 127/16

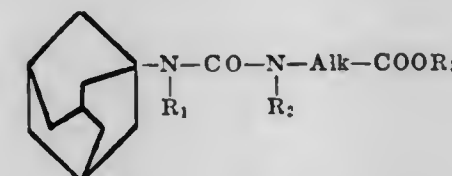
U.S. Cl. 260-468 E

1 Claim

Compounds useful as antiviral agents defined by the formulas:



and



wherein Alk is alkylene, R<sub>1</sub> and R<sub>2</sub> are each hydrogen or lower alkyl, and R<sub>3</sub> is hydrogen or a variously defined ester moiety.



3,755,421

## PREPARATION OF CARBOXYLIC ACID ESTERS

Donald M. Fenton, Anaheim, and Giovanni Biale, Placentia, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed June 27, 1968, Ser. No. 740,482

Int. Cl. C07c 69/40, 69/54, 69/66  
U.S. Cl. 260—484 R

13 Claims

Esters of alpha,beta-ethylenically unsaturated acids, of beta-alkoxy-substituted carboxylic acids and of dicarboxylic acids are obtained by oxidative carbonylation of hydrocarbon olefins. The reaction is performed by contacting the olefin and carbon monoxide with an alcohol in the presence of a Group VIII noble metal in a high oxidation state and a benzene or naphthalene quinone or hydroquinone. In a specific embodiment, ethylene is converted to alkyl acrylates, alkyl beta-alkoxypropionates and dialkyl succinates by contacting ethylene and carbon monoxide at a temperature about 100° C. and about 50 atmospheres with an alkanolic solution of soluble palladium salts and benzoquinone. The reaction results in the production of a large amount of the alkyl acrylate or alkyl beta-alkoxypropionate in preference to the production of byproducts such as alkyl propionates and acetals. The ester of the beta-alkoxypropionate can be readily pyrolyzed to obtain additional quantities of the alkyl acrylate useful as a monomer.

3,755,422

## PREPARATION OF CAROTENOID COMPOUNDS

Jacques Morel, Choisy-Le-Roi, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Jan. 13, 1971, Ser. No. 106,262

Claims priority, application France, Jan. 15, 1970, 700,415

Int. Cl. C07c 67/04

U.S. Cl. 260—497 R

6 Claims

Isoeaxanthine and its saturated aliphatic monocarboxylic acid esters, useful as carotenoid pigments, are made by the action of iodine, in the presence of a said acid and an organic base, on retrodehydro-β-carotene, followed, if desired by saponification of the ester produced.

3,755,423

## PROCESS FOR PREPARING AN UNSATURATED GLYCOL DIESTER

Takeru Onoda, Yokohama, and Junzo Haji, Tokyo, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

No Drawing. Filed Apr. 17, 1972, Ser. No. 244,871

Claims priority, application Japan, Apr. 17, 1971, 46/24,732; Dec. 29, 1971, 47/3,627; Feb. 7, 1972, 47/13,438

Int. Cl. C07c 67/04, 69/16, 69/74

U.S. Cl. 260—497 A

29 Claims

Unsaturated glycol diesters are prepared at high reaction velocities, high degrees of conversion and high selectivity, by reacting a conjugated diene, a carboxylic acid and oxygen, in the presence of a solid catalyst containing palladium, at least one element selected from the group consisting of antimony, bismuth, tellurium and selenium. Tellurium and selenium are preferred since they aid in reducing the quantity of palladium lost in the reaction medium.

3,755,424

## 2-DIALKYLAMINO-1,3-BIS-(ALKOXYALKYLTHIO)PROPANES

Fred Kuhn, Weil am Rhine, Germany, assignor to Sandoz Ltd. (also known as Sandoz AG) Basel, Switzerland

No Drawing. Filed Apr. 5, 1972, Ser. No. 241,453

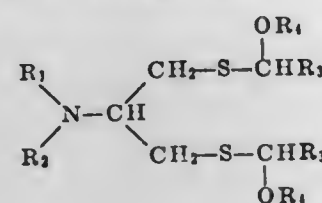
Claims priority, application Switzerland, Apr. 13, 1971, 5,262/71

Int. Cl. C07c 149/24

U.S. Cl. 260—501.19

7 Claims

The present invention concerns 2-dialkylamino-1,3-bis-(alkoxyalkylthio)propane derivatives of the formula:



wherein

R<sub>1</sub> and R<sub>2</sub> are each alkyl,  
R<sub>3</sub> is hydrogen or alkyl and  
R<sub>4</sub> is alkyl.

The compounds possess insecticidal and fungicidal properties.

3,755,425

## OXIMINOPHOSPHONODITHIOATES

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

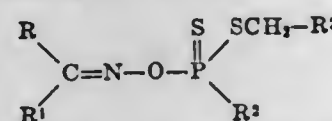
No Drawing. Original application Apr. 6, 1970, Ser. No. 26,148. Divided and this application Mar. 9, 1972, Ser. No. 233,330

Int. Cl. C07f 9/38

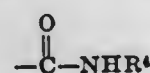
U.S. Cl. 260—502.5

2 Claims

Compounds having the formula



in which R is (1) alkyl or (2) lower alkylthiomethyl; R<sup>1</sup> is alkyl; R<sup>2</sup> is alkyl; and R<sup>3</sup> is (1) hydrogen, (2) lower alkylthio, (3) cyano, (4) phenylthio, (5) substituted phenylthio wherein the substituent is halogen, (6)



wherein R<sup>4</sup> is hydrogen or alkyl, (7) halophenyl, (8) phthalimido, (9) vinyl, (10) carboalkoxy, (11) alkyl, (12) ethynyl, (13) CCl<sub>2</sub>=CR<sup>5</sup>— wherein R<sup>5</sup> is hydrogen or chlorine, (14) —CH<sub>2</sub>OC(O)NH(lower alkyl) or (15) benzylthio, their use as insecticides and acaricides, process for preparing the compounds, intermediates and a process for preparing intermediates.

3,755,426

## 10-HALOPROSTAGLANDIN-A DERIVATIVES

Donald P. Strike, Rosemont, and Herchel Smith, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed July 2, 1971, Ser. No. 159,557

Int. Cl. C07c 61/36, 69/74

U.S. Cl. 260—514 D

3 Claims

10-halo derivatives of prostaglandin-A compounds are prepared by epoxidation followed by treatment with hydrohalic acid. The compounds thus obtained have potent bronchodilator activity.

3,755,427

## 2-(MONO- AND DIFLUORO-4-BIPHENYL) PROPIONIC ACIDS

Stewart Sanders Adams, Armitage, John Bernard and John Stuart Nicholson, Nottingham, England, and Antonio Ribera Blancafort, Madrid, Spain, assignors to The Boots Company Limited, Nottingham, England

No Drawing. Continuation-in-part of application Ser. No. 425,624, Jan. 14, 1965. This application July 25, 1969, Ser. No. 845,033

Int. Cl. C07c 63/52

U.S. Cl. 260—515 A

4 Claims

2-(2-fluoro-4-biphenyl)propionic acid, 2-(2'-fluoro-4-biphenyl)propionic acid and 2-(2,2'-difluoro-4-biphenyl)propionic acid possessing great anti-inflammatory, analgesic, and antipyretic activities.

3,755,428

## DERIVATIVES OF α-CYLYHDRAZINO-β-PHENYL-PROPIONIC ACID

Meyer Sletzinger, North Plainfield, Sandor Karady, Elizabeth, Manuel G. Ly, New Brunswick, and Seemon H. Pines, Murray Hill, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Original application Feb. 24, 1970, Ser. No. 13,770. Divided and this application June 24, 1971, Ser. No. 156,540

Int. Cl. C07c 103/32

U.S. Cl. 260—519

2 Claims

Novel L-α-acylhydrazino-β-phenyl-propionitrile compounds useful as intermediates in the production of L-α-hydrazino-β-phenyl-propionic acids. Also included are processes for preparing the novel compounds of this invention by aminating L-α-acylamido-β-phenyl-propionitrile and processes for hydrolyzing the novel compounds of this invention to form L-α-hydrazino-β-phenyl-propionic acid compounds.

3,755,429

## PROCESS FOR THE PREPARATION OF SULFONATED DETERGENT COMPOSITION

Herbert C. Smitherman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Oct. 12, 1971, Ser. No. 188,590

Int. Cl. C07c 143/02

U.S. Cl. 260—513 R

11 Claims

A process for preparing a water-soluble sulfonated reaction product having excellent detergent properties which uses alpha-olefins as the starting reactant. The process comprises, as the first step, reacting each mole of alpha-olefin with 1.0 to 1.25 moles sulfur trioxide in a film reactor under process conditions of a reaction time of between 12 seconds and 50 seconds, a temperature of 32° F. to 180° F., and a pressure of 8 p.s.i.g. to 20 p.s.i.g. at the top of the reactor. This reaction mix is thereafter immediately reacted with a lower alcohol and is then neutralized and hydrolyzed to produce a valuable detergent composition.

3,755,430

## PROCESS FOR THE PRODUCTION OF METHALLYL SULFONATE

Gunter Lorenz, Heinrich Rinkler, and Gunther Nischk, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 9, 1969, Ser. No. 865,206

Claims priority, application Germany, Oct. 19, 1968, P 18 04 135.5

Int. Cl. C07c 143/16

U.S. Cl. 260—513 B

4 Claims

Process for the production of methallyl sulfonate by reacting a concentrated aqueous solution of sodium sulfite

with at least a 5% molar excess of methallyl chloride in the presence of an emulsifier and recovering the product by cooling the reaction mixture to a temperature of 0–15° C.

3,755,431

## CYCLOPENTANE-TETRACARBOXYLIC ACID

Roland Guillemont, Bourg-La-Reine, France, assignor to Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,206

Claims priority, application France, Dec. 3, 1969, 6941684

Int. Cl. C07c 51/32, 61/06

U.S. Cl. 260—514 K

4 Claims

This invention is addressed to a novel isomer of cyclopentane-tetracarboxylic acid having a melting point of about 160° C., and a tetramethyl ester thereof, which is prepared by subjecting 3,6-methylene 1,2,3,6-tetrahydrophthalic anhydride to a nitric acid oxidation reaction, and which can be used in the preparation of improved alkyl resins.

3,755,432

## NEW PROCESS FOR THE PREPARATION OF 1-INDANCARBOXYLIC ACIDS

Terrence W. Doyle, Candiac, Leeson R. Morris, Hemmingford, and Marcel Menard, Candiac, Quebec, Canada, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 201,566, Nov. 23, 1971. This application July 11, 1972, Ser. No. 270,771

Int. Cl. C07c 63/00

U.S. Cl. 260—515 R

7 Claims

Levorotatory 5-cyclohexyl-1-indancarboxylic acid is a useful anti-inflammatory agent in the treatment of inflammatory diseases in animals, including man. As such, a new and more efficient process has been discovered for the preparation of large quantities of the racemic mixture of the compound, (±)-5-cyclohexyl-1-indancarboxylic acid.

3,755,433

## ASHLESS LUBRICATING OIL DISPERSANT

Edward F. Miller, and Walter W. Hellmuth, Beacon, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 16, 1971, Ser. No. 208,978

Int. Cl. C10m 1/22, 1/32

U.S. Cl. 252—51.5 R

5 Claims

Polyisobutenyl-substituted N-aminoethylethanamines are provided which function as ashless nitrogen-containing dispersants for lubricating oil compositions.

3,755,434

## OXIDATION OF OLEFINS TO UNSATURATED ACIDS AND ALDEHYDES

Leon B. Levy, Corpus Christi, Tex., assignor to Celanese Corporation, New York, N.Y.

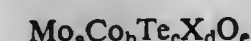
No Drawing. Continuation of abandoned application Ser. No. 804,683, Mar. 5, 1969. This application Feb. 15, 1972, Ser. No. 226,536

Int. Cl. C07c 45/04, 57/04; B01j 11/34

U.S. Cl. 260—533 N

11 Claims

A process for the oxidation of olefins to the corresponding unsaturated aldehydes and acids, e.g. propylene to acrolein and acrylic acid, by reacting the olefin with oxygen in the presence of a catalyst of the empirical formula





wherein X is rhodium or boron. When *a* is 100, *b* is 40–200, *c* is 0.1–7.0 and *d* is 5–75 when X is rhodium and is 0.1 to 3.0 when X is boron.

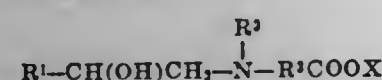
3,755,435

# **N-(2-HYDROXY-HIGHER HYDROCARBYL)-N-LOWER HYDROCARBYL-AMINOCARBOXYLATES**

Bjorn Sundby, Piscataway, Edward J. Kenney, Bernardsville, and Harold E. Wixon, New Brunswick, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,991  
Int. Cl. C07c 101/06

U.S. Cl. 260—534 M 6 Claims  
N-(2-hydroxy-higher hydrocarbyl)-N-lower hydrocarbyl-aminocarboxylates or the corresponding aminocarboxylic acids are of the formula



wherein  $R^1$  is an aliphatic hydrocarbon radical of 10 to 20 carbon atoms,  $R^2$  is a hydrocarbon radical of 1 to 4 carbon atoms,  $R^3$  is a divalent aliphatic or aromatic hydrocarbon radical of 1 to 9 carbon atoms, and X is either hydrogen or a salt-forming element or radical. In preferred embodiments of the invention,  $R^1$  is an acyclic saturated radical of 12 to 16 carbon atoms,  $R^2$  is methyl,  $R^3$  is of 1 to 2 carbon atoms, and X is a monovalent metal or an alkanolamine, such as sodium or triethanolamine.

The novel compounds are surface active and many exhibit excellent substantivities to fibrous materials, especially cotton. They are useful as detergents or as constituents of detergent preparations. Preferred compounds function very effectively as softening agents, which may be employed in the final rinsing of laundry or textiles, if used alone or in conjunction with other detergent composition materials, in the wash water. The present N-(2-hydroxy-higher hydrocarbyl)-N-lower hydrocarbyl-aminocarboxylates may also be converted to the corresponding N-oxides, which are also effective detergents, and many of which may be employed as excellent softening agents for laundry and textiles.

3,755,436

# **PRODUCTION OF CITRIC ACID**

Richard H. Wiley, New York, N.Y., assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,383  
Int. Cl. C07c 59/16

U.S. Cl. 260—535 P 2 Claims  
Citric acid can be produced by the bimolecular decarboxylative self-condensation of oxaloacetic acid followed by oxidative decarboxylation with hydrogen peroxide. Citric acid can then be recovered from the resulting products.

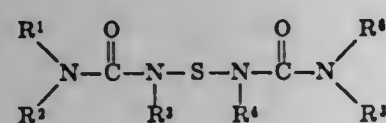
3,755,437

# **1,3-DISUBSTITUTED-1-UREIDO-1',3'-DISUBSTITUTED-1'-UREIDO SULFIDES**

Melancthon Starr Brown, deceased, by Gustave K. Kohn, administrator, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,212  
Int. Cl. C07c 161/00

U.S. Cl. 260—545 R 9 Claims  
Compounds of the formula



wherein  $R^1$  is phenyl optionally substituted with halogen, nitro, alkoxy or alkyl groups,  $R^2$ ,  $R^3$  and  $R^4$  are hydro-

gen, or alkyl of 1 to 4 carbon atoms optionally substituted with halogen,  $R^4$  is hydrogen; alkyl of 1 to 4 carbon atoms optionally substituted with halogen; phenyl group optionally substituted with halogen, nitro, alkoxy or alkyl groups and  $R^5$  is phenyl; phenyl substituted with halogen, nitro, alkoxy or alkyl groups; or alkyl optionally substituted with halogen. The compounds find use as herbicides.

3,755,438

# **PRODUCTION OF SELENIUM COMPOUNDS**

Patrick Joseph Keogh, Ilford, England, assignor to Ilford Limited, Ilford, England

No Drawing. Filed Sept. 22, 1971, Ser. No. 182,836  
Int. Cl. C07f 11/00

U.S. Cl. 260—551 R 6 Claims  
A process for the production of selenosemicarbazides by reacting a selenosemicarbazone with a hydrazine is disclosed.

3,755,439

# **METHOD OF PREPARING ALKANESULFONAMIDES FROM ALKANESULFONYL CHLORIDES**

Carl D. Kennedy, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Oct. 14, 1971, Ser. No. 189,332  
Int. Cl. C07c 143/74

U.S. Cl. 260—556 A 6 Claims  
The present invention relates to a method of preparing alkanesulfonamides from the alkanesulfonyl chloride reaction mixture obtained by the sulfochlorination of a paraffin hydrocarbon. The alkanesulfonyl chloride mixture is added to an excess of a nitrogen base compound selected from the group consisting of ammonia and amines to form an alkanesulfonamide product mixture. By the present invention the alkanesulfonamide product mixture is heated to a temperature of from about 20° C. to about 200° C. at a pressure of from about 1 to about 350 atmospheres for a period of time sufficient to convert chain chlorinated alkane sulfonamide compounds contained in the product mixture to aminoalkanesulfonamides. Once formed, the aminoalkanesulfonamides may be removed from the product mixture by extraction.

3,755,440

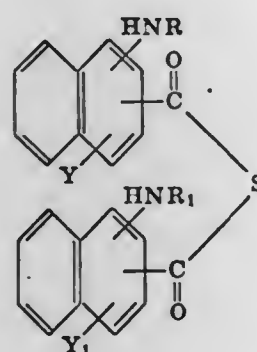
# **AMINO-NAPHTHOIC THIOLANHYDRIDES**

Stanley B. Mirviss, Stamford, Conn., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 788,053, Dec. 30, 1968. This application Oct. 22, 1970, Ser. No. 83,227

Int. Cl. C07c 153/00

U.S. Cl. 260—545 R 8 Claims  
Vinyl polymer compositions are stabilized against degradation and discoloration due to heat by adding to the polymer a stabilizing amount of a novel compound of the formula:



wherein Y and  $Y_1$  are hydrogen or alkyl groups containing from 1 to about 12 carbon atoms and R and  $R_1$  are hydrogen, aryl or alkyl groups containing from 1 to about 12 carbon atoms.

3,755,441

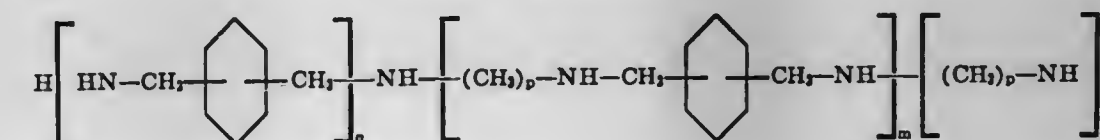
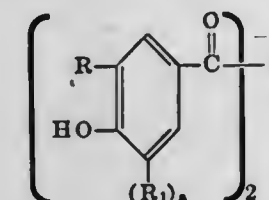
# **HYDROXY BENZOIC THIOLANHYDRIDES**

Stanley B. Mirviss, Stamford, Conn., and Carl C. Greco, Garnerville, N.Y., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 788,054, Dec. 30, 1968. This application Oct. 22, 1970, Ser. No. 83,228

Int. Cl. C07c 153/00

U.S. Cl. 260—545 R 3 Claims  
Vinyl polymer compositions are stabilized against degradation and discolorization due to heat by adding to the polymer a stabilizing amount of a novel compound of the formula:



wherein R and  $R_1$  are alkyl radicals consisting essentially of carbon and hydrogen and containing from 1 to about 12 carbon atoms and *a* is an integer with a value of from zero to one inclusive.

3,755,442

# **ACENAPHTHYL AMIDES AND AMINES**

Seymour D. Levine, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of application Ser. No. 862,951, Oct. 1, 1969. This application Mar. 15, 1972, Ser. No. 234,986

Int. Cl. C07c 103/34

U.S. Cl. 260—558 P 10 Claims  
Acenaphthenones are reduced to the corresponding acenaphthenols and the latter converted to the corresponding amides by reaction with a nitrile in the presence of an acid. The amides may then be reduced to the corresponding amines. The amides and amines possess anti-inflammatory activity.

3,755,443

# **4,4'-ALKYLENE BIS(SEMICARBAZIDE) AND DERIVATIVES THEREOF**

Chester Stephen Sheppard and Ronald Edward MacLeay, Tonawanda, N.Y., assignors to Pennwalt Corporation, East Orange, N.J.

No Drawing. Original application June 9, 1966, Ser. No. 556,263, now Patent No. 3,585,200, dated June 15, 1971. Divided and this application June 22, 1970, Ser. No. 59,808

Int. Cl. C07c 121/20, 133/02

U.S. Cl. 260—554 1 Claim  
The compound 4,4'-ethylene bis(semicarbazide) is prepared, said compound being useful in polymer formation.

3,755,444

# **BROMINATION OF ORGANIC COMPOUNDS WITH A BROMINE CHLORIDE-DIOXANE COMPLEX**

John A. Schneider and Jack F. Mills, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application Apr. 24, 1969, Ser. No. 819,541, now Patent No. 3,607,883. Divided and this application Apr. 16, 1971, Ser. No. 134,859

Int. Cl. C07c 17/12, 103/30

U.S. Cl. 260—559 S 1 Claim  
A bromine chloride complex of p-dioxane has been discovered which is useful as a solid source of bromine chloride. A dioxane-bromine chloride complex formed by

mixing bromine chloride with dioxane in methylene chloride at 10° C. has been used to selectively brominate salicylanilide to give an 88% yield of 3,4,5-tribromosalicylanilide.

3,755,445

# **CYCLOALKYL-ALKYLENE- AND ARYLALKYLENE-POLYAMINES**

Ernst Hanschke, Burghausen, Walter Fester, Königstein, Taunus, and Franz Jakob, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 19, 1970, Ser. No. 65,298  
Claims priority, application Germany, Aug. 26, 1969, P 19 43 254.3

Int. Cl. C07c 87/02, 87/28

U.S. Cl. 260—563 R 2 Claims  
Novel polyamines are prepared in known manner. They have the formula

in which:

*p* represents a whole number of from 1 to 12, preferably from 2 to 4,  
*q* and *q'* equal 0 or 1,  
*m* represents a whole number of from 1 to 10, preferably from 1 or 2 (if *q* and *q'* are 0) to 4,

the linkages of the rings are 1,3 and/or 1,4-linkages, and, optionally, to a small extent, also 1,2-linkages, at least half of the rings being cyclo-aliphatic, the rest being aromatic. The rings may also be substituted by low molecular weight alkyl groups. The polyamines are suitable, for example, as modification components for the preparation of film and fiber-forming polyamides.

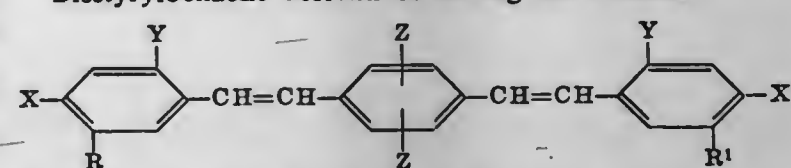
3,755,446

# **OPTICAL BRIGHTENERS OF THE BIS-STYRYLBENZENE SERIES**

Horst Scheuermann, Ludwigshafen, and Peter-Matthias Hell, Frankenthal, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Aug. 3, 1971, Ser. No. 168,731  
Int. Cl. C07c 103/24; C09b 23/00

U.S. Cl. 260—559 A 3 Claims  
Bisstyrylbenzene derivatives having the formula



in which the most important substituents R and  $R_1$  are carboxyl groups or carboxylic ester or amide groups. The compounds are useful as optical brighteners, particularly for paper.

3,755,447

# **POLYALKYLENE POLYAMINE SEPARATION AND PURIFICATION**

Lawrence P. Klemann, Somerville, Thomas A. Whitney, Linden, and Arthur W. Langer, Jr., Watchung, N.J., assignors to Esso Research and Engineering Company

Filed Nov. 26, 1971, Ser. No. 202,380  
Int. Cl. C07c 85/16

U.S. Cl. 260—563 7 Claims  
This invention relates to a process for the separation and purification of polyalkylene polyamines such as occur in commercial mixtures via the selective formation of a complex between a polyamine and an inorganic salt wherein the metal portion of said salt is a metal selected



from the group consisting of lithium, sodium, potassium, magnesium, calcium, strontium and barium. This process has the advantage of operating with very high selectivities in the absence of large amounts of water and it permits recovery of the pure amines with no prior modification by methylation.

### 3,755,448 N-(PENTACHLOROPHENYL)-DIETHYLENE TRIAMINE

John J. Merianos, Jersey City, N.J., Edward Griffin Shay, Suffern, N.Y., and Phillip Adams, Murray Hill, and Alfonso N. Petrocci, Glen Rock, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.  
No Drawing. Original application Dec. 9, 1969, Ser. No. 883,636, now Patent No. 3,663,620, dated May 10, 1972. Divided and this application Mar. 15, 1972, Ser. No. 235,092

Int. Cl. C07c 91/16

U.S. Cl. 260—570.5 P

1 Claim

Microbiocidal ammonia and amino substituted halogenated biphenyls, as well as the nitrogen derivatives thereof such as quaternary ammonium compounds, amine oxides, imidazolines, amides, enamines, ampholytes, and the like.

The ammonia and amino halobiphenyls are prepared by reacting the ammonia or the amine and the halobiphenyl reactants in such a manner that the ratio of amine to halobiphenyl is preferably limited to between two and five mols of amine to each mol of halobiphenyl.

### 3,755,449 PROCESS FOR PRODUCING AMINODIPHENYL ETHER DERIVATIVES

Ken Ito and Hiroshi Kaminaka, Toyonaka-shi, Osaka-fu, and Takashi Tamura, Ibaraki-shi, Osaka-fu, Japan, assignors to Sumitomo Chemical Co., Ltd.  
No Drawing. Filed Feb. 25, 1969, Ser. No. 802,214  
Claims priority, application Japan, Feb. 28, 1968, 43/13,106

Int. Cl. C07c 93/14

U.S. Cl. 260—571

1 Claim

Process for catalytic reduction of a nitrodiphenyl ether derivative to produce an aminodiphenyl ether derivative which comprises treating the nitrodiphenyl ether derivative with hydrogen in the presence of Raney nickel in dimethylformamide at a temperature of 50 to 200° C. under a pressure of 5 to 150 kg./cm.<sup>2</sup> for a period of 1 to 20 hours.

### 3,755,450 FREE-FLOWING UV ABSORBER COMPOSITIONS WITH MAGNESIUM OR ZINC SALTS OF FATTY ACIDS

Robert F. Anderson, Flemington, and George A. Menghi, Piscataway, N.J., assignors to American Cyanamid Company, Stamford, Conn.  
No Drawing. Filed July 31, 1969, Ser. No. 846,585

Int. Cl. C07c 49/82

U.S. Cl. 260—591

8 Claims

Free-flowing 2-hydroxy-4-alkoxybenzophenones are provided by a process comprising admixing said alkoxybenzophenone and from about 1% to about 10% by weight of a magnesium or zinc salt of a saturated fatty acid containing from about 12 to about 20 carbon atoms.

### 3,755,451 EXCHANGE REACTIONS OF OCTADIENYL ESTERS WITH ACTIVE HYDROGEN COMPOUNDS

Abraham N. Kurtz and Melvin L. Farmer, Charleston, and Kenneth E. Atkins, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.  
No Drawing. Filed Apr. 29, 1970, Ser. No. 33,065

Int. Cl. C07c 49/12

U.S. Cl. 260—593 R

2 Claims

3-octa-1,7-dienyl acetate is readily isomerized to 1-octa-2,7-dienyl acetate in the presence of palladium catalysts alone and at a rapid rate when a tertiary amine is added.

This same allylic isomerization occurs with butenyl acetates. Allylic alcohols such as 2-octa-1,7-dienol also undergo this isomerization.

1-acetoxy-2,7-octadiene and 1-octa-2,7-dienol are each intermediates in the process for the production of linear octanol.

The catalyst system is also useful for replacing the functional groups in an allylic system. For example, octadienyl esters can be converted into (1) octadienyl amines via reaction with primary or secondary amines, (2) octadienyl ethers via reaction with alcohols, (3) other octadienyl esters by reaction with other carboxylic acids and (4) used to extend a carbon chain when reacted with compounds containing an activated carbon-hydrogen bond.

### 3,755,452 MIXING GASES AND LIQUIDS WITH A LIQUID MEDIUM

Richard Sinn, Ludwigshafen (Rhine), Guenter Herrmann, Mannheim, Otto Nagel, Wachenheim, Pfalz, Hubertus Scheuring, Frankenthal, Pfalz, and Paul Hornberger, Ludwigshafen (Rhine), Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Apr. 3, 1967, Ser. No. 627,786

Int. Cl. B01f 5/04; C07c 29/00, 45/02

U.S. Cl. 260—586 B

11 Claims

A process for mixing gases and liquids with a liquid medium in which the gas and the liquid are injected into an impulse exchange chamber which is located in the liquid medium, and apparatus for carrying out the mixing.

### 3,755,453 PROCESS FOR THE SYNTHESIS OF ADIPOIN (2-HYDROXYCYCLOHEXANONE)

Rudolph Rosenthal, Broomall, and Giovanni A. Bonetti, Wynnewood, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Mar. 18, 1971, Ser. No. 125,814

Int. Cl. C07c 27/00

U.S. Cl. 260—586 R

8 Claims

A process for preparing 2-hydroxycycloaliphatic ketones comprising reacting the corresponding cycloaliphatic ketones with an organic hydroperoxide in the presence of formic acid.

### 3,755,454 ORGANIC PEROXIDES AND METHOD THEREFOR

Yun Ger Chang and Phillip S. Bailey, Austin, Tex., assignors to Reichhold Chemicals, Inc., White Plains, N.Y.

No Drawing. Original application Aug. 21, 1968, Ser. No. 754,472. Divided and this application Aug. 10, 1971, Ser. No. 170,621

Int. Cl. C07c 49/76

U.S. Cl. 260—590

9 Claims

This invention discloses a process of preparing organic peroxides, by reacting a hydroperoxide having the general formula R—O—O—H with an  $\alpha,\beta$ -unsaturated ketone. The  $\alpha,\beta$ -unsaturated ketone may have a straight chain structure or a cyclic structure. Reaction takes place at a temperature from about 0° C.—80° C. in the presence of an acidic catalyst. The mole ratios of the components may vary from about 10:1 to 1:10.

### 3,755,455 (1-ALKOXY-2-NAPHTHYL)-SUBSTITUTED OR UNSUBSTITUTED PHENYLKETONES

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wonder, Inc., Hanover, N.J.

No Drawing. Filed Dec. 9, 1970, Ser. No. 96,668

Int. Cl. C07c 49/80, 49/82

U.S. Cl. 260—591

3 Claims

(1-alkoxy-2-naphthyl)-substituted or unsubstituted phenylketone, e.g., (1-methoxy-2-naphthyl)-phenylketone,

prepared by oxidizing a corresponding 1-alkoxy-2-phenyl-2-naphthalenemethanol. The compounds are useful as anti-inflammatory agents.

### 3,755,456 ALDEHYDE SEPARATION PROCESS

Wayne B. Gitchel, Rothschild, Donald G. Diddams, Schofield, and James W. Barr, Rothschild, Wis., assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed Nov. 10, 1970, Ser. No. 88,522

Int. Cl. C07c 45/24

U.S. Cl. 260—600

2 Claims

Mixtures of syringic aldehyde and vanillin are separated into the pure components by selective precipitation of the syringic aldehyde-ammonia complex from aqueous methanol, and isolation of syringic aldehyde and vanillin from the acidified complex and filtrate, respectively.

### 3,755,457 PREPARATION OF TETRAKIS(ALPHA-HYDROXY- ORGANO)PHOSPHONIUM ACID SALTS FROM ELEMENTAL PHOSPHORUS

Ronald H. Carlson, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Filed Aug. 25, 1971, Ser. No. 174,953

Int. Cl. C07f 9/28

U.S. Cl. 260—606.5 F

13 Claims

Tetrakis(alphaorgano)phosphonium acid salts, and specifically tetrakis(hydroxymethyl)phosphonium chloride, are prepared by a process which includes the step of reacting elemental phosphorus and an aldehyde, such as formaldehyde, with hydrochloric acid, in the presence of an electropositive metal. Other acid salts of the tetrakis(hydroxyorgano)phosphonium compound can be prepared by substituting other acids, e.g., hydrobromic acid, sulfuric acid, phosphoric acid, and the like, for hydrochloric acid.

These compounds are useful as fireproofing agents for cellulosic textile materials.

### 3,755,458 OXIDATION OF PROPYLENE AND ISOBUTENE TO UNSATURATED ALDEHYDES

Theodor Vrbaski, Harvey, Ill., and Thomas D. Sheehan, Kalamazoo, Mich., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed Sept. 10, 1968, Ser. No. 758,666

Int. Cl. C70c 45/02

U.S. Cl. 260—604 R

11 Claims

A process for the catalytic vapor phase oxidation of propylene and isobutene to unsaturated aldehydes, i.e. acrolein and methacrolein, respectively. The oxidation is conducted in the vapor phase at a temperature of about 350 to 550° C. with molecular oxygen-containing gas and in contact with an oxidation catalyst consisting essentially of oxides of copper, arsenic and from one to two members of Group VI having an atomic number of 42 to 74, i.e. molybdenum, tellurium and tungsten. The metals are present in the catalyst in the following atomic ratios:



where X is molybdenum or tungsten, a is about 2 to 30, b is about 0.1 to 15, c is 0 to about 5, and d is about 2 to 30. Also, when c is 0, X is molybdenum. Very high selectivity and total conversions are obtained.

### 3,755,459 PHENYLPHOSPHONIUM SALTS

Julius Diamond, Lafayette Hill, Pa., assignor to William H. Rorer, Inc., Washington, Pa.

No Drawing. Filed Jan. 22, 1971, Ser. No. 109,020

Int. Cl. C07f 9/54

U.S. Cl. 260—606.5 F

22 Claims

Novel phenylphosphonium salts have been prepared. Compounds of this invention possess useful gastric anti-

secretory, spasmolytic and anti-ulcerogenic properties. A method of treating gastrointestinal hyperacidity and ulceration has also been disclosed.

### 3,755,460 PRODUCTION OF TRIALKYLPHOSPHONIUM HALIDES

Horst Staendeke, Bruhl, Germany, assignor to Knapsack Aktiengesellschaft, Knapsack bei Cologne, Germany

Filed Mar. 31, 1972, Ser. No. 240,033

Claims priority, application Germany, Apr. 3, 1971, P 21 16 355.3

Int. Cl. C07f 9/54

U.S. Cl. 260—606.5 F

17 Claims

Production of trialkylphosphonium halides of the general formula



in which R stands for alkyl groups having from 1 to 3 carbon atoms and X stands for a halogen atom. A vaporous or gaseous mixture of phosphorus and an alkyl halide with between 1 and 3 carbon atoms in the alkyl radical is passed by means of a carrier gas, in the absence of oxygen or air, and at a temperature between 280 and 420° C., over an active carbon catalyst, the resulting gaseous reaction mixture is subjected to fractional condensation so as to isolate monoalkylhalogenophosphine, dialkylhalogenophosphine and a two layer-forming mixture of trialkylphosphonium halide and unreacted phosphorus therefrom, and the trialkylphosphonium halide is separated.

### 3,755,461 PROCESS FOR THE PRODUCTION OF ORGANIC DISULPHIDES

Georges Kvasnikoff, Monen, Alain Pfister, Pau, and Robert Vecchiutti, Jurancon, France, assignors to Societe Anonyme dite: Societe Nationale des Petroles D. Aquitaine, Courbevoie, France

Filed Mar. 24, 1972, Ser. No. 237,895

Claims priority, application France, Mar. 29, 1971, 7110938

Int. Cl. C07c 149/12

U.S. Cl. 260—608

13 Claims

A process for preparing organic disulphides, by oxidizing the corresponding mercaptan with sulphur in the presence of a basic catalyst is characterized by the fact that liquid sulphur is sprayed finely over the surface of a liquid reaction phase, in a reactor equipped with a stirrer, while the liquid mercaptan is injected into this liquid phase which consists of a solution of mercaptan and of disulphide obtained during the reaction, the disulphide obtained in the liquid phase being separated by means known in the previous art. The use of the process to obtain dimethyldisulphide and an apparatus used to perform the process is also described.

### 3,755,462 PROCESS FOR THE PREPARATION OF POLYETHER THIOETHERS

Eberhart Degener, Opladen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 1, 1971, Ser. No. 177,100

Claims priority, application Germany, Sept. 4, 1970, P 20 43 899.7

Int. Cl. C07c 149/14

U.S. Cl. 260—609 R

7 Claims

This invention relates to an improved process for the preparation of polyether thioethers which are suitable for use as plasticizers. It has been found that the condensation of thioglycol which is catalyzed with phosphorous acid can be substantially accelerated by also adding a small quantity of a salt of metal from the group II, II-A, VIII-A of the Periodic System and an organic sulphonic acid.



3,755,463

**PROCESS FOR THE PREPARATION OF HYDROXYALKYL MERCAPTANS**

Wilfried Umbach, Langenfeld Rhineland, Rainer Mehren, Wesel-Lackhausen, and Werner Stein, Erkrath-Unterbach, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf, Germany

No Drawing. Continuation-in-part of application Ser. No. 818,444, Apr. 22, 1969. This application Oct. 6, 1971, Ser. No. 187,191

Claims priority, application Germany, Apr. 23, 1968, P 17 68 265.4

Int. Cl. C07c 149/14

U.S. Cl. 260—609 R

6 Claims

Reacting hydrogen sulfide with mono or poly, terminal or non-terminal, aliphatic or cycloaliphatic epoxide at a temperature of from  $-20^{\circ}\text{C}$ . to  $150^{\circ}\text{C}$ . in the presence of 0.01 to 10% by weight, based on the epoxide, of an aliphatic, cycloaliphatic, aromatic and/or heterocyclic, primary or secondary amines, to produce a higher molecular weight hydroxyalkyl mercaptan.

3,755,464

**TERTIARY-ALKYL HALOCUMYL PEROXIDES**

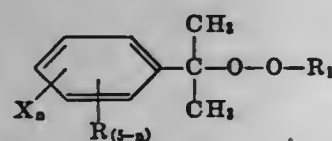
Richard Anthony Bafford, Aiken, S.C., assignor to Pennwalt Corporation, Philadelphia, Pa.  
No Drawing. Continuation-in-part of application Ser. No. 771,344, Oct. 28, 1968. This application Feb. 25, 1970, Ser. No. 13,792

Int. Cl. C07c 73/08

U.S. Cl. 260—610 R

8 Claims

Tertiary-alkyl halocumyl peroxides of the formula



wherein X is F, Cl, or Br;  $n=1-5$ ; R is H, alkyl, cycloalkyl, or aryl; and  $R_1$  is tertiary-alkyl of 4-8 carbon atoms. These peroxides are useful for crosslinking polymeric materials without producing an objectionable odor.

3,755,465

**DIFUNCTIONAL BETA-HYDROXY PERESTERS AND METHOD OF MAKING SAME**

Yun Ger Chang, Austin, Tex., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

No Drawing. Filed Mar. 9, 1971, Ser. No. 122,545

Int. Cl. C07c 73/02

U.S. Cl. 260—610 D

1 Claim

Difunctional beta-hydroxy peresters are prepared by reacting beta-butyrolactone or beta-propiolactone with a difunctional hydroperoxide in the presence of either an acidic or a basic catalyst at a temperature ranging from about  $0^{\circ}\text{C}$ . to about  $100^{\circ}\text{C}$ . and at a preferred temperature ranging from about  $20^{\circ}\text{C}$ . to about  $45^{\circ}\text{C}$ . The mole ratio of beta-lactone to difunctional hydroperoxide may range from about 2:1 to about 3:1 with a preferred mole ratio ranging from about 2.0:1 to about 2.2:1. Compounds of this invention are highly efficient polymerization initiators and cross-linking agents.

3,755,466

**SELECTIVE DECOMPOSITION OF HYDROPEROXIDES IN THE PRESENCE OF POLYMERIC PEROXIDES AND RECOVERY OF THE POLYMERIC PEROXIDES**

Charles J. Norton, Berkeley, Calif., and Dennis E. Drayer, Littleton, Michael J. Reuter, Denver, and Kent W. Robinson, Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Nov. 4, 1968, Ser. No. 772,966

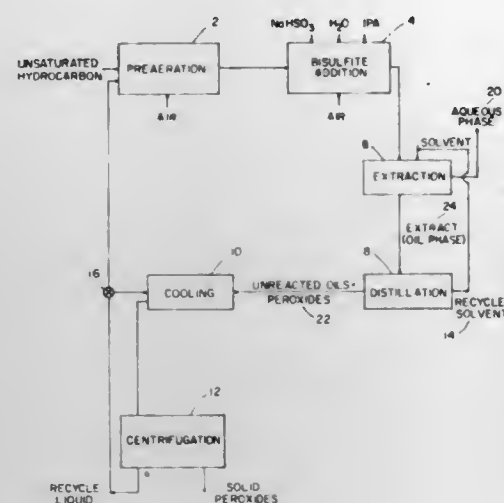
Int. Cl. C07c 73/00

U.S. Cl. 260—610 B

7 Claims

Mixtures comprising hydroperoxides and polymeric peroxides obtained by the preacration of unsaturated hydrocarbons are treated with aqueous bisulfite to selectively

destroy the more reactive hydroperoxides. The resultant mixture is solvent extracted and the extract phase, which contains the polymeric peroxides, is distilled to remove the solvent, cooled and centrifuged to produce a



product of polymeric peroxides. These economically prepared polymeric peroxides are useful, inter alia, as free radical initiators and as catalysts in polymerization reactions.

3,755,467

**TETRACHLORO ARYL DIETHERS**

Gerhard Darsow, Krefeld-Uerdingen, Ludwig Bottenbruch, Krefeld-Bockum, and Hermann Schnell, Krefeld-Uerdingen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Aug. 12, 1968, Ser. No. 752,173, now abandoned. Divided and this application Jan. 25, 1971, Ser. No. 109,713

Claims priority, application Germany, Aug. 18, 1967, P 16 43 344

Int. Cl. C07c 43/22

U.S. Cl. 260—613 R

3 Claims

The invention is concerned with novel halogen-containing arylethers or polyethers and the process for the production thereof.

3,755,468

**1-CHLORO-1,1,3,3,3-PENTAFLUORO-2-PROPYL METHYL ETHER AS INHALATION ANESTHETIC**  
Everett E. Gilbert and Benjamin Veldhuis, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application Jan. 10, 1967, Ser. No. 608,276, now Patent No. 3,594,484. Divided and this application Apr. 5, 1971, Ser. No. 131,473

Int. Cl. C07c 43/00

U.S. Cl. 260—614 F

1 Claim

This application relates to the novel compound 1-chloro-1,1,3,3,3-pentafluoro-2-propyl methyl ether and its use as a potent general inhalation anesthetic having a high margin of toxic safety.

3,755,469

**CONTINUOUS MANUFACTURE OF ACETYLENE ALCOHOLS**

Heinrich Pasedach, Ludwigshafen, Walter Himmele, Waldorf, Ludwig Vogel, Frankenthal, and Klaus Weinerth, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed July 10, 1969, Ser. No. 840,844

Claims priority, application Germany, July 10, 1968, P 17 68 877.6

Int. Cl. C07c 33/04, 35/02

U.S. Cl. 260—617 A

8 Claims

Continuous manufacture of acetylene alcohols by the ethynylation of aldehydes or ketones with at least 0.6

mole of a basic condensing agent per mole of aldehyde or ketone at 5 to 26 atm. gauge, the development of a gas phase in the reaction chamber being avoided.

3,755,470

**PROCESS FOR PREPARING POLYHALO PHENOLS**

Edwin B. Michaels, Gregory Court 06855, and John W. Lee, Glen Ave. 06850, both of Norwalk, Conn.

No Drawing. Filed July 31, 1968, Ser. No. 748,982

Int. Cl. C07c 39/32

U.S. Cl. 260—623 R

10 Claims

A process is provided for the hydrolysis of polyhalobenzene to polyhalo phenols in good yields and purity by initially reacting ethylene glycol with an alkali metal hydroxide to obtain a mixture comprising ethylene glycol alkali metal derivative, alkali metal hydroxide and ethylene glycol, adding to the latter mixture an alkane of from 6 to 14 carbon atoms or mixtures of the same, such as mineral spirits or deodorized kerosene, then introducing a polyhalobenzene, whereby hydrolysis of the latter occurs and, thereafter, recovering the so-hydrolyzed benzene.

3,755,471

**NONANITROTERTHENYL**

Joseph C. Dacons, Washington, D.C., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Oct. 31, 1963, Ser. No. 320,579

Int. Cl. C07c 79/10

U.S. Cl. 260—645

3 Claims

1. The compound 2,2',2'',4,4',4'',6,6',6''-nonanitroterphenyl.  
2. The method of preparing polynitroterphenyls which comprises reacting copper dust with a picryl halide and a dihalotritrobenzene under anhydrous conditions in the presence of a diluent therefor.

3,755,472

**8-HALO-2-MENTHENE AND ITS METHOD OF PREPARATION**

Albert B. Booth, Jekyll Island, Ga., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Application July 9, 1968, Ser. No. 743,293, which is a division of application Ser. No. 563,370, July 7, 1966. Divided and this application July 27, 1970, Ser. No. 58,683

Int. Cl. C07c 17/08, 23/10

U.S. Cl. 260—648 R

2 Claims

An 8-halo-2-menthene, such as 8-chloro-2-menthene, is prepared by reacting d-trans-isolimonene and a hydrogen halide, such as hydrogen chloride. d-2,4(8)-p-menthadiene and 2-trans-menthene can be prepared from the 8-halo-2-menthenes.

3,755,473

**PROCESS FOR SEPARATING MONO-CHLOROMETHYLATION AND DI-CHLOROMETHYLATION PRODUCT OF A C<sub>10</sub> OR LOWER AROMATIC HYDROCARBON**

Harry E. Cler and Hulen L. Wilder, Baytown, Tex., assignors to Esso Research and Engineering Company  
Original application May 2, 1968, Ser. No. 726,053.

Divided and this application Sept. 3, 1971, Ser. No. 177,817

Int. Cl. C07c 25/14

U.S. Cl. 260—651 R

5 Claims

A process for separating the mono-chloromethylation from the di-chloromethylation products of aromatic hydrocarbons of  $C_{10}$  or lower whose mono-chloromethylation products have a melting point of about  $25^{\circ}\text{C}$ . or

higher. A chloromethylation reaction mixture is heated with a  $C_8$  to  $C_9$  aromatic hydrocarbon in the liquid phase to dissolve the mono-chloromethylation and di-chloromethylation products and is then cooled to precipitate solid di-chloromethylation product. Solid di-chloromethylation product is separated from the aromatic hydrocarbon solution and washed with a  $C_8$  to  $C_9$  saturated hydrocarbon in the liquid phase to high purity. The aromatic hydrocarbon solution is vaporized to leave a residue including the mono-chloromethylated product. The residue is heated with a saturated  $C_8$  to  $C_9$  hydrocarbon in the liquid phase to dissolve mono-chloromethylated product therein. Then the hot saturated hydrocarbon is separated from undissolved solids and is cooled to precipitate solid mono-chloromethylated product, which is then recovered from the saturated hydrocarbon.

3,755,474

**CONVERSION OF HALOCARBON COMPOUNDS**

Geir Bjornson, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed July 29, 1970, Ser. No. 58,993

Int. Cl. C07c 17/20

U.S. Cl. 260—653

10 Claims

Perhaloethane compounds in the presence of elemental bromine or chlorine and alkali metal or alkaline earth metal catalysts are converted to halocarbon compounds having a chemical composition different from the feed-stock material.

3,755,475

**PROCESS FOR THE RECOVERY OF HALOALKANES**

Robert Fuhrmann, 32 Cross Road, Morris Plains, N.J. 07950; John Pisanchyn, 15 Washington Place, Morris-town, N.J. 07960; and Fred W. Koff, 288 Parker Ave., Clifton, N.J. 07015

No Drawing. Continuation-in-part of application Ser. No. 720,480, Apr. 11, 1968. This application Feb. 25, 1971, Ser. No. 118,981

Int. Cl. C07c 17/38

U.S. Cl. 260—652 P

7 Claims

A process for the separation of haloalkanes from alkanes in a mixture containing the same whereby the mixture is dissolved in a ketone solvent, the temperature lowered below the solidification temperature of the alkanes, and separation of the liquid and solid phases effected. The liquid phase, enriched in haloalkanes, is treated to remove the solvent while the solid phase, enriched in alkanes, may be warmed and recycled. The process is particularly applicable to mixtures derived from the free radical halogenation of alkanes to provide a product stream containing a high proportion of haloalkanes useful in the preparation of alkylbenzenes, alkylphenols and olefins.

3,755,476

**DEHYDROHALOGENATION PROCESS**

James W. Cray, Wilmington, and Robert Edward Tarney, Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 639,634, May 19, 1967. This application Jan. 14, 1970, Ser. No. 2,977

Int. Cl. C07c 21/20

U.S. Cl. 260—655

8 Claims

The halogen containing compound, 3,4-dichloro-1-butene, is treated with a calculated amount of alkali metal hydroxide in the presence of a catalyst in an aqueous medium initially containing 30% to 55% hydroxide and finally containing at least 25% hydroxide by weight based on the water and said hydroxide.



3,755,477

**PROCESS FOR PRODUCING FLUORINATED HYDROCARBONS**

Richard Andrew Firth and George Edward Foll, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 22, 1970, Ser. No. 48,497  
Claims priority, application Great Britain, Feb. 26, 1969, 32,543/69

Int. Cl. C07c 17/08, 17/20

U.S. Cl. 260—653.4

15 Claims

An improved chromia catalyst for fluorination of halogenated hydrocarbons is prepared by treating a chromium hydroxide paste with water or steam before being dried and calcined.

3,755,478

**CYCLIC PROCESS FOR THE PREPARATION OF DIORGANOMAGNESIUM COMPOUNDS**

Conrad W. Kamienski, Gastonia, N.C., assignor to Lithium Corporation of America, New York, N.Y.

No Drawing. Filed Aug. 18, 1971, Ser. No. 172,931

Int. Cl. C07f 3/02

U.S. Cl. 260—665 R

11 Claims

A cyclic process for the preparation of diorganomagnesium compounds which involves, first, preparing a diorganomagnesium compound from magnesium metal and an organic chloride in a hydrocarbon medium; second, reacting the resulting mixture of diorganomagnesium and magnesium chloride with sufficient organolithium to react with the magnesium chloride to produce hydrocarbon-soluble diorganomagnesium compounds; third, separating therefrom the by-product lithium chloride and subsequently reacting it with an alkyl or aryl chloride and sodium metal to regenerate the organolithium compound which is then finally recycled to the reaction mixture obtained in the first step described above.

3,755,479

**BERYLLIUM HYDRIDE COMPOSITIONS AND THEIR USE IN MAKING CYCLOPENTADIENYL BERYLLIUM HYDRIDE COMPOUNDS**

Everett M. Marlett and Robert N. Sanders, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Oct. 24, 1967, Ser. No. 678,489

Int. Cl. C07f 3/00

U.S. Cl. 260—665 R

6 Claims

Beryllium hydride, dissolved in a novel solvent therefor, dicyclopentadienyl beryllium, reacts with the latter on prolonged heating at 105–115° C. to yield cyclopentadienyl beryllium hydride. This compound is useful as an intermediate for cyclopentadienyl beryllium alkyls and as the basis of a low-pressure route to crystalline beryllium hydride.

3,755,480

**DEHYDROGENATION WITH A PLATINUM-LEAD CATALYTIC COMPOSITE**

Frederick C. Wilhelm, Arlington Heights, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Application Oct. 20, 1969, Ser. No. 867,861, now Patent No. 3,649,565, which is a continuation-in-part of abandoned application Ser. No. 835,218, June 20, 1968. Divided and this application Aug. 11, 1971, Ser. No. 170,953

Int. Cl. C07c 5/18, 15/10

U.S. Cl. 260—668 D

23 Claims

Dehydrogenatable hydrocarbons are dehydrogenated by contacting them at dehydrogenation conditions with a catalytic composite comprising a combination of catalytically effective amounts of a platinum group compo-

nent and a lead component with a porous carrier material. A specific example of the catalytic composite used in the dehydrogenation method disclosed herein is a combination of a platinum component, a lead component and an alkali or alkaline earth component with a porous carrier material in a manner such that the platinum and lead components are uniformly distributed throughout the porous carrier material, the composite contains about 0.01 to about 5 wt. percent of the alkali metal or alkaline earth metal and the lead component is present in an amount sufficient to result in an atomic ratio of lead to platinum of about 0.05:1 to about 0.9:1.

3,755,481

**DEHYDROGENATION METHOD AND MULTICOMPONENT CATALYTIC COMPOSITE FOR USE THEREIN**

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 856,810, Sept. 10, 1969, now Patent No. 3,632,503. This application Sept. 29, 1971, Ser. No. 184,965

Int. Cl. C07c 5/18

U.S. Cl. 260—668 D

18 Claims

Dehydrogenatable hydrocarbons are dehydrogenated by contacting them at dehydrogenation conditions with a catalytic composite, comprising a combination of catalytically effective amounts of a platinum group component, a tin component and a germanium component with a porous carrier material. A specific example of the catalytic composite disclosed herein is a combination of a platinum group component, a tin component, a germanium component and an alkali or alkaline earth component with a porous carrier material wherein substantially all of the platinum group component is present as the elemental metal and substantially all of the germanium component is present in an oxidation state above the elemental metal, wherein the composite contains about 0.01 to about 2 wt. percent of platinum group metal, about 0.01 to about 5 wt. percent tin, about 0.01 to about 5 wt. percent germanium and about 0.01 to about 5 wt. percent alkali or alkaline earth metal.

3,755,482

**MULTISTAGE PRODUCTION OF STYRENE**

Kenneth R. Nunnally, Brazoria, William M. Castor, Clute, and Robert R. Turley, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,946

Int. Cl. C07c 15/10

U.S. Cl. 260—669 R

3 Claims

A process for improving the styrene yield in the catalytic multistage dehydrogenation of ethylbenzene wherein the average temperature of each stage is at least 10° C. higher than the preceding stage.

3,755,483

**VAPOR-PHASE ALKYLATION IN PRESENCE OF CRYSTALLINE ALUMINOSILICATE CATALYST**

George Thomas Burress, Beaumont, Tex., assignor to Mobile Oil Corporation

No Drawing. Filed Apr. 28, 1972, Ser. No. 248,365

Int. Cl. C07c 3/52

U.S. Cl. 260—671 R

10 Claims

A process is provided for alkylation of aromatic hydrocarbons by contacting same with an alkylating agent in a reaction zone maintained under conditions such that said alkylation is accomplished in the vapor-phase and in the presence of a catalyst comprising a crystalline aluminosilicate zeolite characterized by a unique X-ray diffraction pattern, said catalyst under said conditions being capable of affording a high and selective yield of desired alkylaromatic product.

3,755,484

**PROCESS FOR MAKING SYNTHETIC WAXES**

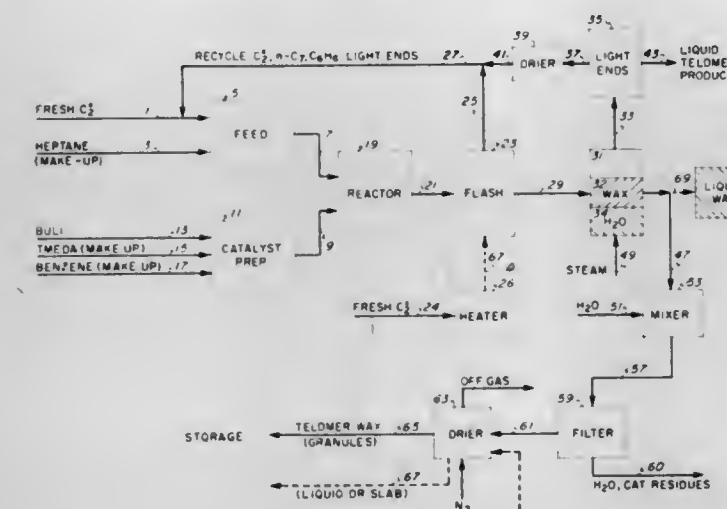
Arthur W. Langer, Jr., Watchung, N.J., assignor to Esso Research and Engineering Company

Filed Oct. 30, 1970, Ser. No. 85,606

Int. Cl. C08f 1/88

U.S. Cl. 260—671 B

8 Claims



An efficient, simplified wax finishing process which comprises steam-stripping the wax to remove light ends and catalyst residues; separating the wax from the aqueous phase containing the stripped catalyst residues and light ends and recovering the wax product.

3,755,485

**HYDROCARBON ALKYLATION PROCESS**

Jay E. Sobel, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed July 30, 1971, Ser. No. 167,790

Int. Cl. C07c 3/54

U.S. Cl. 260—671 R

8 Claims

A process is disclosed for alkylating an alkylatable hydrocarbon reactant with an olefin-acting reactant utilizing an alkylation catalyst diluted with from about 0.001 wt. percent to about 40 wt. percent, based on the catalyst, of a catalyst diluent derived from a terpene or mixture of terpenes. The catalyst diluent is formed by reacting a terpene, or mixture of terpenes, with an alkylation catalyst.

3,755,486

**DEHYDROCYCLIZATION OF HYDROCARBONS**

Masayoshi Oishi, Boothwyn, and Walter A. Butte, Jr., West Chester, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed Aug. 26, 1971, Ser. No. 175,405

Int. Cl. C07c 5/26, 5/27

U.S. Cl. 260—673.5

9 Claims

Process of dehydrocyclizing C<sub>6</sub>–C<sub>10</sub> hydrocarbons having at least a C<sub>6</sub> backbone using a Li, Na or K zeolite X or Y or faujasite impregnated with 0.3 to 1.4 percent Pt at from 500 to 560° C. and preferably 510 to 555° C. using a partial pressure of H<sub>2</sub> of from 10 to 300 p.s.i. and preferably 50 to 200 p.s.i. to form benzene and alkylbenzenes. Optionally the catalyst can be treated with chlorine so that it contains from 0.3 to 1.5 weight percent chlorine which improves the effectiveness of the catalyst.

3,755,487

**OLEFIN COMPLEXING PROCESS**

Charles E. Jahnig, Rumson, David W. Savage, Summit, and Hugh H. Horowitz, Elizabeth, N.J., assignors to Esso Research and Engineering Company

Filed June 2, 1972, Ser. No. 259,078

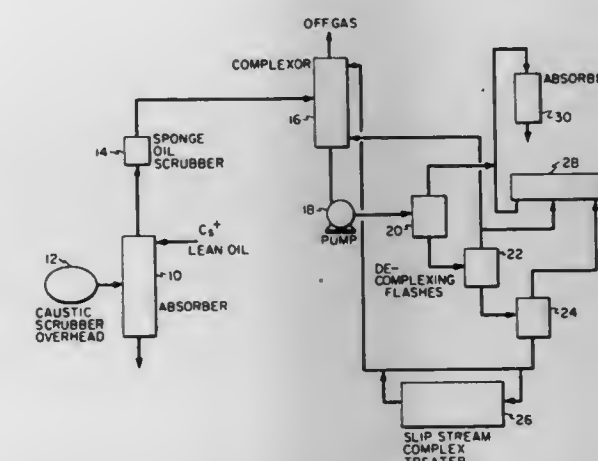
Int. Cl. C07c 7/00

U.S. Cl. 260—677 A

10 Claims

A process is described for separating and recovering complexible ligands from feedstreams containing them,

comprising the steps of complexing the ligands with a complexing solution, stripping impurities out of solution, decomplexing by flashing at pressures of from 1 atmosphere to about 40 atmospheres, recycling solvent to the



complexer and thereafter recovering said ligands as a high purity product. The complexing solution comprises Group I–B metal salts dissolved in low volatility aromatic solvents. The ligands are decomplexed by either flashing off at high pressures or by multiple stage flashing.

3,755,488

**SELECTIVE ABSORPTION AND HYDROGENATION OF ACETYLENES**

Marvin M. Johnson and Gerhard P. Nowack, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,168

Int. Cl. C07c 11/72

U.S. Cl. 260—677 A

10 Claims

A manufacturing method for the purification and production of olefins through selective absorption of acetylenes impurities with a liquid absorbent and hydrogenating the resulting acetylenes-enriched liquid absorbent with a Group VIII catalyst, converting thereby the acetylenes to monoolefins having the same number of carbon atoms per molecule as the converted acetylenic compound.

3,755,489

**SYNTHESIS OF 1,2-BUTADIENE**

Durward T. Roberts, Jr. and Edward L. Kay, Akron, Lawrence E. Calihan, Cuyahoga Falls, and Lynn B. Wakefield, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Mar. 1, 1972, Ser. No. 230,961

Int. Cl. C07c 5/24

U.S. Cl. 260—680 R

5 Claims

Significant quantities of 1,2-butadiene are produced from a 2-butyne feed stream by placing the feed stream in contact with a base-treated catalyst comprising silica or alumina for from 1.0 to 100 seconds at a temperature of from about 200° C. to about 600° C., and recovering the desired 1,2-butadiene from the products thus formed.

3,755,490

**OLEFIN POLYMERIZATION CATALYZED BY A SUPPORTED BLACK AMORPHOUS NICKEL COMPLEX**

Jin Sun Yoo, South Holland, and Henry Erickson, Park Forest, Ill., assignors to Atlantic Richfield Company

No Drawing. Filed May 1, 1969, Ser. No. 821,134

Int. Cl. C07c 3/10

U.S. Cl. 260—683.15 D

24 Claims

A solid phase catalyst composition comprising a complex of nickel, a Group V–A electron donor ligand, and a non-protonic Lewis acid and reducing agent on a solid,



acidic silica-based support. Exemplary is a complex comprising nickel acetylacetonate, trialkylphosphine, and ethylaluminum sesquichloride on a solid, acidic silica-based support. Use of the catalyst in the polymerization of olefin hydrocarbons is also disclosed.

3,755,491

# PROCESS FOR PRODUCING 4-METHYL-1-PENTENE

Harukichi Hashimoto, Sendai, Japan, assignor to Idemitsu Petrochemical Co., Ltd.

No Drawing. Filed May 1, 1972, Ser. No. 249,253  
Claims priority, application Japan, Feb. 3, 1972, 47/11,870

Int. Cl. C07c 3/20

U.S. Cl. 260—683.15 E

3 Claims

Propylene is dimerized in the presence of a catalyst composed of potassium, copper and a potassium alkoxide of an aliphatic saturated primary or secondary alcohol. The dimerization is carried out in an inert gas atmosphere, at 100°–250° C., and in the substantial absence of oxygen and water. 4-methyl-1-pentene is produced with high selectivity.

3,755,492

# SEPARATE ALKYL FLUORIDE ALKYLATION WITH A SUBSTANTIALLY PURE HYDROGEN FLUORIDE STREAM

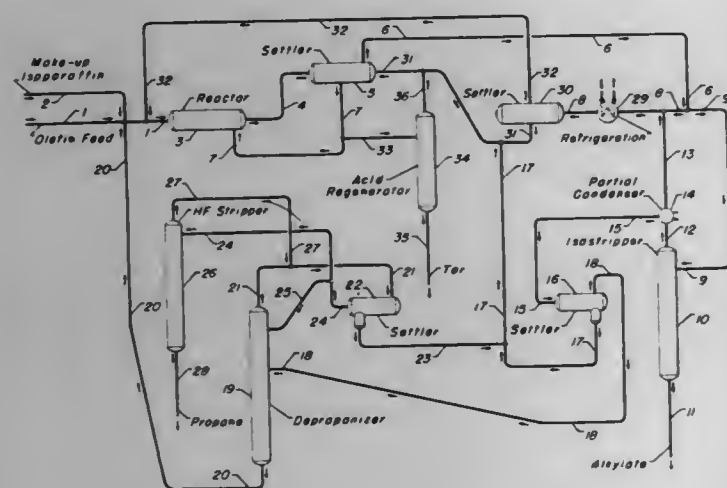
Robert F. Anderson, La Grange Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 12, 1971, Ser. No. 123,502

Int. Cl. C07c 3/54

U.S. Cl. 260—683.48

5 Claims



Alkylatable hydrocarbon, i.e. isobutane, isopentane or isohexane, and an olefinic hydrocarbon are reacted in a hydrogen fluoride catalyzed process, the effluent from the reaction zone is commingled with a substantially pure hydrogen fluoride stream to alkylate alkyl fluorides present in said effluent. This substantially pure HF stream is supplied from (1) a catalyst regeneration step, (2) HF separated from the cooled hydrocarbon phase and (3) HF separated from an overhead hydrocarbon fraction.

3,755,493

# NORMAL PARAFFIN ISOMERIZATION WITH LIQUID PHASE $AsF_5$ /HF CATALYST

John R. Norell, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,400  
Int. Cl. C07c 5/28

U.S. Cl. 260—683.68

9 Claims

Normal paraffins are isomerized to skeletal isomers containing the same number of carbon atoms by contacting paraffins with a liquid mixture of arsenic pentafluoride ( $AsF_5$ ) and HF. For extended reaction periods, hydrogen is employed to suppress cracking.

3,755,494  
**PROCESS FOR CLARIFYING GUMS**  
Stephen J. Chinnock, Pearl River, and Paul A. Kirkpatrick, New Rochelle, N.Y., assignors to General Foods Corporation, White Plains, N.Y.  
No Drawing. Filed Apr. 2, 1971, Ser. No. 130,834  
Int. Cl. C08c 3/00, 17/00

U.S. Cl. 260—816

5 Claims

Natural gums and natural gum bases are purified or clarified by heating a suspension of said gums in glycerol to effect separation of the gum into an upper layer and settling precipitous matter into the lower layer of glycerol, whereupon the heated admixture is centrifuged to remove the glycerol and precipitated impurities concurrently from the clarified gums.

3,755,495

# PARTICLE PROCESS FOR REACTING AN OLEFIN POLYMER WITH A POLYMERIZABLE COMPOUND

Albert E. Schrage, 365 Park Ave., East Orange, N.J. 07017, and Philip D. Readio, 219 W. Lake Shore Drive, Rockaway, N.J. 07866

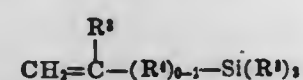
No Drawing. Original application Oct. 16, 1970, Ser. No. 81,526. Divided and this application Sept. 1, 1971, Ser. No. 177,143

Int. Cl. C08f 29/10, 35/06; C08g 47/10

U.S. Cl. 260—827

9 Claims

A process has been developed for directly producing a modified polyolefin composition in particulate form which has improved adhesiveness. Generally, the process comprises providing an olefin polymer in particulate form; admixing the olefin polymer, an organic peroxide and a specific polymerizable compound having the general formula



reacting the mixture in an inert atmosphere at a temperature below the tacky point of the polymer; and directly recovering the modified polyolefin composition.

3,755,496

# COATING COMPOSITIONS

Shun Koizumi, Toyonaka, Takeshi Suzuki, Kyoto, and Chuzo Okuno, Takatsuki, Japan, assignors to Dalkin Kogyo Kabushiki Kaisha, Osaka-shi, Japan

No Drawing. Filed July 1, 1971, Ser. No. 159,038

Int. Cl. C08g 45/04

U.S. Cl. 260—836

8 Claims

In a pigmented coating composition containing organic liquid medium having dispersed therein a polyvinyl fluoride polymer and pigment, the improvement where in said composition are incorporated an aliphatic polyol having 2 to 15 carbon atoms and 2 to 8 alcoholic hydroxyl groups, an organic antioxidant having a boiling point of higher than the melting point of the vinyl fluoride polymer and 0.5 to 30 weight percent of a glycidyl methacrylate polymer, based on the weight of the vinyl fluoride polymer.

3,755,497

# ANTISTATIC POLYESTER FIBER CONTAINING POLYETHER

Gene C. Weedon, Richmond, and Lamberto Crescentini, Chester, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application Apr. 30, 1970, Ser. No. 33,530. Divided and this application Sept. 15, 1971, Ser. No. 180,907

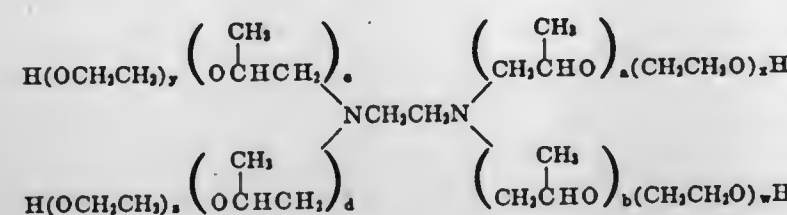
Int. Cl. C08g 39/10

U.S. Cl. 260—860

5 Claims

It has been found that an antistatic fiber of polyamide, polyester, polyurea, polyurethane or polysulfonamide can

be prepared by uniformly dispersing between about 1 percent and about 12 percent by weight of a compound represented by the formula:



where  $a, b, c, d, w, x, y$ , and  $z$  are each a whole number and the total of  $a, b, c$ , and  $d$  is between 8 and 850 and the total of  $w, x, y$ , and  $z$  is between 8 and 1,000. The compound has a molecular weight between about 4,000 and 135,000 and the ethylene oxide moiety makes up 10 to 90% of the molecular weight of the compound.

3,755,498

# TEXTILE FIBER COMPRISING AN ADMIXTURE OF A POLYESTER AND AN ADDITION POLYMER HAVING A TRIBROMONEOPENTYL GROUP IN THE REPEATING UNIT OF THE ADDITION POLYMER

William C. Dickason, Dale E. Van Sickle, and John M. McIntire, Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

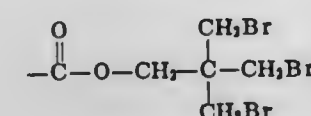
No Drawing. Filed Feb. 9, 1972, Ser. No. 224,992

Int. Cl. C08g 39/10

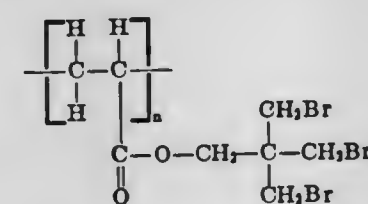
U.S. Cl. 260—873

6 Claims

Disclosed are flame retardant textile fibers comprising an admixture of a polyester and an addition polymer having the



group as a portion of the polymer unit. The polyester is derived from at least 90 mole percent terephthalic acid and at least 90 mole percent ethylene glycol, tetramethylene glycol, or 1,4-cyclohexanedimethanol. The addition polymer preferably comprises at least 95 mole percent units of the structure



The textile fibers of this invention are flame retardant and exhibit a desirable and unobvious combination of other properties necessary in a commercially acceptable textile fiber.

3,755,499

# POLYESTER-HIGH POLYMER SYNTHETIC PAPER FOR WRITING

Ichio Heijo, Sigeiro Wakamatsu, Hideki Wada, and Hiroshi Nagamatsu, Nagahama, Japan, assignors to Mitsubishi Jushi Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed May 24, 1971, Ser. No. 146,446  
Claims priority, application Japan, May 26, 1970, 45/44,521

Int. Cl. B43I 1/12; C08g 39/10

U.S. Cl. 260—873

5 Claims

Synthetic writing sheet made from a linear polyester and a high polymer having a higher glass transition point than that of the linear polyester by mixing them uniformly, forming the polymer mixture into film, and stretching the film.

3,755,500

# POLYOLEFIN COMPOSITIONS COMPRISING POLYMERIZED 4-METHYL-PENTENE-1

Keith Jasper Clark, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation of application Ser. No. 457,824, May 21, 1965. This application Jan. 22, 1970, Ser. No. 6,019

Claims priority, application Great Britain, May 27, 1964, 21,958/64; Aug. 4, 1964, 31,604/64; Apr. 15, 1965, 16,271/65

Int. Cl. C08f 15/04

U.S. Cl. 260—878 R

19 Claims

A polymeric composition of 4-methyl pentene-1 having dispersed through it a small proportion of polymerized units of an aliphatic olefin, the homopolymer of said aliphatic olefin having a melting point above 275° C., preferably above 320° C. The composition may also include units of a linear 1-olefin having 4 to 18 carbon atoms. The composition is prepared by sequential polymerization of 4-methyl pentene-1 and the aliphatic olefin. The composition may be moulded into articles having a mean spherulite size of less than 5 microns, which, if the polymer has a low ash content, may have a light transmission in 1/8" section of at least 90%.

3,755,501

# PHOSPHATE OR PHOSPHITE ESTERS OF S-(2-HYDROXYALKYL)PHOSPHORODITHIOATES

Milton Braid, Westmont, N.J., assignor to

Mobil Oil Corporation

No Drawing. Original application June 3, 1968, Ser. No. 733,815, now Patent No. 3,544,465. Divided and this application June 25, 1970, Ser. No. 49,983

Int. Cl. C07f 9/18; C10m 1/48

U.S. Cl. 260—928

8 Claims

Novel esters of O,O-diorgano - S - (2 - hydroxyalkyl) phosphorodithioates are excellent antioxidants and corrosion inhibitors in industrial fluid compositions. This application is specifically concerned with ester prepared from the phosphorodithioate and a phosphorus-containing compound.

3,755,502

# BLENDS OF POLYOLEFINS WITH ISOBUTENE-DIPENTENE COPOLYMER AND FILMS THEREFROM

Edward M. Bullard, Rochester, N.Y., assignor to

Mobil Oil Corporation

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,145

Int. Cl. C08f 29/12

U.S. Cl. 260—897 A

2 Claims

A normally solid resinous blend composition, adaptable for fabrication into oriented film structures having improved physical properties, comprising a thermoplastic resin including polyolefins such as polypropylene and blends of polypropylene with other polyolefinic materials including copolymers, having incorporated therein additive amounts, on the order of from about 5% to about 40% by weight of a copolymer of dipentene and isobutene.

3,755,503

# PHOSPHATE ESTERS OF OXYPROPYLATED AMINES

James R. Stanford, Sugar Land, and Paul G. Vogelsang, Jr., Houston, Tex., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Original application Nov. 25, 1969, Ser. No. 879,940. Divided and this application Mar. 4, 1971, Ser. No. 121,207

Int. Cl. C07f 9/08; C02b 5/06

U.S. Cl. 260—929

7 Claims

Phosphated oxypropylated amines obtained by reacting polyphosphoric acid or phosphorus pentoxide or mixtures



thereof with oxypropylated amines, with or without neutralization, are prepared and are useful as scale inhibitors for calcium, barium and magnesium salts in waters.

3,755,504

# BUTANE-1,2,3,4-TETRAPHOSPHONIC LOWER ALKYL ESTERS AND PROCESS FOR SAME

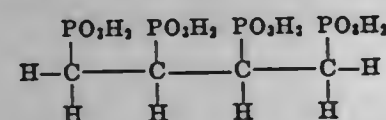
D. Allan Nicholson, Springfield Township, Hamilton County, and Darrel Campbell, Fairfield, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio. Original application Dec. 27, 1967, Ser. No. 694,003. Divided and this application Aug. 26, 1970, Ser. No. 67,200.

Int. Cl. C07f 9/40; C11d 1/12

U.S. Cl. 260—932

6 Claims

A class of vicinal polyphosphonates, butane-1,2,3,4-tetraphosphonates are prepared by reacting a butyne compound such as 2-butyne-1,4-diol, a hydrogen dialkyl phosphite, and an alkali metal promoter such as sodium at a temperature of about 20° C.—100° C. for from about 30 minutes to about 60 hours. The novel class of compounds consist of butane tetraphosphonic acid,



lower alkyl esters, and alkali metal salts thereof. The compounds are useful as detergency builders, sequestering agents and anti-calculus agents in oral compositions.

3,755,505

# O,O-DIALKYL S-(2-[3-(SUBSTITUTED)UREIDO]ETHYL)PHOSPHORODITHIOATES

Herman O. Senkbeil and D. Wendell Osborne, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 3, 1970, Ser. No. 43,188

Int. Cl. C07f 9/16; A01n 9/36

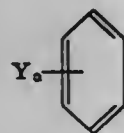
U.S. Cl. 260—938

9 Claims

The present invention is directed to novel O,O-dialkyl S - (2 - [3 - (substituted)ureido]ethyl)phosphorodithioates of the formula:



wherein R represents



a lower alkyl group of from 1 to about 3, inclusive, carbon atoms, or a benzyl radical; Y represents chlorine, bromine, hydrogen, methoxy, lower alkyl, nitro, or  $\alpha,\alpha,\alpha$ -tri-fluoromethyl; n represents an integer of 1, 2 or 3; X and Z each independently represent oxygen or sulfur, and R' represents a lower alkyl group of from 1 to about 3, inclusive, carbon atoms. The compounds of the present invention are useful as insecticides and fungicides.

3,755,506

# PHOSPHORYL CYANODITHIOIMIDO CARBONATES

Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Feb. 24, 1970, Ser. No. 13,857. Divided and this application Apr. 23, 1971, Ser. No. 137,000.

Int. Cl. A01n 9/36; C07f 9/16

U.S. Cl. 260—940

11 Claims

Novel phosphoryl cyanodithioimido carbonates are disclosed. The compounds are useful as insecticides, particularly as soil insecticides.

# O,O-DIHYDROCARBYL-N-ALKYLTHIO- OR N-ARYLTHIO PHOSPHORODITHIOATES

Melancthon S. Brown, deceased, by Gustave K. Kohn, administrator, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

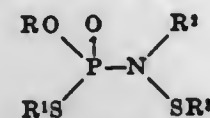
No Drawing. Filed June 21, 1971, Ser. No. 155,292

Int. Cl. A01n 9/36; C07f 9/22, 9/24

U.S. Cl. 260—947

14 Claims

Compounds of the formula



wherein R and R<sup>1</sup> are independently alkyl, alkenyl or alkynyl; R<sup>2</sup> is hydrogen, alkyl or —SR<sup>3</sup>; and R<sup>3</sup> is alkyl optionally substituted with halogen atoms or aryl optionally substituted with alkyl groups or halogen atoms. The compounds are insecticides.

3,755,508

# S,S-DI(2-ALKOXY-ETHYL) PHOSPHORO- OR PHOSPHONO-THIONODITHIOLATES

Shigeo Kishino, Akio Kudamatsu, and Kozo Shiokawa, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 7, 1971, Ser. No. 178,488

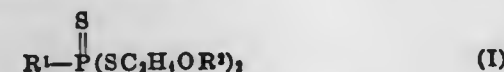
Claims priority, application Japan, Sept. 9, 1970, 45/78,493

Int. Cl. A01n 9/36; C07f 9/16

U.S. Cl. 260—950

8 Claims

S,S-di(2-alkoxy-ethyl) phosphoro-or phosphono-thionodithiolates of the general formula



wherein:

R<sup>1</sup> is a lower alkyl or lower alkoxy radical, and R<sup>2</sup> is a lower alkyl radical,

which possess insecticidal, acaricidal and nematocidal properties.

3,755,509

# PHOSPHORUS ACID ESTERS

Leslie G. Nunn, Jr., Metuchen, and Leslie M. Schenck, and Robert E. Leary, Union, N.J., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed June 1, 1970, Ser. No. 42,537

Int. Cl. C07f 9/08

U.S. Cl. 260—951

1 Claim

A process of neutralizing phosphate esters is described. The esters are prepared by reacting a phosphating agent with a hydroxylic organic compound. A lower alkylene oxide is added to the ester and controlled temperatures and under anhydrous conditions to achieve the desired degree of neutralization. The neutralized esters have surface active qualities.

3,755,510

# O OR S ARYL-N,N',N'' HEXAALKYL PHOSPHONIUM SALTS AND THEIR METHOD OF PREPARATION

David Cheong King Chan, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

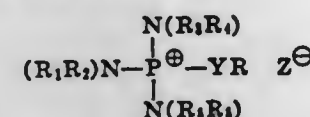
No Drawing. Filed Dec. 21, 1970, Ser. No. 100,415

Int. Cl. A01n 9/36; C07f 9/54

U.S. Cl. 260—959

19 Claims

Compounds of the formula



wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub>, R<sub>4</sub>, R<sub>5</sub> and R<sub>6</sub> are individually alkyl of 1 to 6 carbon atoms or cycloalkyl of 3 to 6 carbon atoms with the proviso that R<sub>1</sub>, R<sub>2</sub>, or R<sub>3</sub>, R<sub>4</sub>, or R<sub>5</sub>, R<sub>6</sub>

may be joined to form a linear alkylene radical of 4 to 6 carbon atoms which is bound to the nitrogen to form a ring, and with the further proviso that when both groups attached to any amido nitrogen are alkyl, then at least one of said alkyl groups must have a primary attachment, Y is oxygen or sulfur, R is an aryl group of 6 to 10 carbon atoms optionally substituted with halogen atoms, nitro groups, alkyl groups or alkoxy groups and Z represents a halogen-containing anion. The compounds find use as pesticides, particularly herbicides, defoliants and fungicides.

3,755,511

# HALOALKOXY- AND HALOALKYLTHIO- PHENYL PHOSPHATES, PHOSPHOROTHIOATES AND PHOSPHORODITHIOATES

Lennon H. McKendry, Eric R. Larsen, and Fred Y. Edamura, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

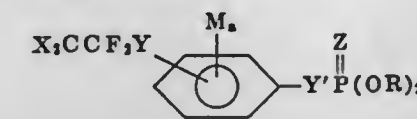
No Drawing. Filed Feb. 1, 1971, Ser. No. 111,684

Int. Cl. A01n 9/36; C07f 9/12, 9/18

U.S. Cl. 260—951

17 Claims

Novel haloalkoxy- and haloalkylthio- phenyl phosphates, phosphorothioates and phosphorodithioates corresponding to the formula:



wherein

each X independently represents hydrogen, bromo, chloro or fluoro, with the proviso that at least one X is always bromo, chloro or fluoro;

Y, Y' and Z each independently represents oxygen or sulfur;

each M independently represents bromo, chloro, fluoro, iodo, nitro or loweralkyl containing from 1 to about 4 carbon atoms, both inclusive;

a represents an integer of from 0 to 3, both inclusive, and each R independently represents loweralkyl containing from 1 to about 4 carbon atoms, both inclusive. The novel compounds of the present invention are suitable for use as insecticides, fungicides and herbicides.

3,755,512

# 3-DIALKOXYPHOSPHORYLTHIO-ACRYLAMIDES AND RELATED COMPOUNDS

Horst O. Bayer, Levittown, and William S. Hurt, Norristown, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed July 12, 1971, Ser. No. 162,009

Int. Cl. C07f 9/06, 9/16; C07d 87/46

U.S. Cl. 260—970

17 Claims

A novel method for preparing 3-dialkoxyphosphorylthio and 3-dialkoxythionophosphorylthio-acrylamides, crotonamides, methacrylamides and related compounds which consists of opening a 3-isothiazolone ring with a dialkyl phosphite or an O,O-dialkyl thionophosphite in the presence of a basic catalyst.

3,755,513

# PRODUCTION OF POROUS UO<sub>2</sub> CONTAINING CERAMIC OXIDE FUEL

Wolfgang Stoll and Hartmut Kroll, Hanau am Main, Germany, assignors to NUKEM/Nuklear-Chemie und Metallurgie, GmbH, Wolfgang near Hanau am Main, Germany

No Drawing. Filed Sept. 8, 1969, Ser. No. 856,192

Claims priority, application Germany, Jan. 15, 1969, P 19 01 788.0

Int. Cl. G21c 21/02

U.S. Cl. 264—0.5

12 Claims

Ceramic oxide sintered materials are prepared from uranium dioxide or mixtures containing uranium dioxide

as the primary component by dry mixing a powder of thermally decomposable compounds of definite particle distribution at temperatures up to 600° C. with uranium dioxide, plutonium dioxide or thorium dioxide or mixtures of these oxides and finally without dewaxing treatment are further worked to molded and sintered products of lower density. The preferred additive is ammonium uranyl carbonate.

3,755,514

# METHOD OF MAKING PRIMARY METAL-AIR BATTERIES

Derek Roger Bennett, Sutton Coldfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

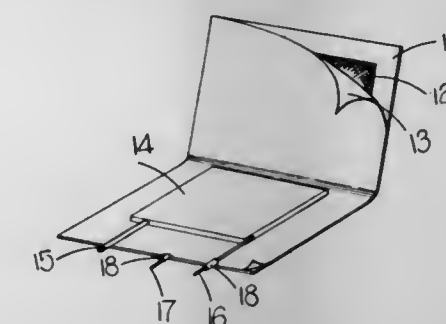
Filed Mar. 30, 1972, Ser. No. 239,585

Claims priority, application Great Britain, Apr. 27, 1971, 11,511/71

Int. Cl. B29c 6/00

U.S. Cl. 264—23

6 Claims



A method of manufacturing a primary metal-air battery comprises starting with a plurality of electrically connected metal-air battery cells, each of which includes a pair of electrically connected air electrodes positioned on opposite sides respectively of a metal anode and insulated therefrom. Each air electrode includes catalyst material supported on a sheet of porous material, with each pair of sheets of porous material being joined together at their peripheries to define a cell compartment, and with a removable pin extending into each cell compartment and projecting from the peripheries of the pair of sheets defining the respective cell compartment. The cells are positioned in a mould with the removable pins being received in respective holes in the mould and a settable compound is introduced into the mould. The compound is then allowed to set so as to form a body extending between and joining adjacent cells, and the pins are removed from their respective cells so as to leave apertures in the body through which electrolyte can be introduced into the cell compartments respectively of the battery.

3,755,515

# UTILIZING A MAGNETIC FIELD TO RESTRAIN A FERRITE SLURRY DURING PRESSURE FILTRATION AND PARTICLE ORIENTATION

Philip A. Cochardt, Alexander R. Cochardt, and Alexander W. Cochardt, Export, Pa., assignors to Community Building Association of Washington, Indiana, Inc.

Filed Oct. 15, 1970, Ser. No. 80,941

Int. Cl. B28b 5/02; C04b 33/28, 35/26

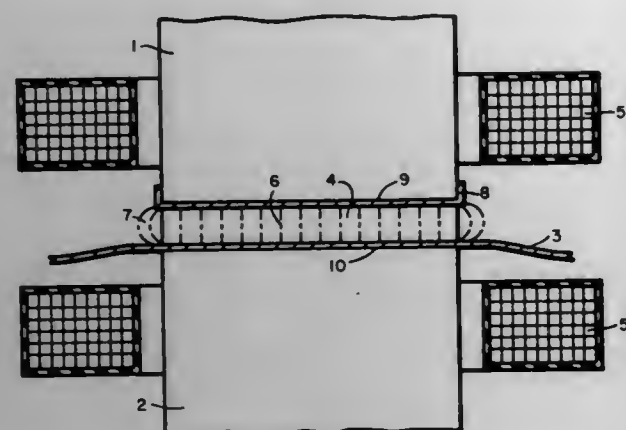
U.S. Cl. 264—24

11 Claims

Highly oriented green ferrite bodies are pressed from a ferrite slurry on a filter cloth between the pole faces of an electromagnet without the use of a restraining oil. Portions of the green ferrites are sintered into superior, anisotropic



ferrite permanent magnets. The magnets can be crushed into a powder, and the powder can be mixed with a plas-



tic binder for making a series of novel plastic-bonded ferrite permanent magnets.

3,755,516

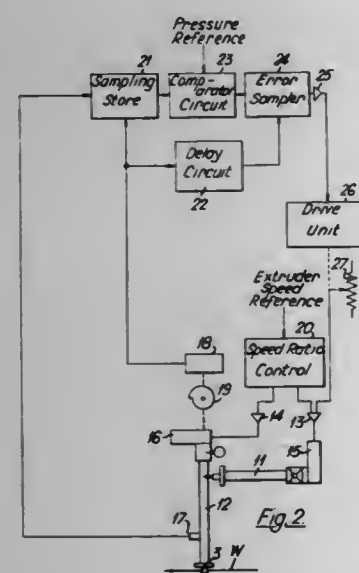
**METHODS OF EXTRUDING PLASTIC MATERIAL**  
Zbigniew Bonikowski, London, and Bruce Henry Keen, Hounslow, Middlesex, England, assignors to British Insulated Callender's Cables Limited, London, England  
Filed Aug. 21, 1970, Ser. No. 65,980

Claims priority, application Great Britain, Aug. 25, 1969, 42,224/69

Int. Cl. B29d 27/00; B29f 3/00

U.S. Cl. 264-40

11 Claims



The rate of feed of plastic material into a screw extruder is controlled in accordance with the internal pressure at at least one point along the extruder barrel by sampling the pressure measurement at one point in, or at each of several spaced points along, the extruder barrel at intervals under the control of a timing device driven by the extruder screw in such a way that each sample is taken from the same part of the pressure cycle. Pressure samples are compared with a reference signal to produce an error signal when the value of one or more pressure samples deviates from a desired value. These error signals, which may themselves be sampled under the control of the timing device to avoid hunting, are caused to adjust the rate of feed of material to the extruder, e.g. from a second screw extruder, to restore the pressure to the desired value.

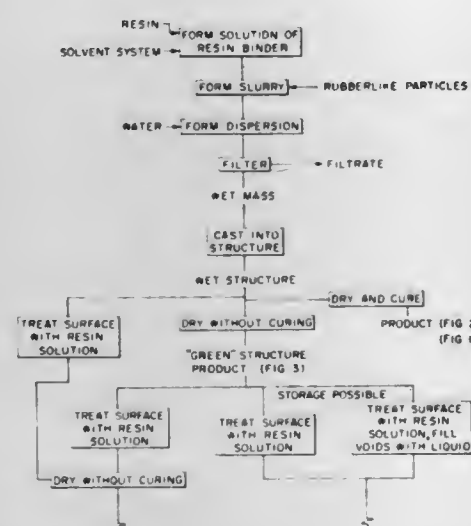
### 3,755,517 METHOD OF MAKING POROUS APPLICATOR STRUCTURES

John J. Clancy, Westwood, John W. Rafferty, Marblehead, and Robert C. Wells, Arlington, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.  
Original copending application Jan. 19, 1968, Ser. No. 699,243, now abandoned. Divided and this application Dec. 30, 1970, Ser. No. 102,960

Int. Cl. B29d 27/04, 27/08

U.S. Cl. 264-41

13 Claims



A method for making a porous structure and the resulting product capable of retaining a liquid and releasing it at a controlled rate with the application of pressure. The porous material is particularly well suited, by virtue of a resin binder gradient across its thickness, to the rapid, easy formation of self-linking stamps. The resulting stamps are capable of forming fine printed lines with high fidelity of outline.

### 3,755,518 PRODUCTION OF FLEXIBLE AND RESILIENT FOAMED PLASTICS

Fritz Stastny, Ludwigshafen, Rudolf Gaeth, Limburgerhof, and Heinz-Hermann Koerner, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany  
No Drawing. Filed May 28, 1970, Ser. No. 41,531

Claims priority, application Germany, May 31, 1969, P 19 27 844.5

Int. Cl. B29d 27/04; B29h 3/02; B32b 25/02

U.S. Cl. 264-46

5 Claims

Production of flexible and resilient foamed plastics by foaming a vulcanizable latex, mixing the foamed product with expanded particles of an olefin polymer, filling the mixture into a mold, heating the mixture therein to a temperature of from 70° to 150° C., removing the flexible and resilient foam therefrom and drying said foam. The flexible and resilient foamed plastics are used as upholstery padding, for thermal insulation and as shock-absorbing materials.

3,755,519

### PROCESS FOR THE PREPARATION OF WEAVABLE CROSSLINKED AND CARBON FILLED POLYOLEFIN FILAMENTS

William N. Meyers and Miller C. Hawkins, Raleigh, N.C., assignors to Beaunit Corporation, New York, N.Y.  
Original application July 20, 1970, Ser. No. 56,255. Divided and this application Sept. 21, 1971, Ser. No. 182,407

Int. Cl. B29c 25/00

U.S. Cl. 264-26

4 Claims

Weavable, crosslinked polyolefin filaments containing therein adequate amounts of carbon black to dissipate electrostatic charges are prepared by (1) extruding substantially uncrosslinked compositions comprising from

about 20 to 80 percent by weight of a polyolefin, from about 80 to 20 percent by weight of electrically conductive carbon black and small amounts of an organic peroxide to form substantially uncrosslinked filaments; (2) cooling the resulting substantially uncrosslinked filaments to a temperature below the melting point of the polyolefin; (3) supporting the cooled filaments; and thereafter (4) passing the cooled substantially uncrosslinked filaments through a field of microwaves, while said filaments are un-

lapse the foam to an extent such that the resulting relatively dense film shrinks longitudinally and transversely when heated to above the polymer melting point.

3,755,521

### METHOD OF MAKING BRICK PANELS

James M. Young, 3402 W. Wells St. 53208, and George O. Whitney, Milwaukee, Wis. (868 Bayway Blvd., Apt. M-312, Clearwater, Fla. 33515)

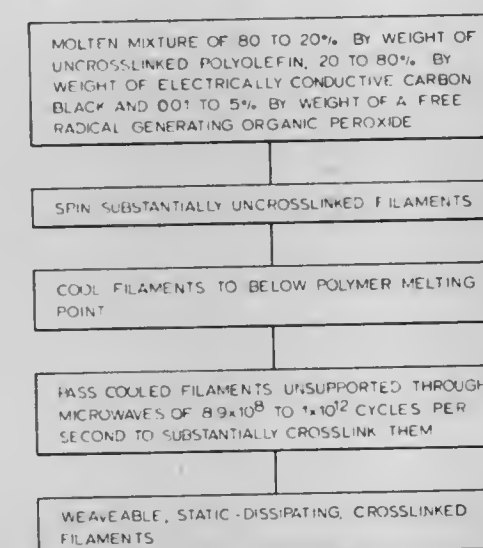
Original application Aug. 19, 1968, Ser. No. 753,500.

Divided and this application Mar. 25, 1971, Ser. No. 128,123

Int. Cl. B28b 1/08, 1/16

U.S. Cl. 264-69

11 Claims



supported therein, for an interval during which the temperature of said filaments is raised to at least the decomposition temperature of the peroxide and to at least the melting point of the polyolefin and for a period sufficient to substantially crosslink the compositions and impart weavability thereto. Weavable, static-dissipating, cross-linked and carbon filled polyolefin filaments are obtained having a tenacity of at least 0.3 grams per denier and an elongation of at least 10 percent at break.

3,755,520

### METHOD FOR THE PREPARATION OF TRANSPARENT HEAT SHRINKABLE THERMOPLASTIC POLYMERIC FILM FROM FOAMED THERMOPLASTIC POLYMERIC MATERIAL

Joseph A. Coglian, Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.  
Filed Oct. 27, 1971, Ser. No. 193,191

Int. Cl. B29c 25/00; B29d 7/02, 27/00

U.S. Cl. 264-53

6 Claims

PROVIDE AIR-FREE EXPANDED CELLULAR POLYMERIC ARTICLE COMPRISING ORIENTED SOFTENABLE THERMOPLASTIC FOAM POLYSTYRENE AND VOLATILE FOAMING AGENT

COMPRESS THE CELLULAR ARTICLE TO COLLAPSE THE FOAM AND FORM CELL-FREE TRANSPARENT HEAT-SHRINKABLE FILM

The invention disclosed is directed to a process for making biaxially oriented heat-shrinkable film, which includes providing an expanded cellular plastic article formed of a composition comprising a softenable thermoplastic foam polymer, and compressing the article to col-

A method of manufacturing a brick panel includes the steps of forming a bed of concrete, arranging the bricks in a plurality of rows, moving the rows of bricks over the exposed surface of the bed of material, sequentially depositing the rows of bricks in the bed of concrete, and sequentially partially embedding the rows of bricks in the surface of the concrete, as by vibratory blows.

3,755,522

### TRIM IN PLACE DIFFERENTIAL PRESSURE THERMOFORMING PROCESS

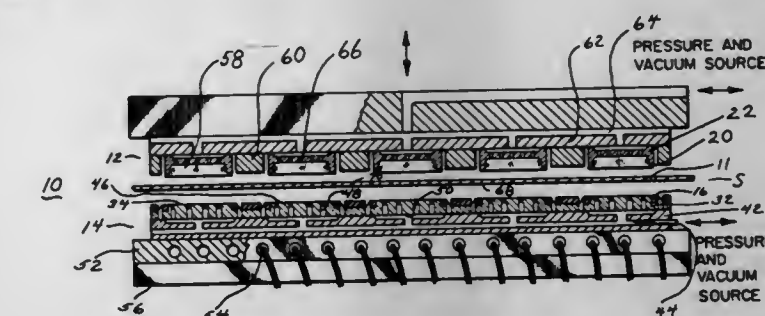
Bruce T. Jope, Glastonbury, Conn., and Alan R. Phillips, Monson, Mass., assignors to Monsanto Company, St. Louis, Mo.

Continuation of abandoned application Ser. No. 860,944, Sept. 25, 1969. This application Oct. 1, 1971, Ser. No. 185,679

Int. Cl. B29c 17/04, 17/10

U.S. Cl. 264-89

3 Claims



Method for trim in place thermoforming of articles from successive portions of a continuous sheet. Each sheet portion is sealed and a rounded flange formed therein prior to forming the container by advancing a rounded mold portion into an opposing resilient surface with the sheet interposed therebetween, while simultaneously substantially separating each sheet portion from the remainder of the sheet. Separating is by means of a blade which preferably is heated and has depressions in its surface to prevent completely separating each portion from the sheet. The blade may optionally operate against another opposing resilient surface.



### 3,755,523 METHOD FOR APPLYING EXTRUDED PLASTIC FILMS TO SUBSTRATES

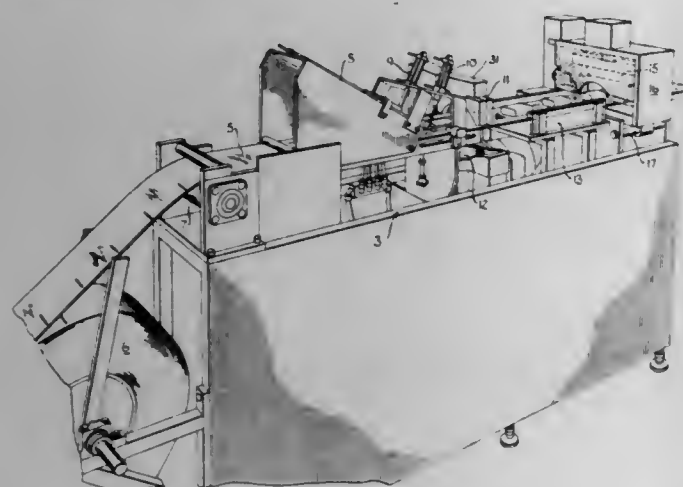
Melvin J. Straub, Minnetonka, and Thomas L. Schuette, Osseo, Minn., assignors to Possis Corporation, Minneapolis, Minn.

Original application July 18, 1969, Ser. No. 842,991, now Patent No. 3,596,432, dated Aug. 3, 1971. Divided and this application Mar. 1, 1971, Ser. No. 119,568

Int. Cl. B29c 17/04; B29d 7/04

U.S. Cl. 264—90

3 Claims



A packaging method wherein a web of paperboard is continuously drawn along a defined path, under a loading device by which articles or products to be packaged are successively deposited upon the web to be carried thereby through a curtain or sheet of molten thermoplastic resin which debouches from a downwardly opening nozzle, to lay itself onto and form a covering film on the web and over any articles or products thereon. The mouth of the nozzle is a slit which extends transversely across the path of the web and is arched to have its ends close to the web while its mid-portion is spaced much farther from the web. The film covered web then travels across a vacuum chamber by which any space between the covering film and the web is evacuated and the film drawn tightly over the articles or products and against the web. A series of closely spaced parallel rollers across the top of the vacuum chamber with their axes transverse to the web supports the web, and certain of the rollers are driven to draw the web through the machine. Beyond the vacuum chamber, the web with the covered articles or products thereon enters a guillotine type cutoff station where it is cut into discrete units each of which is a complete package.

### 3,755,524 METHOD FOR MAKING PIPE REDUCERS

Edwin C. McKay, Fresno, Calif., assignor to Climate Conditioning Corporation, Stanton, Calif.

Filed Oct. 26, 1970, Ser. No. 83,920

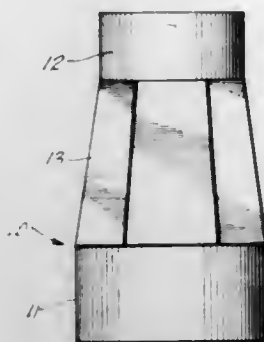
Int. Cl. B29c 17/02

U.S. Cl. 264—138

2 Claims

A method is described for making plastic pipe reducers, such as, for example, for large diameter polyvinyl chloride irrigation pipe employing the shape memory of extruded plastic irrigation pipe to full advantage. An appropriate length of extruded plastic pipe having a diameter approximately that of the smaller reducer diameter is cut from a length of extruded plastic pipe. A sufficient length of the cut piece to form the larger diameter end and the transition to the smaller diameter end is heated to the softening temperature of the thermoplastic material. Longitudinally extending fingers are forced radially outwardly to expand the length of pipe polygonally into the transition portion, and the pipe is cooled in its expanded condition. A circular mold having an outside diameter the same as the relatively larger inside diameter of the reducer is inserted in the expanded end, and that portion

adjacent the mold is heated to the softening temperature of the plastic so that the shape memory of the plastic shrinks the material onto the mold. The mold is removed



after the plastic material is cooled. A similar molding technique is employed for the smaller diameter end of the reducer, either before or after the larger end is formed.

### 3,755,525 METHOD OF MAKING MULTIPLE LUMEN TUBING FOR MEDICO-SURGICAL TUBES

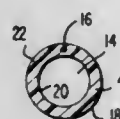
David S. Sheridan, Hook Road, Argyle, N.Y. 12809, and Isaac S. Jackson, Greenwich, N.Y., said Jackson assignor to said Sheridan

Original application July 12, 1971, Ser. No. 860,278, now Patent No. 3,625,793. Divided and this application July 12, 1971, Ser. No. 161,877

Int. Cl. B29d 23/04; B29c 17/00

U.S. Cl. 264—167

1 Claim



Multiple lumen tubing for use in medico-surgical tubes that have an arcuate shape, e.g., endotracheal tubes, are formed by extrusion and then wound on a drum with the secondary lumen facing the drum. The tubing and drum are then stored for at least 10 minutes at an elevated temperature, after which the tubing is cooled while still wound on the drum. Finally, the cooled tubing is removed from the drum and cut into desired lengths to make the medico-surgical tubes.

### 3,755,526 METHOD OF FORMING THERMOPLASTICS

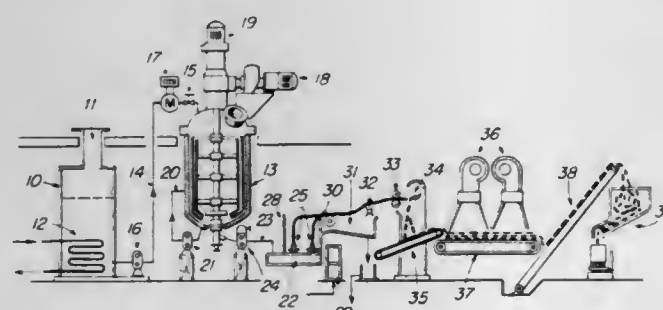
Kazuo Watanabe, Yokohama, Japan, assignor to Mobil Oil Company

Filed June 11, 1971, Ser. No. 152,133

Claims priority, application Japan, July 1, 1970, 45/56,885

U.S. Cl. 264—178 F

9 Claims



Apparatus and process are described for forming thermoplastic materials into rods for shipment and use in hot melt coating equipment. The system of extrusion through

electrically heated nozzles to a water bath is particularly applicable to hot melts which are blends of petroleum waxes and polymeric materials, which blends have relatively high melting point and tensile strength.

### 3,755,527 PROCESS FOR PRODUCING MELT-BLOWN NON-WOVEN SYNTHETIC POLYMER MAT HAVING HIGH TEAR RESISTANCE

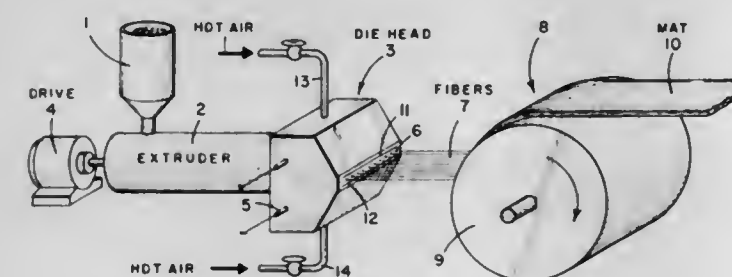
James P. Keller, James S. Prentice, and John W. Harding, Baytown, Tex., assignors to Esso Research and Engineering Company

Filed Oct. 9, 1969, Ser. No. 865,105

Int. Cl. D01d 5/12

U.S. Cl. 264—210 F

14 Claims



A highly tear resistant nonwoven mat of thermoplastic polymer fibers is made in a melt-blowing process in which a molten polymeric resin is extruded through a row of die openings into a stream of hot gas which attenuates the resin into fibers having diameters between about 10–40 microns. The fibers are collected on a continuously moving surface positioned from about 10 to about 30 inches from the die openings.

### 3,755,528 METHOD FOR MAKING TUBULAR ARTICLES FROM A THERMOPLASTIC MATERIAL

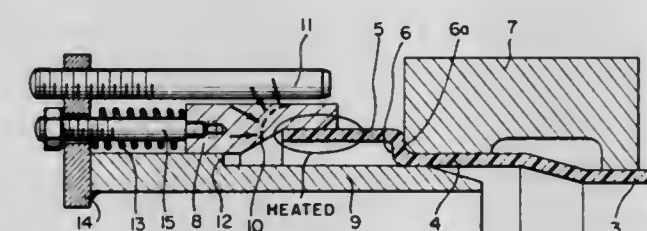
Johann Güthuber, Irlbach, Robert Heitzer, Bogen, and Ludwig Neuder, Strasskirchen, Germany, assignors to Kunststoffwerk Gebrüder Anger GmbH

Continuation-in-part of application Ser. No. 845,263, July 28, 1969. This application Sept. 13, 1971, Ser. No. 180,214

Int. Cl. B29b 3/00

U.S. Cl. 264—322

6 Claims



The end of a thermoplastic tubular article is molded to form a socket portion greater in diameter than the diameter of the tubular article and the end is enlarged to diameter greater than the socket portion with there being an annular shoulder between the socket and enlarged end portions. The enlarged end portion is heated to thermoelasticity and the outer edge of the enlarged end is drawn inwardly while the enlarged diameter end portion is restrained against outward radial movement and the socket portion restrained against both inward and outward radial movement. The extent of inward axial movement of the outer edge will determine the configuration of the annular corrugation formed in the enlarged end.

### 3,755,529 RAPIDLY DISSOLVING ACID COMPOSITION

Basil A. Procyk, Moon Township, Pa., assignor to United States Steel Corporation

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,424

Int. Cl. B01f 3/12, 3/20

U.S. Cl. 252—363.5

4 Claims

Sodium monoethyl sodium sulfosuccinate and a wetting agent are added to fumaric and other difficultly soluble acids to increase their rate of solubility in water. The wetting agent used is sodium lauryl sulfate, sodium lauryl monoglyceride sulfonate, polyoxyethylene sorbitan stearate, tallow oxyethylated sucrose or coconut oxyethylated sucrose.

### 3,755,530 PROCESS FOR TREATMENT OF WASTE SOLUTIONS

Arthur Julian Avila, Naperville, Ill., and Raymond Edward Jaeger, Basking Ridge, and Thomas John Miller, Piscataway, N.J., and Harold Alfred Sauer, Hatboro, Pa.; said Avila, assignor to Western Electric Company, Incorporated, New York, N.Y., said Jaeger, Miller and Sauer, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

No Drawing. Filed Nov. 24, 1971, Ser. No. 202,017

Int. Cl. C01g 3/00, 5/00, 7/00, 51/00, 53/00, 55/00

U.S. Cl. 423—22

5 Claims

Solids are removed from waste solutions of metal finishing processes by injecting droplets of the solution into a refrigerant to quick-freeze them, followed by removal of ice by sublimation in a controlled vacuum. The solids may then be incinerated to decompose metallic salts and in particular toxic materials such as cyanides to leave a residue which may be rich in precious or costly non-precious metals or their oxides, such as gold, silver or copper oxide. These metals may be recycled, while the sublimed water may be either condensed and reused or discarded.

### 3,755,531 PROCESS FOR REFINING ALUMINA

Masahiro Tsukawaki and Yoshiaki Inamoto, Wakayama-shi, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,303

Claims priority, application Japan, Aug. 24, 1970, 45/74,013

Int. Cl. C01f 7/06

U.S. Cl. 423—121

4 Claims

A crude alkali aluminate solution obtained by extracting aluminum from aluminum-containing ores with caustic alkali solution is added with an emulsion of a polyacrylic acid ester homopolymer or copolymer to precipitate red mud in the solution by flocculation and to give alkali aluminate solution of good clarity.

### 3,755,532 METHOD OF MAKING NaF OR NaF/AlF<sub>3</sub> INVOLVING THE REACTION OF SODIUM SULFATE WITH FLUOSILICIC ACID

Maurice Clark Harrison and Donald Otis Vancil, Longview, Wash., assignors to Reynolds Metals Company, Richmond, Va.

No Drawing. Original application Aug. 7, 1970, Ser. No. 62,129. Divided and this application June 7, 1972, Ser. No. 260,588

Int. Cl. C01f 7/54, 7/50; C01d 3/02

U.S. Cl. 423—116

1 Claim

A sodium fluoride-aluminum fluoride double salt, such as chiolite, of high purity and virtually free from CaO and P<sub>2</sub>O<sub>5</sub> contamination, is prepared from impure fluosilicic acid containing these impurities, such as the by-product from the manufacture of phosphates from phosphate rock, by treating a portion of the fluosilicic acid with a reactive aluminous material to convert it completely to AlF<sub>3</sub>, and separating the precipitated CaO,



$P_2O_5$ , and silica, reacting a second portion of the fluosilicic acid with sodium sulfate to form sodium fluosilicate substantially free of  $CaO$  and  $P_2O_5$  decomposing the fluosilicate to sodium fluoride; admixing aqueous solutions of the  $AlF_3$  and  $NaF$  at about  $140^\circ F.$ – $190^\circ F.$  while maintaining the pH between about 3.0 and 6.8 to keep  $SiO_2$  in solution, and recovering the precipitated double salt.

3,755,533

# SEPARATION AND RECOVERY OF INORGANIC LITHIUM SALTS FROM OTHER METAL SALTS

Arthur W. Langer, Jr., Watchung, and Thomas A. Whitney, Linden, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of application Ser. No. 808,328, Mar. 18, 1969. This application Nov. 26, 1971, Ser. No. 202,645

Int. Cl. C01a 1/28

U.S. Cl. 423—181

6 Claims

Inorganic lithium salt mixtures are separated into components as well as inorganic lithium salts are separated from other metal salts by complexation with a monomeric or polymeric organic chelating agent. The salt may be recovered thereafter by destabilization of the complex. The chelating agent is a secondary or tertiary polyamine or aminoether.

3,755,534

# CATALYTIC CONTROL OF AUTO EXHAUST EMISSIONS

James R. Graham, Columbia, Md., assignor to W. R. Grace & Co.

Filed Aug. 12, 1971, Ser. No. 171,152

Int. Cl. B01d 53/34

U.S. Cl. 423—213.7

4 Claims

A method of converting the noxious components of auto exhaust gases to innocuous entities by contacting the gases with a palladium catalyst on a suitable support followed by passing the gases over a catalyst active for hydrocarbon conversion on a suitable support. The use of this particular configuration results in improved conversion of the carbon monoxide and hydrocarbons in the exhaust gases.

3,755,535

# PROCESS FOR THE REMOVAL OF SULFUR TRIOXIDE FROM INDUSTRIAL OFF-GASES

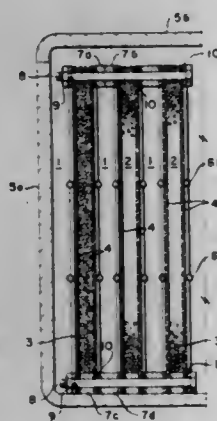
Jaap E. Naber, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Filed Sept. 16, 1971, Ser. No. 180,959

Int. Cl. B01j 11/00; C01b 17/02, 17/68

U.S. Cl. 423—244

15 Claims



A process for removing sulfur trioxide from industrial off-gases containing sulfur oxides by contacting the gases at an elevated temperature with a solid acceptor comprising an inorganic oxide which is substantially free of deposited metals or metal compounds, and regenerating

the loaded acceptor with a hydrogen sulfide-containing gas. Optionally, the sulfur compounds in the off-gases may first be oxidized to sulfur trioxide prior to contacting with the solid acceptor.

3,755,536

# ISOTYPIC BORATES OF ALUMINUM, RHODIUM AND THALLIUM OF CALCITE-TYPE CRYSTAL STRUCTURE

Tom Allen Bither, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 27, 1971, Ser. No. 166,622

Int. Cl. C01b 35/00

U.S. Cl. 423—279

5 Claims

Disclosed herein are isotypic borates of aluminum,  $AlBO_3$ , rhodium,  $RhBO_3$ , and thallium,  $TlBO_3$ , each having the calcite-type crystal structure; a process for making them employing high temperature and high pressure and use(s) of said borates.

3,755,537

# PROCESS FOR SEPARATING OLIGOMERS FROM (NPCl<sub>2</sub>) RUBBER

David Paul Tate, Northfield, Adel Farhan Halasa, Bath, and Gary Stephen Kyker, North Canton, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed Oct. 29, 1971, Ser. No. 194,020

Int. Cl. C01b 25/10

U.S. Cl. 423—300

6 Claims

This invention relates to the preparation of purified phosphazene rubbers.

3,755,538

# PREPARATION OF ZEOLITES

Edwin W. Albers, Annapolis, Grant C. Edwards, Silver Spring, and David E. W. Vaughan, Ellicott City, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Oct. 8, 1971, Ser. No. 187,858

Int. Cl. C01b 33/28

U.S. Cl. 423—329

12 Claims

Crystalline zeolites are prepared by reacting precursor mixtures of silica, alumina, alkali metal, hydroxide and water to which have been added a minor quantity of a composition which is highly active for initiation of crystallization of the desired zeolite from the precursor reaction mixture. The composition which is highly active for the production of zeolites comprises a reacted aqueous slurry of alkali metal hydroxide, alumina, silica, water and a minor quantity of an additive selected from the group consisting of boron, vanadium, phosphorus, molybdenum, tungsten, germanium, gallium, and mixtures thereof.

3,755,539

# PROCESS FOR THE MANUFACTURE OF PHOSPHORIC ACID IN THE WET WAY

Bernard Blgot, Rouen, France, assignor to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France, and U.C.B. (Union Chimique-Chimische Bedrijven) Brussels, Belgium

Filed Jan. 2, 1970, Ser. No. 250

Int. Cl. C01b 25/16

U.S. Cl. 423—320

10 Claims

A method of making phosphoric acid and gypsum which comprises forming a first fluid reaction medium comprising the phosphoric acid product of the process, dividing the phosphatic raw material, in powder form, into major and minor fractions, mixing the major fraction with the first fluid reaction medium, mixing more sulfuric acid with the first fluid reaction than is required to react with the phosphatic raw material therein to form gypsum forming a second fluid reaction medium comprising the phosphoric acid product of the process, transferring product formed in the first reaction medium to the second re-

action medium and mixing it therewith, mixing the minor fraction of phosphatic raw material with the second fluid reaction medium, and separating phosphoric acid from the gypsum.

3,755,540

# METHOD FOR PREPARING COPPER-EXCHANGED TYPE X ZEOLITE

Donald H. Rosback, Elmhurst, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 865,979, Oct. 13, 1969. This application Jan. 28, 1972, Ser. No. 221,775

Int. Cl. C01b 33/28

U.S. Cl. 423—328

7 Claims

Copper-exchanged Type X zeolite is prepared by ion-exchanging a sodium Type X zeolite with a copper salt solution, heating the zeolite to effect at least partial dehydration of the zeolite, contacting the zeolite with a mixture comprising a cuprous salt and a hydrocarbon capable of forming a soluble complex with the cuprous salt and passing the pore openings of the zeolite, subjecting the zeolite to reducing conditions to effect at least a partial reduction of the cupric ions to cuprous ions, and hydrating the zeolite to a desired water content. The product is particularly useful in the selective separation of olefinic hydrocarbons from saturated hydrocarbons in the presence of contaminant aromatic hydrocarbons.

3,755,541

# METHOD AND DEVICE FOR MANUFACTURING SILICON CARBIDE

Serge Strepkoff, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 22, 1968, Ser. No. 769,481

Claims priority, application France, Oct. 23, 1967, 125,392

Int. Cl. C01b 31/36; C01j 1/14

U.S. Cl. 423—346

6 Claims

A method of manufacturing silicon carbide by decomposition of a gas mixture containing a hydrocarbon compound, e.g. propane, a silane, e.g.  $SiH_4$ , a carrier gas, e.g. hydrogen, and hydrogen chloride. The concentration of silicon atoms in the mixture is chosen to be between 10 to 50% of the concentration of the carbon atoms.

3,755,542

# PROCESS FOR THE CONTINUOUS PRODUCTION OF CHLORINE-FREE CYANOGEN CHLORIDE

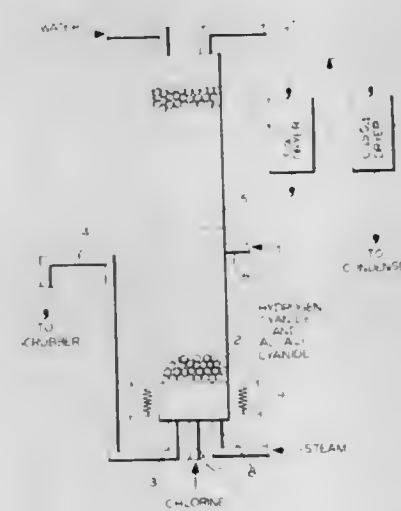
Yelagondahally S. Suryanarayana, Mobile, Ala., assignor to Ciba-Geigy Corporation, Greenburgh, N.Y.

Filed Aug. 20, 1970, Ser. No. 65,457

Int. Cl. C01b 21/52, 31/00

U.S. Cl. 423—364

5 Claims



Cyanogen chloride without detectable chlorine and containing up to 1% of free hydrogen cyanide can be

prepared by reaction of chlorine with acidified alkali cyanide or hydrogen cyanide solution in amounts up to 40% excess cyanide over the theoretical amount. The reaction is performed in an apparatus providing an efficient gas-liquid contact as e.g. in a flooded packed column or a sparged gas reactor, to have a quantitative reaction of the chlorine. The reactor liquid effluent is maintained in boiling conditions to minimize its cyanide content.

3,755,543

# AIR COOLED POROUS METAL PIPE FOR USE IN FEEDSTOCK INJECTION ASSEMBLY

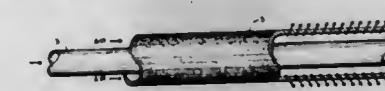
Burton F. Latham, Jr., Houston, Tex., assignor to Continental Carbon Company, Houston, Tex.

Filed Aug. 16, 1971, Ser. No. 171,832

Int. Cl. C01b 31/02

U.S. Cl. 423—450

5 Claims



A porous metal pipe surrounds a fluids conduit which is subjected to high temperatures, so that air can be passed into the annulus between the two pipes and through the porous pipe wall to assist in cooling the oil injection pipe. For example, the oil feedstock pipe in a carbon black reactor is surrounded by a porous metal pipe into which axial air is passed.

3,755,544

# CARBON BLACK PRODUCTION

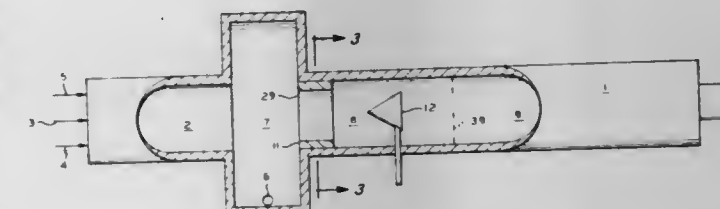
Thomas J. Gunnell, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Jan. 4, 1971, Ser. No. 103,379

Int. Cl. C09c 1/50

U.S. Cl. 423—456

6 Claims



A process and apparatus for producing carbon black in which the property distribution ranges of the individual carbon black particles are narrowed by creating turbulence within the carbon black formation zone.

Carbon black is produced by passing a reactant mass comprising hydrocarbon feed and hot combustion gases into a carbon black formation zone wherein a fluid is introduced to increase the turbulence of the reactant mass. Means for introducing the fluid include a deflector or a conduit having apertures through which the fluid is discharged centrally into the reactant mass and outwardly towards the wall of the reactor.

3,755,545

# PROCESS FOR OBTAINING SODIUM AND AMMONIUM FLUORIDE BY THE TREATMENT OF PHOSPHONITRATE SOLUTIONS

Iuliu Virgil Florian Moldovan, Laurentia Cristescu, and Victoria Preda, Bucharest, Rumania, assignors to Institutul De Cercetari Chimice-Icechim, Bucharest, Rumania

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,930

Claims priority, application Rumania, Jan. 15, 1970, 62,137

Int. Cl. C01c 1/16; C01d 3/02

U.S. Cl. 423—470

1 Claim

A process for the recovery of fluorine as sodium fluoride and/or ammonium fluoride from phosphonitrate so-



lutions obtained by the reaction of nitric acid with phosphate rock. Calcium nitrate may be removed from the solution by precipitating it with cooling, whereupon fluorine is precipitated concomitantly with the precipitation of calcium by treating the filtrate or decantate from the separation of calcium nitrate with a quantity of sodium sulfate or sodium carbonate and ammonium sulfate or with sodium carbonate and ammonium sulfate in an excess of 1 to 300% above the stoichiometric quantity necessary for total fluorine removal, separating the resulting precipitate of sodium fluosilicate and calcium sulfate, and treating the precipitate with ammonia to solubilize the precipitate in the form of sodium fluoride and ammonium fluoride solution.

3,755,546

#### PROCESS FOR REMOVAL OF PHOSPHATES FROM SOLUTIONS CONTAINING FLUORIDE IONS

Bernard M. Lichstein, Elizabeth, and Cyril Woolf, Morristown, N.J., assignors to Allied Chemical Company, New York, N.Y.

No Drawing. Filed Aug. 31, 1971, Ser. No. 176,718

Int. Cl. C01b 25/32, 33/12; C01c 1/16

U.S. Cl. 423—470

7 Claims

A process for removing phosphate ion from fluoride ion-containing aqueous solution is provided which comprises adding a water-soluble barium salt in the presence of sufficient ammonia to afford a pH of at least 8.5 and separating the thereby precipitated barium phosphate from the solution.

3,755,547

#### PROCESS FOR THE MANUFACTURING OF VANADIUM CHLORIDES

Ferdinand Langenhoff, 9 Mondorfer-str., 4 5211 Ranzel-Deutz, Germany; Erich Termin, 4 Kraftwerkweg, 7877 Laufenburg, Germany; Arnold Lenz, 7 Gerstenkamp, 5 Cologne-Stammheim, Germany; and Georg Schinke, 2 Feldmuhlestr., 5211 Ranzel, Germany

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,331

Int. Cl. C01b 11/00

U.S. Cl. 423—472

4 Claims

Improvements in the production of vanadium chlorides and/or oxychlorides by the reductive chlorination of vanadium oxides with chlorine in the presence of carbon at elevated temperatures by carrying out the process in a tube reactor, the walls of which are lined with the product produced by flame-hardening or baking to 800 to 1000° C. a mixture of corundum and as a binder the water hydrolysis product of silicon and aluminum alcoholates made by the process disclosed in published German Pat. 1,286,038.

3,755,548

#### PRODUCTION OF ALUMINUM FLUORIDE

Eberhard Weise, Leverkusen, Manfred Schulze, Opladen, and Manfred Rothert, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 11, 1971, Ser. No. 170,733

Claims priority, application Germany, Aug. 14, 1970, P 20 40 412.0

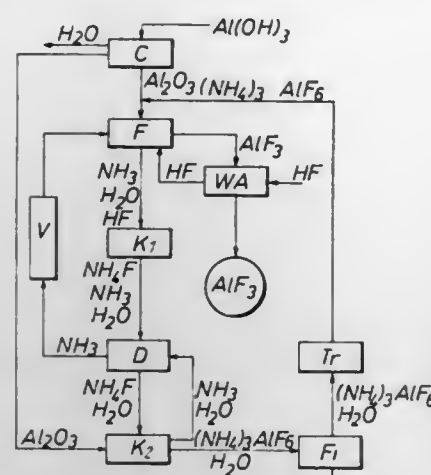
Int. Cl. C01f 7/50

U.S. Cl. 423—489

7 Claims

Reaction of aluminum oxide and gaseous hydrogen fluoride in a reaction zone in the presence of ammonia at a temperature of 400 to 700° C., condensation of gaseous products formed in said reaction zone, separation of ammonia from resulting condensate, precipitation of am-

monium fluoride present in the condensate with reactive aluminum oxide and/or aluminum hydroxide to form



3,755,549

#### CATALYTIC OXIDATION OF SO<sub>2</sub> TO SO<sub>3</sub>

Hans Guth, Bergisch-Neukirchen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 25, 1971, Ser. No. 146,713

Claims priority, application Germany, June 2, 1970, P 20 26 818.2

Int. Cl. C01b 17/08

U.S. Cl. 423—533

6 Claims

In the process for producing SO<sub>3</sub> comprising the steps of catalytically oxidizing SO<sub>2</sub> with air to SO<sub>3</sub> in a plurality of contact stages and subjecting the product gases to absorption to remove some of the SO<sub>3</sub> at some stage prior to the last and after an SO<sub>2</sub> conversion of about 80 to 95%, the improvement which comprises incorporating in the SO<sub>2</sub>-containing gas prior to its introduction into the first catalyst stage an air stream which has been passed through oleum and thereby picked up SO<sub>3</sub>, the proportions being such that the resultant gas fed to the first catalyst stage contains about 2 to 10% by volume of SO<sub>3</sub>. The liquid which is used to absorb some of the SO<sub>3</sub> in the product gases prior to the last stage is taken from a common supply with the oleum through which the air stream is passed to pick up SO<sub>3</sub>. The SO<sub>2</sub>-containing gas can be of 12 to 21% concentration by volume, produced by burning sulfur, and be diluted to 10 to 14% before catalytic oxidation to SO<sub>3</sub>; if a roasting or cleavage gas of 12 to 30% SO<sub>2</sub> concentration is used, it may be diluted to 10 to 20%.

3,755,550

#### PROCESS FOR REDUCTION OF SO<sub>2</sub>

Alvin B. Stiles, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of abandoned application Ser. No. 818,027, Apr. 21, 1969. This application Aug. 2, 1971, Ser. No. 168,351

Int. Cl. C01b 17/16

U.S. Cl. 423—564

5 Claims

This invention relates to the initial catalytic reduction of sulfur dioxide to hydrogen sulfide with a reducing gas wherein the catalytic material is on a support and the material is a combination of (1) alkaline earth molybdates and (2) a chromite selected from the group of the chromites of cobalt, manganese, copper, cerium, or a mixture of the rare earths containing at least 30% ceri-

um. Space velocities of at least 500 up to over 4000 hr.<sup>-1</sup> at light-off temperatures of less than 540° C. with the gases reaching equilibrium are practical.

3,755,551

#### REDUCTION OF SULFUR DIOXIDE

Billy W. Bridwell, Parsippany, Emery J. Carlson, Chatham, Raymond H. Edgecomb, Somerville, and William E. Watson, Tabor, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 809,996, Mar. 24, 1969. This application May 27, 1971, Ser. No. 150,948

Int. Cl. C01b 17/04

U.S. Cl. 423—570

12 Claims

This invention relates to a method for the reduction of sulfur dioxide by a process which comprises converting the sulfur dioxide to elemental sulfur and/or other gaseous sulfur compounds in the presence of a calcium aluminate catalyst and gaseous hydrocarbon at a temperature within the range from 1500° F. to 2600° F.

3,755,552

#### PROCESS FOR PRODUCING HYDROGEN PEROXIDE

Nathan Dean Lee, Lambertville, N.J., and Wayne Edwin Schrock, Charleston, W. Va., assignors to FMC Corporation, New York, N.Y.

No Drawing. Filed Oct. 21, 1970, Ser. No. 82,802

Int. Cl. B01j 9/00; C01b 15/02

U.S. Cl. 423—588

1 Claim

Process for producing hydrogen peroxide by alternately, catalytically hydrogenating and oxidizing an anthraquinone working solution, wherein hydrogen and the working solution are passed in contact with a hydrogenation catalyst contained in a plurality of substantially vertically oriented cylinders and wherein the ratio of the diameter of each cylinder to the diameter of the catalyst particles is at least 15:1.

3,755,553

#### METHOD OF PRODUCING SALTS OF ALKALINE EARTH METALS

Sergel Alexeevich Kutolin, ulitsa Demyana Bednogo, 58, kv. 19; Alexandr Ilich Vulikh, ulitsa Demyana Bednogo, 58a, kv. 36; and Anna Egorovna Shammasova, ulitsa Dostoevskogo, 22, kv. 75, all of Novosibirsk, U.S.S.R.

No Drawing. Filed Apr. 18, 1968, Ser. No. 722,192

Int. Cl. C01g 23/00, 33/00, 35/00

U.S. Cl. 423—598

7 Claims

Alkaline earth metal salts are prepared by heating a charge consisting of alkaline earth carbonates and transition metal oxides at 700–900° C. in an ammonia stream and then in air at 600–750° C.

3,755,554

#### PREPARATION OF IRON OXIDE AND HYDRATED IRON OXIDE PIGMENTS

Günter Lailach, Krefeld, Fritz Rodi, Kaldenhausen, Heribert Bade, Krefeld, and Heinz Köller, Krefeld-Bockum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 25, 1971, Ser. No. 146,787

Claims priority, application Germany, June 13, 1970, P 20 29 300.9

Int. Cl. C01g 49/06

U.S. Cl. 423—633

3 Claims

Treatment of metallic iron containing material with oxygen containing gases in the presence of an aqueous,

slightly acid ferrous salt solution characterized by addition of the metallic iron containing material as a finely divided powder into the reaction mixture at a rate maintaining the pH between 1 and 6, preferably between 3 and 6. Modifying substances such as  $\alpha$ -FeOOH,  $\gamma$ -FeOOH,  $\delta$ -FeOOH and  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> may be employed.

3,755,555

#### PRODUCTION OF ALKALI HYDRIDOALUMINATES

Tatyana Nikolaevna Dymova, ulitsa Krasikova, 19, kv. 40, and Mariya Semenovna Roschina, ulitsa Gvardelskaya, 14, kv. 227, both of Moscow; Nina Grigorievna Eliseeva, ulitsa Glavmosstroya, 7, korpus, 2, kv. 40, Moskovskaya Oblast; and Nikolai Tikhonovich Osipenko, ulitsa Gubkina, 16, korpus, 1, kv. 2, Moscow, U.S.S.R.

No Drawing. Filed Sept. 16, 1969, Ser. No. 858,498

Int. Cl. C01b 6/24

U.S. Cl. 423—644

7 Claims

A process for the production of alkali hydridoaluminates of the general formula MAIH<sub>4</sub> where M is sodium, potassium, rubidium or cesium characterized in that an alkali metal is reacted with aluminum and hydrogen in a melt of said alkali metal-hydridoaluminate, sodium being reacted with aluminium and hydrogen at a temperature of 200 to 350° C. under a pressure of 175 to 300 atm., and potassium, rubidium and cesium being reacted with aluminium and hydrogen at a temperature of 250 to 400° C. under a pressure of 100 to 250 atm.

3,755,556

#### LOW TEMPERATURE SHIFT REACTION INVOLVING AN ALKALI METAL COMPOUND AND A HYDROGENATION-DEHYDROGENATION COMPONENT

Clyde L. Aldridge, Baton Rouge, La., assignor to Esso Research and Engineering Company

No Drawing. Filed July 7, 1970, Ser. No. 52,997

Int. Cl. C01b 1/05, 1/08

U.S. Cl. 423—655

17 Claims

A process for producing hydrogen comprising reacting carbon monoxide with steam at a temperature of at least 300° F. in the presence of (1) at least one alkali metal compound derived from acids having ionization constants below  $1 \times 10^{-3}$  and (2) rhenium. The ratio of the rhenium component to the alkali metal compound ranges from 0.001 to about 10 parts by weight of the alkali metal compound. The alkali metal compound may be impregnated on the hydrogenation-dehydrogenation component, Re, or may be mixed with or used in the presence of said component. A suitable combination is a potassium compound such as potassium carbonate mixed with Re<sub>2</sub>O<sub>7</sub> on an alumina support.

3,755,557

#### SPRAY VACCINES

Jan Jacobs, Weesp, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Aug. 27, 1971, Ser. No. 175,778

Claims priority, application Netherlands, Aug. 29, 1970, 7012832

Int. Cl. A61k 9/00

U.S. Cl. 424—46

6 Claims

The invention relates to spray vaccines in which the antigen material in a dry form is dispersed in a liquid propellant. The dispersing agent used is not a liquid and at the same time non-ionic compound, but lecithin which is solid and ionic.



3,755,558

**POLYLACTIDE-DRUG MIXTURES FOR TOPICAL APPLICATION**

Richard M. Scribner, Crestfield, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.  
No Drawing. Filed Feb. 23, 1971, Ser. No. 118,081

Int. Cl. A61k 7/00

U.S. Cl. 424-47 10 Claims

Formulations of polylactide and drug for topical application to the body as films provide a slow sustained release of the drug to the site. The polylactide is biodegradable to normal or essentially normal metabolic products.

3,755,559

**HIGH-LATHERING CONDITIONING SHAMPOO COMPOSITION**

Gordon Trent Hewitt, Upper Montclair, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 816,395, Apr. 15, 1969. This application Aug. 23, 1971, Ser. No. 174,192

The portion of the term of the patent subsequent to Jan. 16, 1990 has been disclaimed

Int. Cl. A61k 7/08; C11d 1/84

U.S. Cl. 424-70 7 Claims

This disclosure relates to a stable, creamy-foam shampoo comprising a tertiary amine oxide, a higher alkyl betaine or sulphobetaine and a soap in the ratio of 2:1:1, respectively.

3,755,560

**NONGREASY COSMETIC LOTIONS**

Yancy J. Dickert, Bruce P. Thill, and Alfred F. Steinhauer, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 873,081, Oct. 31, 1969. This application June 30, 1971, Ser. No. 158,559

Int. Cl. A61k 7/00, 9/06; A61l 23/00

U.S. Cl. 424-78 9 Claims

Aqueous based cosmetic lotions for skin care and skin protection may be formulated to contain high levels of an oily effect agent, such as an emollient, without imparting a greasy or oily feel to the touch after applying and drying same by the inclusion in the lotion of an emulsion (latex) of a water insoluble, organo soluble, film-forming vinyl polymer and a cosmetically suitable emulsifying agent. The effect agent must be a non-solvent and a non-plasticizer for the vinyl polymer. Certain desirable ingredients such as humectants, thickeners, etc. may be optionally added to the lotion.

3,755,561

**BACTERICIDAL CONTACT LENS SOLUTION**

Billy F. Rankin, Rockville, Md., assignor to Burton, Parsons & Company, Inc., Washington, D.C.

No Drawing. Continuation-in-part of application Ser. No. 44,564, June 8, 1970. This application Mar. 22, 1971, Ser. No. 127,002

Int. Cl. A61k 17/00

U.S. Cl. 424-78 6 Claims

A composition is provided for employment with gel-type contact lenses, which contains no component which will become entrained in the lattice of the gel, and yet provides a durable bactericidal action for the lens and is compatible with ocular tissues. The composition comprises an aqueous solution of polyvinyl pyrrolidone and a polyalkylene glycol plasticizing humectant and up to about 1 part in 50,000, preferably not more than about 1 part in 100,000 of thimerosal.

3,755,562

**PARAFFINIC BASE OIL CARRIER COMPOSITIONS FOR PESTICIDES**

Frederic C. McCoy, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed June 24, 1968, Ser. No. 739,181

The portion of the term of the patent subsequent to Dec. 1, 1987, has been disclaimed

Int. Cl. A01n 9/20, 13/00

U.S. Cl. 424-78 15 Claims

A pesticidal dispersion comprising (1) a paraffinic hydrocarbon oil having an unsulfonatable content of at least about 90 wt. percent, (2) an oil soluble aluminum, iron, nickel, alkali metal, alkaline earth metal or alkylamine salt of a carboxylic or dihydrocarbyl orthophosphoric acid (3) an ashless dispersant for lubricating oils selected from (a) alkylene oxide derivative of an organic phosphorus acid, (b) alkyl methacrylate-vinyl pyrrolidinone copolymer, or (c) an alkoxyated piperazine derivative of alkenyl succinic anhydride and (4) a finely divided, oil insoluble pesticidal compound dispersed throughout, said composition optionally including a supplementary suspending agent.

3,755,563

**METHOD AND COMPOSITION FOR ATTRACTING AND COMBATING INSECTS, IN PARTICULAR BARK BEETLES**

Jean P. Vité, Beaumont, Tex., assignor to Boyce Thompson Institute for Plant Research, Inc.

No Drawing. Filed Aug. 12, 1969, Ser. No. 849,491

Int. Cl. A01n 17/14, 9/28

U.S. Cl. 424-84 10 Claims

A method is described for combating invertebrate animals such as bark beetles by regulating the aggregation of them. The method exploits chemical compositions having a content of attractants comprising the class of dioxabicyclo compounds exemplified by 1,5 - dimethyl-6,8 - dioxabicyclo[3.2.1]octane, used alone, or in combination with normal terpenoid compounds of tree resins or in combination with normal terpenoid compounds of tree resins and a compatible biocide.

3,755,564

**SYNERGISTIC INSECTICIDAL COMPOSITION OF DIAZINON AND A CERTAIN CARBAMATE**

Kurt Gubler, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

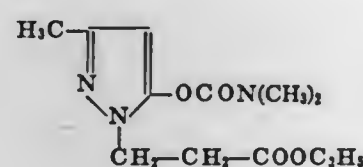
No Drawing. Continuation-in-part of application Ser. No. 803,090, Feb. 27, 1969. This application Nov. 15, 1971, Ser. No. 199,017

Claims priority, application Switzerland, Mar. 7, 1968, 3,410/68

Int. Cl. A01n 9/22, 9/36

U.S. Cl. 424-200 4 Claims

Insecticidal compositions which are synergistic insecticidal mixtures of O,O-diethyl-O-(2-isopropyl-6-methylpyrimidyl-4)-thiophosphate, known under the trade name of Diazinon® with the carbamate of the formula



are described as well as methods for combatting insects using these compositions.

3,755,565

**METHOD FOR INHIBITING BLOOD PLATELET AGGREGATION**

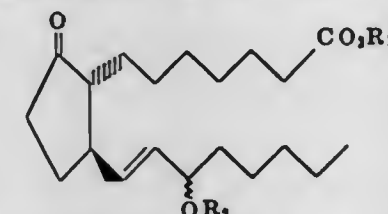
Robert L. Spraggins, San Jose, Calif., assignor to Alza Corporation

No Drawing. Filed June 23, 1971, Ser. No. 156,074

Int. Cl. A61k 17/00

U.S. Cl. 424-101 7 Claims

A method for inhibiting blood platelet aggregation by adding to platelets a prostaglandin of the general formula:



wherein R<sub>1</sub> is hydrogen or alkyl, R<sub>2</sub> is hydrogen or acyl, its diastereomers and non-toxic salts.

3,755,566

**9α-FLUORO - 16-FLUOROMETHYLENEPREDNISOLONE-21-ENANTHATE AND PROCESS FOR THE PREPARATION THEREOF**

Klaus Irmscher, Gerhard Cimbolek, Hans-Gunther Kraft, and Jurgen Harting, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Germany

No Drawing. Original application Feb. 6, 1970, Ser. No. 9,408, now Patent No. 3,681,409, dated Aug. 1, 1972. Divided and this application Jan. 31, 1972, Ser. No. 222,297

Int. Cl. A61k 17/00

U.S. Cl. 424-243 5 Claims

9α-fluoro - 16-fluoromethyleneprednisolone - 21-enanthate has high anti-proliferative activity with relatively little glyconeogenic and adrenal atrophy side effects when administered to mammals having a skin disease such as psoriasis.

3,755,567

**METHOD FOR TREATING ALCOHOLISM**

Hamao Umezawa, Tokyo, and Motoi Ogata, Ebetsu, Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

No Drawing. Filed Apr. 2, 1971, Ser. No. 130,786

Int. Cl. A61k 27/00

U.S. Cl. 424-263 1 Claim

Therapeutic compositions having antialcoholism action, in which the active agent is a compound selected from the group consisting of calcium 5-butylypicolinate and calcium 5-pentylypicolinate, said agent being present in the amount of about 50 to 200 mg. per unit dose of the composition.

3,755,568

**PROCESSES FOR MAKING COMPETITIVE INHIBITION AGENTS AND PRODUCTS THEREOF**

Sol Roy Rosenthal, Box F, Rancho Santa Fe, Calif. 92067

Continuation-in-part of application Ser. No. 720,751, Apr. 10, 1968, which is a continuation-in-part of application Ser. No. 587,669, Oct. 19, 1960. This application Nov. 5, 1970, Ser. No. 87,252

Int. Cl. A61k 27/00

U.S. Cl. 424-177 5 Claims

There is disclosed a process for providing in vitro a competitive inhibition agent or competitor for inhibiting the action in vivo of a material such as tissue injury toxins, the process comprising first subjecting the material to freezing and thawing and heating and thereafter subjecting the material to sonication or high pressure or enzymatic action, thus to produce a competitive inhibition agent that competes in vivo with the material for the receptor sites on target cells.

3,755,569

**ACYL-SUBSTITUTED INSULINS**

Richard L. Fenichel, Wyncote, Norman H. Grant, Wynne-wood, and Harvey E. Alburn, West Chester, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 86,377, Nov. 2, 1970, which is a division of application Ser. No. 732,812, May 29, 1968. This application July 25, 1972, Ser. No. 274,925

Int. Cl. A61k 17/02

U.S. Cl. 424-178 3 Claims

Acyl-substituted-insulins, particularly phenyl- and substituted-phenylglycyl-insulins, especially N-phenylglycyl-insulin, N-p-methylphenylglycyl-insulin and N-p-chloro-phenylglycyl-insulin (I), are prepared by treating insulin with an acylating agent, especially the corresponding N-chloroformyl-N-phenyl or substituted-phenylglycine (II). The new compounds (I) have hypoglycemic activity and are useful to treat diabetes, especially in subjects who are insulin fast.

3,755,570

**CONTROL OF PESTS WITH S-2-HYDROCARBYLTHIOALKYL ESTERS OF THIOPHOSPHORUS ACIDS**

Wolfgang H. Mueller, Elizabeth, Warren A. Thaler, Matawan, and Alexis A. Oswald, Mountainside, N.J., assignors to Esso Research and Engineering Company

No Drawing. Original application Mar. 4, 1969, Ser. No. 805,115, now Patent No. 3,660,542. Divided and this application Feb. 10, 1972, Ser. No. 225,359

Int. Cl. A01n 9/36

U.S. Cl. 424-216 13 Claims

Neutral S-2-hydrocarbylthioalkyl esters of thiophosphorus acids possess particularly good pesticidal activity against insects, mites and nematodes.

3,755,571

**USE OF SUBSTITUTED 1,2,4-THIADIAZOLES FOR KILLING INSECTS**

Edmund J. Gaughan, Kensington, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Jan. 2, 1970, Ser. No. 431, now Patent No. 3,632,597. Divided and this application Apr. 23, 1971, Ser. No. 137,038

Int. Cl. A01n 9/36

U.S. Cl. 424-200 10 Claims

Insecticidal compositions, and methods of killing insects employing such compositions are disclosed. The active ingredients of the compositions are substituted 5-phosphorylaceto- and substituted 5-phosphonyl acetamido-3-alkylthio- or alkoxy-1,2,4-thiadiazoles.

3,755,572

**COMBATING ACARIDS AND INSECTS WITH AMIDO-THIONO-PHOSPHORIC ACID PHENYL ESTERS**

Gerhard Schrader, Wuppertal-Cronenberg, Ingeborg Hamann, Cologne, and Wilhelm Stendel, Wuppertal-Vohwinkel, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Nov. 13, 1968, Ser. No. 775,540, now Patent No. 3,621,082. Divided and this application Apr. 15, 1971, Ser. No. 134,436

Claims priority, application Germany, Nov. 30, 1967, P 16 68 047.0

Int. Cl. A01n 9/36

U.S. Cl. 424-212 14 Claims

(N-unsubstituted and N-mono- and N,N-di-alkyl-substituted amido)-O-alkyl-O-[(2-carboalkoxy and 2-carbo-cycloalkoxy, i.e. 2-alkoxy carbonyl and 2-cycloalkoxy carbonyl)phenyl]-thiono-phosphoric acid esters which possess arthropodocidal, especially acaricidal and insecticidal, properties and which may be produced by reacting the corresponding thionophosphoric acid diester mono-halide with ammonia or a primary or a secondary amine.



3,755,573

**FERTILITY CONTROL EMPLOYING QUINESTROL AND QUINGESTANOL ACETATE**

Edel Berman, Morristown, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Continuation-in-part of application Ser. No. 869,934, Oct. 27, 1969, which is a continuation-in-part of application Ser. No. 596,081, Nov. 22, 1966. This application July 10, 1970, Ser. No. 54,026

Int. Cl. A61k 23/00

U.S. Cl. 424-238

1 Claim

Method for fertility control by the administration of a single dose of quingestrol, orally or by injection, at weekly or monthly intervals or at greater intervals.

3,755,574

**ESTROGENIC COMPOSITIONS COMPRISING 11 $\beta$ -ALKOXY-GONA-1,3,5(10)-TRIENES**

Daniel Bertin and Andre Pierdet, Noisy-le-Sec, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Application Aug. 25, 1969, Ser. No. 852,905, which is a continuation-in-part of abandoned application Ser. No. 643,062, June 2, 1967. Divided and this application Jan. 21, 1971, Ser. No. 108,568

Int. Cl. A61k 17/00

U.S. Cl. 424-238

10 Claims

Novel 11 $\beta$ -lower alkoxy- $\Delta^{1,3,5(10)}$ -gonatrienes substituted in the 3-position by a member selected from the group consisting of hydroxy, alkoxy of 1 to 4 carbon atoms, cycloalkoxy of 5 to 6 carbon atoms, and acyloxy, wherein the acyl is derived from an organic carboxylic acid having 1 to 10 carbon atoms, in the 13-position by a lower alkyl radical, and in the 17-position by the group-

wherein X is selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, and Y is selected from the group consisting of a hydrocarbon radical and a substituted hydrocarbon radical. These compounds possess estrogenic activity.

3,755,575

**PHARMACEUTICAL COMPOSITIONS**

Leonard J. Lerner, New Brunswick, N.J., assignor to E. R. Squibb &amp; Sons, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 222,946, Sept. 11, 1962. This application Jan. 26, 1965, Ser. No. 428,189

Int. Cl. A61o 27/00

U.S. Cl. 424-240

2 Claims

A combination of a steroidal progestational agent and a steroidal estrogenic agent for parenteral administration to prevent conception.

3,755,576

**ANTI-INFLAMMATORY COMPOSITIONS CONTAINING DIOXYPYRAZOLIDINE DERIVATIVES AND METHODS OF USE**

Antonio Esteve, Barcelona, Spain, assignor to Laboratorios Del Dr. Esteve S.A.

No Drawing. Continuation-in-part of abandoned application Ser. No. 777,203, Nov. 19, 1968. This application Mar. 17, 1971, Ser. No. 125,324

Claims priority, application Spain, Nov. 23, 1967, 347,942

Int. Cl. A61k 17/16, 27/00

U.S. Cl. 424-240

14 Claims

Novel para-halogeno benzoates, in particular the para-chlorobenzoate of 1,2-diphenyl-4-n-butyl-4-hydroxymethyl-3,5-dioxypyrazolidine have been prepared. These have therapeutic properties which make them suitable for the treatment of disorders which are accompanied by inflammation, such as acute, subacute and chronic rheumatismal disorders.

3,755,577

**ANIMAL FEED AND PROCESS**

Robert J. Collins, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

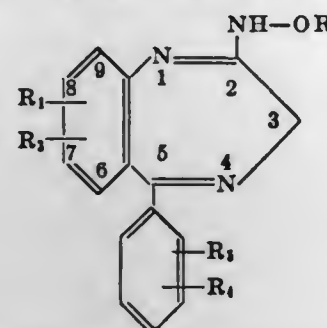
No Drawing. Filed Aug. 9, 1971, Ser. No. 170,324

Int. Cl. A61k 27/00

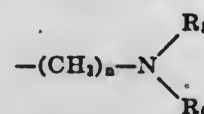
U.S. Cl. 424-244

12 Claims

An animal feed comprising a compound of the group consisting of a 3H-1,4-benzodiazepine of the formula:



Formula 1

wherein R is selected from the group consisting of hydrogen, lower-alkyl of 1 to 4 carbon atoms, inclusive, lower-alkenyl of 3 or 4 carbon atoms, benzyl,  $\text{—H}_2\text{CCOOH}$  and  $\text{—(CH}_2\text{)}_n\text{COOH}$  and the esters thereof derived from an alkanol of 1 to 3 carbon atoms, inclusive, andin which n is 3 or 4 and  $\text{R}_5$  and  $\text{R}_6$  are lower-alkyl of 1 to 4 carbon atoms, inclusive, or  $\text{R}_5$  and  $\text{R}_6$  together are alkylene of 4 or 5 carbon atoms, and wherein  $\text{R}_1$ ,  $\text{R}_2$ ,  $\text{R}_3$ , and  $\text{R}_4$  are selected from the group consisting of hydrogen, lower alkoxy of 1 to 3 carbon atoms, inclusive, alkyl defined as above, alkylthio in which the alkyl group is defined as above, halogen, nitro, cyano and  $\text{—CF}_3$ ; and pharmacologically acceptable acid addition salts thereof in combination with the nutrient feed.

3,755,578

**THIAZOLINE AND 5,6-DIHYDRO-4H-1,3-THIAZINE ANTI-PLANT-VIRAL AGENTS**

James W. McFarland, Lyme, and Verne A. Ray, Groton, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Original application June 6, 1969, Ser. No. 831,245, now Patent No. 3,629,247, dated Dec. 21, 1971. Divided and this application Jan. 6, 1971, Ser. No. 104,478

Int. Cl. A01n 9/00

U.S. Cl. 424-246

6 Claims

Aryl vinyl derivatives of thiazoline and 5,6-dihydro-4H-1,3-thiazine which exhibit antiviral activity particularly in the combating of plant viral diseases.

3,755,579

**2,3-DIHYDRO-1H-PYRIDO[2,3-b][1,4]THIAZIN-2-ONE AS AN ANTI-SECRETORY AGENT**

Claude Gaston Blava, Deerfield, and Kao Hwang, Highland Park, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Sept. 23, 1971, Ser. No. 183,232

Int. Cl. A61k 27/00

U.S. Cl. 424-246

1 Claim

A method of treating peptic ulcers by reducing the rate of gastric secretions using 2,3-dihydro-1H-pyrido[2,3-b][1,4]thiazin-2-one as the anti-secretory agent.

3,755,580

**INSECTICIDAL TRIAZINE DERIVATIVES**

John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 19, 1970, Ser. No. 47,877

Int. Cl. A01n 9/22

U.S. Cl. 424-249

12 Claims

Insecticidal compositions and methods utilizing triacyloxy hexahydrotriazines in which the acyl group can

have an alkyl, haloalkyl, phenylalkyl, phenylalkenyl, furan or substituted phenyl substituent.

3,755,581

**COMBATTING PHYTOPATHOGENIC BACTERIA AND FUNGI WITH N-PHENYLQUINAZOLONES**

Stefan Janiak, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original application Feb. 24, 1969, Ser. No. 801,830, now abandoned. Divided and this application Nov. 12, 1970, Ser. No. 89,018

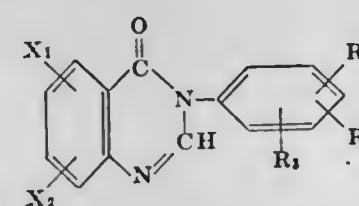
Claims priority, application Switzerland, Feb. 27, 1968, 2,779/68

Int. Cl. A01n 9/00

U.S. Cl. 424-251

9 Claims

Phytopathogenic bacteria and fungi are controlled with quinazolones of the formula

in which each of  $\text{X}_1$  and  $\text{X}_2$  is hydrogen, halogen, lower alkyl, lower alkoxy or lower alkylthio; and each of  $\text{R}_1$ ,  $\text{R}_2$  and  $\text{R}_3$  is hydrogen, halogen,  $\text{CF}_3$ , CN,  $\text{NO}_2$ , lower alkyl, lower alkoxy, carboxy lower alkyl, lower acylamino, phenoxy or halogenated phenoxy.

3,755,582

**QUINAZOLINONE FUNGICIDES**

Greg Alan Bullock, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 4, 1971, Ser. No. 121,143

Int. Cl. A01n 9/12, 9/22

U.S. Cl. 424-251

6 Claims

A group of substituted 4(3H)-quinazolinone compounds are useful as fungicides. An exemplary compound of the group is 3-allyl-6-chloro-2-methylthio-4(3H)-quinazolinone.

3,755,583

**BENZOTHIENO[3,2-d]- AND BENZOFURO[3,2-d] PYRIMIDINES INHIBITORS OF PLATELET AGGREGATION**

Gerald George De Angelis, North Stonington, and Hans-Jürgen Ernst Hess, Old Lyme, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Original application June 5, 1970, Ser. No. 43,974, now Patent No. 3,706,747. Divided and this application Nov. 24, 1971, Ser. No. 202,029

Int. Cl. A61k 27/00

U.S. Cl. 424-251

8 Claims

4-aminobenzothieno[3,2-d]- and 4-aminobenzofuro[3,2-d]pyrimidines and salts thereof, novel classes of heterocyclic compounds useful as inhibitors of platelet aggregation.

3,755,584

**TRANQUILIZERS**

Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Apr. 3, 1972, Ser. No. 240,770

Int. Cl. A61k 27/00

U.S. Cl. 424-263

4 Claims

 $\gamma$ -Carbolines carrying fluorine in the 6- or 8-position and a specific p-substituted phenylalkyl moiety at the 2-position were found to be major tranquilizers at low doses in warm-blooded animals.

3,755,585

**METHOD OF TREATING INFLAMMATION**

Henricus J. C. Tendeloo, Valkenburchtlaan 35, Oosterbeek, Frederik W. Broekman, Geertjesweg 98, Wageningen, Wouter F. H. Stroer, Graaf Willemlaan 68, Amstelveen, and Johannes J. Siemelink, Emmalaan 1, Utrecht, all of Netherlands

No Drawing. Filed Aug. 3, 1971, Ser. No. 168,765

Claims priority, application Netherlands, Aug. 7, 1970, 7011749

Int. Cl. A61k 27/00

U.S. Cl. 424-266

7 Claims

Pharmaceutical compositions comprising 4-hydroxynicotinic acid or a pharmaceutically acceptable salt thereof, useful as analgesics and antiphlogistics.

3,755,586

**ANTI-TUSSIVE COMPOSITIONS CONTAINING PIPERIDINE DERIVATIVES**

Neil P. Sanzari, Parsippany, and Jane F. Emele, Morris Plains, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

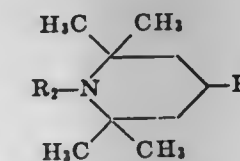
No Drawing. Continuation-in-part of abandoned application Ser. No. 816,069, Apr. 14, 1969. This application Mar. 25, 1971, Ser. No. 128,118

Int. Cl. A61k 27/00

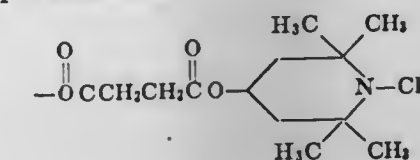
U.S. Cl. 424-267

8 Claims

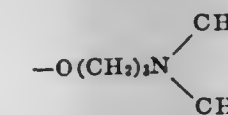
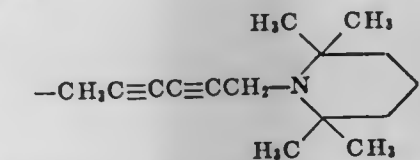
An anti-tussive composition containing per dosage unit from about 0.5 to 30 mg. of a piperidine derivative of the formula:



(I)

wherein  $\text{R}_1$  is amino or

or

 $\text{R}_2$  is methyl or

and the corresponding pharmaceutically acceptable acid addition salts or quaternary ammonium salts thereof. The composition is administered, preferably orally, at about 0.05 to about 2.5 mg./kg. of body weight.

3,755,587

**COMPOSITIONS AND METHODS FOR LOWERING BLOOD SUGAR USING ARYL-SULPHONYL-SEMICARBAZIDES CONTAINING HETEROCYCLIC ACYLAMINO GROUPS**

Hans Plumpe and Walter Puls, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Nov. 12, 1968, Ser. No. 775,138, now Patent No. 3,668,215, dated June 6, 1972. Divided and this application Apr. 23, 1971, Ser. No. 137,077

Int. Cl. A61k 27/00

U.S. Cl. 424-267

13 Claims

Oral antidiabetic compositions are provided which utilize aryl-sulphonyl-semicarbazides having heterocyclic



acylamino groups. Typical embodiments are represented by the compounds 4-{{4-{{β-[4-methyl-isoxazolyl-(5)-carbonamido]-ethyl}-benzene-sulphonyl}}-1,1-hexamethylene-semicarbazide, 4-[4-{{β-[4,5-tetramethylene-isoxazolyl-(3)-carboxamido]-ethyl}-benzene-sulphonyl}-1,1-hexamethylene-semicarbazide and 4-[3-{{β-[5-methylisoxazolyl-(3)-carboxamido]-ethyl}-benzene-sulphonyl}-1,1-hexamethylene-semicarbazide which are administered in dosages of 1-10 mg./kg. to a diabetic host formulated with excipients and tableted or filled into gelatin capsules.

It is known that arylsulphonyl-urea derivatives have a blood sugar-depressing effect. In particular, N-(4-methylbenzene-sulphonyl)-N'-butyl-urea (tolbutamide) has achieved great importance as a therapeutic agent because of its blood sugar-depressing effect in conjunction with its good compatibility.

3,755,588

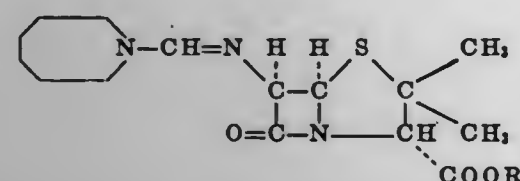
**PENICILLANIC ACID IN DOSAGE-UNIT FORM**  
Frantz Johannes Lund, Lyngby, Denmark, assignor to Lovenskemlske Fabrik Produktionsaktieselskab, Ballerup, Denmark

No Drawing. Filed Nov. 4, 1970, Ser. No. 86,977

Int. Cl. A61k 21/00

U.S. Cl. 424-271 3 Claims

The invention relates to a pharmaceutical composition in dosage-unit form for use in the treatment of infectious diseases and comprising, as an active ingredient, the hitherto unknown 6-[(hexahydro-1H-azepin-1-yl)-methyleneamino]-penicillanic acid or a derivative thereof of the formula:



wherein R is hydrogen or a  $-\text{CH}_2\text{OCO}-\text{A}$  group, wherein A is aliphatic group of from 1 to 6 carbon atoms, or a pharmaceutically acceptable salt of such acid or ester, the quantity of the active ingredient in a dose being from 25 to 1000 mg. calculated as the free acid.

3,755,589

**COMPOSITIONS AND METHODS FOR TREATING GOUT**

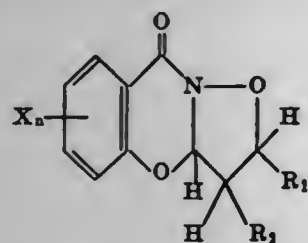
David B. Reisner, Hightstown, Bernard J. Ludwig, North Brunswick, and Frank M. Berger, Princeton, N.J., assignors to Carter-Wallace, Inc., New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 826,738, Mar. 24, 1969, now abandoned, and Ser. No. 4,745, Jan. 21, 1970, now Patent No. 3,598,814. This application Aug. 5, 1971, Ser. No. 169,556

Int. Cl. A61k 27/00

U.S. Cl. 424-272 4 Claims

Chemical compounds of the formula:



wherein n is 1 or 2 and wherein each X is hydrogen, hydroxy, halogen, lower alkyl, lower alkoxy, nitro, amino, acetamido, sulfonamido or trifluoromethyl and each R is selected from the group consisting of hydrogen and lower alkyl. Said compounds have demonstrated hy-

pouricemic activity in humans as well as valuable anti-inflammatory, antipyretic and diuretic activities in standard laboratory animals.

3,755,590

**CERTAIN TRIAZINES USED TO CONTROL BACTERIA AND FUNGI**

Lester A. Brooks, East Norwalk, and Allan M. Harvey, Wilton, Conn., assignors to R. T. Vanderbilt Co., Inc., New York, N.Y.

No Drawing. Continuation of application Ser. No. 591,116, Nov. 1, 1966, which is a continuation-in-part of Ser. No. 439,432, Mar. 12, 1965, both abandoned. This application Nov. 19, 1970, Ser. No. 91,217

Int. Cl. A01n 9/22

U.S. Cl. 424-249 3 Claims

This invention relates to the use of certain hexahydro-1,3,5-trialkyl-s-triazines as bacteriostats and fungicides, and more particularly relates to their use in sanitizing dry cleaning solvents and mop saturants, as fungicides, and as preservatives against the growth of micro-organisms in cosmetics, rubber latices, adhesives, and drilling mud used in the petroleum industry.

3,755,591

**BIOCIDAL METHODS EMPLOYING PERHALO-COUMALIN DERIVATIVES**

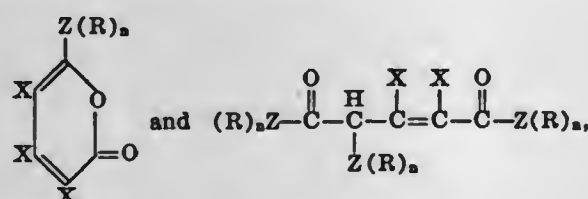
Victor Mark, Ransomville, and Leon Zengierski, North Tonawanda, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application Oct. 12, 1966, Ser. No. 586,056, now Patent No. 3,528,995, dated Sept. 15, 1970. Divided and this application Nov. 24, 1969, Ser. No. 877,596

Int. Cl. A01k 27/00; A61k 27/00

U.S. Cl. 424-279 16 Claims

A compound selected from the group consisting of compounds of the formulae



wherein X is a halogen chosen from the group consisting of fluorine, chlorine, bromine, and iodine, and mixtures thereof. (R)<sub>n</sub>Z is a substituents in which the following relationship exists:

If n is—	Z may be—
0	Bromine, iodine, fluorine.
1	Oxygen, sulfur, selenium.
2	Nitrogen, arsenic.
3	Carbon.

and wherein R is selected from the group consisting of hydrogen; alkyl groups of 1 to 18 carbon atoms in any of their isomeric forms, provided that when Z is oxygen the alkyl groups from which R may be selected contain from 6 to 18 carbon atoms; substituted alkyl groups of 1 to 18 carbon atoms wherein the substituents are selected from the group consisting of fluorine, chlorine, bromine, iodine, sulfur, oxygen, phosphorus, nitrogen, and silicon; alicyclic groups containing from 5 to 18 carbon atoms; heterocyclic groups containing from 5 to 18 carbon atoms wherein the hetero atom(s) is selected from the group consisting of oxygen, sulfur, nitrogen, phosphorus, and silicon; and aromatic and aralkyl groups containing from 6 to 18 carbon atoms.

The compounds are useful as pesticides, bactericides, fungicides, nematocides, insecticides and miticides.

3,755,592

**METHOD OF PREPARING HIGH CONCENTRATION CALCIUM ASCORBATE REACTION PRODUCTS AND PRODUCTS PRODUCED BY SAME**

Gerhard W. Ahrens, 1781 E. 15th St., Brooklyn, N.Y. 11229

No Drawing. Continuation-in-part of abandoned application Ser. No. 805,029, Mar. 6, 1969. This application Mar. 23, 1971, Ser. No. 127,391

Int. Cl. A61k 15/12

U.S. Cl. 424-280 4 Claims

Novel high concentration calcium ascorbate preparations are formed which essentially consist of a series of from liquid to solid reaction products resulting from the reaction of up to 82 parts by weight percent, on the total weight of the reaction product, of nonhygroscopic calcium ascorbate dihydrate with not less than 18 parts by weight, on the total weight of the reaction product, of an anhydrous hydroxypropane derivative having from 2 to 3 hydroxy groups selected from the group including 1,2-dihydroxypropane and trihydroxypropane. The resulting of reaction products supply per gram reaction product up to 672 mgs. active L-ascorbic acid or vitamin C and up to 78 mgs. of ionic calcium upon ionization of the calcium ascorbate contained therein. The reaction products result from the application of heat to admixed calcium ascorbate dihydrate and anhydrous hydroxypropane derivatives at a reaction temperature which is limited to temperature exposure levels at which the calcium ascorbate dihydrate will not lose more than one molecule of its water of hydration. The resulting products are extremely stable and useful in medical, pharmaceutical and dermatological preparations, as such or when added to suitable carriers having constituents compatible with the anhydrous hydroxypropane derivatives.

3,755,593

**TREATMENT OF PEPTIC ULCERATION WITH XANTHENE DERIVATIVES**

Stewart Sanders Adams, Bernard John Armitage, Norman William Bristow, and Bernard Vincent Heathcote, Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

No Drawing. Continuation-in-part of application Ser. No. 858,183, Sept. 15, 1969, now Patent No. 3,686,218, which is a continuation-in-part of application Ser. No. 662,987, Aug. 23, 1967, now Patent No. 3,644,420. This application July 31, 1972, Ser. No. 276,670

Claims priority, application Great Britain, Sept. 2, 1966, 39,384/66; Apr. 5, 1967, 15,692/67

Int. Cl. A61k 27/00

U.S. Cl. 424-283 11 Claims

Xanthene derivatives having utility in the treatment of peptic ulceration.

3,755,594

**ANTI-SECRETORY COMPOSITION CONTAINING XANTHENE DERIVATIVES AND USES THEREFOR**

Stewart Sanders Adams, Bernard John Armitage, Norman William Bristow, and Bernard Vincent Heathcote, Nottingham, England, assignors to The Boots Company Limited, Nottingham, England

No Drawing. Application Sept. 15, 1969, Ser. No. 858,183, now Patent No. 3,686,218, which is a continuation-in-part of application Ser. No. 662,987, Aug. 23, 1967, now Patent No. 3,644,420. Divided and this application Aug. 2, 1972, Ser. No. 277,333

Int. Cl. A61k 27/00

U.S. Cl. 424-283 11 Claims

4-(9-xanthenyl)semicarbazide and thiosemicarbazide, 4-(9-thioxanthenyl)semicarbazide and thiosemicarbazide and derivatives of these compounds, useful as antisecretory agents.

3,755,595

**FUNGICIDAL METHODS AND COMPOSITIONS CONTAINING A TRICYCLOHEXYLTIN COMPOUND AND AN ALIPHATIC AMINE**

Cleve A. I. Goring, Walnut Creek, and Ronald J. Sbragia, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,372

Int. Cl. A01n 9/00

U.S. Cl. 424-288 8 Claims

Fungicidal methods and compositions containing a tricyclohexyltin compound together with an aliphatic amine such as butylamine, ethylenediamine, diethylenetriamine or N-ethylethylenediamine. The addition of the amine provides methods and compositions having increased microbiocidal activity as well as reduced levels of phytotoxicity when applied to plant foliage.

3,755,596

**STABILIZED INSECTICIDAL COMPOSITION EMPLOYING CERTAIN ACID STABILIZERS**

Toshiaki Osugi, Takatsuki, Japan, assignor to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

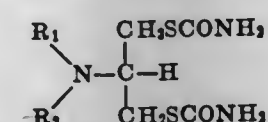
No Drawing. Filed Mar. 6, 1970, Ser. No. 17,306

Claims priority, application Japan, Mar. 8, 1969, 44/17,662

Int. Cl. A01n 9/12

U.S. Cl. 424-300 11 Claims

Stable insecticidal preparations contain at least (1) an acid salt of a carbamoyl derivative represented by the general formula:



wherein R<sub>1</sub> and R<sub>2</sub> represent the same or different lower alkyl radical having up to 6 carbon atoms, or wherein R<sub>1</sub> and R<sub>2</sub> together with the nitrogen atom form a heterocyclic ring, (2) an organic acid compound and (3) a comminuted mineral carrier.

3,755,597

**MOSQUITO LARVICIDE COMPOSITIONS**

Walter William Abramitis, Downers Grove, Ill., assignor to Akzona, Incorporated, Asheville, N.C.

No Drawing. Continuation-in-part of application Ser. No. 610,748, Jan. 23, 1967. This application Nov. 24, 1969, Ser. No. 879,582

Int. Cl. A01n 9/20

U.S. Cl. 424-304 4 Claims

Compositions for killing the larvae of insects comprising an inert organic or aqueous carrier and an amine compound selected from the group consisting of N-(2-cyanoethyl)dodecylamine and long chain aliphatic hydrocarbon diamines, especially N-tallow 1,3-trimethylene diamine.

3,755,598

**MOSQUITO CONTROL AGENTS**

Robert K. Howe, Bridgeton, and Walter A. Darlington, Brentwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,771

Int. Cl. A01n 9/06, 9/20

U.S. Cl. 424-304 3 Claims

N - (3,5-di(trifluoromethyl)phenyl)azomalononitriles for use in combating mosquitoes.



3,755,599

**METHODS FOR RELIEVING BRONCHOSPASM WITH PROSTAGLANDIN-A COMPOUNDS**  
Marvin E. Rosenthale, Havertown, and Donald P. Strike, Rosemont, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,209  
Int. Cl. A61k 27/00

**U.S. Cl. 424—305** 4 Claims  
Members of the prostaglandin-A series, 19-hydroxylated derivatives thereof, their esters, alkali metal salts, and amine salts are employed in compositions and methods for relieving bronchial spasm and facilitating breathing in warm blooded animals. Administration by the oral inhalation route is particularly effective.

3,755,600

**N-ACYL-DICYANOCARBONYL-PHENYL-HYDRAZONES AS ARTHROPODICIDES AND FUNGICIDES**

Karl Heinz Buchel, Wuppertal-Elberfeld, Ingeborg Hamann, Cologne, Gunter Unterstenhofer, Opladen, and Ferdinand Grewe, Burscheid, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany  
No Drawing. Original application Dec. 9, 1969, Ser. No. 883,631, now Patent No. 3,660,462. Divided and this application Jan. 27, 1972, Ser. No. 221,385

Int. Cl. A01n 9/20

**U.S. Cl. 424—304** 12 Claims  
The use of 1-( $\alpha$ -cyano- $\alpha$ -cyano)-carbonyl-2-(alkyl, chloroalkyl, alkenyl, alkoxy, cycloalkyloxy, alkenyloxy, phenyl, phenoxy and dialkylamino)-carbonyl and thio-carbonyl-2-[(mono, and same and mixed di and tri, -chloro, -fluoro, -trifluoromethyl, -alkyl, -alkoxy, -nitro and -acetyl amino)-phenyl]-hydrazones, which possess arthropodocidal, especially acaricidal and insecticidal, as well as fungicidal properties.

3,755,601

**METHODS AND COMPOSITIONS FOR IMPROVING FEED EFFICIENCY OF RUMINANTS USING POLYHALOALDEHYDE CONDENSING PRODUCTS**

Roger C. Parish, King of Prussia, and John E. Trei, West Chester, assignors to Smith Kline & French Laboratories, Philadelphia, Pa.  
No Drawing. Continuation-in-part of application Ser. No. 881,868, Dec. 3, 1969. This application May 31, 1972, Ser. No. 258,253

Int. Cl. A61k 27/00; A61n 9/24

**U.S. Cl. 424—313** 5 Claims  
Certain condensation reaction products of polyhaloaldehydes with active hydrogen containing chemicals when ingested admixed in the feed of ruminants in doses which have no therapeutic or toxic properties and which do not inhibit overall fermentation of the rumen, improve the feed efficiency of the ruminant significantly. The chemical compounds are added to the feed as a uniform additive, used as a premix combined with an edible carrier or dispersed in salt blocks for pasture feeding. Preferred and exemplary compounds to be used as active ingredients are 5,5,5-trichloro-4-hydroxy-2-pentanone and the condensation products of chloral with ethyl or methyl malonate.

3,755,602

**PHARMACEUTICAL COMPOSITIONS CONTAINING LITHIUM RHEINANTHRONE AND LITHIUM RHEINANTHRONE COMPLEX SALT**

Herbert Alan Ryan and Charles Aubrey Friedmann, London, England, assignors to Westminster Laboratories, Limited, London, England  
No Drawing. Original application May 24, 1963, Ser. No. 282,963, now Patent No. 3,519,655, dated July 7, 1970. Divided and this application Jan. 9, 1970, Ser. No. 31,466

Int. Cl. A61k 27/00

**U.S. Cl. 424—317** 9 Claims  
Pharmaceutical compositions comprising lithium rheinanthrone and lithium rheinanthrone complex salt that are suitable for administration to humans and animals for the purpose of inducing a peristaltic response and for the correction of constipation.

3,755,603

**BIPHENYLYLOXYACETIC ACIDS IN PHARMACEUTICAL COMPOSITIONS**

Ian T. Harrison and John H. Fried, Palo Alto, Calif., assignors to Syntex Corporation, Panama, Panama  
No Drawing. Continuation-in-part of application Ser. No. 608,956, Jan. 13, 1967. This application July 1, 1970, Ser. No. 51,737

Int. Cl. A61u 27/00

**U.S. Cl. 424—317** 2 Claims  
Biphenylyloxyacetic acids having optional substitution in the ring carbons and the  $\alpha$ -carbon of the acetic acid moiety and the corresponding amide, ester, and addition salts thereof which compounds are useful as anti-inflammatory, analgesic, anti-pyretic and antipruritic agents as well as fibrinolytic and hypocholesterolemic agents. The compounds per se and pharmaceutical compositions incorporating, and pharmaceutical methods employing these compounds are disclosed.

3,755,604

**SEBUM INHIBITORS**

Duane Gordon Gallo, Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.  
No Drawing. Filed Dec. 14, 1970, Ser. No. 98,192

Int. Cl. A61k 27/00

**U.S. Cl. 424—317** 5 Claims  
A process is disclosed for inhibition of sebum production by sebaceous cells. This process is carried out by contacting the sebaceous cell with a pentadienoic acid such as 3-methyl-5-phenyl-2-trans-4-trans-pentadienoic acid or 2-alkyl-3-methyl-5-phenyl-2-trans-4-trans-pentadienoic acids.

3,755,605

**DIPHENYLAMINE DERIVATIVES**

George G. I. Moore, Birchwood, and Joseph Kenneth Harrington, Edina, Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.  
No Drawing. Continuation-in-part of abandoned application Ser. No. 28,082, Apr. 13, 1970. This application June 13, 1972, Ser. No. 262,302

Int. Cl. A61k 27/00

**U.S. Cl. 424—321** 10 Claims  
Diphenylamines substituted by haloalkylsulfonamido groups and optionally substituted by other groups on the phenyl rings. These compounds and their salts are active anti-microbial agents and some are useful as anti-inflammatory agents, analgesics and herbicides.

## ELECTRICAL

3,755,606

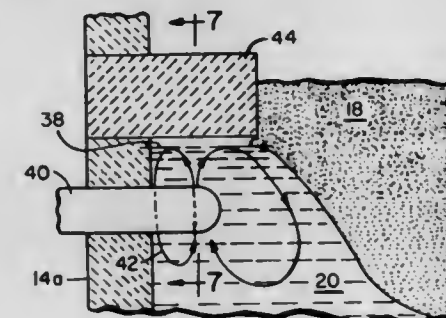
**APPARATUS FOR MELTING THERMOPLASTIC MATERIAL**

George B. Boettner, and Paul F. Spremulli, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.  
Filed Oct. 2, 1972, Ser. No. 293,841

Int. Cl. C03b 5/02

U.S. Cl. 13—6

8 Claims



An improvement in the melting zone of a furnace, having a plurality of spaced and immersed electrodes for melting and refining thermoplastic material, wherein there is incorporated, above the electrodes and not in contact with the molten material, means for deflecting raw batch away from the vicinity of the electrodes and for substantially preventing incompletely-melted batch from being convected toward the vertical furnace wall area closest to the ends of the electrodes, thereby minimizing the downward convection of the raw or partially-melted batch in the vicinity of this furnace wall area. If desired, the deflector means can also have incorporated therein radiant heating means for maintaining a small pool of molten material directly above the electrodes.

3,755,607

**WAKE SIMULATOR**

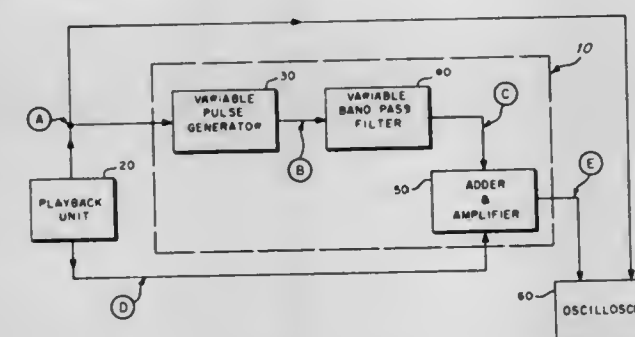
Paul Terpeluk, Horsham, Pa., assignor to The United States of America as represented by the Secretary of the Navy,  
Washington, D.C.

Filed July 30, 1965, Ser. No. 476,787

Int. Cl. G09b 9/00

U.S. Cl. 35—10.4

10 Claims



1. An electronic device for simulating wakes of submarines or other underwater targets comprising:  
first circuit means for providing a series of output signals representative of sea background and a triggering pulse prior to each of said signals;  
second circuit means receiving said triggering pulses from said first circuit for generating in response thereto rectangular pulses having the trailing edges thereof occurring coincident in time with corresponding ones of said sea background signals;  
third circuit means receiving the output of said second circuit means for filtering the same and providing output

signals indicative of the wake of the target, said wake signals having coincidence in time with corresponding ones of said sea background signals; and  
fourth circuit means receiving said series of sea background signals and said wake signal for adding the same and for providing a composite signal representative of a target wake superimposed on the sea background.

3,755,608

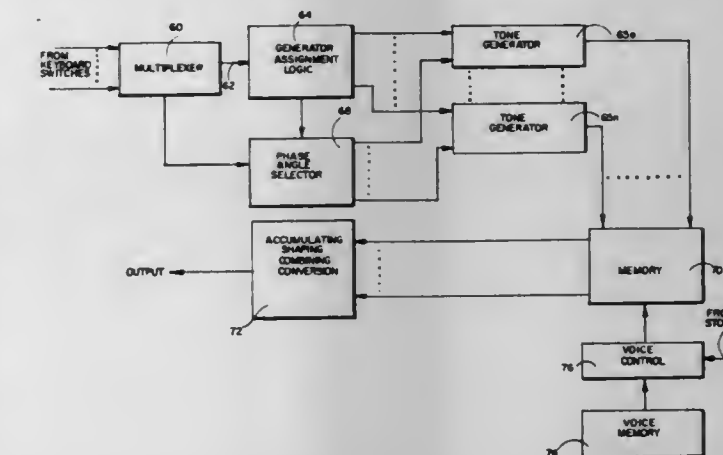
**APPARATUS AND METHOD FOR SELECTIVELY ALTERABLE VOICING IN AN ELECTRICAL INSTRUMENT**

Ralph Deutsch, Sherman Oaks, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.  
Filed Dec. 6, 1971, Ser. No. 204,839

Int. Cl. G10h 1/00

U.S. Cl. 84—1.01

24 Claims



A number of different voices of an electrical organ are stored in specification memories as groups of amplitude samples of respective voices of the instrument. Under control of selectively actuated stops, groups of amplitude samples of chosen voices are extracted from the specification memories, combined, and stored in an alterable or registration memory. The latter is addressed for read out at a rate selected according to the frequency of the note to be generated. The various voices are combinable in different groups and chosen combinations are selectively stored in any one of several registration memories of which there may be one for each division of an organ and which may feed two or more separate audio channels. Selective scaling of one or more of the voices read from the specification memories will increase the number of voice combinations available. Loading of a newly selected voice combination into the registration memory may occur continuously during read out of the registration memory, or only upon actuation of a stop. Although loading of a new voice combination into the registration memory in one embodiment takes place during the read out of the registration memory, the loading may take place at less than musical frequency and at rates slower than registration memory read out rates.

3,755,609

**INTEGRATED CIRCUIT ALL-HARMONIC WAVE ORGAN SYSTEM INCLUDING PROVISION FOR FLUTE TONES AND PEDAL NOTES**

David Millet, Cambridge, Mass., and Ray B. Schrecongost, Park Ridge, Ill., assignors to Hammond Corporation, Deerfield, Ill.

Filed Apr. 28, 1972, Ser. No. 248,677

Int. Cl. G10h 1/06; H03k 4/02

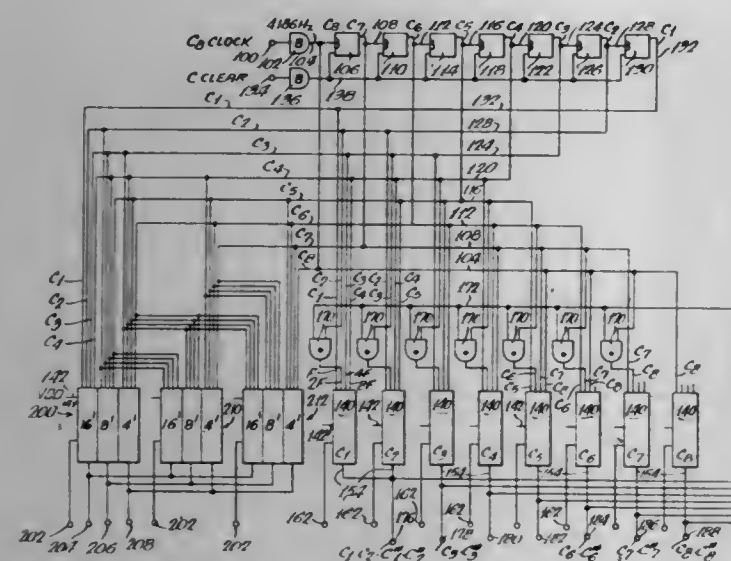
U.S. Cl. 84—1.23

14 Claims

A bright wave (all harmonic wave) organ system which has direct current (D.C.) keying for all notes, both manual and



pedal, and also provides sine wave (flute) notes by filtration. All-harmonic waves are provided by stairstepping octavely related square waves and the flutes by filtration of the complex stairstepped wave minus the square wave component which has its fundamental at twice the frequency of the desired flute note to accommodate octave flute filtering. The present arrangement is such that one integrated circuit package provides for two octavely related groups of adjacent notes, all C's and all C # 's, for instance, for eight octaves of manual notes and three octaves of 16-, 8- and 4-foot pedal notes or the



equivalent. Each circuit package requires only one musical frequency input or clock for each of two adjacent note groups, one for C and one for C # for instance. The integrated circuit packages are large scale integrations (LSI) and include the frequency dividers, the arrangement for keying and stairstepping the square waves, for collecting and controlling the outputs for octave or half octave sine wave filtration and for formanting, and for providing three pedal outputs, one each for the 16-foot, 8-foot and 4-foot pedal notes or the equivalent for other use. Provision is made for phase synchronization of the frequency dividers.

3,755,610

**ELECTRICALLY CONDUCTIVE CABLE**

Frank H. McTigue, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Sept. 15, 1971, Ser. No. 180,842

Int. Cl. H02g 15/20; B44d 1/42

U.S. Cl. 174-23 C

4 Claims

Improvements are taught in the preparation of olefin coated electrically conductive cables wherein the space between individual singles wires within the cable is filled with petroleum jelly. The improvement comprises stabilizing the polymer coating on the singles wires with a specified thiobisphenol phosphite which is particularly resistant to extraction by petroleum jelly.

3,755,611

**DEVICE FOR PASSING A CONDUCTOR THROUGH THE COVER OF AN ELECTRICAL PRECIPITATION APPARATUS**

Robert Queck, Hurth-Burbach, and Hugo Werner, Hurth-Hermulheim, Knapsack, Germany, assignors to Knapsack Aktienegesellschaft, Knapsack Cologne, Germany

Filed Aug. 7, 1972, Ser. No. 278,569

Claims priority, application Germany, Aug. 9, 1971, P 21 39 824.3

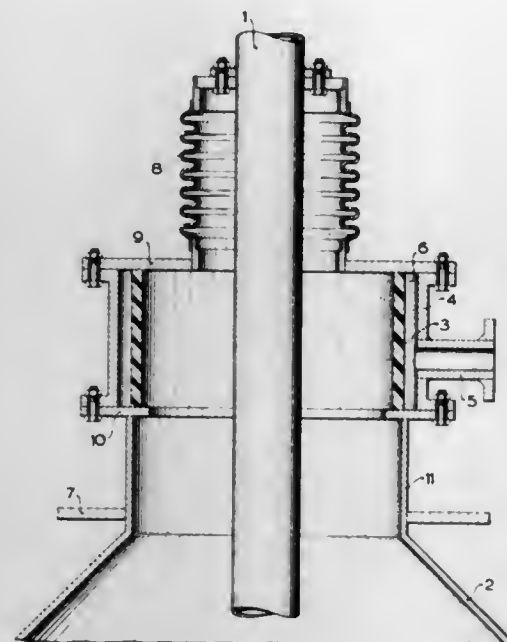
Int. Cl. B03c 3/34; H01b 17/26

U.S. Cl. 174-31 R

4 Claims

Improved lead-in device passing a conductor through the cover of an electrical precipitation apparatus down to its spray

system. The improved device is characterized in that a porous insulator is used as the insulator and a gas-tight insulating cylinder concentrically surrounds the porous insulator. The device is further fitted with a tubular gas inlet opening into the porous insulating cylinder. The upper and lower ends of the



insulator and the insulating cylinder, respectively, are connected together by annular metal plates so as to form a space therebetween, and the space is occupied by a sealing gas maintained at a relatively higher pressure than that prevailing inside the electrical precipitation apparatus.

3,755,612

**STRUCTURAL SUPPORTS PROVIDING SHIELDING AGAINST INTERFERENCE**

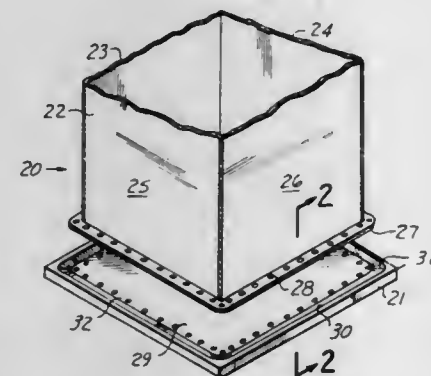
Simon Yerkovich, Los Angeles, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Mar. 6, 1972, Ser. No. 231,968

Int. Cl. H05k 9/00

U.S. Cl. 174-35 MS

9 Claims



A structure is provided for supporting and shielding electrical apparatus. A metallic plate member is fastened to another metal member by suitable fasteners. The plate member is deformed in a region adjacent an edge portion thereof so that the edge portion grips the metal of the other member in interference relationship. The deformation of the region of the plate is to such degree that the elastic limit of the plate is not exceeded so that the plate continuously bears against such other member.

3,755,613

**VIBRATION RESISTOR FOR OVERHEAD CONDUCTORS**

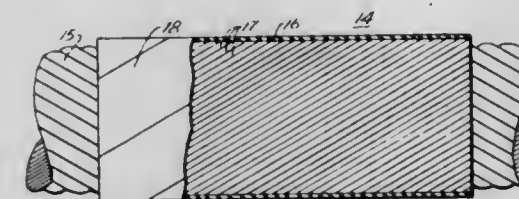
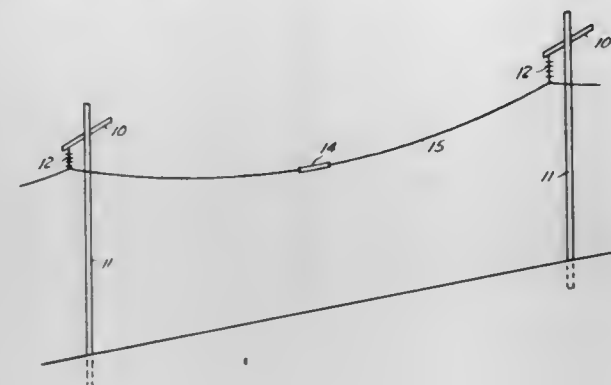
Allan H. Kldder, P.O. Box 14, Lansdowne, Pa.

Filed May 10, 1972, Ser. No. 252,062

Int. Cl. H02g 7/14

U.S. Cl. 174-42

6 Claims



A vibration resistor is disclosed in which provision is made to retard vibration by mounting on the conductor an energy sink having a relatively short overlay of passive friction resistance imparting small strands mounted on the conductor with numerous contacts between the conductor and the small strands for wave energy absorption and disposal.

3,755,614

**SEALED UNDERGROUND WIRING TEST STATION**

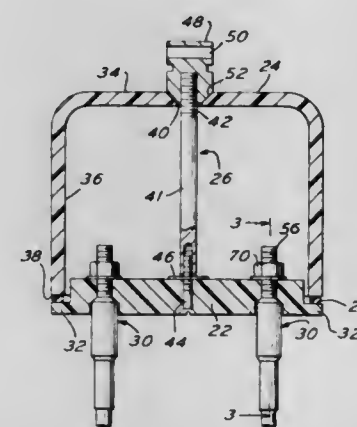
Wallace B. Jakacki, Chalfont, Pa., assignor to Barlow Corp., Philadelphia, Pa.

Filed Jan. 21, 1972, Ser. No. 219,653

Int. Cl. H05k 5/06

U.S. Cl. 174-59

9 Claims



A test station is provided for underground wiring which comprises a housing having a planar circular base and a cap. The lateral surface of the base has an annular flange which extends around the base. An annular resilient gasket is disposed on the flange. The cap has an annular lip which is aligned with the flange. Means are provided for securing the cap to the base with the gasket being interposed between the lip and the flange and in communication with the interior of the housing to seal the housing. A pressure increase within the housing causes the gasket to be urged outwardly of the housing. When a pressure approximately twice that of atmospheric pressure is

present in the housing, the gasket is completely removed from between the lip of the cap and the flange of the base to enable the escape of gas from the housing. After the pressure differential between the inside and outside of the housing has decreased, the resiliency of the gasket enables the gasket to close off the opening between the cap and the base to provide a fluid seal.

The station also includes a plurality of terminals disposed within respective flared openings in the base of the housing. Each terminal includes a threaded member soldered to an electrically conductive wire. A tapered collar is provided about the collar. Each terminal also includes a threaded nut which, when tightened on the threaded member, causes the sleeve to be compressed within the associated flared opening in the base of the housing to seal same.

3,755,615

**ADAPTER ASSEMBLY FOR SEALING A CONNECTOR PART**

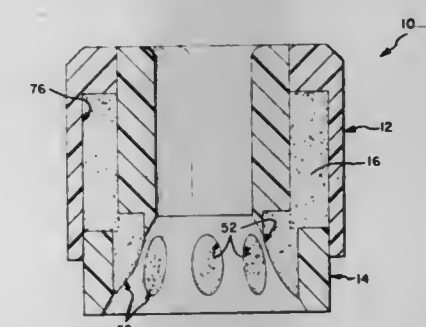
Clarence Leonard Paullus, Lewisberry, and Larry Ronald Stauffer, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 29, 1972, Ser. No. 293,603

Int. Cl. H01r 13/52

U.S. Cl. 174-76

5 Claims



An adapter assembly is provided for sealing an end of an electrical connector part of the type having a body portion, a plurality of cavities extending through the body portion and opening at the end of the connector part, and a plurality of wires leading from the cavities outwardly from the end of the connector part. The adapter assembly includes a post member seatable upon the end of the connector part, a central passageway defined axially through the post member through which may pass the plurality of wires emanating from the connector part end, and a hollow cover member fitted about the post member in slideable engagement with opposing ends of the post member and moveable between initial and final positions relative to the post member along the longitudinal axis of the post member. An interior surface of the cover member disposed radially outwardly from an exterior surface of the post member forms a reservoir therebetween when the cover member is in its initial position. A predetermined quantity of impervious material capable of flowing under pressure and retainable in any shape as may be impressed on it is contained within the reservoir. A plurality of apertures defined in the post member and spaced from one another radially about the longitudinal axis of the post member communicate the exterior surface of the post member with the end of the connector part via the central passageway of the post member. When the post member is seated upon the end of the connector part and the cover member is forceably moved from its initial position to its final position at which a bottom portion of the cover member securely engages the end of the connector part to fixedly secure the adapter assembly to the connector part, the impervious material is hydraulically forced to extrude through the plurality of apertures in the post member and fill the empty space about the plurality of wires in the end of the connector part and in the central passageway of the post member to thereby seal the end of the connector part.



3,755,616

**THERMOPLASTIC SEALED-SHEATH COVERING UPON ELECTRICAL BUS-BAR CONDUCTORS**

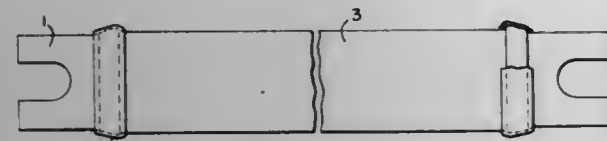
Julius Toth, Beaver, and Edward M. Walker, Industry, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 888,296, Dec. 29, 1969, abandoned.

This application Sept. 15, 1971, Ser. No. 180,872

Int. Cl. H01b 7/02

U.S. Cl. 174—120 SR



POLYVINYL CHLORIDE ADHESIVE TAPE WITH A TOP OVERLAY OF "PIOFILM" TRANSPARENT TAPE

An improved and relatively inexpensive electrical conductor, such as a bus-bar, or feeder conductor, of aluminum or copper, for example, is provided with a thermoplastic elongated tubular sheath, or sheath tubing, such as polyvinyl chloride heat-reactive tubing of resinous material, having the ends of the sheath, or tubing, sealed, in a water-tight fashion to the bus-bar by a thermoplastic resinous tape material. In one method of the invention, the resinous tape may be wound adjacent the outer ends of the bus-bar at spaced areas thereon, and the thermoplastic tubing subsequently pulled, as a second operation, upon the bus-bar and heat shrunk into place over the aforesaid spaced taped areas.

Another alternate method for sealing the thermoplastic sheath tubing to the bus-bar, is to heat-shrink the thermoplastic insulating tubing, or "boot" upon the bus-bar after pulling it into place, scalp excess tubing to a specified dimension upon the bus-bar, and then band or tape each of the scalped ends of the tubing, or "boot" with a suitable thermoplastic resinous tape material, such, for example, as polyvinyl chloride adhesive tape.

3,755,617

**SUB-CARRIER SIGNAL GENERATING SYSTEM HAVING PHASE COMPENSATOR AND UTILIZING VIR SIGNALS**

Takeshige Ichida, Kadoma City, Osaka, Japan, assignor to Matsushita Electric Industrial Company, Osaka, Japan

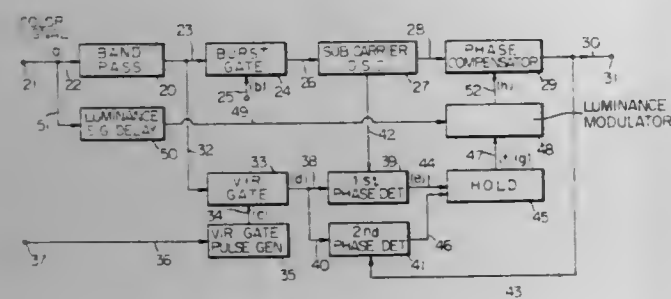
Filed Dec. 14, 1971, Ser. No. 207,752

Claims priority, application Japan, Dec. 18, 1970, 45/114646; Dec. 25, 1970, 45/125577

Int. Cl. H04n 9/46

U.S. Cl. 178—5.4 HE

2 Claims



A sub-carrier signal generator for use with a television receiver in the NTSC system for receiving a color signal including the vertical interval color reference (VIR) signal. The sub-carrier signal generator comprises means for generating a sub-carrier signal synchronized with the burst signal in the color signal, means for phase-detecting the VIR signal by using the burst signal to produce a compensation signal

representing phase difference between the chrominance reference bar in the VIR signal and the burst signal, and means for compensating the phase of the sub-carrier signal by the compensation signal.

3,755,618

**SHUNT COLOR KILLER CIRCUIT**

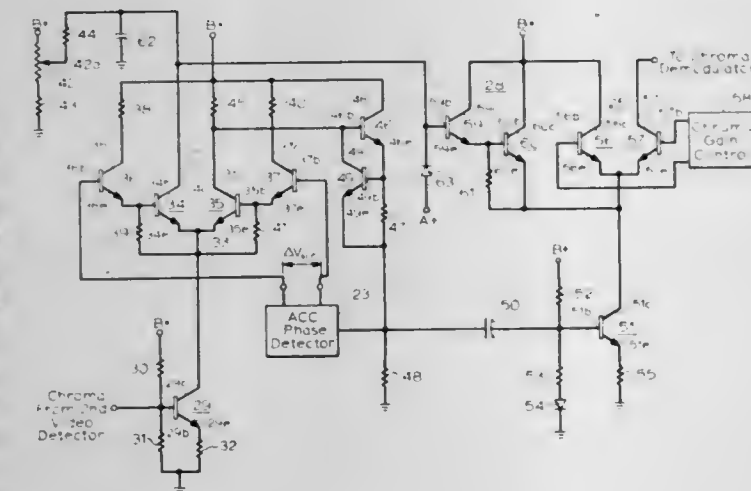
Dwight J. Poppy, Arlington Heights, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Mar. 2, 1972, Ser. No. 231,317

Int. Cl. H04n 9/48

U.S. Cl. 178—5.4 CK

7 Claims



A color killer circuit is provided for disabling the chrominance processing channel when the signal strength of the received chrominance signals drops below a selectable, predetermined level. The circuitry, which is suitable for fabrication on a monolithic integrated circuit, includes a semiconductor arrangement coupled in shunt with a differential amplifier between a source of unidirectional potential (B+) and the output of a chroma driver amplifier. Whenever the chrominance signal strength is at or above the selectable, predetermined level indicative of normal color reception, the chroma driver, responsive to chrominance signals applied at its input, develops a chrominance-modulated current which is conducted through the differential amplifier to the chroma demodulator. On the other hand, whenever the chrominance signal strength is below the selectable, predetermined level, the semiconductor arrangement is switched to its conductive state by a control network in response to control signals representative of the chrominance signal strength. In its conductive state, the semiconductor arrangement presents an alternate low impedance current path to the chrominance-modulated current diverting it from the differential amplifier and thereby preventing chroma reproduction.

3,755,619

**AUTOMATIC COLOR SATURATION CONTROL RESPONSIVE TO AMBIENT LIGHT LEVEL**

John D. Lovely, Waterloo, and Sam Q. Wong, Kitchener, Ontario, both of Canada, assignors to Electrohome Limited, Ontario, Canada

Filed June 9, 1972, Ser. No. 261,229

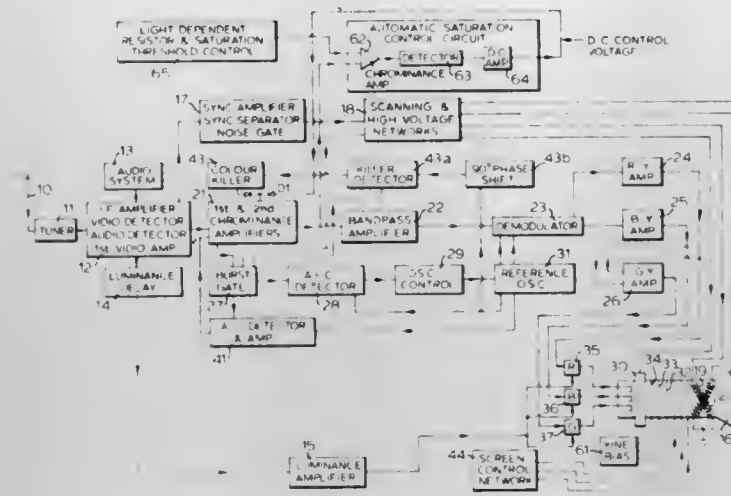
Int. Cl. H04n 9/48

U.S. Cl. 178—5.4 AC

10 Claims

An automatic saturation control system includes an A.G.C. system for the chrominance signal that maintains an essentially constant saturation level. This level is varied automati-

cally by a device such as a light dependent resistor in response to changes in light incident on the light dependent resistor, the



latter being mounted to receive ambient light on the picture tube screen and/or light emitted from the picture tube screen.

3,755,620

**SINGLE TUBE COLOR TELEVISION CAMERA SYSTEM AND METHOD**

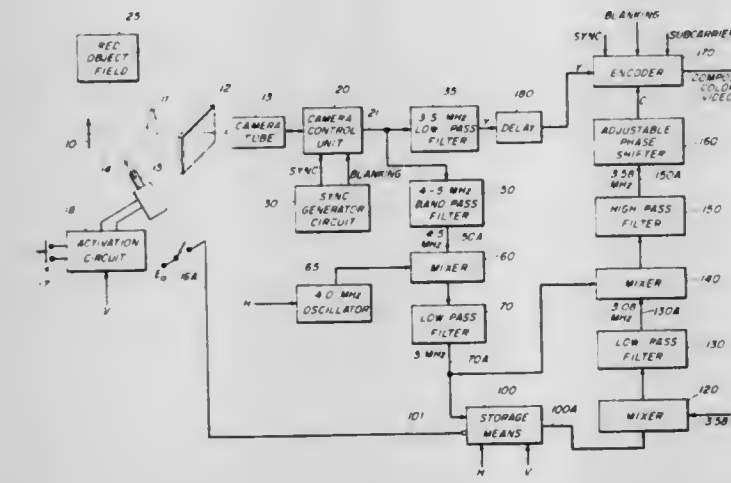
Renville H. McMann, New Canaan, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed June 30, 1972, Ser. No. 267,988

Int. Cl. H04n 9/06

U.S. Cl. 178—5.4 ST

20 Claims



A color television camera system for producing coherent chroma video signals representative of the color content of a scene. A filter is disposed in the optical path of the scene, the filter having a striped array of colored areas thereon. A single camera tube electronically scans the image projected through the filter and generates color signals representative of the filtered image. The color signals are translated to a lower frequency. Means are provided for projecting, during selected field scans, a uniformly colored field on said filter. The translated color signals generated during the selected field scans are stored in a digital storage circuit. Subsequently, the translated color signals generated during non-selected fields are modified in accordance with the stored signals to produce coherent chroma signals.

3,755,621

**METHOD FOR DELAYING WIDE BAND ELECTRICAL SIGNALS**

Wolfgang Dillenburger, Nieder-Ramstadt, and Gerhard Krause, Ebersberg/Munich, both of Germany, assignors to Fernseh GmbH, Darmstadt, Germany

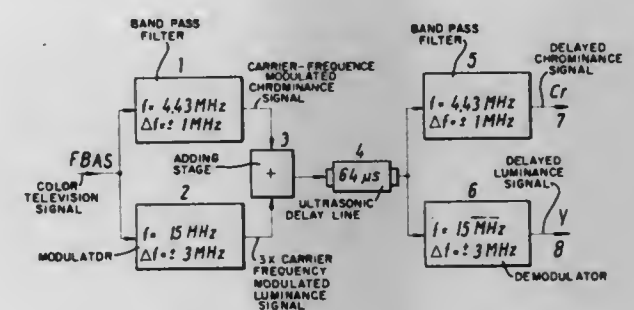
Filed Aug. 20, 1970, Ser. No. 65,446

Claims priority, application Germany, Aug. 20, 1969, P 19 42 290.3

Int. Cl. H04n 9/00, 5/14; H03h 7/30

U.S. Cl. 178—5.4 R

10 Claims



A method for increasing the bandwidth of delay devices which operate to delay a modulated carrier wave. The frequency of the carrier is raised to an odd multiple of the fundamental frequency of the input and output transducers of the delay device, allowing operation over a wider bandwidth.

3,755,622

**FILM SCANNING SYSTEM HAVING IMPROVED VERTICAL STABILITY**

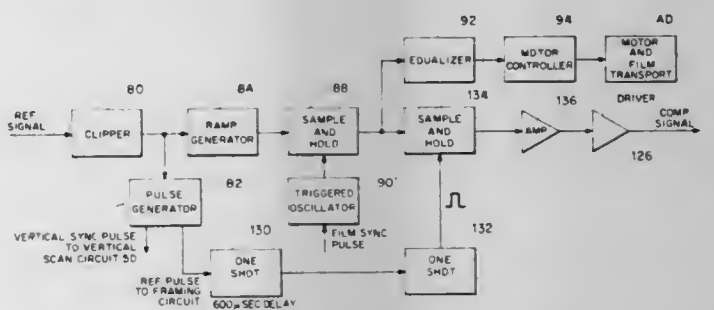
Harvey M. Horowitz, Easton, and Renville H. McMann, Jr., New Canaan, both of Conn., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Nov. 22, 1971, Ser. No. 200,786

Int. Cl. G11b 15/52; H04n 5/36, 5/86

U.S. Cl. 178—7.2

7 Claims



An electronic film scanning system dynamically compensated for the effects of instabilities caused by variable film speed, and/or variations in spacing between successive film frames and associated sync marks. Sync information derived from the film in phase-locked to a reference by a film transport servo drive, and a compensation signal proportional to the dynamic phase error of the servo is produced to maintain the alignment between a scanning raster and film frame position.

3,755,623

**COMBINED TELEVISION CAMERA AND A TELEVISION RECEIVER UNIT**

Pierre Cassagne, Rueil, France, assignor to Engins Matra, Paris, France

Filed Oct. 19, 1971, Ser. No. 190,513

Claims priority, application France, Oct. 22, 1970, 7038142

Int. Cl. H04n 5/26, 5/655

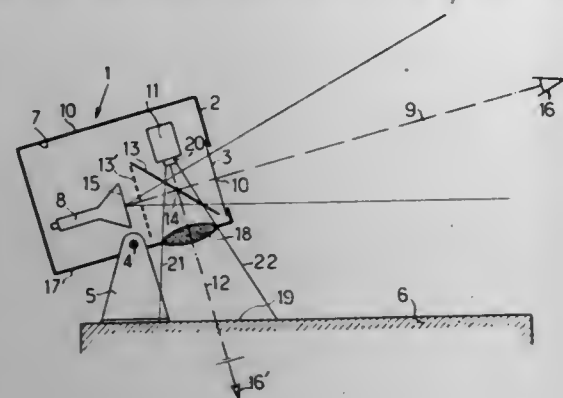
U.S. Cl. 178—7.89

7 Claims

A combined television camera and receiver unit for transmitting and receiving images to and from a similar unit located at a distance therefrom.



The unit is housed in a case which is pivotally mounted on a base and fixed to a support. The television camera is capable of shooting along two substantially perpendicular directions. In a first direction the television camera transmits the image of the first party to the second party and in the other direction



the camera transmits the image of a document to the second party. A semi-reflecting plate acts as an optical switching means enabling the camera to shoot in each of the two directions. The camera is preferably mounted parallel or perpendicular to the picture tube depending whether or not a mirror is used.

3,755,624

### PCM-TV SYSTEM USING A UNIQUE WORD FOR HORIZONTAL TIME SYNCHRONIZATION

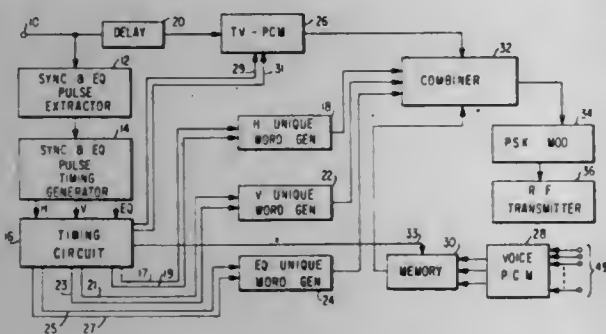
Tadahiro Sekimoto, Tokyo, Japan, assignor to Communications Satellite Corporation, Washington, D.C.

Division of Ser. No. 740,310, June 26, 1968, Pat. No. 3,666,888. This application Apr. 22, 1971, Ser. No. 136,582

Int. Cl. H04n 5/04

U.S. Cl. 178—69.5 TV

9 Claims



In a communication system for transmitting and receiving television information by means of digital codes, the horizontal sync pulses are transformed into a code word, thus leaving time slots in the transmitted waveform which are unoccupied by the digital picture information or the code word representing horizontal synchronization. These time slots are used to transmit additional information such as multiple sound or data channels, or bandwidth compression information. In the case of multiple sound or data channels, the channels are multiplexed and coded and transmitted during the available time slots at a bit rate which is the same as the digital picture information bit rate. In the case of bandwidth compression, an address code word is annexed to the single horizontal synchronization code word to provide an address for each line of picture information in a television frame. With all lines identified by addresses, the system compares each line of picture information with a prior line of picture information having the same address and transmits to the receiver only those lines which represent changes of a certain degree from a prior frame. As a result, redundant picture information is not transmitted thereby reducing the total amount of information transmitted, allowing the transmitter to operate at a reduced bit rate. The receiver stores all lines of information and the storage is up-dated by the received non-redundant lines of picture information. During each frame period, the receiver extracts from storage the redundant lines necessary to complete a picture frame.

### 3,755,625 MULTIMICROPHONE LOUDSPEAKING TELEPHONE SYSTEM

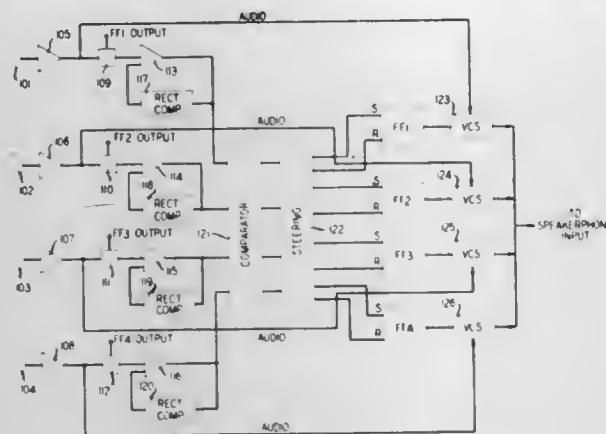
Donald James Maston, West Lafayette, Ind., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Oct. 12, 1971, Ser. No. 188,119

Int. Cl. H04m 3/56

U.S. Cl. 179—1 CN

8 Claims



A modified speakerphone conference system with a plurality of microphones employs a comparator in combination with logic circuitry that selects the microphone with the greatest output and connects it to the speakerphone input while simultaneously disconnecting the others. In the absence of other inputs, a microphone that has control retains control despite pauses. Control can be seized, however, by any microphone with an overriding signal. Switching and the transmission of background noise are both minimized.

3,755,626

### ELECTRONIC CONTROL CIRCUIT

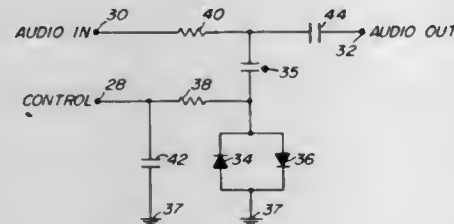
Melvin A. Lace, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 17, 1971, Ser. No. 209,050

Int. Cl. H04r 3/00; H03g 1/02

U.S. Cl. 179—1 D

2 Claims



An electronic control for modifying the amplitude and frequency characteristics of an electrical signal in response to a control signal. The circuit utilizes a pair of oppositely poled parallel coupled semiconductor diodes the impedance of which changes in response to control current flowing therethrough. The oppositely poled configuration allows control signals of either positive or negative polarity to serve as control voltages for modifying the alternating current signal.

3,755,627

### PROGRAMMABLE FEATURE EXTRACTOR AND SPEECH RECOGNIZER

Sidney Berkowitz, Silver Spring, Md., and James R. Carlberg, McLean, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 22, 1971, Ser. No. 210,803

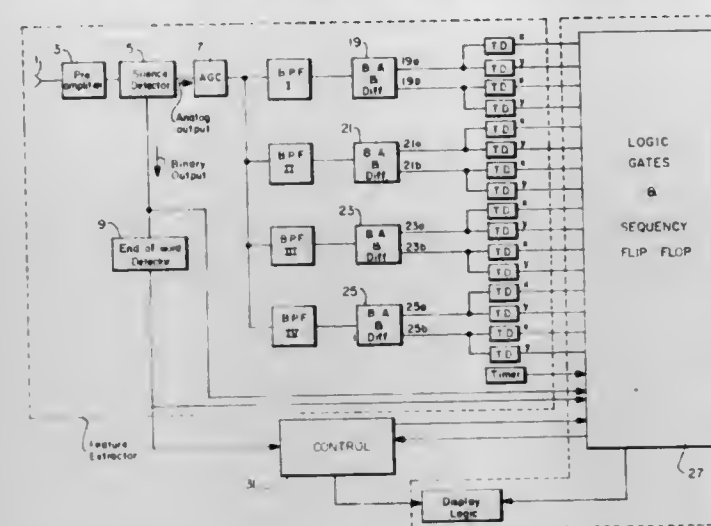
Int. Cl. G101 1/02

U.S. Cl. 179—1 SA

14 Claims

A spoken word is analyzed to determine its power spectrum density and slope-intensity product. The recognizer then

identifies the word by its unique density and slope-intensity characteristic. The analysis is accomplished through bandpass filters and differentiators which generate signals corresponding to the power spectrum density and slope-intensity product and by a bank of threshold gates which generates binary



signals when the power density and the slope-intensity signals are above preset threshold levels. The threshold signals produced are processed through a logic system which indicates which word has been spoken when a unique combination of threshold signals corresponding to a particular word have been triggered.

3,755,628

### TIME DIVERSITY, MULTI-REDUNDANT DATA SYNCHRONIZED TRANSMISSION SYSTEM

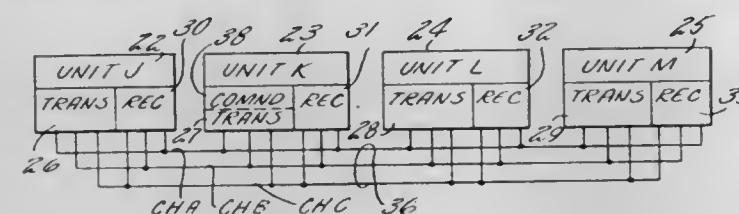
John E. Games, Granby; John Saunders, East Hartford, and Ivor Hughes, Granby, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 4, 1970, Ser. No. 95,231

Int. Cl. H04g 7/04; H04m 3/00

U.S. Cl. 179—15 BS

6 Claims



Four independent data stations, each having data sources and data responders, transmit data signals from one to another in response to commands, in the nature of polling instructions or addresses, generated by one of the units. Time division multiplexed transmission is over dual lines in the form of bipolar/return-to-zero signals which permit utilizing discrete signals indicative of either data ONEs or ZEROs as a data clock for synchronizing the transmitting, receiving and command stations. Counters indicate completion of transmission of fixed formatted groups of data words, and monostable multivibrator time outs are used to sense times between words, between multiword transmission and reception periods, and between frames of transmission periods. The receiver of each unit recognizes the unit designations of each command, causing that unit to transmit or receive when it is involved, and preventing that unit from recognizing further data signals when it is not involved. Substantially every part of each of the units, including the command section of one of the units, is provided in triple redundancy, there also being provided three independent, bipolar/return-to-zero data channels. One of the data channels is provided with a two word delay at the output of each transmitter and no delay at the input to each receiver; a second data channel is provided with a one word delay at the output of each transmitter and a one word delay at the input to each receiver; and the third data channel is provided with no

delay at the output of each transmitter and a two word delay at the input to each receiver; thus the actual transmission is provided with time diversity, whereby noise, such as a flash of lightning might generate, effects only one word out of the three redundant words being transmitted since the other two words are diverse in time from the generated noise. Data, and certain of the functions for controlling the units, are majority-voted so that the data or control indicium is taken to be that for which two out of the three redundant sets indicate likeness.

3,755,629

### ELECTRONIC MATRIX SCANNER FOR A TELEPHONE CENTRAL OFFICE

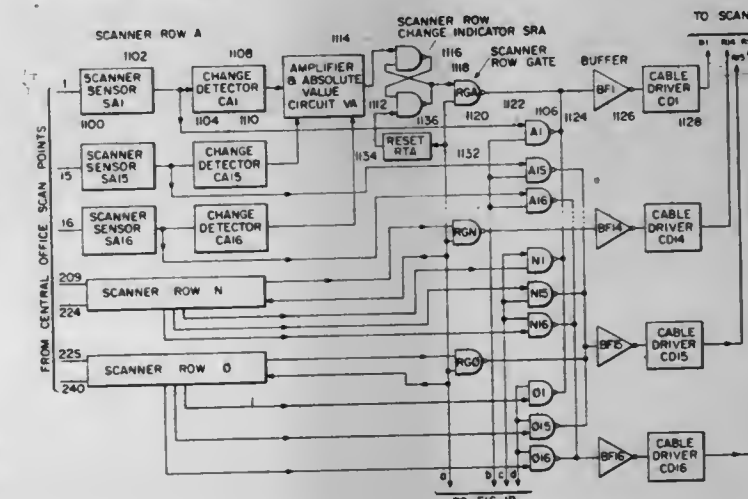
Cho Lun Wong, Ottawa, Ontario; Glenison Trevelyn Jones, Kanata, Ontario, and Helmuth Krausbar, Ottawa, Ontario, all of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Jan. 14, 1972, Ser. No. 217,924

Int. Cl. H04m 3/22

U.S. Cl. 179—18 ES

7 Claims



An electronic scanner for use in a telephone central office wherein the scanner sensors are arranged in a plurality of scanner rows to form a scanner sensor matrix. A scanner row change indicator associated with each scanner row detects and registers a change if any of the scanner sensors which form its associated scanner row experience a change of state. By scanning only the scanner rows which have indicated a change, via corresponding row change indicators, valuable central processor time may be saved.

3,755,630

### WIRED EQUIPMENT SHELF

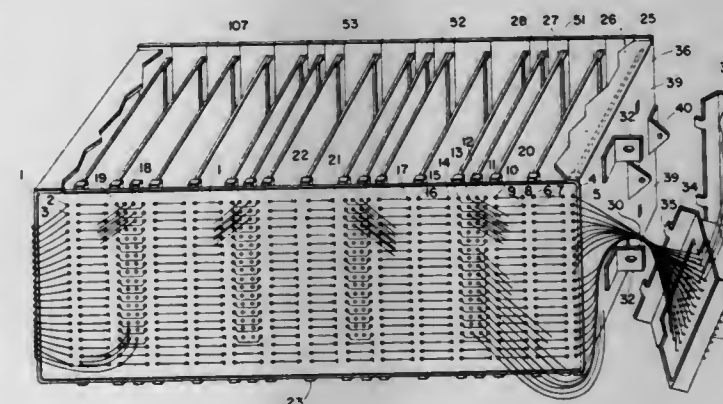
Michel Boyer, Longueuil, Quebec, Canada, assignor to Bell Canada, Montreal, Quebec, Canada

Filed June 3, 1971, Ser. No. 149,484

Int. Cl. H05k 1/07

U.S. Cl. 179—98

17 Claims



A mounting shelf for plug-in telephone line equipment is prewired to receive various kinds of vertical circuit board



units in a horizontal array. The prewiring gives the options of either arranging in one shelf unit several sequences individual to particular telephone lines, of a few circuit units each, or else placing an ordinary circuit unit in one or more of the available circuit division locations to build longer circuit sequences for some or all of the lines.

3,755,631

### MANUAL ERASE MECHANISM FOR MAGNETIC RECORD

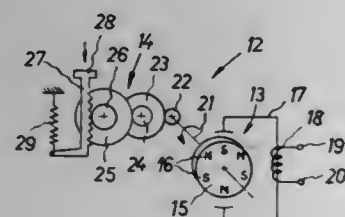
Oskar Sturzing, Baar, Switzerland, assignor to Anstalt Europaische Handelsgesellschaft, Vaduz, Liechtenstein  
Filed Nov. 9, 1971, Ser. No. 196,990

Claims priority, application Switzerland, Dec. 14, 1970, 1852/70

Int. Cl. G11b 5/02

U.S. Cl. 179—100.2 D

5 Claims



An information storage with a multiplicity of magnetic storage elements which can be directly electrically controlled through the agency of an input location. The information storage is equipped with an erasing mechanism embodying a mechanical-electrical energy transducer, the electrical outputs of which can be connected with the input location.

3,755,632

### APPARATUS FOR SIMULTANEOUSLY JOINING AND TESTING CONDUCTORS

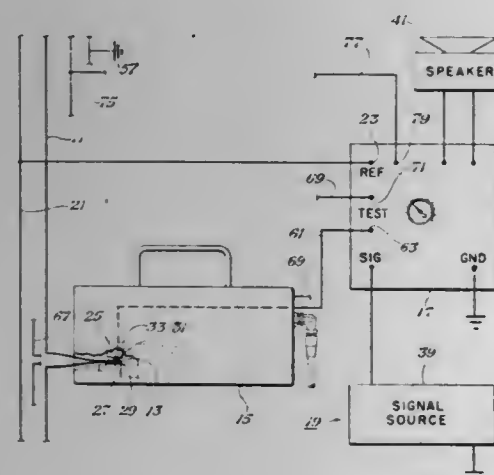
Paul Johnson, Lakewood, Colo., assignor to A. P. C. Industries, Inc., Mineral Wells, Tex.

Filed Aug. 17, 1971, Ser. No. 172,522

Int. Cl. H04b 3/46

U.S. Cl. 179—175.3

10 Claims



Method and apparatus for splicing telephone cable conductors characterized by the steps of crimping a connector means about the ends to be joined together and simultaneously testing the spliced conductor for electrical defects. Also disclosed are specific elements of the apparatus such as a bridge circuit for comparing the capacitance of the spliced wire pair that is being tested with that of a reference wire pair that is similar in character and traverse and is known to be free of the electrical defects.

3,755,633

### NO MISS FIRE ROLLER CAM FOR AUTOMOTIVE DISTRIBUTOR ASSEMBLIES

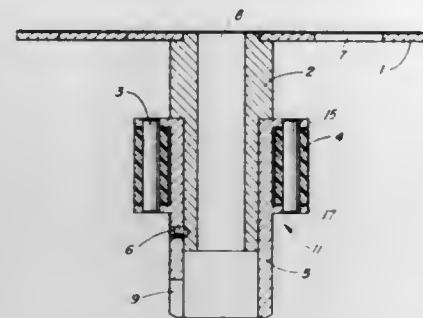
Warren John Rhinesmith, Union Valley Rd., Box 225, West Milford, N.J.

Filed Dec. 7, 1971, Ser. No. 171,182

Int. Cl. H01h 3/42

U.S. Cl. 200—19 R

4 Claims



An improved multi-lobed cam for use in automotive distributors and the like is shown. The cam is formed by arranging a plurality of rollers in a circle with the rollers providing the cam lobes and spaces therebetween the cam flats so that wobble of the cam will have no effect on the cam follower when it is in the spaces thus preventing the points from opening at the wrong time and causing a miss-fire.

3,755,634

### SINGLE PILLAR ISOLATOR SWITCH

Sven Bachler; Sven Erik Akervall, and Sven Wallenstein, all of Ludvika, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

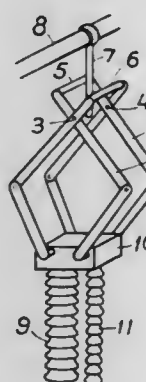
Filed Feb. 7, 1972, Ser. No. 223,924

Claims priority, application Sweden, Feb. 12, 1971, 1847/71

Int. Cl. H01h 31/00

U.S. Cl. 200—48 V

6 Claims



In a high voltage isolator switch of the pantograph type, a movable contact of the pivoted tong type cooperates with a counter-contact in the form of a rod suspended vertically from an overhead line. This rod is adapted to be gripped by two substantially horizontally directed elongated contact bars carried by the movable contact. The counter-contact may be provided with longitudinally extending current collecting strips, two on one face and one on the other face. A downwardly-open guiding means secured to the counter-contact guides the contact bars into engagement with the counter-contact.

3,755,635

### ISOLATED ELECTRICAL OUTLET ASSEMBLY

William B. McGill, 9612-B Roosevelt Dr., Ellsworth A.F.B., S. Dak.

Filed Apr. 7, 1972, Ser. No. 241,999

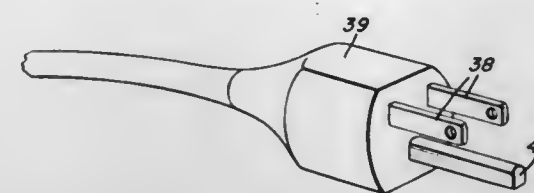
Int. Cl. H01r 33/30

U.S. Cl. 200—51.09

3 Claims

An electrical outlet and safety control circuit for preventing accidental shock comprising a socket with a pair of outlet ter-

minals isolated from a primary voltage source by normally opened relay contacts, and a switch actuatable by an elongated pin on the associated electrical plug upon insertion



thereof into the socket, the switch being serially connected to the relay for closure thereof and simultaneous energization of the electrical terminals upon complete insertion of the plug.

3,755,636

### WATER CONTROL TRIGGER

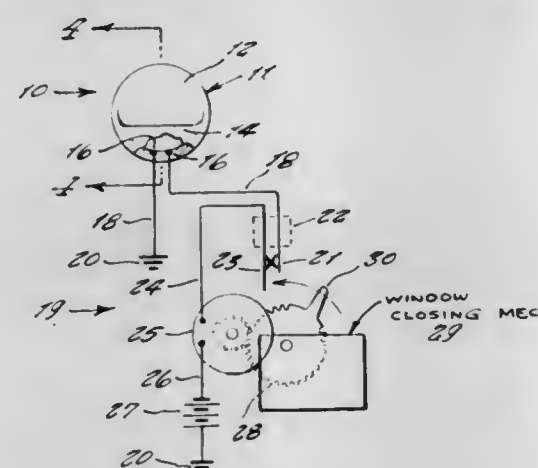
Herbert Hoover Hill, 919 Starer Ave., Akron, Ohio

Filed July 27, 1971, Ser. No. 166,522

Int. Cl. H01h 9/00

U.S. Cl. 200—61.05

2 Claims



A control device for automatically closing a window of a house or automatically raising a roof of a convertible automobile, the device consisting of an electrical switch that is activated by rainwater so to close the switch; and wherein the switch is automatically becomes deactivated after the rain has stopped falling for awhile.

3,755,637

### SUB-SURFACE SWITCH CONSTRUCTION FOR UNDERGROUND ELECTRIC POWER DISTRIBUTION

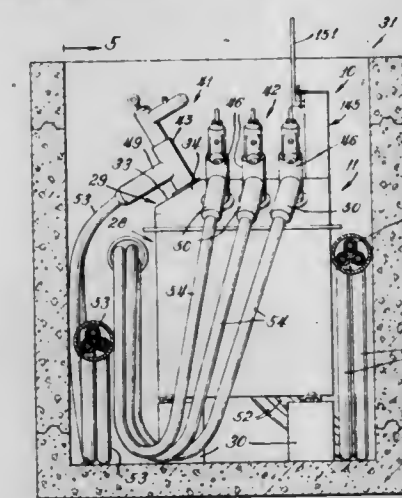
John A. Gloviak, Chicago, and Gerald Sakats, Arlington Heights, both of Ill., assignors to S. C. Electric Company, Chicago, Ill.

Filed May 15, 1972, Ser. No. 253,503

Int. Cl. H02b 1/12; H01h 3/36

U.S. Cl. 200—168 G

10 Claims



A rectangular tank has a rectangular cover secured thereto in fluid tight relation for mounting in a sub-surface vault likely

to be flooded. Insulator through bushings are mounted on inclined end portions and one inclined side portion for supporting terminals extending into the space enclosed by the tank and cover. A switching assembly is enclosed by the tank and cover. It comprises stationary contacts connected to the end and side terminals. The contacts are engageable by commonly connected switch blades. Spring operators are connected to the switch blades and remotely operated on pivotal movement of horizontal shafts projecting from a conning tower which extends upwardly from the cover to one side thereof. Indicators on the projecting ends of the shafts show the open or closed position of the switch individual thereto.

3,755,638

### CONTACT PRESSURE ADJUSTING MEANS

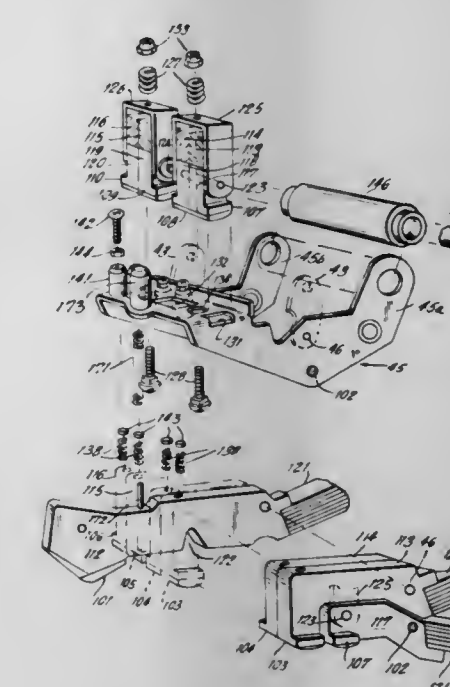
John C. Lucas, Cherry Hill, N.J., and William A. Huggins, Lansdowne, Pa., assignors to I-T-E Imperial Corporation, Spring House, Pa.

Filed July 27, 1972, Ser. No. 275,446

Int. Cl. H01h 9/38, 33/12

U.S. Cl. 200—146 R

12 Claims



A multiphase air magnetic circuit breaker of very high continuous current rating is provided with a compact movable contact structure for each phase thereof by having a first plurality of main contacts positioned in a first transverse row adjacent to and in front of a second plurality of main contacts positioned in a second transverse row. These main contacts are symmetrically arranged on each side of the arcing contact arm, and the arms for the first plurality of main contacts are aligned with and extend over the arms for the second plurality of main contacts. First pivot means provides a common mounting pivotally securing the arms for the arcing contact and first plurality of main contacts to the contact bridge. Second pivot means at one end of the arms for the second plurality of main contacts mounts the latter to the contact bridge and auxiliary bridges at the other end of the arms for the second plurality of main contacts cooperate with the contact bridge to establish the open circuit position for the second plurality of main contacts. Engagement of the first and second pluralities of contacts establishes the open circuit position of the former, and engagement between the second pivot and the arcing contact arm establishes the open circuit position of the latter. Individually adjustable biasing springs are provided for each contact of the first plurality of main contacts, and individually adjustable springs are provided for each section of the auxiliary bridge.



3,755,639

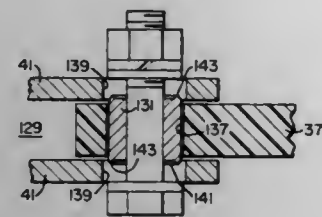
**CIRCUIT INTERRUPTER WITH CONTACT ACTUATING LEVER ARM ADJUSTING MEANS**

Fred Bould, Swissvale, and Norman Davies, Trafford, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 13, 1972, Ser. No. 271,426  
Int. Cl. H01h 3/46, 3/30; G05g 1/24

U.S. Cl. 200—153 H

16 Claims



A circuit interrupter having relatively movable contacts, means for moving the contacts between open and closed positions which means include a support arm for the movable contact, a rotatable operating shaft, a drive structure between the shaft and the arm including a connecting link and a member extending substantially radially from the shaft and fixedly mounted thereon, the link and the member being pivotally connected, adjustable means for pivotally mounting the link on the member and comprising an elongated slot in the member and an aperture in the link which is aligned with the slot, a nut and bolt assembly extending through the slot and aperture and a bushing mounted on the bolt and within the aperture, the bushing having a cylindrical surface and having tapered annular ridges at each end thereof, whereby upon tightening of the nut and bolt assembly the ridges bite into the bifurcated portion of the member and thereby prevent movement of the nut and bolt assembly with respect to its desired location in the slot.

3,755,640

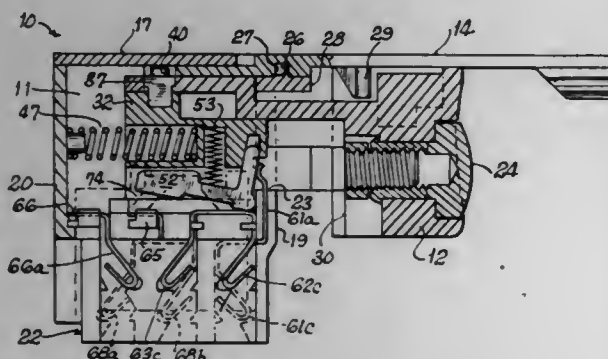
**REVERSING SWITCH FOR A POWER TOOL WITH SEPARATE SELECTIVELY MOVABLE CONTACT CARRIERS**

Frank A. Kaman, Prospect Heights; Conrad D. Robertson, Northbrook, and Ignacy Supel, Chicago, all of Ill., assignors to Skle Corporation, Chicago, Ill.

Filed July 27, 1972, Ser. No. 275,701  
Int. Cl. H01h 13/08

U.S. Cl. 200—157

10 Claims



A common contact is arranged for connection to one of the two lines of an electric power source; a second common contact is arranged for connection to the field windings of the motor. A pair of contact strips is arranged for respective connection to the sides of a motor armature which is wound for rotation in both directions. A pair of movable contacts is mounted by a respective pair of contact carriers for slidable engagement with the contact strips. A reversing arm actuates a shuttle for connecting a selected one of the contact carriers for

movement by the trigger from an "off" position wherein the associated movable contact is in engagement with the first common contact and out of engagement with the second common contact to an "on" position wherein said movable contact is in engagement with the second common contact and out of engagement with the first common contact.

3,755,641

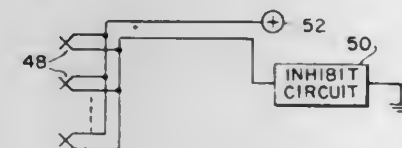
**MATING CONFIGURATIONS FOR CONNECTABLE COMPONENTS**

Michael I. Rackman, 1710 Glenwood Rd., Brooklyn, N.Y.

Filed Feb. 5, 1970, Ser. No. 9,001  
Int. Cl. H01h 1/38

U.S. Cl. 200—163

10 Claims



Cooperating mating configurations on a cartridge and a receptacle therefor. The configuration of the receptacle is such that for a cartridge to fit properly in the receptacle, it must exhibit a configuration which if used without authorization would be an infringement of legal trademark rights.

3,755,642

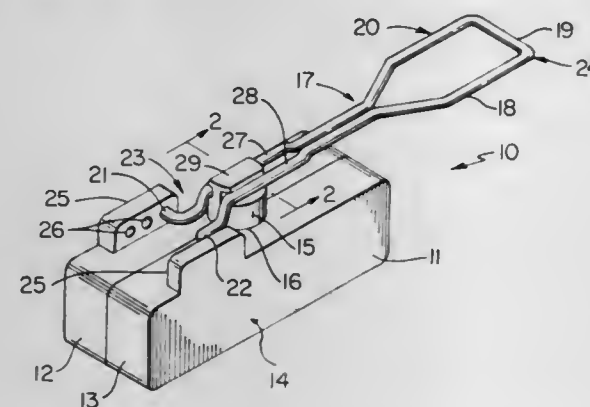
**LEVER MEANS FOR AN ELECTRICAL SWITCH CONSTRUCTION OR THE LIKE AND METHOD OF MAKING THE SAME**

Roger L. Warner, Union Twp., Ohio, assignor to Robertshaw Controls Company, Richmond, Va.

Filed May 17, 1972, Ser. No. 253,999  
Int. Cl. H01h 3/04

U.S. Cl. 200—172 A

15 Claims



An electrical switch construction having a housing provided with an electrical switch therein and a movable plunger for actuating the electrical switch when the plunger is axially moved relative to the housing. A lever is pivotally mounted to the housing to permit pivotal movement of the lever and the lever is secured to the plunger intermediate the opposed ends of the lever to cause movement of the plunger as the lever is pivoted relative to the housing.

3,755,643

**TILT ACTUATED LIQUID METAL SWITCH HAVING A NEGATIVE BREAK ANGLE**

Carl D. Blair, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 23, 1970, Ser. No. 31,243  
Int. Cl. H01h 29/20

U.S. Cl. 200—220

4 Claims

A tilt actuated liquid metal switch of the liquid metal to electrode type including a depressor arranged to be in engage-

3,755,645

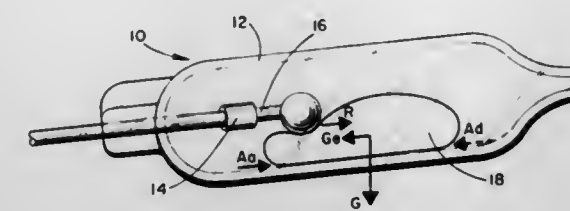
**MAXIMUM AVERAGE GAP VOLTAGE CONTROL FOR EDM POWER SUPPLY**

Harry D. Kauffman, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Apr. 21, 1972, Ser. No. 246,157  
Int. Cl. B23p 1/08, 1/14

U.S. Cl. 219—69 C

4 Claims



the pool and thereby provide a force in the deactuating mode of the switch such that it is adequate to overcome the other inherent forces to cause disengagement of the pool from the electrode prior to the horizontal position being attained.

3,755,644

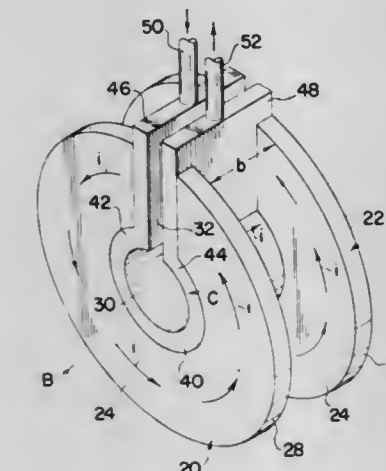
**HIGH FREQUENCY INDUCTION HEATING APPARATUS**

John C. Lewis, Hamilton, Wentworth, Ontario, Canada, assignor to Growth International, Inc., Cleveland, Ohio

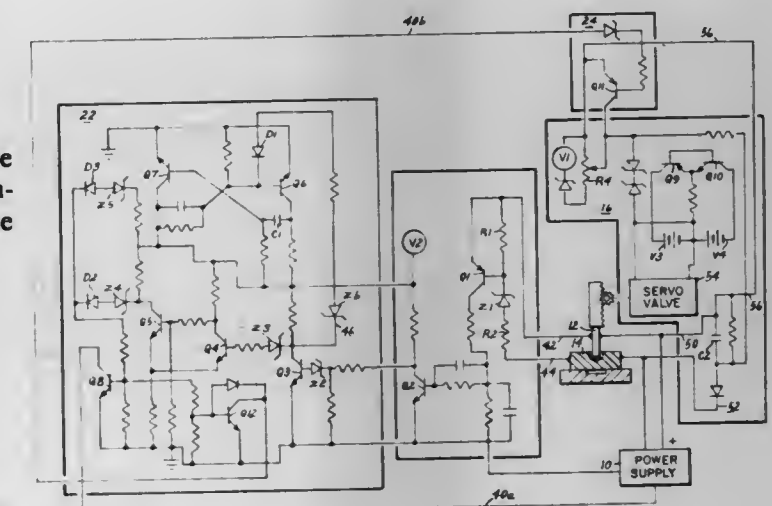
Filed June 27, 1972, Ser. No. 266,603  
Int. Cl. H05b 5/18

U.S. Cl. 219—10.79

2 Claims



An apparatus for high frequency induction heating of elongated workpieces wherein the induction heating inductor is mounted as an integral part of the transformer secondary portion. The transformer secondary is comprised of one or more spaced apart disc members having the inductor, which defines a desired workpiece heating pass, disposed therein and extending therebetween. The transformer secondary portion is releasably retained between a pair of spaced apart transformer primary pancake coils with one of the coils positioned in a magnetic coupling relationship with each of the disc members. The transformer secondary portion is easily removable from its magnetic coupling relationship with the transformer primary so as to permit selective use of other secondary portions which include inductors defining different sized workpiece passes.



A gap sensing circuit in conjunction with an inhibit circuit defines apparatus for maintaining the average voltage across the gap between an electrode tool and workpiece of an EDM mechanism within a predetermined maximum level. The gap sensing circuit monitors the peak voltage present across the gap, and enables an inhibit circuit to produce a signal suppressing the production of sustained machining pulses when the average voltage across the gap exceeds a predetermined maximum level. The sensing network disables the inhibit circuit when the gap voltage returns to an acceptable level.

3,755,646

**METHOD AND DEVICE FOR BALANCING ROTORS**

Richard Muller, Worfelden, Germany, assignor to Gebr. Hofmann KG, Postfach, Germany

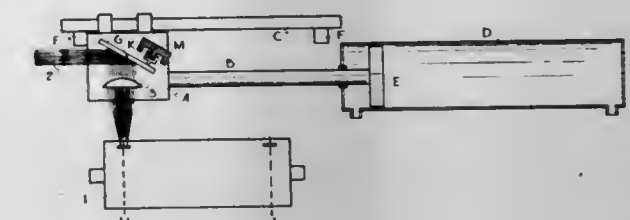
Filed July 2, 1971, Ser. No. 159,444

Claims priority, application Germany, July 2, 1970, P 20 32 893.2

Int. Cl. B23k 27/00

U.S. Cl. 219—121 LM

22 Claims



The invention relates to a method and device for balancing rotors where the unbalance is eliminated step by step during rotation of the rotor through momentary periodical bombardment by laser beams of high intensity.



3,755,647

**METHOD FOR MAKING A TUBULAR STRUCTURE**

Robert M. Pierart, Saint-Nazaire, France, assignor to Babcock-Atlantique, Paris, France

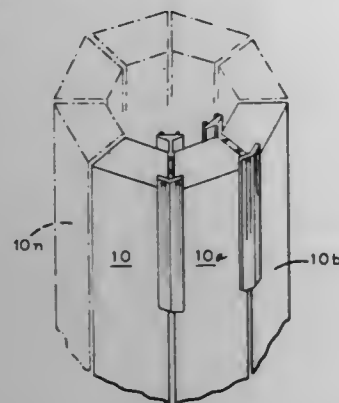
Filed Feb. 17, 1972, Ser. No. 227,689

Claims priority, application France, March 30, 1971, 7111049

Int. Cl. B23k 9/12

U.S. Cl. 219—126

7 Claims



This invention is a simple and easy method for making tubular structures of substantial thickness in an effective and efficient manner.

3,755,648

**FLEXIBLE WELDING NOZZLE APPARATUS**

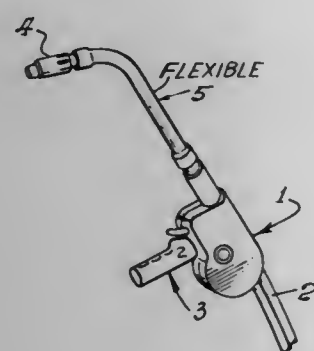
Julius Rothman, 13702 Beach St., Cerritos, Calif.; Edmond Andrew Tacconelli, 5456 Abbeyfield St., Long Beach, Calif., and Frank Vincent Buzzetta, 11399 Pinetree Ln., Stanton, Calif.

Filed Sept. 5, 1972, Ser. No. 285,967

Int. Cl. B23k 9/00

U.S. Cl. 219—130

5 Claims



The nozzle of an inert gas arc-welding gun is flexibly extended by coupling an elongate, tubular electrode between the body of the gun and its nozzle. The electrode is formed of spirally-wound conductive wire capable of being bent into any desired configuration needed for the particular job and of retaining its set disposition. A sleeve binds the wound wire electrode to maintain its circularity during bending and insulation is provided around the sleeve. Welding current is carried by the wire and the welding metal in wire form is passed through the bore of the wound wire. A steel spring co-axial with the electrode guides the welding wire. Inert gas is supplied through a passage provided between the insulation and the sleeve.

3,755,649

**SERVING STEAMER**

Leonard Osrow, Great Neck, N.Y., assignor to Osrow Products Co., Inc., Glen Cove, N.Y.

Filed Feb. 2, 1972, Ser. No. 222,898

Int. Cl. D06f 75/08

U.S. Cl. 219—245

5 Claims

A light weight portable hand manipulatable pressing/steaming device having a reservoir formed therein to be at least par-

tially filled with an electrolytic solution. The steaming device includes a steam generator, passageway means leading from said generator for receiving steam therefrom and conducting it to an exit thereof, and a sole plate having an opening therein in communication with the exit of the passageway means so that steam created in the generator will issue through the sole plate. The generator includes a pair of electrodes shaped and positioned within the reservoir and at least partially submerged within the electrolytic solution to support a flow of current between the electrodes when said device is operated in either the vertical or the horizontal position. Each of the electrodes includes a first and second portion, wherein each portion of each electrode has a substantially flat surface which

is so positioned within the reservoir that as the level of the solution recedes below the flat surfaces, a meniscus is formed between the solution and the flat surface of the first portions if the device is being operated in the horizontal position and with the flat surface of the second portions if the device is being operated in the vertical position. The device has an opening in a top wall thereof and a cap detachably engaged therewith for sealing the opening. The cap has a depression formed therein for measuring the quantity of salt to be added to water when forming the electrolytic solution. A baffle is positioned within the device adjacent the opening for preventing the electrolytic solution from accidentally draining out of the opening when the device is being operated in either of the vertical and horizontal positions.

3,755,650

**ELONGATED HEAT-GENERATING APPARATUS PROVIDING FOR A REDUCTION IN THE HIGHEST VOLTAGE TO BE APPLIED**

Masao Ando, Kahokuku, Kanagawa, Japan, assignor to Chisso Corporation, Osaka, Japan

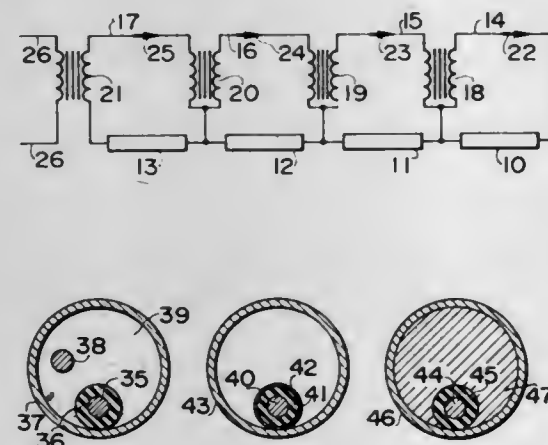
Filed Nov. 16, 1971, Ser. No. 199,192

Claims priority, application Japan, Nov. 20, 1970, 45/102479

Int. Cl. H05b 3/00

U.S. Cl. 219—301

5 Claims



An elongated heat-generating apparatus is divided into at least two sections and a transformer is provided at each division between adjacent sections of said at least two sections and linked with the electrical circuits of the adjacent sections. The output voltage of the transformer is as near as possible to the highest voltage allowed for the section, the resistance of which is adjusted in relation to the definite voltage to meet the required quantity of heat in that section.

3,755,651

**APPARATUS FOR AND METHOD OF MAKING CONDUCTIVE RECORD CARDS**

Robert L. Giuliani, 45310 Akimela Pl., Kaneohe, Hawaii

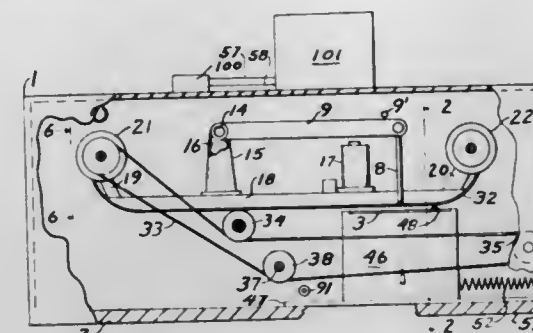
Continuation-in-part of Ser. No. 118,329, Feb. 24, 1971. This

application Sept. 27, 1971, Ser. No. 183,940

Int. Cl. G06k 7/06, 1/00

U.S. Cl. 235—61.1

8 Claims



Errors are avoided by marking credit cards with machine-readable spot arrays in a computer controlled machine. A card is placed in a tray on a movable block. The block is stepped row by row according to the number of rows on the credit card. Solenoids controlled by a computer selectively strike a tape to a card, transferring a machine readable material to the card. The number of punches corresponds to the number of available spaces in each row. The unique spot arrays are exact duplicates of binary record identifiers in the controlling computer. When the cards are subsequently read, the array directs the computer logic to the correct record among voluminous records, and the computer accesses the information therein.

3,755,652

**CODE READING METHOD AND APPARATUS**

Takashi Endo, Tarumi-ku Kobe; Hironobu Yamamoto, Suma-ku, Kobe, and Yasuhiko Nohara, Kohoku, Yokoama, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Nihon Doro Kodan, Tokyo, Japan

Continuation of Ser. No. 845,799, July 29, 1969, abandoned.

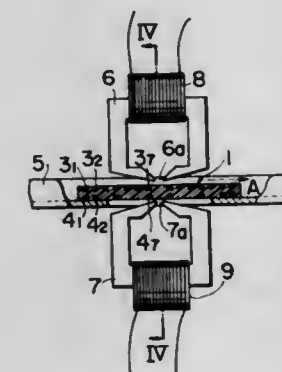
This application Nov. 8, 1971, Ser. No. 196,734

Claims priority, application Japan, Aug. 8, 1968, 45/55984

Int. Cl. G06k 7/08

U.S. Cl. 235—61.11 D

9 Claims



In a code read-out method and apparatus, a code carrier is in the form of a circular plate of non-magnetic material having, on one surface, clock indicia in the form of concentric, uniformly spaced annular bands of magnetic material and having, on the opposite surface, signal indicia in the form of concentric, selectively spaced annular bands of magnetic material, each opposite a different respective clock indicia. The code carrier is passed along a detection path and between a pair of magnetic pickup heads which are disposed directly opposite each other, and each of which is associated with a different

respective surface of the plate. Both heads are connected in parallel to an AND circuit and to an OR circuit. The OR circuit provides an output pulse responsive to detection of an indicia on either surface of the plate. The AND circuit provides an output pulse responsive only to simultaneous detection of indicia on both surfaces of the plate. Thereby, the output clock pulses are readily discriminated from the output signal pulses. Preferably, the magnetic material is imbedded in annular channels in the plate surfaces.

3,755,653

**RECORD CARD READING APPARATUS**

Hilrich Jan Matthijs Venker, Paris 20 eme, France, assignor to Societe Industrielle Honeywell Bull (Societe anonyme), Paris, France

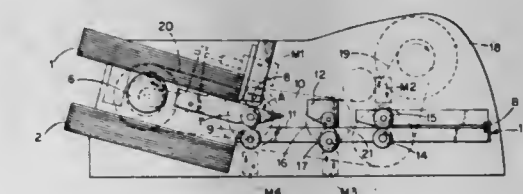
Filed Dec. 13, 1971, Ser. No. 207,441

Claims priority, application Netherlands, Dec. 21, 1970, 7018602

Int. Cl. B65k 1/06, 5/06; G06k 7/00

U.S. Cl. 235—61.11 R

12 Claims



A record card reading apparatus of the type wherein cards are transported from a supply hopper to a reading track, are read, and then transported to a receiving hopper, wherein the receiving hopper is located under the supply hopper, and wherein the cards are found in the receiving hopper in the same order as they were first stacked in the supply hopper.

3,755,654

**DIGITAL DECODING OF RETROSPECTIVE PULSE MODULATION**

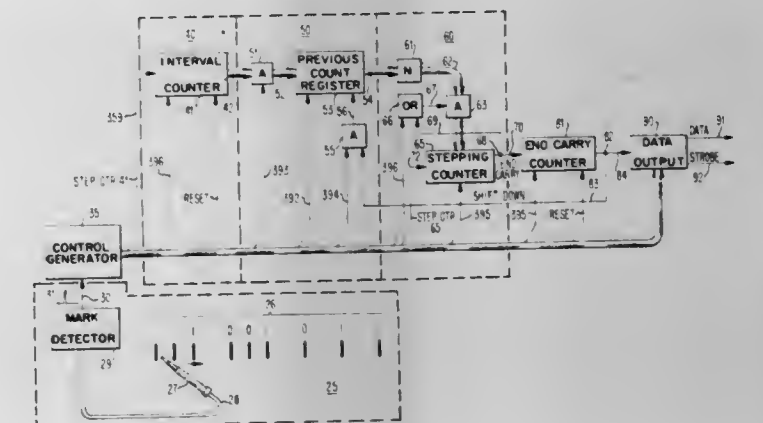
Francis Charles Dellacato, Lake Katrine, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 31, 1972, Ser. No. 276,337

Int. Cl. G06k 7/00

U.S. Cl. 235—61.11 E

8 Claims



A digital system for decoding data encoded by retrospective pulse modulation, wherein binary ones and zeros are represented by a comparison of the space between a first and second mark with the space between a second and third mark. A counter accumulates a current count representative of the elapsed time between the sensing of a first mark and a second mark. This count is stored in a register as the previous count while a new current count is accumulated representative of the elapsed time between the sensing of the second mark and a third mark. Concurrent with the accumulation of the new cur-



rent count, the ones complement of the previous count is loaded into a stepping counter, stepped until an end carry occurs, and then repeatedly reloaded and stepped until the new current count has been accumulated. If more than a predetermined number of end carries takes place during the accumulation of the new current count, a signal indicates that a long space is present between the second and third marks. The presence or absence of this signal, compared with its presence or absence after the second mark was sensed, is indicative of whether a binary one or a binary zero is represented.

3,755,655

## MACHINE PROCESSED DATA CARD

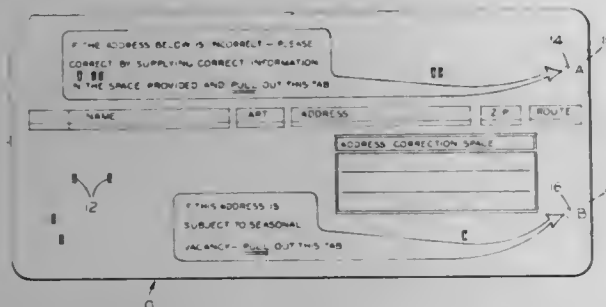
Eugene G. Senecal, Windsor, Conn., assignor to TAC Industries, Inc., New York, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,372

Int. Cl. G06k 19/06

U.S. Cl. 235—61.12 R

3 Claims



A machine processed data card is provided with a manually removable section which when removed creates an aperture that can be read by a processing machine. The removable section may be connected to a peripheral pull tab and both the section and the tab are joined to the rest of the card along lines of weakening so that a person not having the normal facilities for imposing information on the data card can remove the tab and section manually to either create new data or to indicate that the data should be changed.

3,755,656

## DATA PROCESSING SYSTEM

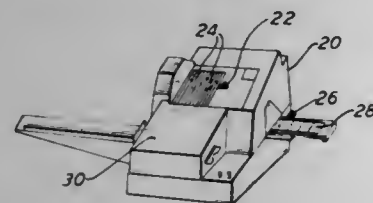
Edward C. Marshall, Upper Montclair, and Paul E. Stanford, Bloomfield, both of N.J., assignors to Litton Business Systems, Inc., New York, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,231

Int. Cl. B44b 5/00; G06k 1/20, 7/04, 19/06

U.S. Cl. 235—61.11 C

11 Claims



Each of the value entering slides of a print-punch machine has associated with it a perforate indicia sensing slide of a record reader. Each sensing slide in response to sensing an indicia, during relative movement between the sensing slide and the data record, is either slid proportionate to the value of the indicia sensed or set to a position permitting manual operation of the associated print-punch value entering slide. Any sliding movement of the indicia setting slides results in a corresponding movement of the associated print-punch value entering slides. A checking means determines that the data record has been properly read by moving into a space which is open when each indicia sensing member has either sensed an indicia in its column or is set to the manual entry position. When said space is blocked the checking means provides an indication that one or more sensing members has not functioned properly.

### 3,755,657 SCANNING FINGER FOR ELECTROMECHANICAL PUNCH CARD SCANNER

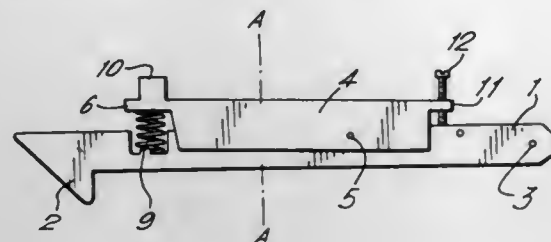
Fryderyk Kunz, Marmoreveien 12, Oslo, Norway

Filed Sept. 27, 1971, Ser. No. 184,258

Int. Cl. G06k 7/04

U.S. Cl. 235—61.11 C

5 Claims



An adjustable scanning finger for electromechanical punch card scanners has a resilient element which is urged into contact with a microswitch actuator upon sensing movement of the rigid finger. Adjustment is carried out by means of a set screw.

3,755,658

## ANALOG COMPUTER FOR PROCESSING DELTA ROSETTE STRAIN GAGE DATA

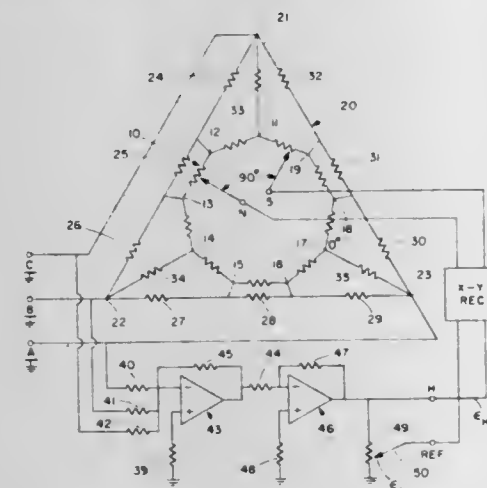
Robert M. Walters, 17 Princeton Rd., Burlington, Mass.

Filed June 2, 1972, Ser. No. 259,069

Int. Cl. G06g 7/48, 7/22

U.S. Cl. 235—151.3

15 Claims



An analog computer which determines the state of stress at a point on the surface of a body from data produced by a standard three-gage delta rosette. The computer solves this problem by use of an analog of Mohr circles rather than by direct solution of the rosette equations. Its circuit includes a circular potentiometer with two rotatable output contacts 90° apart which is interconnected at preselected points to a resistance triangle whose vertices correspond to those of the delta rosette. The normal and associated shear stress are available at these contacts when taken with respect to appropriate potential levels. Provision is included for changing one of these levels so that the computer may be utilized with materials having different Poisson's ratios.

3,755,659

## METHOD OF DETERMINING THE SURFACE AREA OF AN IRREGULAR SHAPE

John R. Bolhuis, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 15, 1972, Ser. No. 263,218

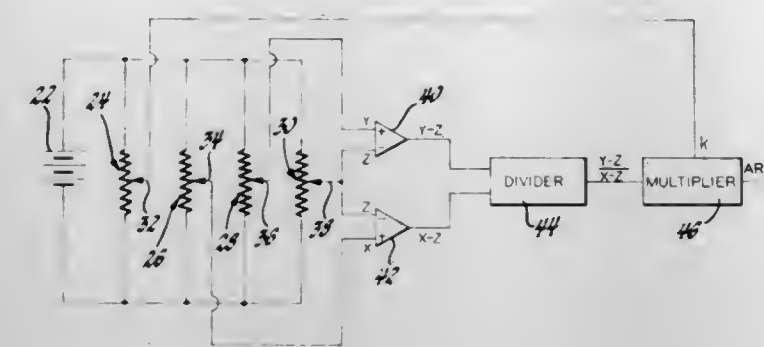
Int. Cl. B44c 1/22; G01m 17/02; G06g 7/16

U.S. Cl. 235—151.3

2 Claims

The method of measuring the area of a tire print including the steps of making a photographic negative of the tire print,

weighing a circuit board having a full copper layer, etching away by a photoetching process the copper on the circuit board except for copper within the boundaries defined by the surface area to be measured to produce a copper pattern having an area equal to the area of the tire print, reweighing the



circuit board, removing the remaining copper on the circuit board, reweighing the circuit board with all the copper removed, and multiplying the ratio of the weight of the copper pattern to the total weight of the copper removed times the total area of the printed circuit board.

3,755,660

## DIGITAL WORD MAGNITUDE SELECTION CIRCUIT APPARATUS

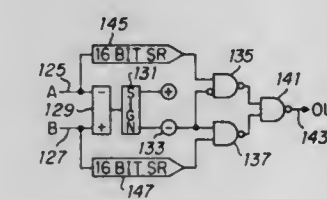
Delaine C. Sather, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Feb. 11, 1972, Ser. No. 225,444

Int. Cl. G06f 7/02

U.S. Cl. 235—177

8 Claims



(OUT)<sub>N</sub> = A<sub>N-1</sub>  
IF A<sub>N-1</sub> IS LESS (+) THAN B<sub>N-1</sub>  
(OUT)<sub>N</sub> = B<sub>N-1</sub>  
IF B<sub>N-1</sub> IS LESS (+) THAN A<sub>N-1</sub>

A circuit for selecting which one of a pair of binary digital serial word numbers are the least (or most) positive and providing an output indicative of this selected value. Two of these circuits may be used in series for providing an output which is always contained between two limits. The selection is accomplished by subtracting one of the digital numbers from the other and checking the answer. If the answer or difference is negative, the subtrahend is larger than the minuend. On the other hand, if the answer or difference is positive, the minuend is more positive than the subtrahend. A zero answer will indicate that both numbers are equal.

3,755,661

## LUMINOUS SWITCHING KEY-OR PUSH-BUTTON

Andre Maurice Bouvrard, Boussey-Saint-Antoine, France, assignor to Societe de Telecommunications Electronique Aeronautique et Maritime "T. E. A. M.", Paris, France

Filed Dec. 15, 1971, Ser. No. 208,298

Claims priority, application France, Dec. 24, 1970, 7046741

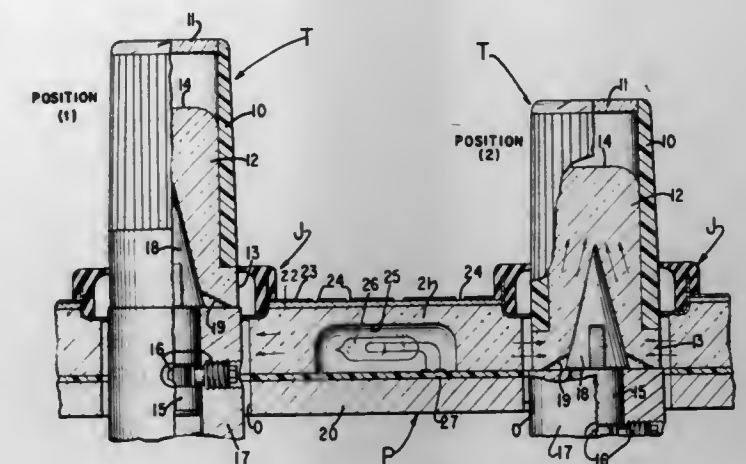
Int. Cl. F21v 33/00

U.S. Cl. 240—2 S

10 Claims

A key- or push-button for controlling the switching on and off of at least one electrical circuit is provided with an elongated body extending through an aperture of a panel. The body and the panel are made essentially of transparent materi-

al covered with an opaque outer wall or coating, with the exception of the end of the body and of an annular root portion thereof registering with the aperture of the panel in one



switching position, whereby the light produced by a bulb incorporated to said panel is selectively transmitted to the end of the button.

3,755,662

## PHASE LIGHTING HEATER AND HEATER A/C CONTROL UNITS

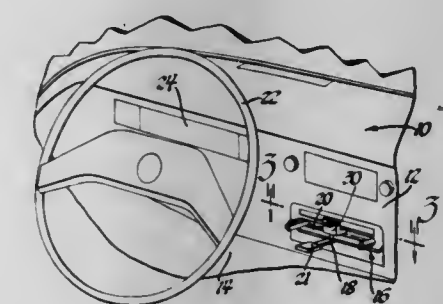
Charles W. Ramsey, Niles, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 14, 1971, Ser. No. 162,394

Int. Cl. B60q 3/04

U.S. Cl. 240—8.16

1 Claim



A temperature control indicator for an automobile heating system including a temperature selector lever extending through a slot in the automobile dashboard which is connected to means for varying the temperature output of the heating system. An elongated light filter extends along a parallel slot in the dashboard and is multi-colored along its length from a deep red to a deep blue to vary the color of light projected by a light source behind the dashboard into the passenger compartment. A lens is linked to the lever and moves with it along the filter for focusing the colored light as it is projected into the passenger compartment.

3,755,663

## ELECTRICAL DISPLAY DEVICE AND METHOD OF MAKING THE SAME

Ben B. George, Jr., Santa Ana, Calif., assignor to Shelly Associates, Inc., Santa Ana, Calif.

Filed Nov. 17, 1971, Ser. No. 199,489

Int. Cl. F21r 23/00; H01j 5/00

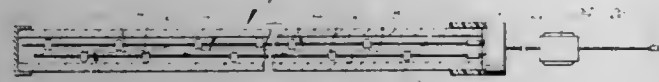
U.S. Cl. 240—10 R

6 Claims

The display device has a plurality of low voltage unbased miniature lamps connected in series at spaced intervals to



form substrings which are coupled in parallel between a pair of elongated parallel wire conductors at spaced intervals corresponding to the length of the substrings. The assembly is collapsed in parallelogram fashion by bringing the parallel wire conductors together so that the substrings extend lengthwise



to be slidably inserted into a transparent flexible tube. The ends of the wire conductors are coupled to suitable end plugs for connection to an appropriate low voltage power source. The tubes can be cut to desired lengths, and be bent and shaped in patterns to, for example, outline different structures for attractive decorative effects.

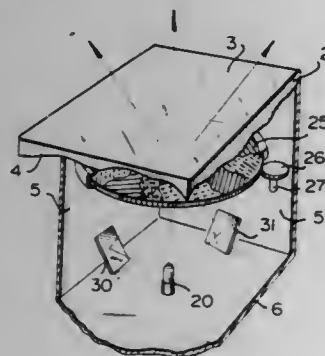
3,755,664

# APPARATUS AND METHOD FOR PRODUCING REFRACTED COLOR IMAGES

Earl Martin Reiback, 20 E. 9th St., New York, N.Y.  
Filed Dec. 20, 1971, Ser. No. 209,844  
Int. Cl. A47g 33/16; F21p 1/02

U.S. Cl. 240—10 R

11 Claims



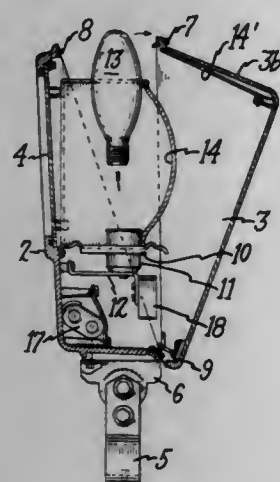
A method for producing an intensified pattern of continuous varying projected color images by interposing between the source of the projected color images and the viewing surface a transparent refracting material having the property of shaping the transmitted light into areas of varying intensity, and apparatus for practicing the method.

3,755,665  
FLOODLIGHT

James L. Grindle, Hendersonville, N.C., assignor to General Electric Company, New York, N.Y.  
Continuation of Ser. No. 174,399, Aug. 24, 1971, abandoned.  
This application Sept. 25, 1972, Ser. No. 291,781  
Int. Cl. F21v 17/00

U.S. Cl. 240—41.55

10 Claims



Floodlight housing is divided into front and rear sections along a diagonal line extending from the upper front edge to

the lower rear edge of the housing. The rear section is hingedly connected at its bottom to the front section by means of a separable hinge device so that the rear section can be tilted back to allow access to the lamp for replacement thereof, and to enable the rear section to be entirely removed to permit full access to the electrical operating components mounted in the front section for servicing or replacement thereof.

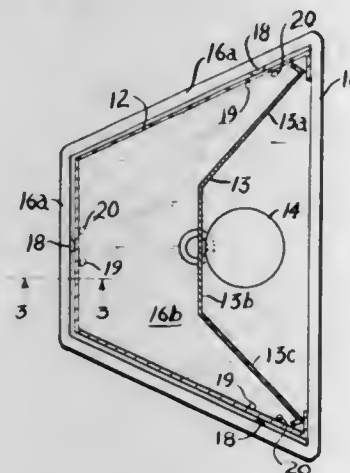
3,755,666

# END CAP CONSTRUCTION

James N. Edgington, Jr., Albuquerque, N. Mex., assignor to IMS Corporation, Albuquerque, N. Mex.  
Filed Dec. 27, 1971, Ser. No. 212,231  
Int. Cl. H05b 33/02

U.S. Cl. 240—51.11 R

8 Claims



An end cap structure comprises a housing portion formed of smooth sheet material having an open portion to be covered by an end cap. The end cap has a wall portion positioned over the opening and turned edges formed around the periphery of the cap in conformity with the outer configuration of the housing being covered. The housing has a deformable surface or covering, at least in the area receiving the end cap, and at least one protuberance is formed on the turned edges, at the inner side thereof, to come into pressing contact with the deformable covering on the housing. The protuberance will cause cold flow of the covering thereby forming a dimple under the protuberance to hold the cap to the housing.

3,755,667

# RECESSED LIGHTING STRUCTURE

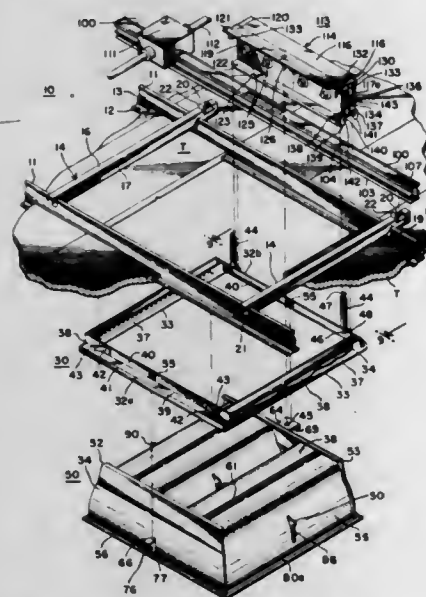
Edison A. Price, New York, N.Y., assignor to The Mint Factors, New York, N.Y.

Filed Mar. 13, 1972, Ser. No. 234,280

Int. Cl. H05b 33/02

U.S. Cl. 240—51.12

23 Claims



A recessed lighting structure includes suspended spaced parallel beams interconnected by snap fastened pairs of lon-

gitudinally spaced cross-pieces extending across pairs of adjacent beams, and spaced frame members are supported by and releaseably locked to adjacent beams. Conductor-carrying longitudinal conduits are supported by the cross-pieces along corresponding frames, and ballast and lamp socket-carrying boxes are locked to the conduits along each frame and are coupled to the conductors. A lamp housing unit, which may be provided with reflectors and removable baffles, is releaseably supported by each frame with the sockets registering with openings in the unit to receive corresponding lamp bases. Locating elements are provided for guiding and positioning the various components. In alternative arrangements, the cross-pieces extend between successive frames and support pairs of conduits or the cross-pieces and the conduits are omitted and the ballast and socket boxes are mounted on the housings or on brackets supported by the frames and are connected to the power line by flexible cables.

3,755,668

# EXTENSION LAMP BULB GUARD AND REFLECTOR

Victor Moreschini, 1300 N. Santa Fe Ave., Pueblo, Colo.

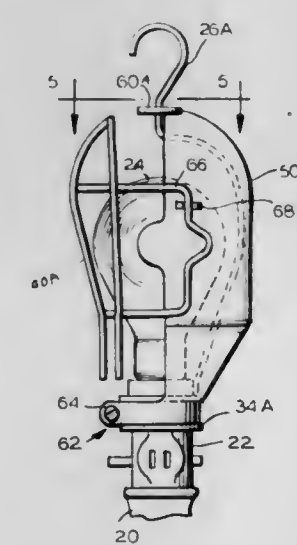
Continuation-in-part of Ser. No. 67,714, Aug. 28, 1970,

abandoned. This application Dec. 9, 1971, Ser. No. 206,299

Int. Cl. F21v 15/02, 21/00

U.S. Cl. 240—54 A

6 Claims



An extension lamp bulb guard and reflector of the type comprising a drop light, which includes a lamp bulb guard or cage unit and a suspension hook operatively associated with a handle and having a lamp bulb reflector. The hook is attached to a handle as a unit, and the reflector is mounted for independent rotation with respect to the unit. The unit consisting of the handle, guard, and hook, together with the associated extension cord, can be suspended from the hook, and regardless of stresses, tensions or torques on the cord, the reflector can be freely turned to focus the light on the work and out of a user's eyes, without the necessity of loosening or rearranging any parts with the exception of a free rotation or movement of the reflector.

3,755,669

# HOT BOX ACTUATED AND DETECTING BRAKE AIR LINE VENT

Kenneth W. Winters, Morgantown, W. Va., assignor to Maurice J. Flynn, Henry L. Max & Charles F. Albright, Flynn, Max and Albright, all of Huntington, W. Va., part interest to each

Filed May 17, 1971, Ser. No. 144,178

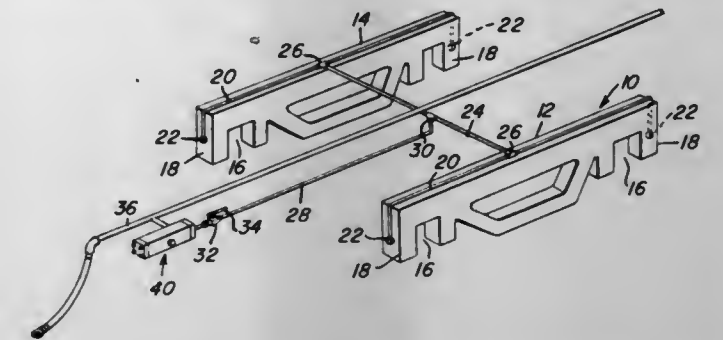
Int. Cl. B61k 9/04

U.S. Cl. 246—169 A

8 Claims

A fusible plug closed vent line for the "Westinghouse Brake System" of a railway car and having a pressure differential actuated control valve operatively associated therewith and responsive to a reduction in air pressure downstream from the

control valve to shift the latter from a closed position to an open position for free venting of the associated "Westinghouse Brake System" upon a reduction of air pressure in the vent line downstream from the control valve as would occur when one or more of the fusible plugs closing the vent



line downstream from the control valve are melted. The control valve includes an exteriorly disposed actuator that may not only be operated to close the control valve, but also indicates, in a visual manner, when the control valve has been shifted to the open position.

3,755,670

# RAILROAD FROG ASSEMBLY

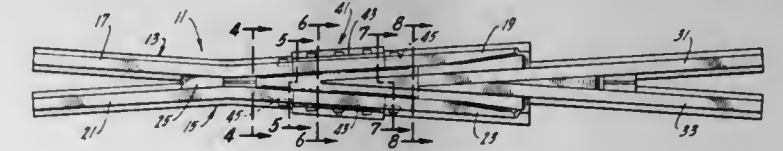
Sergio Rene Dany, Apartado Postal S-56, Guadalajara, Mexico

Filed Dec. 15, 1971, Ser. No. 208,314

Int. Cl. E01b 7/12

U.S. Cl. 246—468

2 Claims



A bolted, rigid railroad frog assembly in which the wing rails are made in separate toe and heel portions. A cast manganese insert is positioned between toe and heel portions of the wing rails. The long point and short point rails about the cast manganese insert and are connected to the heel portions of the wing bars. The cast manganese insert has a point filler, a main filler and wing rail extensions and is symmetrical about a longitudinally extending plane so that the insert may be inverted when one side is worn out.

3,755,671

# METHOD OF PROVIDING A SEMICONDUCTOR BODY WITH PIEZOELECTRIC PROPERTIES

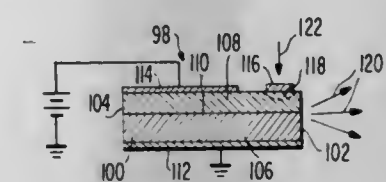
Harry Francis Lockwood, New York, N.Y., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,580

Int. Cl. H01j 37/00

U.S. Cl. 250—49.5 TE

4 Claims



Semiconductor crystalline materials which lack a center of symmetry but which contain mobile carriers are provided with piezoelectric properties by bombarding the materials with electrons. A body of such semiconductor material can be bombarded with electrons on selected portions thereof so that the unbombarded portions of the body have semiconductor properties and the bombarded portions have piezoelectric properties.



3,755,672

## EXPOSURE COMPENSATING DEVICE FOR RADIOGRAPHIC APPARATUS

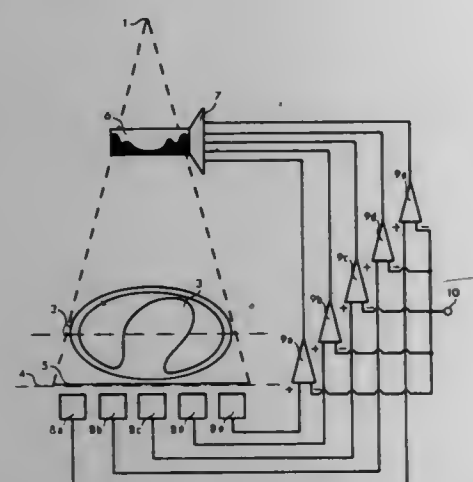
Paul Edholm, Linköping, and Nils Bertil Jacobson, Solna, both of Sweden, assignors to Medinova AB, Solna, Sweden  
Filed Nov. 24, 1971, Ser. No. 201,676

Claims priority, application Sweden, Nov. 30, 1970, 16209/70

Int. Cl. H05g 3/00

U.S. Cl. 250—65 R

31 Claims



A device in radiographic apparatuses for compensating the variations in thickness, density and absorption properties in different parts of an object being radiographed so as to produce a more uniform average exposure of the radiographic recording medium and thereby a more uniform image contrast in all parts of the radiograph of the object. The device comprises a compensating filter device inserted in the radiation path between the radiation source and the object and including radiation absorbing means, which has a variable shape or form such that its absorption values within different portions of the radiation beam can be varied substantially independently of each other. The shape of this radiation absorbing means is varied by automatically operating control means in response to output signals from radiation detecting means disposed on the opposite side of the object so as to sense the average intensity values in different sections of the radiation beam leaving the object to be radiographed.

3,755,673

## FILM HOLDER

Manfred Bauer, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

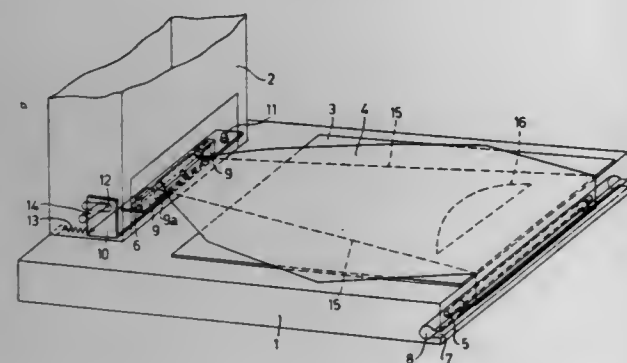
Filed Feb. 16, 1972, Ser. No. 226,874

Claims priority, application Germany, Apr. 14, 1971, G 71 14 217.1

Int. Cl. G03b 41/16

U.S. Cl. 250—68

5 Claims



A film holder, in particular for x-ray films, comprising a holding device for films which is provided on a film holder plate and which comprises a cloth or foil which is subjected to tensile forces and which is stretched over an edge of the film holder plate.

3,755,674  
METHOD OF DETECTING PINHOLE DEFECTS IN SHEET MATERIAL

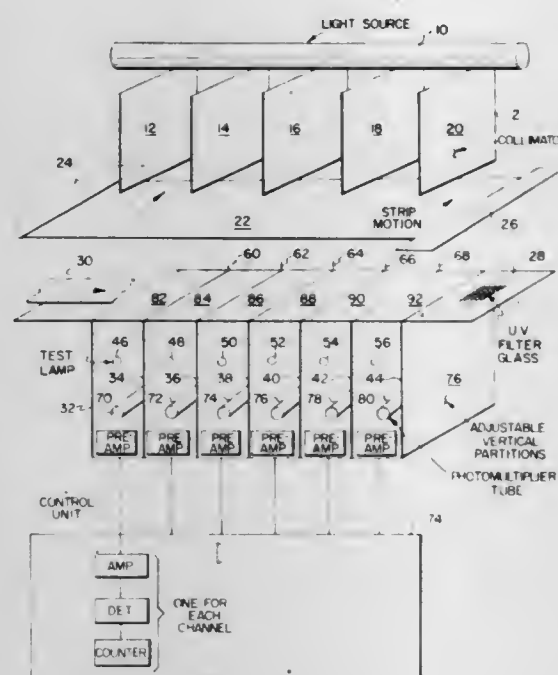
Russell Murray, Laurel, Md., and Dominique Gignoux, Washington, D.C., assignors to Columbia Research Corporation, Galthersburg, Md.

Filed Mar. 9, 1972, Ser. No. 233,240

Int. Cl. G01n 21/32

U.S. Cl. 250—83.3 UV

8 Claims



Method of detecting pinhole defects in sheet materials for example tin plate, galvanized steel and thin metallic foils. A modulated ultra-violet light source is directed at right angles onto the advancing sheet material, the edges of the sheet material are shielded from both ambient and ultra-violet light, all non-ultra-violet light is shielded out from beneath the advancing strip, ultra-violet light which has been transmitted through the pinhole defects and said filtering is photomultiplied as a function of pinhole defects in the advancing material. The method is distinguished from prior art in collimating the ultra-violet light source so as to transmit the light at a right angle to the direction of motion of the sheet material and independently baffling the photomultiplier units with respect to each other, so as to define precise lineal zones of detection in said advancing material.

3,755,675

## NONDESTRUCTIVE ANALYSIS OF FUEL PINS

Ivan E. Stepan, Idaho Falls; Norman F. Allard, Pocatello, and Carl R. Suter, Idaho Falls, all of Idaho, assignors to The United States of America United States Atomic Energy Commission, Washington, D.C.

Filed Nov. 3, 1972, Ser. No. 303,552

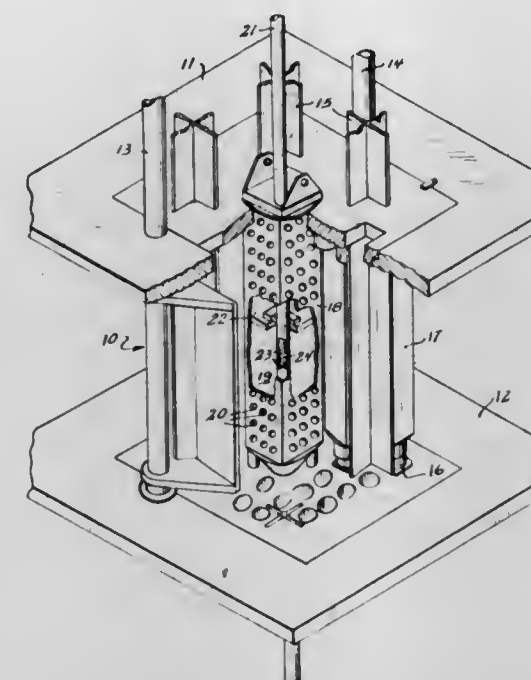
Int. Cl. G21c 7/00, 17/00

U.S. Cl. 250—83.1

9 Claims

A method and a correspondingly adapted facility for the nondestructive analysis of the concentration of fuel and poison in a nuclear reactor fuel pin. The concentrations of fuel and poison in successive sections along the entire length of the fuel pin are determined by measuring the reactivity of a thermal reactor as each successive small section of the fuel pin is exposed to the neutron flux of the reactor core and comparing the measured reactivity with the reactivities measured for standard fuel pins having various known concentrations. Only a small section of the length of the fuel pin is exposed to the neutron flux at any one time while the remainder of the fuel pin is shielded from the neutron flux. In order to expose only a small section at any one time, a boron-10-lined dry traverse tube is passed through the test region within the core of a low-

power thermal nuclear reactor which has a very high fuel sensitivity. A narrow window in the boron-10 lining is positioned at the core center line. The fuel pins are then systematically



traversed through the tube past the narrow window such that successive small sections along the length of the fuel pin are exposed to the neutron flux which passes through the narrow window.

3,755,676

## SPACIALLY MULTIPLEXED OPTICAL BEAM COMMUNICATION SYSTEM

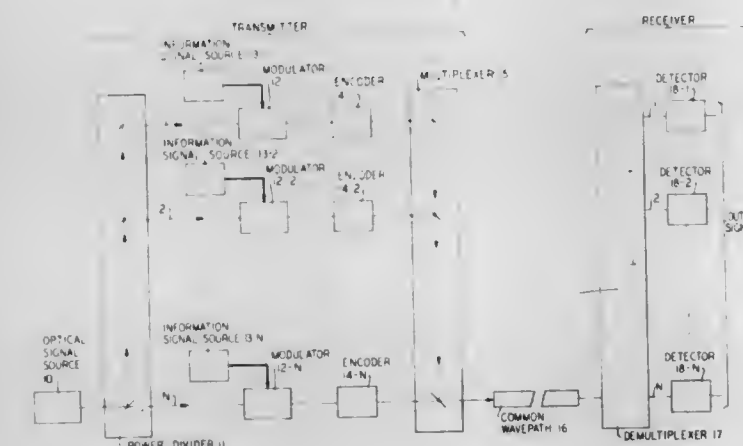
Tracy Stewart Kinsel, Martinsville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 24, 1972, Ser. No. 219,959

Int. Cl. H04b 9/00

U.S. Cl. 250—199

9 Claims



A plurality of optical beams, encoded to have different spatially varying intensity profiles, are launched along a common wavepath. At the receiver, demultiplexing is effected by means of a converging lens which performs a two-dimensional Fourier transformation upon the multiplexed beams, producing an array of spots at the focal plane of the lens which uniquely identifies and separates the plurality of beams. It is an advantage of such a system that the spot locations are not affected by small displacements of the beams off the path axis.

3,755,677

## HOLOGRAM PHOTOGRAPHING APPARATUS WITH LIGHT MEASURING DEVICE

Shingo Ooue; Masakazu Hashiue; Masaru Noguchi, all of Asaka-shi, Saitama; Mesane Suzuki, Omiya-shi, Saitama; Motonori Kanaya, and Sakuo Kitahara, both of Asaka-shi, Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa and Fuji Shashin Koki Kabushiki Kaisha, Saitama, both of Japan

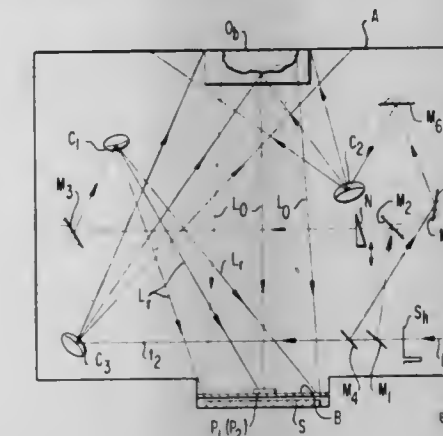
Filed Feb. 11, 1972, Ser. No. 225,497

Claims priority, application Japan, Feb. 12, 1971, 46/5592

Int. Cl. G02b 27/00; G01j 1/36

U.S. Cl. 250—204

6 Claims



In a hologram photographing apparatus wherein the light from the source is divided into two beams, one of which is projected on the object to be photographed to obtain the object light beam, the other of which is caused to project directly on the photo-sensitive material to obtain the reference light beam, whereby both light are superimposed to record the interference fringe patterns; a photo-receiver is arranged so as to make it possible to measure the intensity ratio between the object light beam and the reference light beam as well as the quantity of exposure; and an incident light selecting member, which causes the object light beam or the reference light beam selectively to impinge onto said photo-receiver, is arranged in the light beam path in which the object light beam and the reference light exist at the same time.

3,755,678

## APPARATUS AND PROCESSES FOR DETECTION, GENERATION AND FREQUENCY MEASUREMENTS OF ELECTRO-MAGNETIC RADIATION IN THE INFRARED AND VISIBLE DOMAIN

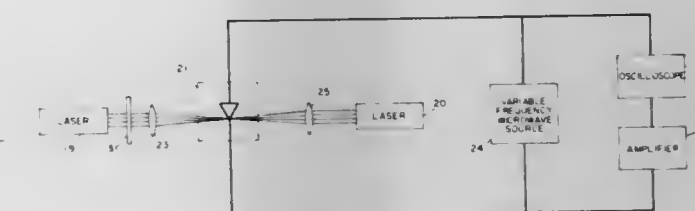
All Javan, Boston, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 10, 1970, Ser. No. 62,380

Int. Cl. H01l 15/00

U.S. Cl. 250—211 J

16 Claims



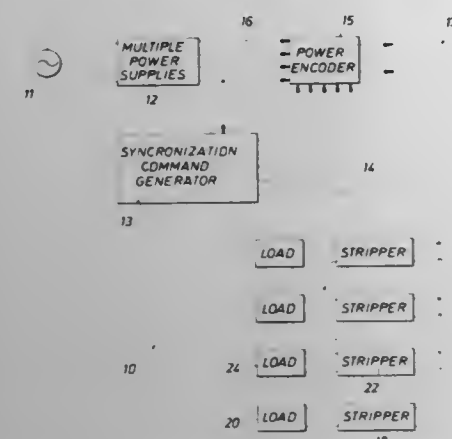
A metal to metal point contact diode with an extremely fast response comprising a metal base and an extremely thin metal wire, a cat whisker, with an end point about the order of a thousand angstroms (0.1 micron) or less in diameter at its junction with the diode's base. Detection of low power radiation is accomplished by detecting a voltage across the diode when incident radiation impinges on the cat whisker. Alterna-







timed sequence. The pair of wires extend to voltage strippers connected to the various loads. The voltage strippers each



respond to the pulse DC levels on the pair of wires and form different output voltages communicated to each load.

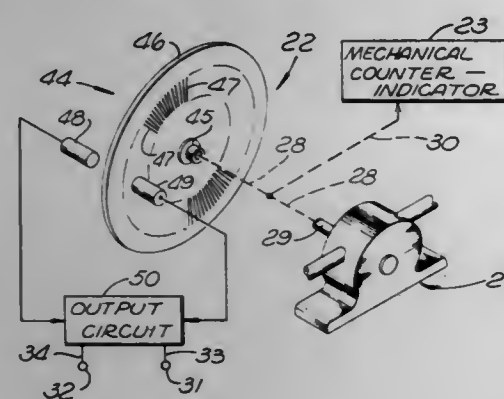
### 3,755,687 PULSE GENERATOR

Lawrence Taylor Garnett, Fullerton, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,528  
Int. Cl. H03k 3/00

U.S. Cl. 307-117

6 Claims



A total volume flowmeter including a fluid motor to in series a light chopper between a light emitting diode and a phototransistor connected in a pulse transmitter. Regenerative feedback is provided from the phototransistor to the light emitting diode. That is, the light output of the light emitting diode is increased as the illumination of the phototransistor is increased, and vice versa. This makes it possible to use high gain amplification because it produces a hysteresis which discriminates against false output pulses which would otherwise occur with the use of high gain amplification because of vibration induced by external means. A source of potential and a resistor may be connected in series with the pulse transmitter, both the source of potential and the resistor, if desired, being positioned at a remote location. A pulse counter is connected across the resistor to an indicator which, if desired, may be calibrated in total volume flow.

### 3,755,688

#### ARRANGEMENT FOR SUPERVISING CIRCUITS

Albert Hohler, Kassel, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 3, 1971, Ser. No. 204,487

Claims priority, application Germany, Dec. 19, 1970, P 20 62 788.7

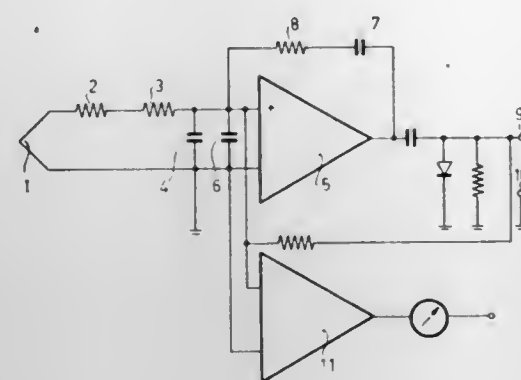
Int. Cl. G08b 21/00

U.S. Cl. 307-117

7 Claims

Apparatus for monitoring thermocouples comprises a Wien Bridge Oscillator with the thermocouple connected as a part

of the bridge. The oscillator parameters are chosen so that oscillations do not occur during normal operation of the ther-



mocouple. The frequency of oscillations are determined by an RC-network. An indicating device is controlled by the output voltage of the oscillator.

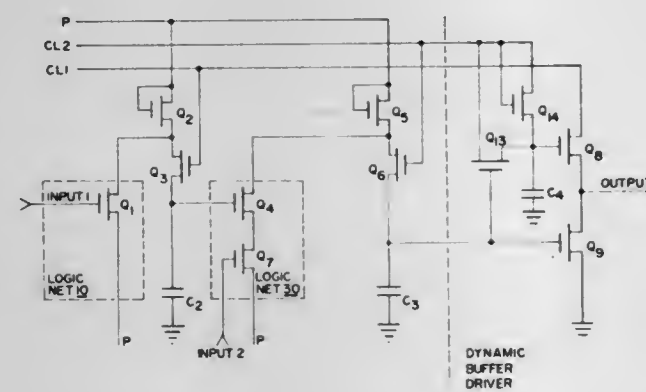
### 3,755,689

TWO-PHASE THREE-CLOCK MOS LOGIC CIRCUITS  
Ben R. Elmer, Glendale, and Melvin H. Eklund, Phoenix, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Dec. 30, 1971, Ser. No. 214,048  
Int. Cl. H03k 19/08

U.S. Cl. 307-205

3 Claims



Ratioless MOS logic circuits are disclosed which use two non-overlapping clocks for two-phase control of signal propagation and a third precharge clock, of shorter duration, at double the repetition rate of the first two clocks for precharging storage node capacitance. In each circuit, an electrical network is provided having a transistor connected as a precharge diode for applying the precharge clock to the storage node capacitance through a clocked transfer gate transistor. A logic network is provided having a net of transistors connected, in parallel with the precharge diode transistor, as a relay logic network to selectively discharge the storage node capacitor, after the precharge clock. Where required, a novel dynamic buffer is provided having an output which is essentially insensitive to crossover capacitance effects.

### 3,755,690

#### M.O.S. INPUT CIRCUIT WITH T. T. L. COMPATABILITY

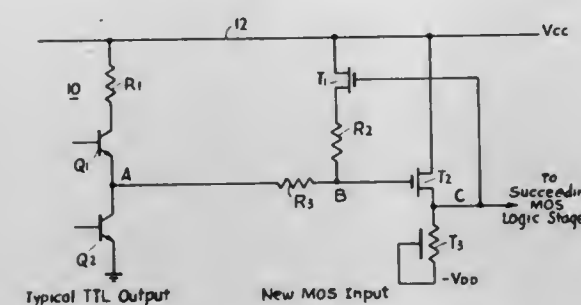
Frederick J. Smith, Centereach, N.Y., assignor to Standard Microsystems Corp., Hauppauge, N.Y.

Filed June 6, 1972, Ser. No. 260,328

Int. Cl. H03k 19/08

U.S. Cl. 307-205

4 Claims U.S. Cl. 307-216



A circuit for interfacing between the output of a TTL circuit and the input of an MOS circuit is described which utilizes a switchable pull-up resistor connected between the TTL circuit output and a voltage line to translate the level of the TTL output to a level compatible with the requirements of the MOS circuit.

### 3,755,692

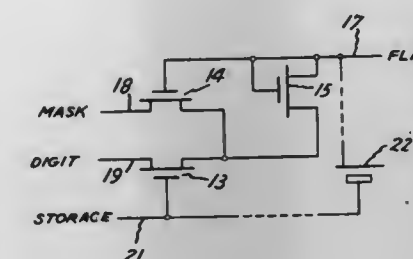
#### EXCLUSIVE-OR LOGIC CIRCUIT

Joseph L. Mundy, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 30, 1972, Ser. No. 257,540

Int. Cl. H03k 19/32

2 Claims



A three transistor exclusive-OR logic circuit is disclosed in which only three of the four possible logic levels of the two input variables are needed.

### 3,755,693

#### COUPLING CIRCUIT

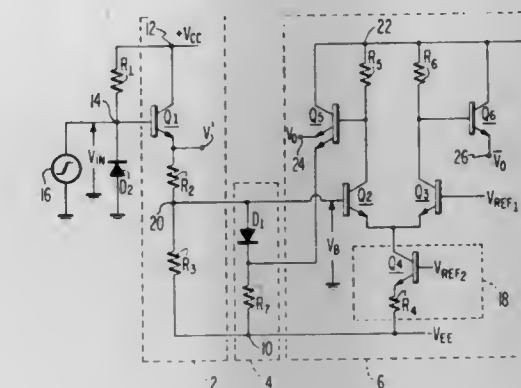
James Yat Lee, New Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 30, 1971, Ser. No. 176,177

Int. Cl. H03k 5/08, 19/30, 19/34

U.S. Cl. 307-237

11 Claims



A circuit for interfacing between the output of a TTL circuit and the input of an MOS circuit is described which utilizes a switchable pull-up resistor connected between the TTL circuit output and a voltage line to translate the level of the TTL output to a level compatible with the requirements of the MOS circuit.

### 3,755,691

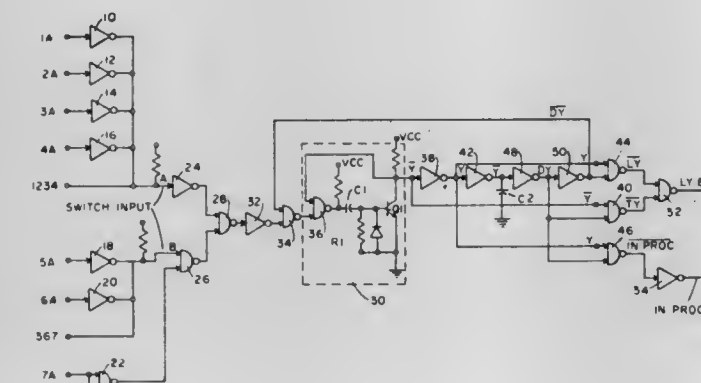
KEYBOARD CLOCK WITH TIMING CIRCUITRY FOR CONTROLLING TRANSFER OF DATA BETWEEN KEYBOARD AND PROCESSING APPARATUS  
Aurelio V. Cassarino, Newington, Conn., assignor to Magsat Corporation, West Hartford, Conn.

Filed June 9, 1972, Ser. No. 261,508

Int. Cl. H03k 19/08

U.S. Cl. 307-208

8 Claims



A timing circuit for sensing the operative condition of keyboard actuated switches and for generating, in the proper sequence, control signals for devices employed to temporarily store input data and further control signals for informing processing equipment that data has been entered in the keyboard. The invention also provides for the generation of a "break through" or repeat function.

### 3,755,694

#### MONOSTABLE/ASTABLE MULTIVIBRATOR

Robert Charles Heuner, Bound Brook, and Joseph Peter Paradise, North Bergen, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 5, 1972, Ser. No. 215,571

Int. Cl. H03k 3/30

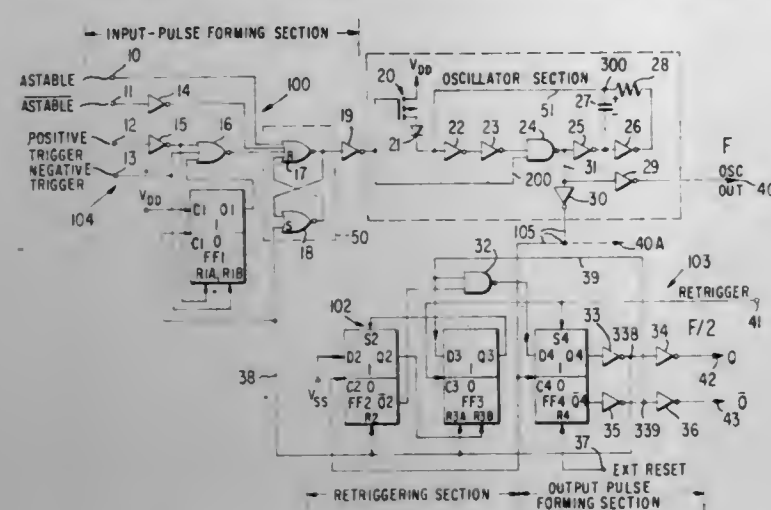
U.S. Cl. 307-276

17 Claims

A multivibrator circuit which can be selectively operated in a monostable mode or an astable mode. In the astable mode, either gatable or free-running operation is permitted. In the monostable mode, the multivibrator circuit can be arranged to operate on either the positive-going or the negative-going



edge of a trigger signal. Control logic circuitry renders the duration of the input signal inconsequential in affecting the dura-



tion of the output signal. An improved oscillator circuit portion permits faster recovery thereof whereby the multivibrator circuit can operate more rapidly.

3,755,695

**SOLID STATE MOTOR CONTROL CYCLING TIMER**

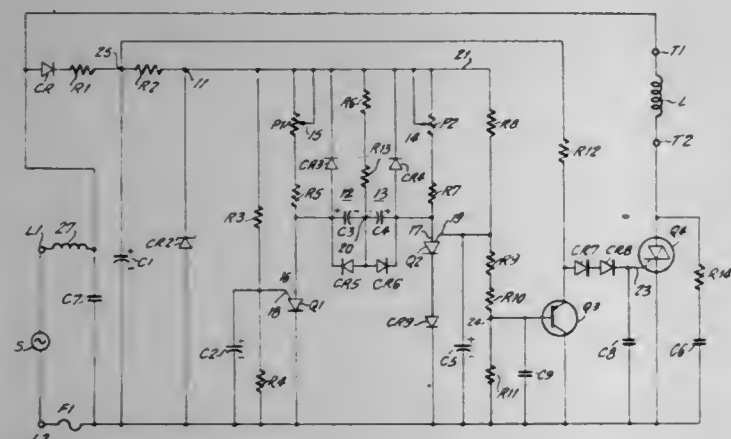
John B. Krick, Joppa, and Bernard Coleman, Westminster, both of Md., assignors to Rowan Controller Inc., Westminster, Md.

Filed Apr. 24, 1972, Ser. No. 246,609

Int. Cl. H03k 17/26; H01h 47/18

U.S. Cl. 307-293

9 Claims



A solid state timer for providing alternating "on" and "off" time periods for controlling relays, contactors, solenoids and the like and especially adapted for use with industrial control circuits. The "on" and "off" periods may be independently adjusted as to their time intervals. The circuitry is designed so as to automatically begin with the "on" timer period first. The separate adjustable timing circuits are interrelated so as to cause the initiation of an "off" timing period only after the initiation of an "on" timing period and vice versa. A resetting circuit is provided to reset all timing capacitors once line voltage has been removed, as well as assuring the fact that the cycling timer will always start with the "on" time period upon the reapplication of line voltage.

3,755,696

**DETECTOR HAVING A CONSTANT FALSE ALARM RATE AND METHOD FOR PROVIDING SAME**

Alexander M. Nicolson, Concord, and Robert J. Brophy, Waltham, both of Mass., assignors to Sperry Rand Corporation, Great Neck, N.Y.

Filed Oct. 14, 1971, Ser. No. 189,286

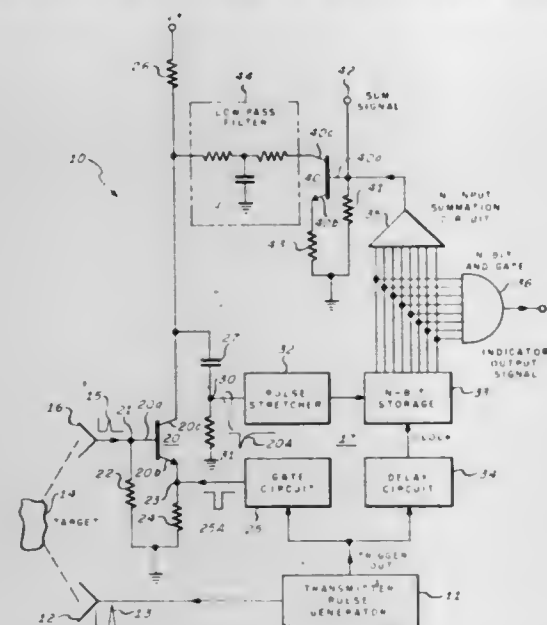
Int. Cl. H03k 17/00

U.S. Cl. 307-296

25 Claims

A detector which may be subject to temperature variations and power supply drift comprised of an avalanche transistor

circuit having a variable threshold that is sensitive to input signals within a useful frequency band and noise which produces threshold signals when the amplitude of the input signals or the noise exceeds the instantaneous value of the variable threshold. The rate at which the threshold signals are produced is determined in an N bit storage device coupled to the avalanche transistor circuit and clocked at a specific repetition rate. The storage device has each stage coupled in parallel to an AND gate and to a summation network. The AND gate produces an output signal which indicates input signals are present when each stage of the storage device applies a specified output signal to the AND gate. The summa-



3,755,697

**LIGHT-EMITTING DIODE DRIVER**

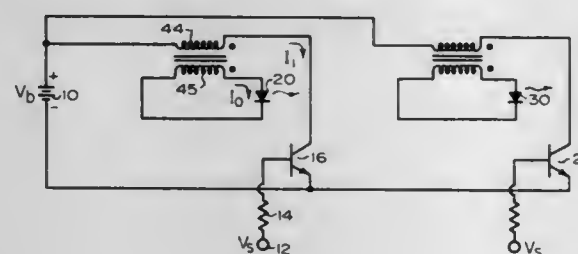
Donald K. Miller, San Jose, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 26, 1971, Ser. No. 202,475

Int. Cl. H03k 17/00

U.S. Cl. 307-311

6 Claims



A transistor is driven into conduction by pulses from an external signal source and has an inductance for a collector load. A light-emitting diode (LED) is connected across the inductance and is forward-biased for a short period each time after the transistor ceases conduction. Repetitive pulsing of the LED produces illumination at low-average current consumption.

3,755,698

**FREE-FLOODED RING TRANSDUCER WITH SLOW WAVE GUIDE**

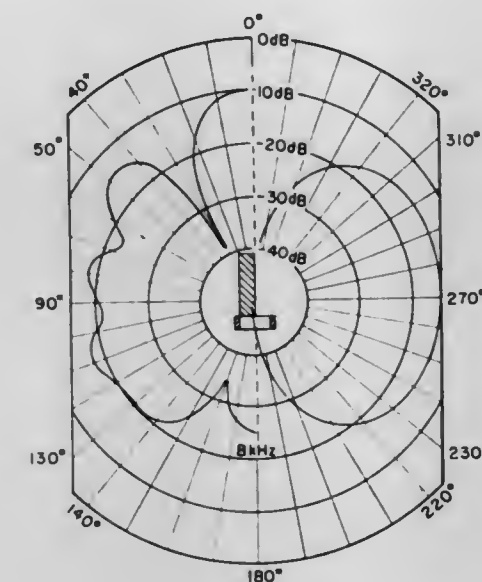
Winfield J. Trott, Annandale, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 25, 1972, Ser. No. 247,427

Int. Cl. H04r 17/00

U.S. Cl. 310-8

2 Claims



This disclosure is directed to a free-flooded ring type transducer in combination with a coaxial slow waveguide for transmitting or receiving signals which improves the performance by delaying the radiation from the inner surface by one-half wavelength so that the radiation from the inner and outer surfaces are in phase.

3,755,699

**ELECTRO-MECHANICAL TRANSDUCER**

John Bryan Francis Cartwright, Wolverhampton, England, assignor to Sperry Rand Limited, London, England; part interest

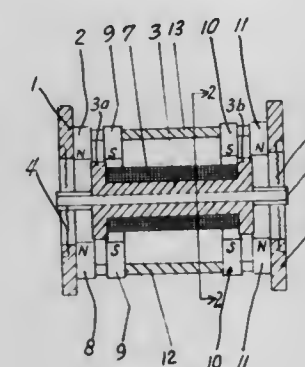
Filed June 12, 1972, Ser. No. 261,790

Claims priority, application Great Britain, June 15, 1971, 28,023/71

Int. Cl. H02k 41/02

U.S. Cl. 310-12

8 Claims



A moving coil transducer comprises a bobbin of magnetically soft ferro-magnetic material having a cylindrical portion wound with an actuating winding between end cheeks, each of the end cheeks being disposed in the gap between a pair of pole pieces comprising parallel plates having apertures shaped to admit the end cheeks and spaced apart at a distance approximately equal to the thickness of the end cheeks.

3,755,700

**ELECTROMAGNETIC DRIVE**

Hans Buschmann, Bensberg-Refrath; Erwin Mehlhart, Porz-Urbach; Emil Pomplun, Steinenbrunn, and Alfred Schwibbe, Cologne, all of Germany, assignors to Nixdorf Computer AG, Paderborn, Germany

Filed Apr. 20, 1972, Ser. No. 245,897

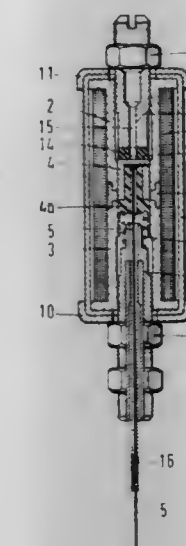
Claims priority, application Germany, Apr. 21, 1971, P 21

19 415.0

Int. Cl. H02k 33/02

U.S. Cl. 310-30

8 Claims



An electromagnetic drive for the needle of a needle printer comprising a pair of cylindrical magnet pole shoes disposed within a cylindrical magnet coil and connected with the needle.

3,755,701

**SELECTIVELY REVERSIBLE STEP MOTOR**

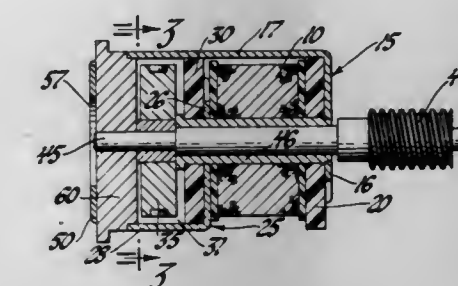
Mark N. Culver, Davison, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 14, 1972, Ser. No. 288,958

Int. Cl. H02k 37/00

U.S. Cl. 310-49

3 Claims



A selectively reversible step motor. Two field pole pieces, each having a plurality of circumferentially arranged salient field pole tips, are positioned on respective opposite sides of a toroidal field coil with the salient field pole tips being interleaved and extending in the same direction substantially parallel to the axis of and beyond an edge of the field coil to define a cylinder-like recess. A disk type rotor, having a series of premagnetized alternate polarity magnetic rotor poles about the periphery thereof, is mounted for rotation within the cylinder-like recess and an auxiliary direction of rotation selecting pole piece, having a plurality of circumferentially arranged salient pole tips equal in number to the total of salient field pole tips, is mounted for rotation about the axis of the rotor with the salient pole pieces thereof interleaved between adjacent salient field pole tips of the field pole pieces for selectively determining the direction of rotor rotation.



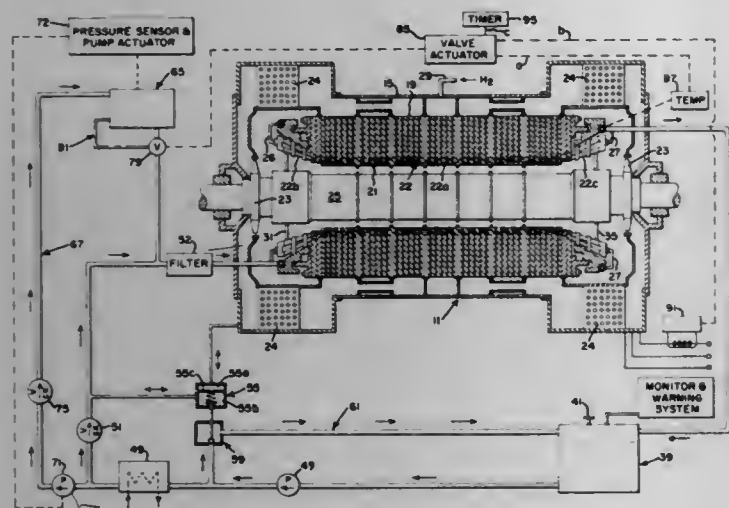
### 3,755,702 FLOW SURGE EQUIPMENT FOR DYNAMOELECTRIC MACHINE

David M. Willyoung, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed July 31, 1972, Ser. No. 276,586  
Int. Cl. H02k 9/00

U.S. Cl. 310—53

16 Claims



In a dynamoelectric machine with liquid-cooled element there is provided, according to the present invention, means for forcing an increased quantity of liquid coolant through the liquid coolant system during brief periods of dynamoelectric machine transient overload as well as on a regular periodic basis. Two beneficial results are thereby obtained. First, the heat removal capability of the liquid coolant system is transiently increased permitting normal operation at higher levels of initial power density; second, the flow surge of liquid coolant tends to purge the liquid coolant system of foreign particles.

### 3,755,703 ELECTRON GUN DEVICE FOR COLOR TUBE

Kiichi Ueno, and Senri Miyaoka, both of Kanagawa-ken, Japan, assignors to Sony Corporation, Tokyo, Japan

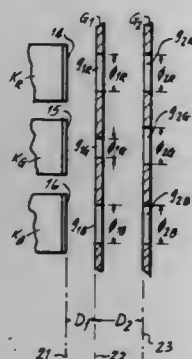
Filed Apr. 14, 1969, Ser. No. 815,941

Claims priority, application Japan, Apr. 14, 1968, 43/24589; Apr. 14, 1968, 43/24590

Int. Cl. H01j 29/50, 31/20

U.S. Cl. 313—70 C

3 Claims



An electron gun device for color television picture tubes. The electron gun has three cathodes and a plurality of grids.

Means are provided for equalizing the cutoff voltages of the cathodes by equalizing the intensity of the electric field reaching the cathodes from the grids. Equalization preferably is obtained by making one or more of the apertures in the first and second grids of a diameter different from that of the other apertures, or by making the distances of one or more of the cathodes from the grids different from the corresponding distances of the other cathodes, or by a combination of both of these arrangements.

### 3,755,704 FIELD EMISSION CATHODE STRUCTURES AND DEVICES UTILIZING SUCH STRUCTURES

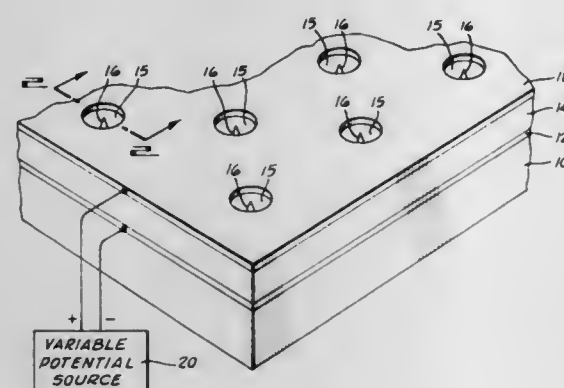
Charles A. Spindt, Menlo Park; Kenneth R. Shoulders, Woodside, and Louis N. Heynick, Palo Alto, all of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Feb. 6, 1970, Ser. No. 9,139

Int. Cl. 313 351; H01j 1/16, 1/02

U.S. Cl. 313—309

6 Claims



Vacuum devices incorporate electron or field forming sources formed by a cellular array of emission sites. The sources comprise a metal/insulator/metal film sandwich on a substrate with a cellular array of holes through the upper metal and insulator, leaving the edges of the upper metal electrode effectively exposed to the upper surface of the lower metal electrode. Sharp protuberances directed toward the upper electrode and constituting emitter tips of controlled configurations are formed on the exposed area of the lower electrode. A method of forming the structure includes starting with the metal/insulator/metal film sandwich having the cellular array of holes already formed and directing permanent electrode material into the cellular array of holes and masking or subsequently removable material onto the surface surrounding the holes whereby an individual sharp cone-like emitter is formed within each of the holes in the cellular array. Vacuum devices are formed from such structures. For example, a diode is formed either by making the masking material over each emission site an electrode or by removing the masking material and applying a conductive electrode material over each emission site.

### 3,755,705 CATHODE HAVING A CAVITY IN THE EMISSIVE ELEMENT

Gooltzen Zwanenburg, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 31, 1972, Ser. No. 222,149

Claims priority, application Netherlands, Feb. 13, 1971, 7101954

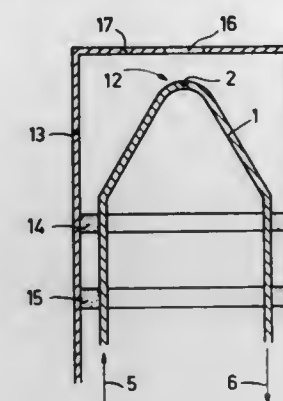
Int. Cl. H01j 1/15, 19/08

U.S. Cl. 313—341

1 Claim

A cavity is provided in a wire of a directly-heated cathode so that the temperature at the area of the cavity will be higher

when a current is passed through the wire than on either side of the cavity. As a result, the cavity acts as a limited emissive



tial applied to the electron gun cathode at and near the beginning and end of field and line deflection in the tube, so that the problem of edge brightening is reduced. The electrom switch increases the applied potentials upon receipt of signals from the normally provided field and line deflection circuits of the tube.

### 3,755,708 SODIUM VAPOR LAMPS HAVING IMPROVED STARTING MEANS

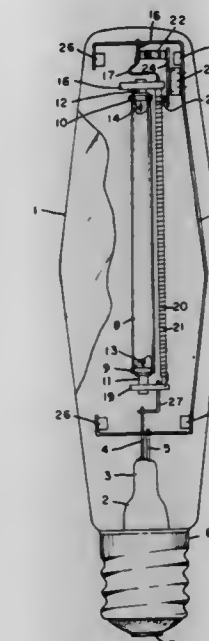
Emery G. Audesse, Salem, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed June 2, 1972, Ser. No. 259,085

Int. Cl. H01j 7/24

U.S. Cl. 315—47

6 Claims



surface and the cathode obtains a longer service life and a more stable construction.

### 3,755,706 MINIATURIZED TRAVELING WAVE TUBE

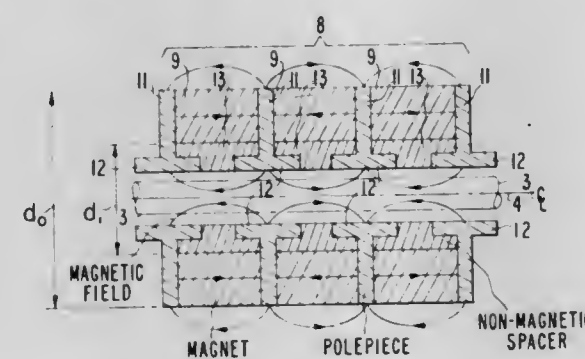
Allan W. Scott, Los Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 20, 1972, Ser. No. 236,299

Int. Cl. H01j 25/34

U.S. Cl. 315—3.5

7 Claims



A microwave beam tube operating above 4GHz is miniaturized by designing the electron gun to produce an electron beam having a micropervance within the range of 0.8 to 2.2. A periodic permanent magnet beam focusing structure is provided which employs ring-shaped permanent magnets having a coercive force in excess of 2,000 gauss, whereby the length, size, and weight of the tube, for a given gain and output power, are reduced substantially.

### 3,755,707 TELEVISION CAMERAS

Andrew de Moulplied Fremont, Great Baddow, England, assignor to The Marconi Company Limited, London, England

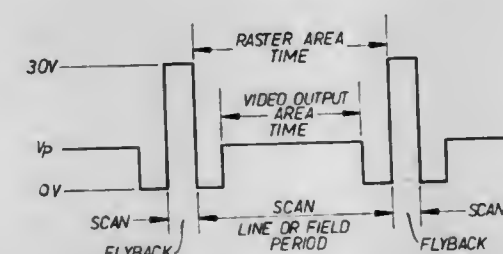
Filed Oct. 14, 1970, Ser. No. 80,711

Claims priority, application Great Britain, Nov. 7, 1969, 54,560/69

Int. Cl. H01j 31/34

U.S. Cl. 315—22

9 Claims



A television camera having at least one camera tube of the Vidicon type in which an electron switch increases the poten-

The arc tube of a sodium vapor arc discharge lamp has an external electrical heater spaced from but in heat transfer relationship therewith. The heater is made of tungsten wire and is coiled around an insulating supporting rod.

### 3,755,709 VEHICULAR LIGHTING SYSTEM REGULATOR AND THE LIKE

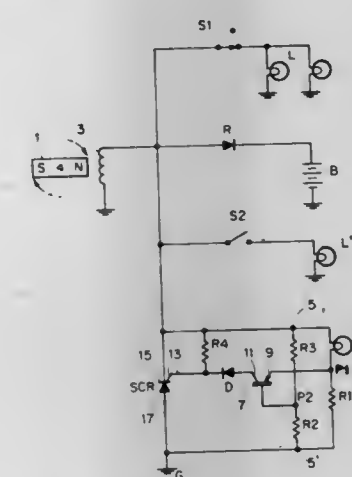
Floyd M. Minks, Rt. No. 1, Box 66, Kissimmee, Fla.

Filed Sept. 27, 1971, Ser. No. 184,080

Int. Cl. B60q 1/02; H02h 3/42

U.S. Cl. 315—82

10 Claims





the current that is produced from the alternator. In accordance with the disclosure, novel circuit connections are employed including the grounding of a regulator SCR switching rectifier anode used with a bridge circuit comprising an incandescent lamp or similar power sensing element, to safe-guard against the short-circuiting of components and, in addition, to provide compatible operation with those systems that require battery charging from the alternator, though the system of the invention is also applicable with self-starting apparatus.

### 3,755,710 GAS PLASMA DEVICE

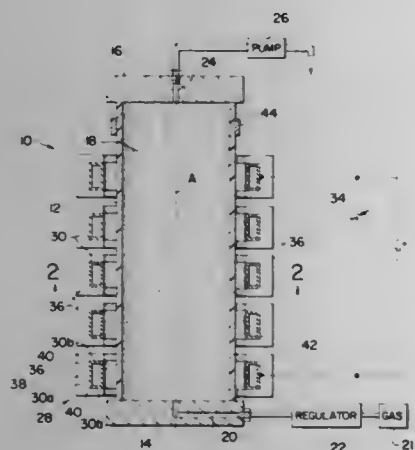
Harry B. Osborn, Jr., Cuyahoga, Ohio, assignor to Park-Ohlo Industries, Inc., Cleveland, Ohio

Filed Mar. 24, 1972, Ser. No. 237,961

Int. Cl. H01j 11/04

U.S. Cl. 315—348

15 Claims



A method and device is disclosed for ionizing gas at the plasma level thereof and comprises a gas chamber having an inlet for gas to be ionized and which inlet is connected to a source of gas so that the chamber can be filled and the gas maintained therein under a vacuum. An induction heating coil surrounds the chamber and the opposite ends of the coil are connected to a source of alternating current for energizing the coil to establish a magnetic field through the chamber. Flux concentrating laminations in the form of C-shaped plates of magnetic material surround the outer and axially opposite sides of the convolutions of the coil to increase the density of the flux field through the chamber to enhance maintenance of gas ionization.

### 3,755,711

#### ASYMMETRY PROTECTION ARRANGEMENT FOR SERIES-CONNECTED CAPACITOR UNITS

Alfons Fendt, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 18, 1972, Ser. No. 315,866

Claims priority, application Germany, Dec. 18, 1971, P 21 63 004.6

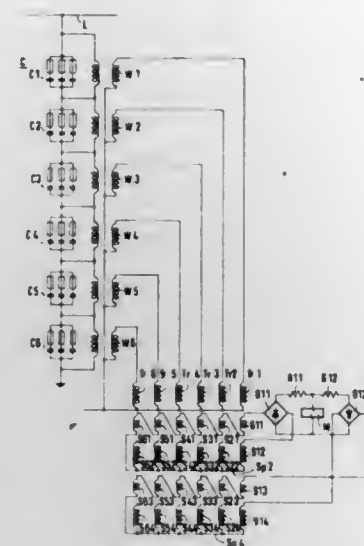
Int. Cl. H02h 7/06

U.S. Cl. 317—12 B

8 Claims

Capacitors operable at high voltages consist of series-connected capacitor units, each of which is in turn composed of capacitors which are connected parallel to each other and can be individually disconnected by fuses. An asymmetry protection arrangement is disclosed for monitoring these units for

voltage asymmetries. The arrangement compares the sum of the voltage drops present at the individual capacitor units with the voltage drop of the individual capacitor units to provide a



signal in response to a fault condition. The signal thus obtained is usable for initiating a turn-off operation or for indicating a fault condition.

### 3,755,712

#### FAULT PROTECTION FOR DC MOTOR THYRISTOR POWER SUPPLIES

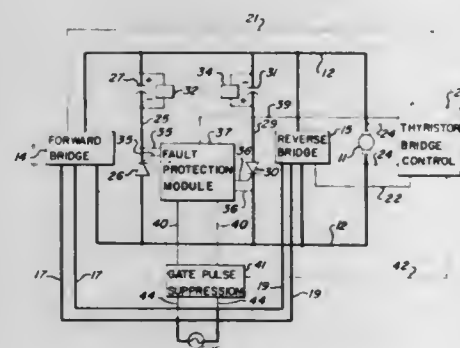
Terrence E. DeViney, Seven Hills, and Robert P. Brennan, Bedford Heights, both of Ohio, assignors to Square D Company, Park Ridge, Ill.

Filed Sept. 7, 1972, Ser. No. 287,146

Int. Cl. H02h 7/14

U.S. Cl. 317—13 R

7 Claims



In a regenerative DC motor control, a line voltage failure during regeneration ordinarily results in a fault current of sufficient magnitude to damage any conducting thyristors or their protective fuses. To prevent such damage, a gate suppression circuit operates upon occurrence of a fault to prevent further firing of thyristors. A fault protection module controls the connection of a charged capacitor across the then-conducting thyristors at a predetermined time after the fault to permit resetting of those thyristors and prevent any damage to thyristors or fuses.

### 3,755,713

#### ELECTRICALLY CONDUCTIVE SURFACE FOR AIRCRAFT

Joseph B. Paszkowski, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed July 25, 1972, Ser. No. 274,948

Int. Cl. H05f 1/02

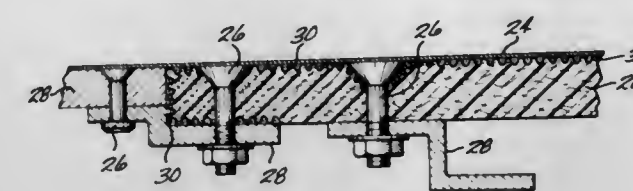
U.S. Cl. 317—2 E

3 Claims

The invention is directed to the method of controlling electrostatic charge on aircraft and vulnerability to lightning strikes and relates to the use of a knitted wire mesh material

applied over a glass fiber composite panel or plastic aerodynamic surface of an aircraft to form a permanent integral part of the surface and wherein the mesh is of the same material as the remainder of the aircraft in order to prevent

direct metallic path from the line to ground. A secondary arc gap between opposed conductors separated by an insulating sleeve has an arc-over voltage that is greater than the normal arc-over voltage of the first-mentioned arc gap and provides a



corrosion. In the case of an aluminum aircraft, the mesh is also made of aluminum and therefore is electrochemically compatible and eliminates the problems generally associated with the use of electrochemically dissimilar materials.

### 3,755,714

#### SELF-CONTAINED INTERRUPTING APPARATUS FOR AN ELECTRIC POWER DISTRIBUTION SYSTEM

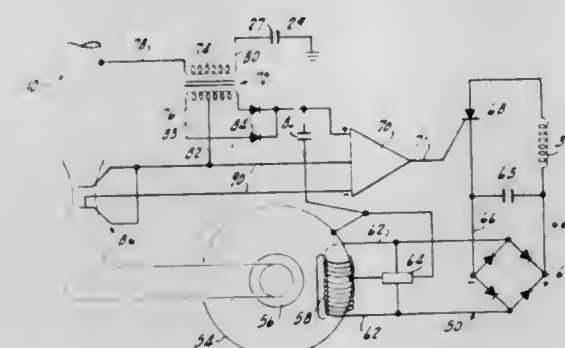
Edwin A. Link, Waukesha, Wis., assignor to RTE Corporation, Waukesha, Wis.

Continuation-in-part of Ser. No. 23,734, March 30, 1970, abandoned. This application Dec. 20, 1971, Ser. No. 209,852

Int. Cl. H02h 3/38

U.S. Cl. 317—29 R

9 Claims



A self-contained circuit interrupter for an underground electric power distribution system, said interrupters being connected in series in the distribution line and including a shielded hermetically sealed housing, a pair of current interrupting contacts within the housing, an overcenter linkage system for biasing said contacts to a closed position, a solenoid actuated latch holding the linkage system in a position to close the contacts, a power circuit within the housing for tripping the solenoid for the latch and a sensor within the housing to activate the power circuit, the sensor being connected to respond to current and voltage in the cable and having a voltage to current inverse time current characteristic whereby the time required to activate the power circuit increases as the voltage increases for a given current in the cable, the housing having a non arc supporting atmosphere.

### 3,755,715

#### LINE PROTECTOR HAVING ARRESTER AND FAIL-SAFE CIRCUIT BYPASSING THE ARRESTER

Milton A. Klayum, Itasca, and Richard A. Greischar, Addison, Ill., assignors to Reliable Electric Company, Franklin Park, Ill.

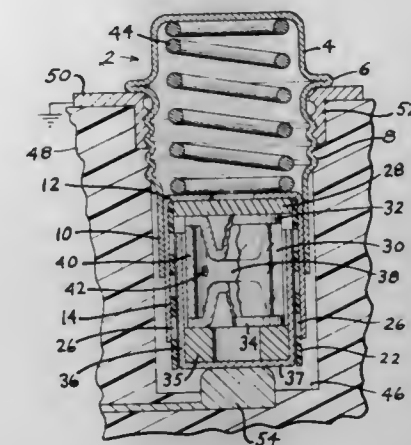
Filed Oct. 11, 1972, Ser. No. 296,578

Int. Cl. H02h 9/06

U.S. Cl. 317—62

12 Claims

A line protector has an arrester through which overvoltages on the line of short duration are grounded. The arrester may be of the type having an arc gap sealed within a gas tube. For an overvoltage of longer duration, a pellet is melted causing a spring to close a circuit bypassing the gas tube and provide a



path to ground for short duration overvoltage conditions in the event of failure of the arrester. Excessive current across the secondary arc gap may melt the insulator sleeve and engage the opposed conductors for grounding purposes.

### 3,755,716

#### EQUIPMENT FRAME FOR ELECTRICAL ELEMENTS

Toshio Yoshii, Tokyo; Jimpachi Yonezaki, Yokohama, and Yoshihiro Takahashi, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa-ken, Japan

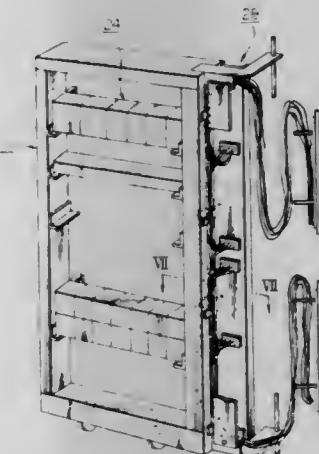
Filed June 28, 1972, Ser. No. 267,067

Claims priority, application Japan, June 29, 1971, 46/46785

Int. Cl. H05k 5/02; H02b 1/04

U.S. Cl. 317—99

1 Claim



A panel system comprising three components or other electrical switching units, a frame or panel for mounting said electrical units, and a connector panel unit containing a number of interlinked connectors to which the electrical units are releasably connected. The components can be individually pre-fabricated at a factory and separately transported to the installing site where they can be assembled in a simple manner.

### 3,755,717

#### WIRING ARRANGEMENT

Jeffery Isaac Shaw, Cook Hill, near Alcester, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed May 12, 1972, Ser. No. 252,742

Claims priority, application Great Britain, May 14, 1971, 15,032/71

Int. Cl. H05k 1/04

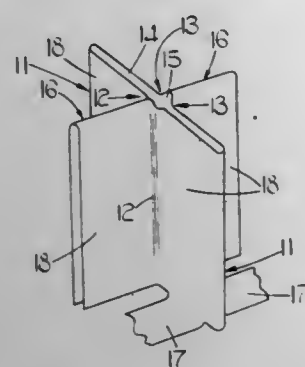
U.S. Cl. 317—101 F

12 Claims

A flexible electric wiring arrangement has an insulating



sheet carrying a conductor pattern. The sheet is slotted and folded so as to be cruciform in plan and so that one side of the



sheet defines eight outwardly directed surfaces to which components can be attached.

3,755,718

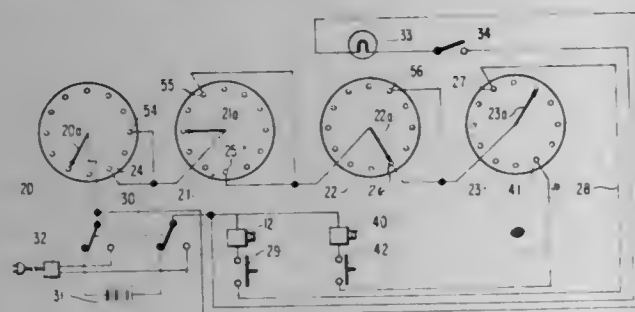
**COMBINATION ELECTRIC LOCK**

Newton H. Nicholson, 1122 Lewis Dr., Daytona Beach, Fla.  
Filed Sept. 9, 1971, Ser. No. 179,028

Int. Cl. E05b 49/00

U.S. Cl. 317-134

3 Claims



Electric lock apparatus including two or more multiple position electrical switches for completing a circuit to actuate an electric unlocking device. The electric unlocking apparatus is operable from a conventional AC power source and also is operable from a self-contained battery in the event of power failure. Provisions are made for using the same basic switching arrangement for providing separate unlocking combinations for controlling two or more locks. A simplified provision for changing the unlocking combinations is shown.

3,755,719

**SEMICONDUCTOR ASSEMBLY**

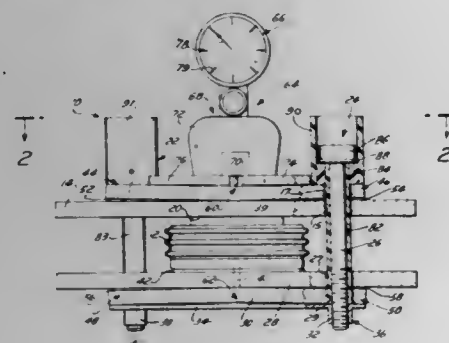
Lance C. Wilcox, Wilton, Conn., assignor to Electric Regulator Corporation, Norwalk, Conn.

Division of Ser. No. 887,542, Dec. 23, 1969, Pat. No. 3,661,013. This application Aug. 26, 1971, Ser. No. 175,317

Int. Cl. H0113/00, 5/00

U.S. Cl. 317-234 R

4 Claims



A semiconductor assembly comprises a semiconductor component, a body operatively connected to the semiconduc-

tor component, a force generating means operatively connected to the body and effective to force the body and the semiconductor into engagement, and means operatively connected to the force generating means and effective to vary its position. The change in position of the end sections is controlled by bolts which pass through the end sections and the body and are operatively connected to the semiconductor component. An insulating guide tube encloses each bolt and an insulating member partially supports each bolt head. The insulating members are effective to withstand the pressures generated by the adjustment of the bolts as well as electrically insulate the bolt heads.

3,755,720

**GLASS ENCAPSULATED SEMICONDUCTOR DEVICE**

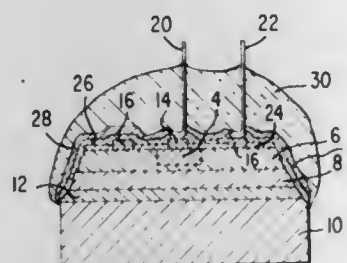
Werner Kern, Belle Mead, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 25, 1972, Ser. No. 292,091

Int. Cl. H0113/00, 5/00

U.S. Cl. 317-234 R

7 Claims



Glass encapsulated semiconductor device in which the glass has the basic composition  $PbO$ , 70-80 wt.%;  $ZnO$ , 5-15 wt.%; and  $B_2O_3$ , 7-15 wt. %.

3,755,721

**FLOATING GATE SOLID STATE STORAGE DEVICE AND METHOD FOR CHARGING AND DISCHARGING SAME**

Dov Frohman-Bentchkowsky, Los Altos, Calif., assignor to Intel Corporation, Mountain View, Calif.

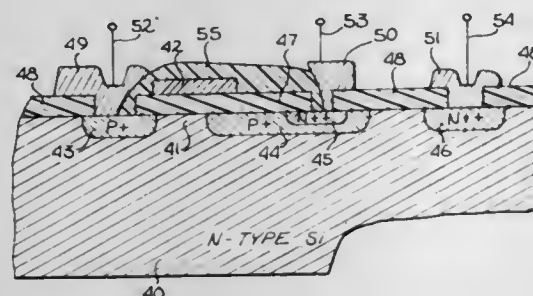
Continuation-in-part of Ser. No. 46,148, June 15, 1970, Pat. No. 3,660,819. This application Jan. 15, 1971, Ser. No.

106,642

Int. Cl. H0111/14

U.S. Cl. 317-235 R

9 Claims



A floating gate solid state storage device comprising a floating silicon or metal gate in a field effect device which is particularly useful in integrated circuit devices such as a read-only memory is disclosed. The gate which is surrounded by an insulative material such as  $SiO_2$  is charged by transferring charged particles (i.e., electrons) at relatively low voltages (e.g., less than approximately 50 volts) across a thick insulation layer (e.g., greater than approximately 500 angstroms) from the substrate during an avalanche injection condition.

3,755,722

**RESISTOR ISOLATION FOR DOUBLE MESA TRANSISTORS**

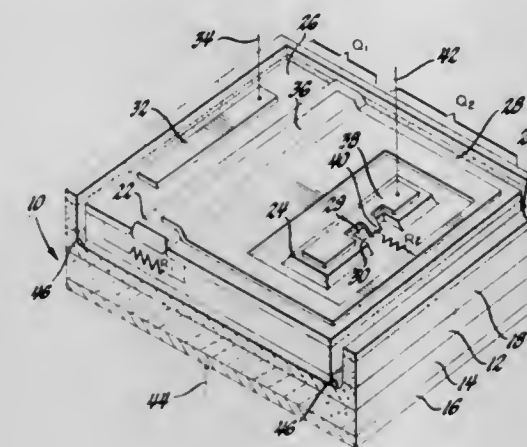
Glen E. Harland, Jr., and Robert W. Metzger, Jr., both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 28, 1972, Ser. No. 292,979

Int. Cl. H0119/00

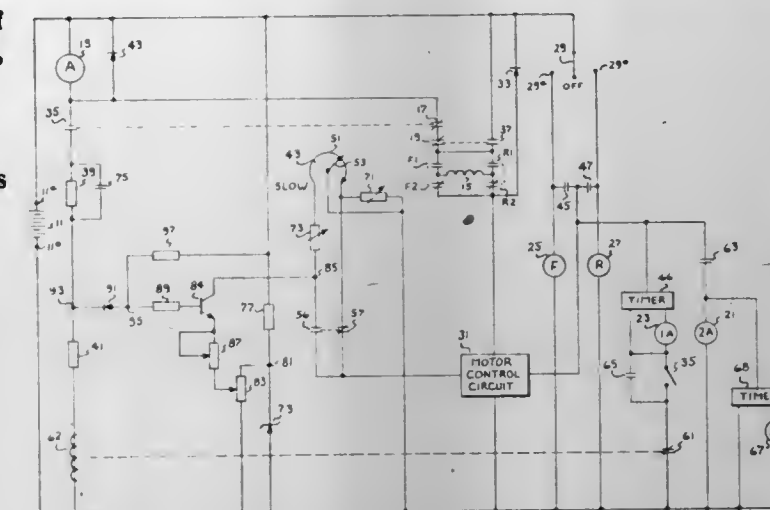
U.S. Cl. 317-235 R

4 Claims



A high voltage and high current mesa type integrated circuit of cascaded common collector mesa emitter transistors and bleeder resistors that resists secondary breakdown. Discrete input and output emitter mesas and base enhancement regions are provided with the output emitter mesa surrounded by an output base enhancement region. Both mesas are separately shorted to the output base enhancement region.

ture and of the motor field to adapt such connections to assure the proper armature commutation under predetermined load



conditions. Field current is varied, in the shunt mode, by comparing a voltage drop proportional to armature current against the voltage drop across a resistor.

3,755,725

**VARIABLE SPEED LOAD BALANCER**

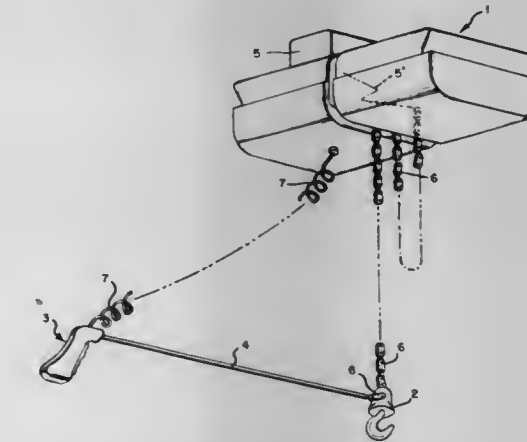
Harry B. Cordes, York, Pa., assignor to American Chain & Cable Company, Inc., New York, N.Y.

Filed Feb. 3, 1972, Ser. No. 223,116

Int. Cl. H02p 1/22

U.S. Cl. 318-257

28 Claims



A variable speed load balancer for moving loads from one location to another. The load balancer includes an overhead hoist from which the load is suspended, a control disposed remotely from the hoist for operating the hoist to raise and lower the load at varying speeds, and guide structure for connecting the control to the load for controlling lateral movement thereof during lifting and lowering.

The control for the balancer includes switch means for actuating the hoist, compressive electrical resistance elements for varying its speed, movable members for actuating the switch means and resistance elements and means for precluding actuation of the resistance elements until after actuation of the switch means.

3,755,723

**NOVEL GLASSES, SILVER COMPOSITIONS AND CAPACITORS THEREFROM**

Oliver A. Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 707,942, Feb. 26, 1968, abandoned.

Filed Sept. 22, 1970, Ser. No. 74,465

Int. Cl. H01g 1/00; H01b 1/02; C03c 5/02

U.S. Cl. 317-258

6 Claims

The glass comprises critical proportionate amounts of  $PbO$ ,  $Bi_2O_3$  and  $B_2O_3$ . Silver compositions, adapted to be applied to and fired on a reduced titanate ceramic substrate to form thereon electrically conductive, adherent fired on films, comprise 1-10 percent of the novel glass and 90-99 percent finely divided silver dispersed in an inert vehicle. Reduced titanate capacitors are prepared from the silver compositions.

3,755,724

**CONTROL FOR SERIES SHUNT MOTOR**

Albert W. Anderson, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Apr. 3, 1972, Ser. No. 240,707

Int. Cl. H02p 7/12

U.S. Cl. 318-139

22 Claims

A control circuit for a direct current electric motor selectively operable as a series motor and as a shunt motor. The circuit includes means to switch connections of the motor arma-

**CLOSED LOOP MOTOR CONTROLLED CONDITION RESPONSIVE SYSTEM**

Leonard E. Knipe, Longview, and Carl D. Furra, Houston, both of Tex., assignors to Continental Can Company, Inc., New York, N.Y.

Filed May 20, 1971, Ser. No. 145,231

Int. Cl. G05b 9/02

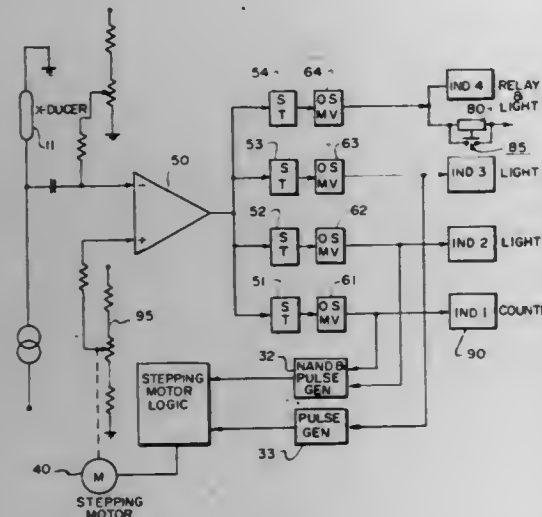
U.S. Cl. 318-563

18 Claims

A condition responsive detection system having a feedback servo control to adjust the system response to compensate for



normal operational variations in the monitored condition. The detection system includes a strain gauge transducer providing an analog output signal coupled as one input to a differential amplifier which receives a second input through a potentiometer adjustable in response to a stepper motor. The AC signal from the transducer is compared to a DC voltage established by the adjustable resistor and the differential portion of the



signal is amplified and coupled to a network of Schmitt triggers, each firing One-Shot or Monostable multivibrators when the threshold level has been reached. The output from the Schmitt trigger actuated multivibrators is coupled to suitable indicators and the stepper motor to adjust the variable resistor for changing the established DC voltage level to compensate for normal operational variations included in the output from the strain gauge transducer.

3,755,727

## CONTROL SYSTEM FOR STEPPING MOTORS

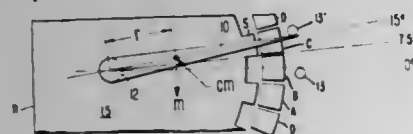
Italo H. Schifalacqua, Drexel Hill, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 31, 1972, Ser. No. 222,215

Int. Cl. H02k 37/00

U.S. Cl. 318—696

16 Claims



A control system for use with stepping motors is provided which eliminates the oscillations occurring at the end of each discrete step of motor operation. In applications where the travel limits are restrained by physical stops, the present system avoids the impact and the resultant noise which would normally occur at such limits, and insures a longer life for the associated components. The control system accomplishes these objectives by permitting acceleration for an initial increment of travel in any given step, deceleration in the final increment of travel, and holding torque in the limit positions.

3,755,728

## PULSED CHARGED ELECTROCHEMICAL TIMING CELLS AND METHOD OF OPERATING

Robert W. Herzig, North Adams; Warren J. Clement, Williamstown, and Juris Zauls, Berkshire, all of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Mar. 22, 1972, Ser. No. 236,843

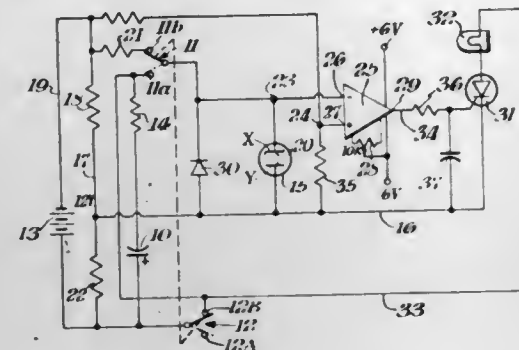
Int. Cl. H02j 7/00

U.S. Cl. 320—9

2 Claims

A coulometer which is charged by a pulse charging method in an R-C network in series with the coulometer measures

time by the passage of a known constant current through the cell so that when the current-time product has caused the transfer of a predetermined amount of active material in the coulometer an impedance transformation within the coulometer results in a voltage rise across the coulometer. The voltage rise applied across the input to a responsive means



changes the potential at the input to change a negative output voltage of said responsive means to be changed to a positive output voltage. The output voltage change is substantially greater than the voltage rise in the coulometer.

The output voltage change triggers a gate mechanism to actuate a suitable control.

3,755,729

## CIRCUIT FOR THE CHARGING OF BATTERIES

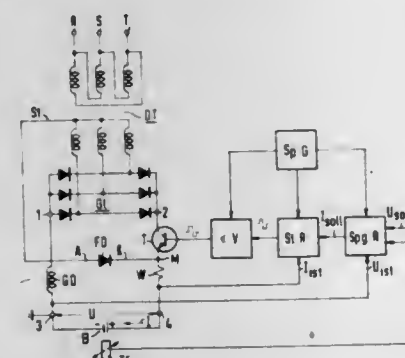
Werner Kuttner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 25, 1972, Ser. No. 291,932

Int. Cl. H02j 7/10

U.S. Cl. 320—20

15 Claims



This invention is concerned with a circuit for charging batteries, particularly aircraft batteries, having a rectifier connected on the input side of the battery to a single- or three-phase system. The circuit uses a controlled semiconductor element or switch connected into the charging circuit of the battery and in which the control electrode of the semiconductor is connected to the output of a current control device having an on-off characteristic. A first input of the current control device is set at a predetermined threshold value of the charging current while the actual value of the charging current is connected as a second input to the device. As a result, the current control device transmits a switching signal to the control electrode of the semiconductor switch only when the actual value of the charging current is smaller than the predetermined threshold value. Thus an average charging current is self-regulated within the charging circuit.

Connected to the first input of the current control device is the output of the voltage control device also having an on-off characteristic. The first input of the voltage control device is set at a predetermined threshold voltage, adjusted to the gassing voltage of the battery, and connected to the second input of the voltage control device is the actual battery voltage. Thus, the voltage control device delivers to the current control device the desired predetermined set value for the charging current only if the actual value of the battery voltage is lower than the predetermined set value of the battery voltage.

3,755,730

## STEEL OBJECT HAVING HIDDEN MAGNETICALLY READABLE IDENTIFICATION AND THE METHOD FOR APPLYING THE IDENTIFICATION

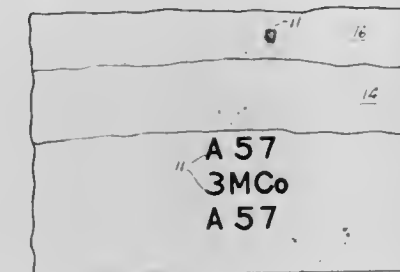
Peter J. Vogelgesang, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 26, 1971, Ser. No. 165,892

Int. Cl. G01r 33/00

U.S. Cl. 324—34 R

7 Claims



A vehicle, appliance or tool having a multiplicity of magnetizable identifying indicia hidden by an opaque, protective layer such as paint. The indicia may be read by the use of a magnetic reader.

3,755,731

## SYSTEM FOR DETECTING DROPOUT AND NOISE CHARACTERISTICS OF MAGNETIC TAPE WITH SWITCH MEANS TO SELECT WHICH CHARACTERISTICS TO BE DETECTED

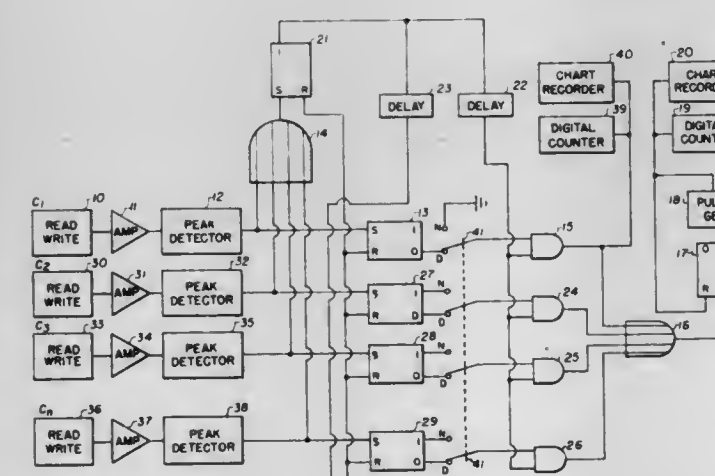
Frank Young, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 10, 1972, Ser. No. 216,673

Int. Cl. G01r 33/12

U.S. Cl. 324—34 TA

4 Claims



Data bits represented by magnetic flux reversals at substantially each one-half cycle of uniform data periods are recorded on each of a plurality of data channels of the magnetic tape which is to be tested for dropout and noise characteristics. The recorded data bits on each of the plurality of data channels are then detected by a suitable means such as a read-write head. The detected data bits for each channel are connected as the input to a bistable means which in turn provides one of the inputs to an associated sampling gate employed for the purpose of detecting each dropout of a data bit for each channel. All channels are connected in common to an appropriate means for generating a timing signal in response to the first received output signal from the detected data bits. The timing signal is used to develop a first delay of less than one-half of

the data period of the originally recorded data and applied to the sampling gates as their second input, actuating each non-inhibited sampling gate to produce a dropout error signal. The timing signal also is used to develop a second delayed signal which is connected to reset the bistable means after the sampling has been completed. Digital counter means are connected to receive and count the dropout error signals thus developed by all the channels. In a preferred embodiment an appropriate chart recorder may also be connected to receive and record the dropout error signals relative to time distribution. Additionally, a digital counter and chart recorder may be connected in each channel to count dropout error signals within each channel and also record error time distribution over the length of tape being tested.

3,755,732

## METHOD AND MEANS FOR TESTING HIGH FREQUENCY EQUIPMENT

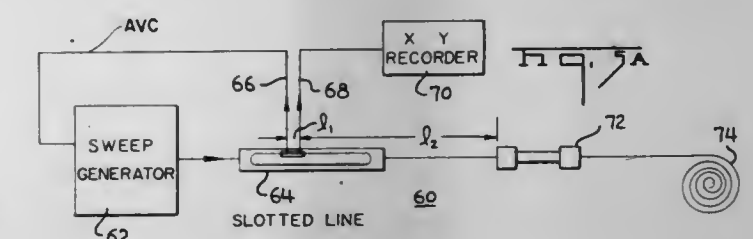
William Dean Couper, Palmyra, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 573,552, Aug. 19, 1966, abandoned, and a continuation of Ser. No. 857,601, Sept. 12, 1969, abandoned. This application Jan. 13, 1972, Ser. No. 217,646

Int. Cl. G01r 27/04

U.S. Cl. 324—58

6 Claims



A system and method of measuring the reflection coefficient and VSWR of discontinuities on a high frequency transmission line comprises a sweep frequency generator connected to one end of the transmission, a pair of properly spaced detectors between the generator and discontinuity, the detector closest to the generator feeding back a signal thereto to maintain the output amplitude constant, the transmission line between the discontinuity and generator being free to transmit all direct and reflected waves. A measuring or recording device is coupled to the other detector for determining the reflection coefficient or VSWR.

3,755,733

## MICROWAVE ABSORPTION MOISTURE GAUGE

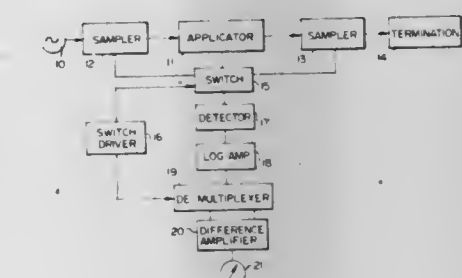
Allan L. Vankoughnett, and Walter Wyslouzil, both of Ottawa, Ontario, Canada, assignors to Canadian Patent and Development Limited, Ottawa, Ontario, Canada

Filed Mar. 13, 1972, Ser. No. 234,292

Int. Cl. G01r 27/04

U.S. Cl. 324—58.5 A

1 Claim



A microwave absorption moisture gauge comprising an applicator containing the sample under test, a source of microwave energy connected via a first sampler to the applica-



tor, a termination connected via a second sampler to the output of the applicator, a microwave switch connected to both first and second samplers, a detector connected to the switch, a switch driver connected to the switch for alternately connecting first and second samplers to the detector through the switch, a logarithmic amplifier connected to the output of the detector, a de-multiplexer connected to the output of the amplifier and synchronously to the switch driver to provide two outputs, the first of which is the log of a signal related to the microwave power passing through the first sampler and the second is the log of a signal related to the microwave power passing through the second sampler, and a difference amplifier connected to the two said outputs to give an output which is the log of the ratio of the said two signals.

3,755,734

# **FREQUENCY DEVIATION MONITOR AND MEASURING DEVICE**

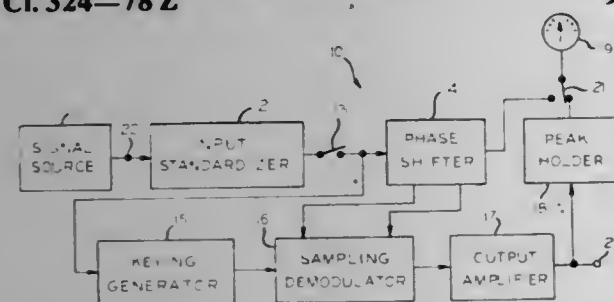
Carl G. Blanyer, Thousand Oaks, Calif., assignor to Abex Corporation, New York, N.Y.

Filed July 24, 1972, Ser. No. 274,203

Int. Cl. G01r 23/02

U.S. Cl. 324—78 Z

9 Claims



A frequency deviation monitor for measuring instantaneous variations of an input signal from a reference frequency, including an input circuit developing an intermediate signal of constant amplitude, a phase-shifting circuit that shifts the signal in phase by an amount and in a direction representative of deviations of the signal from a given reference frequency, and a key signal generator that develops short-duration key signal pulses at the input signal frequency. The signals from the phase-shifting circuit and the key signal generator are applied to a sampling demodulator that develops an output signal having an amplitude and polarity indicative of the deviation of the input signal from the reference frequency.

3,755,735

# **TEMPERATURE AND LOAD COMPENSATED R.F. DETECTOR FOR PEAK POWER MEASUREMENT SYSTEM**

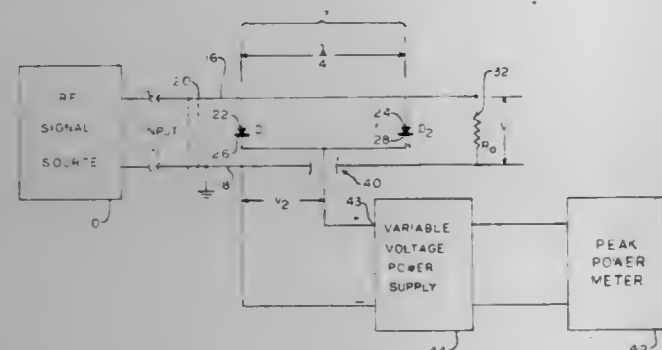
Alvaro D. Biagi, Huntington Station, and Douglas McGarrett, Centerach, both of N.Y., assignors to Republic Electronics Industries Corp., Huntington Station, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,993

Int. Cl. G01r 21/04, 19/16

U.S. Cl. 324—95

6 Claims



A detector circuit for a radio frequency peak power measurement system includes a shielded transmission line and two

identical diodes spaced a quarter wavelength apart and connected across the line. A variable power supply in a slideback arrangement provides a bias to the diodes which are thereby always maintained in a cutoff condition.

3,755,736

# **PHASE TRACKING SYSTEM FOR AN AUTOMATIC EQUALIZATION**

Haruo Kaneko, and Seichiro Shigaki, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

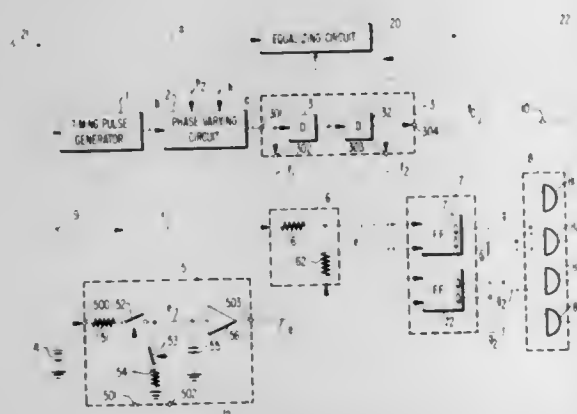
Filed Sept. 1, 1971, Ser. No. 177,073

Claims priority, application Japan, Sept. 3, 1970, 45/77663

Int. Cl. H04b 1/00

U.S. Cl. 325—42

3 Claims



Disclosed herein is a phase tracking system adapted for use with an automatic equalization circuit. This system causes a reference timing pulse, derived from a timing component of a received reference signal, to track the peak of the equalized reference signal, the phase of the extracted timing component randomly varying with respect to the reference signal. Tracking is accomplished by generating a variable level signal and first and second timing pulses occurring respectively, at a selected time before and after the derived reference timing pulse. When the first and second timing pulses are generated, the level of the equalized reference signal is compared with the level of the variable level signal. If the level of the equalized reference signal is greater than that of the variable level signal at one of the comparison times and less than the level of the variable level signal at the other of the comparison times, the phases of the first, second and reference timing pulses are varied in a direction to tend to cause coincidence between the peak of the equalized reference signal and the reference timing pulse. Further, if the equalized reference signal is greater than or less than the level of the variable level signal at both comparison times, the level of the variable level signal at the other comparison time. In this manner, the system causes the reference timing pulse to attempt to align itself with the peak of the equalized reference signal.

3,755,737

# **AGC SYSTEM FOR COMMUNICATIONS SYSTEM**

Timothy S. Eller, Romulus, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed June 26, 1972, Ser. No. 266,437

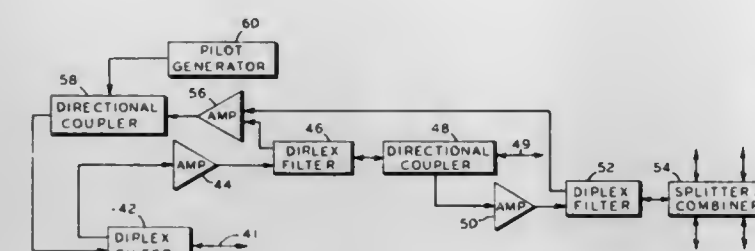
Int. Cl. H04b 3/10

U.S. Cl. 325—62

6 Claims

An AGC system for a communications system wherein AGC pilot signals originating in separate branches are com-

bined on a single branch is shown. The frequencies of the pilot signals are off-set by a frequency difference sufficient to shifts over a time interval  $T_0$  in response to data signals. In that phase shifting occurs over a time interval  $T_0$  rather than in-



prevent beat frequencies from deleteriously affecting the gain control of amplifiers responsive to the pilot signals.

3,755,738

# **PASSBAND EQUALIZER FOR PHASE-MODULATED DATA SIGNALS**

Richard Dennis Gitlin, Monmouth Beach; Edmond Yu-Shang Ho, Englishtown, and James Emery Mazo, Fair Haven, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed May 1, 1972, Ser. No. 249,219

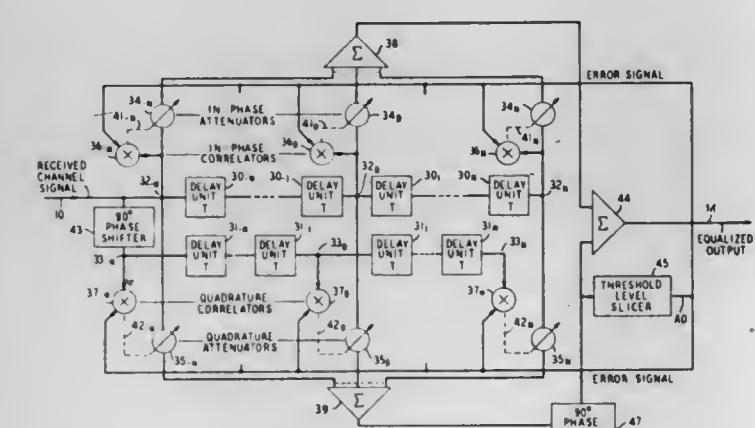
Int. Cl. H03h 7/36

U.S. Cl. 325—42

5 Claims

U.S. Cl. 325—315

3 Claims



An adaptive transversal equalizer for differentially coherent phase-modulated data transmission systems employs a tapped delay line provided with complete sets of in-phase and quadrature weighting attenuators operating on time-spaced samples of passband signals appearing at each tap. Tap signals selectively adjusted by the respective sets of attenuators are combined after a quadrature phase shift of one set to form the equalized output signal. Control signals for adjusting all attenuators are derived from the mean-square error difference between the actual equalizer output and a predetermined threshold level based on an assumed absolute phase reference angle at the equalizer output.

3,755,739

# **DATA SIGNAL TRANSMISSION SYSTEM EMPLOYING PHASE MODULATION**

Yoshimitsu Okano, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Mar. 2, 1971, Ser. No. 120,298

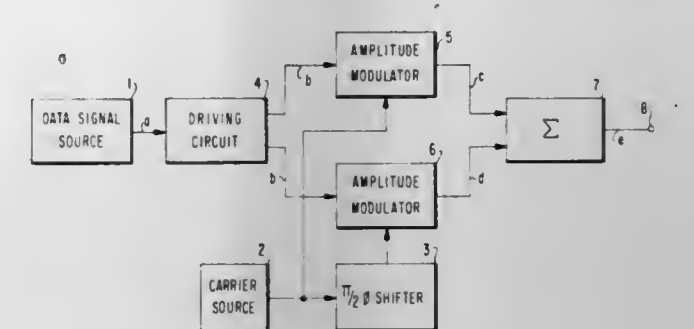
Claims priority, application Japan, Sept. 5, 1970, 45/77979

Int. Cl. H04b 1/04

U.S. Cl. 325—163

5 Claims

Data transmission systems utilizing phase modulation wherein wave distortion and intersymbol interference are reduced by requiring carrier signals to undergo gradual phase



3,755,740

# **ENGAGEMENT DELAY FOR A PUSH BUTTON CONTROLLED VOLTAGE GENERATOR FOR A DUAL BAND ELECTRONICALLY TUNED RECEIVER**

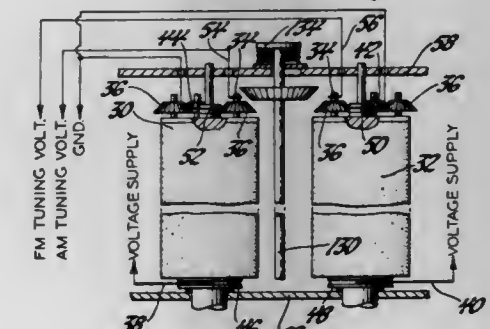
Terrance W. Maugans, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 5, 1972, Ser. No. 250,561

Int. Cl. H04b 1/08

U.S. Cl. 325—315

3 Claims



A ratchet engagement delay for a tuning voltage generator having a first turret for supplying a voltage for tuning a radio receiver in the AM frequency band and a second turret for supplying a voltage for tuning the radio receiver in the FM frequency band. A first ratchet mechanism has a driven member secured to the first turret for rotation therewith and a drive member which is rotated by a first push button actuator. A second ratchet mechanism has a driven member secured to the second turret for rotation therewith and a drive member which is rotated by a second push button actuator. A ratchet engagement mechanism is responsive to the actuation of the first push button actuator to engage the drive and driven members of the first ratchet mechanism after initial rotation of the driven member and responsive to the actuation of the second push button actuator to engage the drive and driven members of the second ratchet mechanism after initial rotation of the drive member to provide a ratchet engagement delay upon the first actuation of the first or second push button actuator after the other of said actuators has been actuated.

3,755,741

# **SELF-MONITORING OF RADIO RECEIVERS**

Harris A. Stover, Cedar Rapids, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Feb. 11, 1972, Ser. No. 225,399

Int. Cl. H04b 1/00

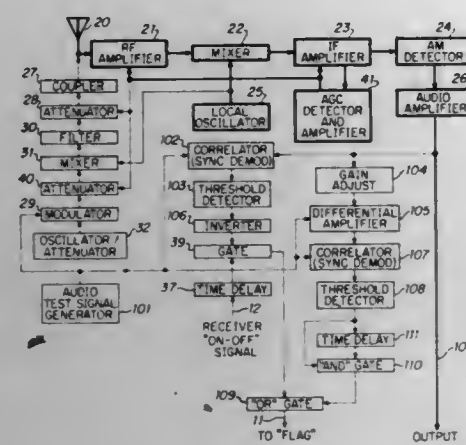
U.S. Cl. 325—363

24 Claims

Continuous monitoring of a radio receiver without impairing normal receiver operation is provided by an internally



generated carrier signal combined at low level with the received signal. The test carrier is so modulated as to not affect normal receiver detection process, and the test modula-



tion signal component, as present in the output of the receiver detector, is synchronously demodulated and monitored to provide indication of faulty receiver threshold level and signal distortion.

3,755,742

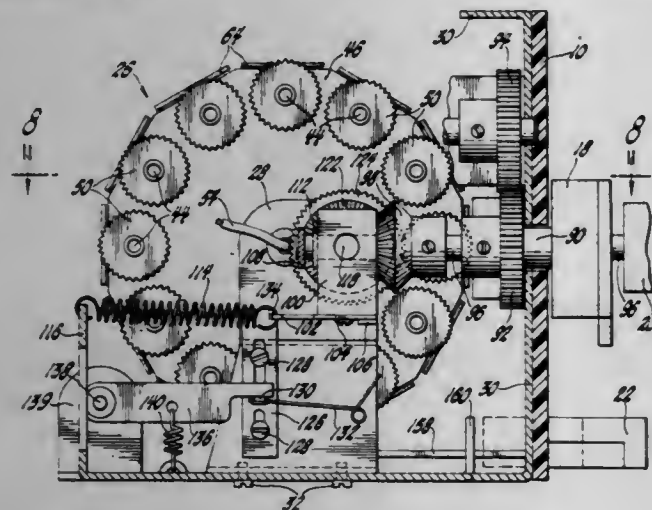
### SINGLE TURRET MECHANISM FOR GENERATING TUNING VOLTAGES FOR A VOLTAGE TUNED AM-FM RADIO RECEIVER

Terrance W. Maugans, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 21, 1972, Ser. No. 245,839  
Int. Cl. H04b 1/16

U.S. Cl. 325-459

3 Claims



An apparatus for generating tuning voltages for a voltage tuned AM-FM radio receiver including a turret having a plurality of potentiometer assemblies circumferentially spaced therearound, the wiper arms of the potentiometer assemblies being positioned so as to generate voltages for tuning the tuned circuits in the AM and FM sections of the radio receiver. A first manually operable ratchet mechanism rotates the turret so as to position alternate potentiometer assemblies at a tuning station and simultaneously switches the radio receiver for operation in the AM frequency band. A second manually operable ratchet mechanism rotates the turret to sequentially position the remaining potentiometers at the tuning station and simultaneously switches the radio receiver for reception in the FM frequency band. A voltage is picked off the potentiometer at the tuning station and supplied to the receiver to effect tuning thereof. A tuning mechanism is manually actuated and latched into engagement with a drive mechanism for the wiper arm of the potentiometer assembly positioned at the tuning station and is operable to position the wiper arm to generate the desired tuning voltage. An unlatching mechanism is provided for unlatching the tuning mechanism upon operation of either of the first or second ratcheting mechanisms.

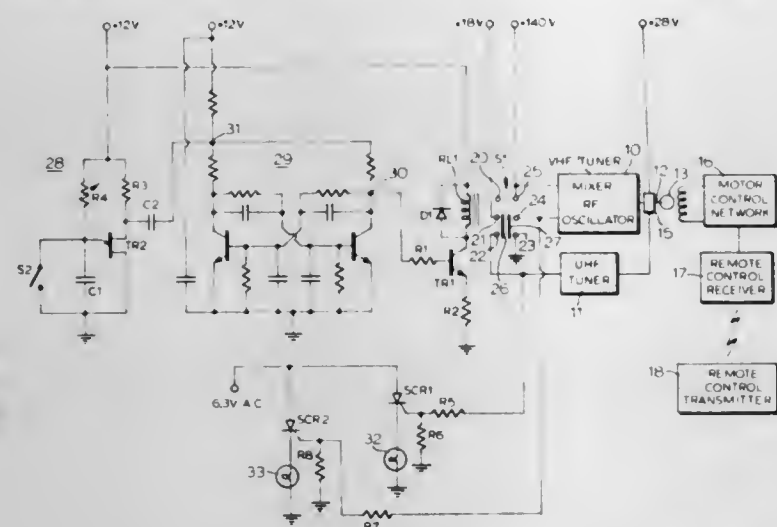
### 3,755,743 SIGNAL RECEIVER WITH A PLURALITY OF TUNERS AND AUTOMATIC SWITCHING SYSTEM FOR CYCLICALLY ENERGIZING THE SAME

Michael W. McLernon, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Ontario, Canada

Filed Apr. 10, 1972, Ser. No. 242,435  
Int. Cl. H04b 1/06

U.S. Cl. 325-462

15 Claims



A signal receiver such as a television receiver has first and second tuners such as a VHF tuner and a UHF tuner. The tuners are capable of being simultaneously rendered into a number of different tuned conditions in each of which, when the tuners are energized, they will be tuned to signal within their respective frequency bands. When one of the tuners is rendered into a particular condition that preferably is different from the aforesaid tuned condition, the tuners are automatically alternately energized cyclically for predetermined periods of time to render the one of the tuners so energized capable of translating signals received by the receiver and within the frequency band of the respective tuner when that tuner is rendered into a tuned condition. Means are provided responsive to one of the tuners being rendered into a tuned state while energized for maintaining the energized tuner in its energized condition while the receiver is on until the aforesaid one tuner is rendered into the aforesaid particular condition.

3,755,744

### RECEIVING DEVICE FOR AUTOMATICALLY DEMUTING AND REMUTING BY TWO CONTROL SIGNALS SEQUENTIALLY TRANSMITTED FROM TRANSMITTER

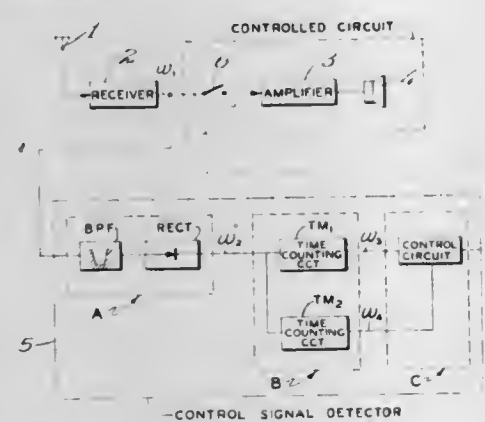
Masayuki Fukata, 94 Shimorenjaku, Mitaka-Shi, Tokyo, Japan

Continuation-in-part of Ser. No. 885,401, Dec. 16, 1969, Pat. No. 3,628,153. This application June 25, 1971, Ser. No. 156,895. The portion of the term of this patent subsequent to Dec. 14, 1988, has been disclaimed.

Int. Cl. H04b 1/06

U.S. Cl. 325-466

4 Claims



Apparatus to sense a first control signal and a second control signal transmitted after the first signal and having a dura-

tion or repetition rate different than the first signal. A controlled circuit is triggered to and self-held in the switching-in state in response to the first signal and restored in response to the second signal.

3,755,745

### NOISE DISCRIMINATION APPARATUS

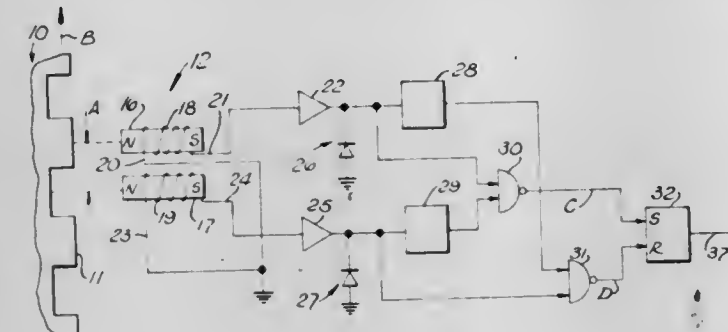
Said Sapir, Westlake Village, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 173,459, Aug. 20, 1971, abandoned. This application June 23, 1972, Ser. No. 265,526

Int. Cl. H03b 3/04

U.S. Cl. 328-133

20 Claims



A system for producing information pulses including, for example, two magnetic pick-ups spaced apart  $nd$ , where  $n$  is any positive odd integer and  $d$  is equal to one-half the spacing between two immediately adjacent teeth of a rotatable ferromagnetic armature. A phase comparison logic circuit is connected from the pick-ups. This circuit is selective and discriminates against voltages induced by vibration, by an internal combustion engine ignition system coil or by other means. The system is useful for providing a velocity analog for any purpose including, but not limited to, an anti-skid braking arrangement for automotive vehicles.

3,755,746

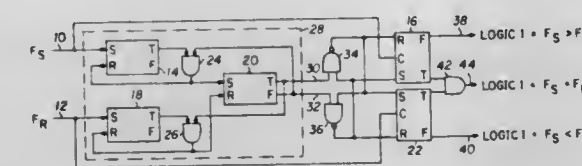
### FREQUENCY COMPARISON INDICATING APPARATUS

Noel E. Hogue, Cedar Rapids, and Charles M. Dennison, Hiawatha, both of Iowa, assignors to Collins Radio Company, Dallas, Tex.

Filed Mar. 7, 1972, Ser. No. 232,460  
Int. Cl. H03d 13/00

U.S. Cl. 328-133

3 Claims



A gating system for use with a frequency discriminator which will provide a positive indication of whether or not two input signals are the same frequency or, if they are not the same frequency, which one is the higher. The apparatus is for use with a frequency detector providing logic "1" and logic "0" outputs indicative of the highest frequency and providing an alternating output when the two frequencies are identical. The output of the frequency discriminator is utilized to steer flip-flops to provide the necessary positive outputs.

3,755,747

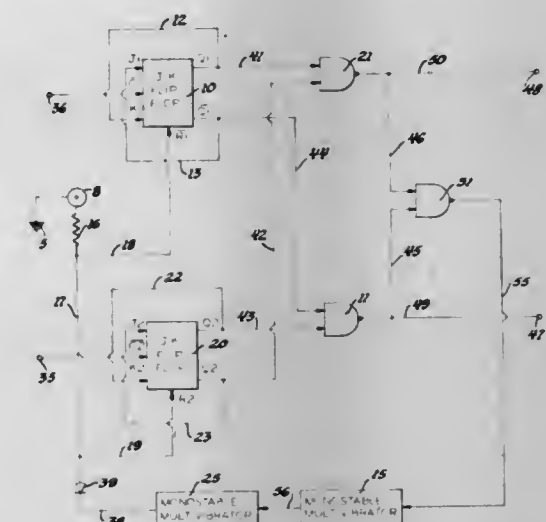
### CIRCUIT FOR PRODUCING AN OUTPUT SIGNAL PULSE OF A WIDTH EQUAL TO THE PERIOD BETWEEN SEPARATED INPUT SIGNAL PULSE PAIRS

Vincent H. Letosky, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 25, 1972, Ser. No. 292,266  
Int. Cl. H03d 13/00

U.S. Cl. 328-133

6 Claims



Two J-K flip-flop circuits, initially reset to a first state in which logic 0 and logic 1 output signals are present upon the Q and Q output terminals, respectively, are triggered by respective pulses of separated input signal pulse pairs to a second state in which logic 1 and logic 0 output signals are present upon the Q and Q output terminals, respectively. First and second NAND gate circuits produce a respective output signal pulse corresponding to each input signal pulse pair of a width equal to the period between the input signal pulse pairs when one of the pulses of each input signal pulse pair is the first occurring or when the other one of the pulses of each input signal pulse pair is the first occurring, respectively, in response to the logic output signals upon the Q output terminal of the first triggered J-K flip-flop circuit and the Q output terminal of the other J-K flip-flop circuit until triggered to the second state by the other input signal pulse of the pulse pair.

3,755,748

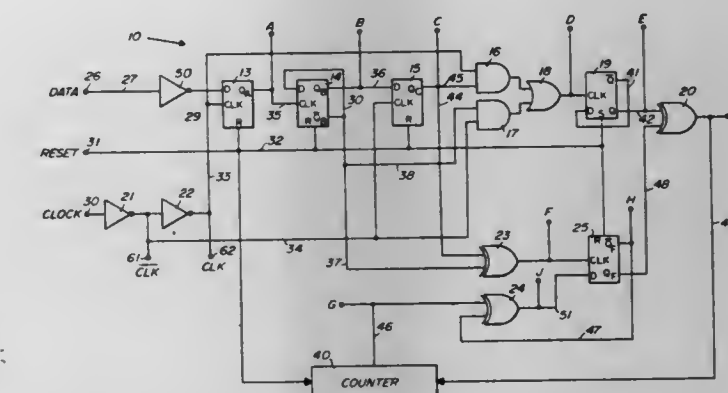
### DIGITAL PHASE SHIFTER/SYNCHRONIZER AND METHOD OF SHIFTING

Earl F. Carlow, Scottsdale, and Edward C. Hepworth, Apache Junction, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 6, 1972, Ser. No. 217,909  
Int. Cl. H03b 3/04; H03k 5/18

U.S. Cl. 328-155

29 Claims



An electronic synchronizer for synchronizing the output pulse rate of an electronic clock with an input pulse train. The



synchronizer provides a sampling signal output at a desired time within the time period of a single pulse of the input pulse train. The synchronizer phase-shifts the sampling signal by one-half of 1 clock cycle to either slow or speed the sample time, when required. A method of synchronizing by phase shifting the sample signal by one-half of 1 clock cycle is also disclosed.

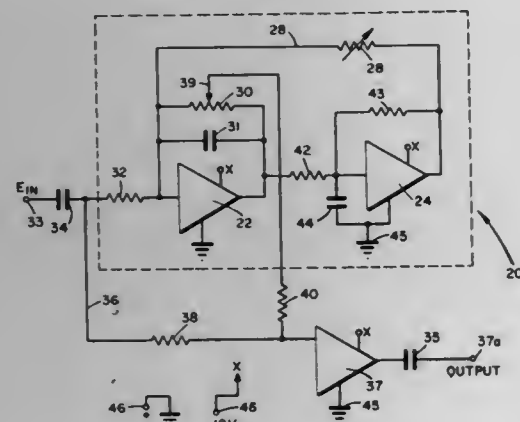
3,755,749

**SOUND REINFORCEMENT EQUALIZATION SYSTEM**  
Carl Wayne Van Ryswyk, and Charles Paul Boner, both of Austin, Tex., assignors to White Instruments, Incorporated, Austin, Tex.

Filed Nov. 22, 1971, Ser. No. 200,785  
Int. Cl. H03b 1/04; H04b 1/10

U.S. Cl. 328-167

9 Claims



An active filter in combination with a sound reinforcement equalization system is provided. The filter permits variation of the notch frequency over a wide range of frequencies and adjustment of the notch depth from zero to any desired value independent of frequency control. Active filters may be cascaded without additional loss in the pass band.

3,755,750

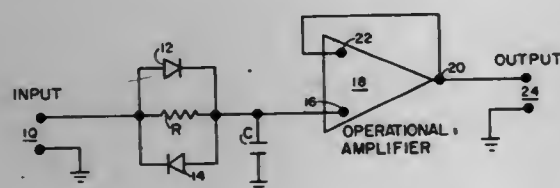
**NOISE SUPPRESSION FILTER**

Emory D. Heberling, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 30, 1972, Ser. No. 239,544  
Int. Cl. H03k 1/10

U.S. Cl. 328-167

2 Claims



A simple and inexpensive device for filtering undesirable high frequency noise from analog data outputs of a data processing system, which operates in two different modes and switches automatically from one to the other depending on the rate of change of data functions and on data transient amplitude with respect to full scale. If the input data is a dc level or a slowly varying dc function, the subject device operates as a low pass filter to attenuate noise in the output, and if a step or square wave function occurs in the data the filter is automatically removed until the transition is completed and then the device reverts back to the low pass filter mode of operation.

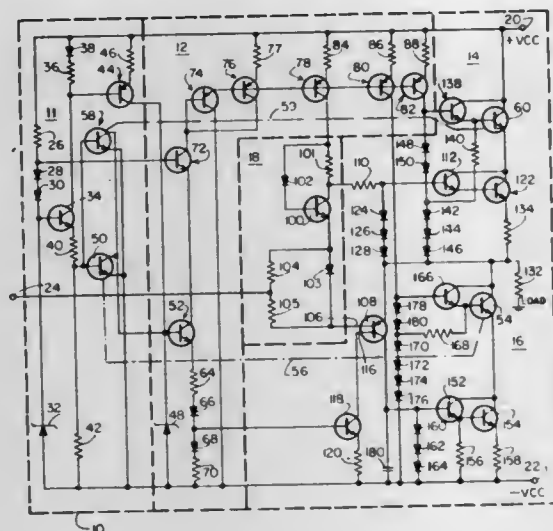
### 3,755,751 HIGH VOLTAGE SOLID-STATE AMPLIFIER HAVING TEMPERATURE RESPONSIVE SHUTDOWN

Charles Martin Ring, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 21, 1971, Ser. No. 191,398  
Int. Cl. H03f 1/32

U.S. Cl. 330-23

26 Claims



The amplifier circuit includes first and second output stages which respectively amplify positive and negative excursions of an input signal. A bias circuit connected to each stage prevents crossover distortion. A plurality of dependent current sources supplying the bias and amplifier stages are controlled by a master current source. Transistors having temperature responsive threshold voltages are thermally connected to each of the output stages and electrically connected between a constant bias supply and the master current source. If the temperature of either output stage increases above a predetermined value, the thermally associated transistor conducts and renders all of the current sources inoperative. Furthermore, diode strings are utilized to provide low base resistances and other transistors are utilized to provide high emitter resistances for selected transistors thereby enabling them to sustain high voltages.

3,755,752

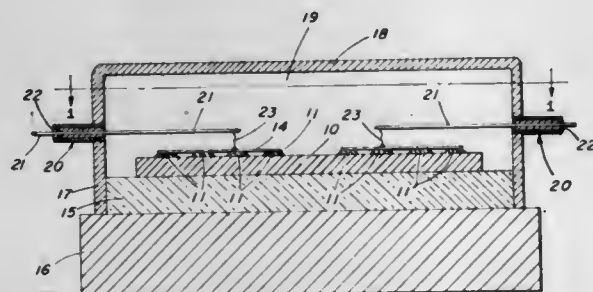
**BACK-TO-BACK SEMICONDUCTOR HIGH FREQUENCY  
DEVICE**

Chung K. Kim, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 26, 1971, Ser. No. 137,373  
Int. Cl. H03f 3/10, 3/12

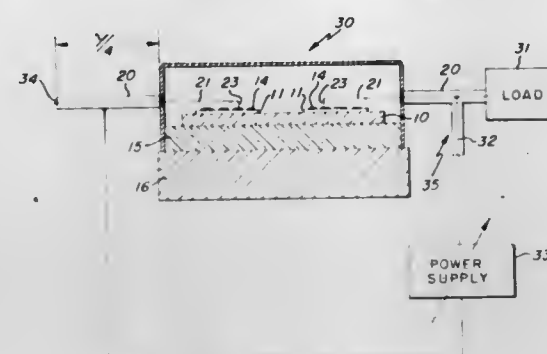
U.S. Cl. 330-34 R

22 Claims



A microwave semiconductor system in which a transistor, tunnel diode, avalanche diode, or transferred electron oscillator (Gunn effect) is formed as a plurality of substantially electrically symmetrical semiconductor devices connected in series and supported on the same heat sink. The active regions

of the devices are formed of uniformly doped semiconductor material. The width of said active regions is less than ten times



the thickness of the active regions and the length of said regions is greater than ten times said thickness, with the heat sink extending beyond the edges of the active regions.

3,755,753

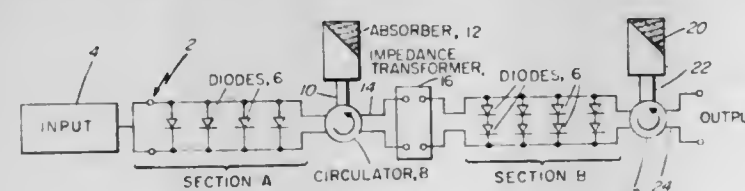
**BROADBAND SOLID STATE AMPLIFIER**

Burton H. Smith, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Dec. 21, 1971, Ser. No. 210,454  
Int. Cl. H03f 3/60

U.S. Cl. 330-53

6 Claims



A plurality of solid state devices exhibiting negative resistance characteristics in the nonoscillating state are positioned in parallel at periodic intervals along an electro-magnetic energy transmission line so as to provide a negative propagation constant to effect a high gain broadband amplifier. Sections of devices with the total number increasing within subsequent sections and reverse wave limitation means together with suitable impedance matching means complete the device. Both rectangular and coaxial waveguide transmission line configurations are described.

3,755,754

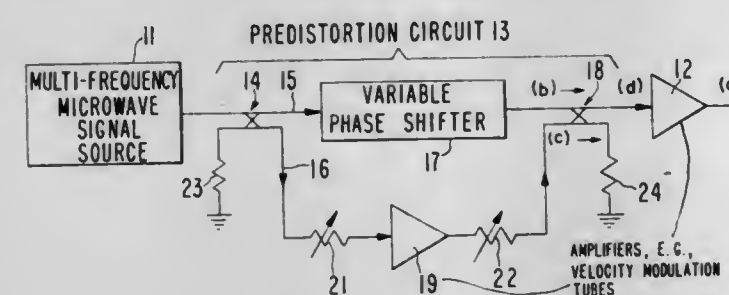
**PREDISTORTION COMPENSATION FOR A  
MICROWAVE AMPLIFIER**

John L. Putz, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Feb. 4, 1972, Ser. No. 223,598  
Int. Cl. H03f 1/32

U.S. Cl. 330-149

10 Claims





al to form segments of the bore of the discharge tube. These elements are sandwiched between glass spacers to define the active gain region of the lasers. In operation, discharge heating vaporizes portions of the material from the elements to provide a uniform distribution and stable control of active vapor in the tube. The lasers eliminate the need for external heating of the active material and for appendages to the tube forming reservoirs for the material. Other desirable features include a short warm-up time, a long tube life, and a simplified and inexpensive construction.

3,755,757

**HIGH EFFICIENCY ERBIUM GLASS LASER**

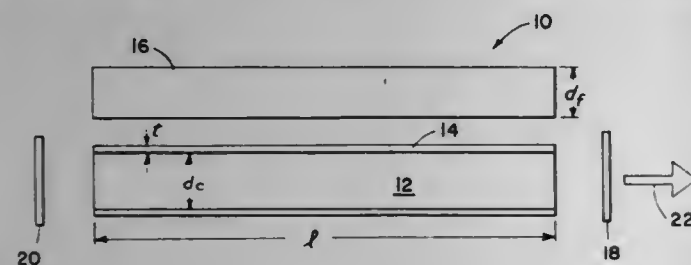
Richard F. Woodcock, South Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Conn.

Filed June 23, 1972, Ser. No. 265,839

Int. Cl. H01s 3/16

U.S. Cl. 331-94.5

7 Claims



An optimized erbium glass laser device for utilization in the range from 50 to 100 millijoules (mJ) output power is defined. This device includes a concentration of  $\text{Er}_2\text{O}_3$  in the core of a clad glass laser rod in the range of about 0.20-0.25 weight percent in combination with a  $\text{Yb}_2\text{O}_3$  concentration of approximately 15 weight percent in a silicate base glass. The optimal cladding glass composition contains approximately 4-5 weight percent each of  $\text{Nd}_2\text{O}_3$  and  $\text{Yb}_2\text{O}_3$ .

3,755,758

**DIGITAL TUNED MICROWAVE OSCILLATOR**

David B. Leeson, Los Altos, Calif., assignor to California Microwave, Inc., Sunnyvale, Calif.

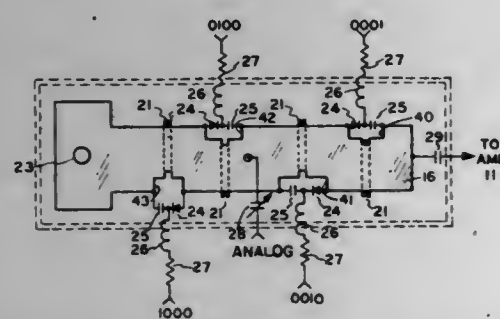
Continuation of Ser. No. 868,720, Oct. 23, 1969, abandoned.

This application Oct. 4, 1971, Ser. No. 186,526

Int. Cl. H03b 5/18

U.S. Cl. 331-101

6 Claims



A high stability digitally tuned L-band cavity oscillator employs PIN diode switching of the cavity resonant frequency to provide an output signal at any one of 16 discrete frequencies under the control of a four-wire digital input. An analog input is added to adjust the center-line frequency over a bandwidth at least as wide as the least significant incremental step to further provide for AFC and phase lock capability. A half-wave resonator cavity is used with a quarter-wave member notched at intervals along its length. A switching diode adapted to be coupled to a source of digital signals is coupled across each notch to digitally control the electrical characteristics of the resonator and its output frequency. A varactor provides the analog and fine tuning control.

3,755,759  
SLOT LINE

Seymour B. Cohn, Los Angeles, Calif., assignor to Stanford Research Institute

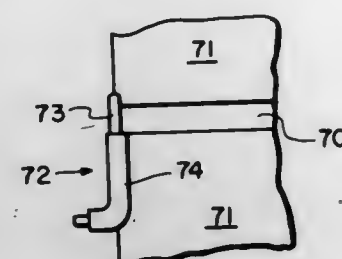
Division of Ser. No. 826,314, May 21, 1969, Pat. No.

3,688,225. This application May 4, 1972, Ser. No. 250,453

Int. Cl. H01p 3/08, 5/08

U.S. Cl. 333-21 R

3 Claims



This invention relates to a low loss transmission line having a slotted metal deposited or etched on a high permittivity substrate. With various sizes, shapes and configurations of slots, the transmission line may be used as part of components such as hybrid junctions, couplers, filters, mixers, amplifiers, ferrite devices, and resonators. Novel slot/coax and slot/stripline junctions or connections are disclosed as well as novel methods of slot excitation.

3,755,760

**DIFFERENTIAL PHASE-SHIFTER FOR PROVIDING A SUBSTANTIALLY CONSTANT DIFFERENTIAL PHASE-SHIFT**

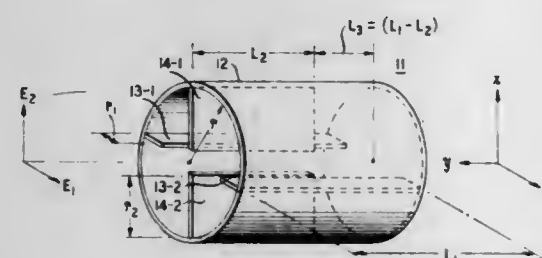
Edward Allen Ohm, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 6, 1972, Ser. No. 295,610

Int. Cl. H03h 7/30; H01p 1/18

U.S. Cl. 333-31 A

6 Claims



A differential phase-shifter which provides a substantially constant differential phase-shift to two orthogonally polarized waves having the same frequency band by causing one of the waves to see two phase-constant characteristics having rates of change over the band which are greater than and less than, respectively, the rate of change of the phase-constant seen by the other wave.

3,755,761

**SURFACE WAVE TRANSVERSAL FREQUENCY FILTER**

Clinton S. Hartmann, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 30, 1971, Ser. No. 214,362

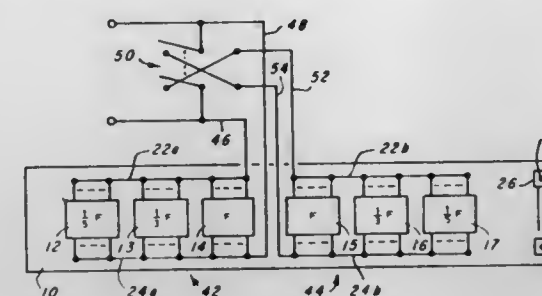
Int. Cl. H03h 9/26, 9/32; H04r 17/00

U.S. Cl. 333-70 T

27 Claims

Elastic waves propagating at the surface of a solid substrate are generated by a transducer-filter of interdigitated electrodes patterned to pass a particular wavelength of frequencies at an established center frequency. Interdigitated electrodes of the filter may be either uniformly spaced one-half wavelength apart or spaced to produce a desired function. The

overlapping length of the electrode configuration for each filter varies in accordance with a weighting function usually approximating  $\sin x/x$ . To generate an output signal having a desired frequency distribution between band pass and band stop regions, each filter comprises two sections of an array of three or more taps of interdigitated electrodes. These taps correspond to a fundamental, third, fifth, etc., time harmonic of the band pass-band stop periodicity. The two sections are ar-



ranged back to back on the substrate, that is, with the fundamental tap of each section adjacent and the highest time harmonic tap of each section at the ends of the filter. An interchange of the band pass and band stop regions is accomplished by splitting each filter and connecting the individual sections to a reversal switch. By selective programming of a plurality of filters, a particular frequency will be selected and passed through an array of such filters.

3,755,762

**METHOD OF BUILDING FOR ELECTRIC FILTERS**

Jacques R. Boulon, Paris, and Alexis Nepomniastchy, Bagneux, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

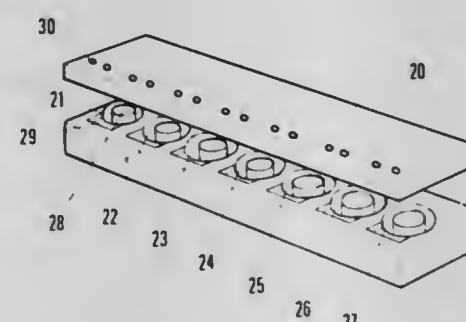
Filed May 22, 1972, Ser. No. 255,585

Claims priority, application France, Feb. 23, 1972, 7206035

Int. Cl. H03h 7/04; H05k 1/16, 1/18

U.S. Cl. 333-70 S

7 Claims



A low cost and reduced bulk electric filter construction, in particular for telecommunication equipment, in the form of an assembly of inductances and capacitors, in which all the inductances of the filter use as magnetic cores a common ferrite block consisting of two contiguous parts. The capacitors are preferably grouped in a single insulating wafer placed in contact with the outside surface of one of the said contiguous parts.

3,755,763

**FM-AM PRESET TUNING DEVICES**

Juro Hoshi, Hamamatsu, Japan, assignor to Nippon Bakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Filed Mar. 23, 1971, Ser. No. 127,220

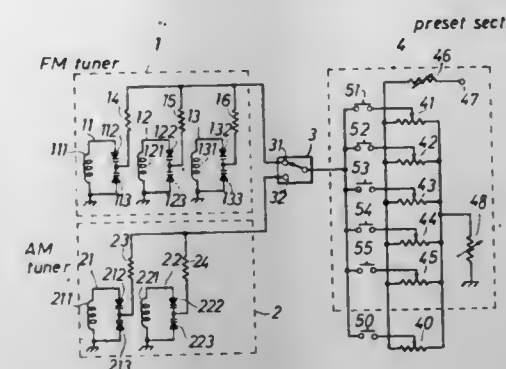
Int. Cl. H03j 5/04

U.S. Cl. 334-1

7 Claims

The FM-AM preset tuning device comprises an FM tuner including a plurality of tank circuits each having a variable capacitance diode; an AM tuner similarly constructed as the FM tuner; preset means including a plurality of voltage ad-

justers to adjust the voltages to be impressed upon respective variable capacitance diodes included in the tank circuits of the FM and AM tuners for pretuning respective tank circuits to the frequencies of respective FM and AM broadcasting sta-



tions to be selected, and a plurality of switches each associated with different one of the voltage adjusters; and at least one FM-AM changeover switch connected between the FM and AM tuners and the preset means for selectively connecting the preset means to either one of the FM and AM tuners.

3,755,764

**ANTENNA COIL SUPPORT FOR A TUNER**

Takeo Suzuki, Tokyo, Japan, assignor to Alphs Electric Co., Ltd., Tokyo, Japan

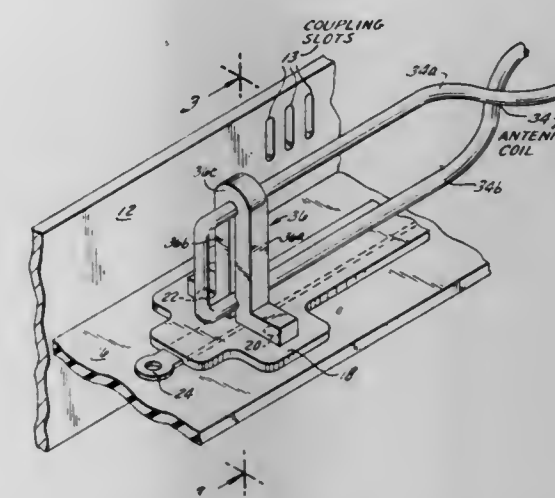
Filed Nov. 24, 1971, Ser. No. 200,695

Claims priority, application Japan, Dec. 10, 1970, 45/123280

Int. Cl. H03j 5/02

U.S. Cl. 334-45

17 Claims



A tuner has an insulating member with a surface upon which is disposed a first electrically conducting element. A second electrically conducting element such as an antenna coil is mounted and directly supported on said member proximate said first element by a support means so as to be electromagnetically coupled thereto. Preferably, the second element has two reaches and said support is substantially U-shaped with a central aperture within which the reaches are disposed.

3,755,765

**MULTI-LEVEL STEP-BY-STEP SWITCH**

A. Lee Reaves, Jr., 355 Ruby St., Clarendon Hills, Ill.

Filed May 26, 1972, Ser. No. 257,141

Int. Cl. H01h 67/08

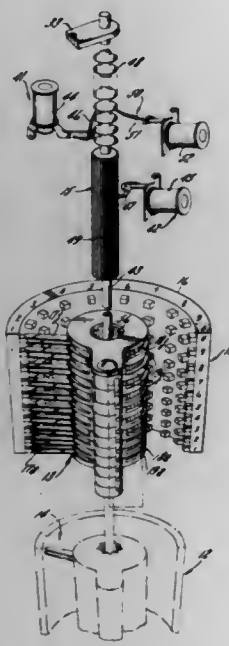
U.S. Cl. 335-118

17 Claims

A multi-level Step-by-step switch capable of simultaneously serving a plurality of electrical circuits comprises at least one terminal bank with an associated set of brushes. The bank in-



cludes several vertically separated rows of contact terminals, and each of the brushes is permanently dedicated to a respective one of the rows. A two motion stepping mechanism provides sequenced vertical and rotary motion for independently positioning the brushes in engagement with selected ones of the contact terminals in their respective associated rows of terminals. One brush is positioned per brush positioning



operation, and after each such operation, the stepping mechanism is reset merely by gravity. For additional capacity, as well as for certain specialized applications, a plurality of terminal banks, with respective sets of brushes, may be vertically stacked to be served by a single stepping mechanism. The switch with stacked terminal banks may be configured to operate as a simple step-by-step switch, separate step-by-step switches, or a compound step-by-step switch.

3,755,766

**BISTABLE ELECTROMAGNETIC ACTUATOR**

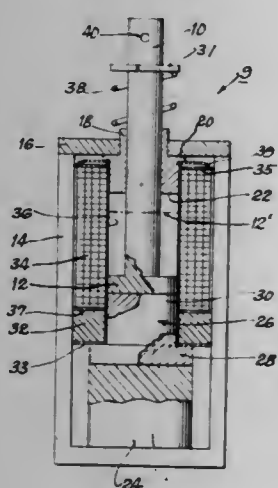
Reginald A. Read, Jr., La Grange, Ill., assignor to Regdon Corporation, Brookfield, Ill.

Filed Jan. 18, 1972, Ser. No. 218,770

Int. Cl. H01f 7/08

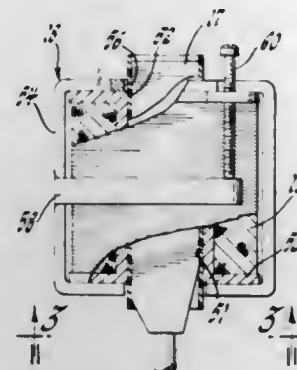
U.S. Cl. 335—229

9 Claims



A bistable electromagnetic actuator has an armature maintained in one stable position magnetically, by means of a permanent magnet, and in a second stable position by means of a spring. Either position may be assumed by energization of a coil with current of the appropriate polarity or by application of mechanical force. A magnetic shunt maintains flux through the permanent magnet during energization of the coil.

3,755,767  
**VARIABLE INDUCTANCE DEVICE**  
Robert R. Hendrickson, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.  
Filed Dec. 15, 1972, Ser. No. 315,342  
Int. Cl. H01f 21/06  
U.S. Cl. 336—20  
4 Claims



In an electronic fuel injection system, a transducer for converting a variable pressure signal to a variable inductance comprises an inductive coil surrounding an axially reciprocable, magnetically permeable plunger. Two opposing sides of one end of the plunger are asymmetrically tapered; and a magnetically permeable flux member attached to the coil has portions adjacent the untapered end of the plunger and both sides of the tapered end of the plunger to create parallel flux paths through the plunger, each of which has a gap defined by one of the tapered sides and has a reluctance which varies with axial movement of the plunger. The portion of the flux member adjacent one side of the tapered end is transversely movable with respect to the plunger by a torque arm and adjusting screw so as to vary the slope of the inductance-plunger position curve.

3,755,768

**SWITCH BREAKER**

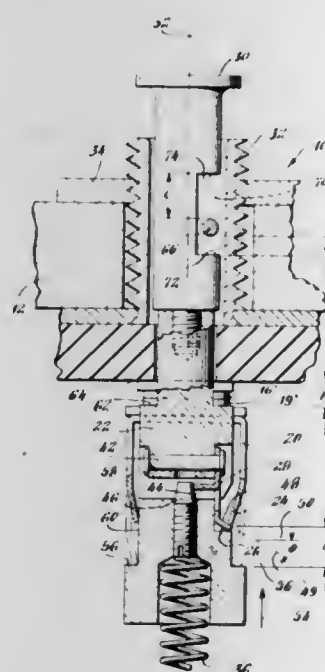
William P. Riendeau, Leonardtown, Md., assignor to Aiken Industries, Incorporated, New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,100

Int. Cl. H01h 71/16

U.S. Cl. 337—66

8 Claims



A circuit breaker is described wherein an automatic overload current circuit interrupting feature is combined with a manual switching feature. A latch plate has an abutment ledge surface for contact with a bimetallic element. The abutment ledge surface has a predetermined latch angle relative to a

plane which is normal to the axis of movement of the latch plate. The angle is selected to form a latch which may be manually overcome by movement of the latch plate against the bimetallic element to force the bimetallic element to slip off the abutment ledge surface. A range and preferred values of the latch angle are described.

3,755,769

**MODULARIZED FUSE WITH PRECISE GAP**

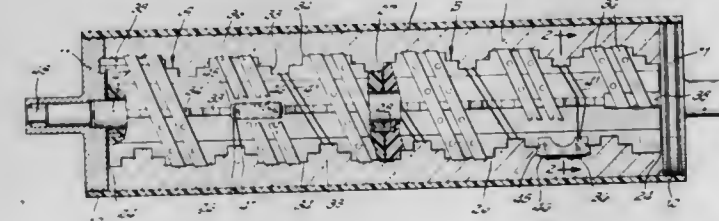
Harvey W. Mikulecky, Racine, Wis., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Oct. 31, 1969, Ser. No. 873,771

Int. Cl. H01h 85/04

U.S. Cl. 337—158

5 Claims



This current limiting fuse has a spider type support for the main fuse element. This support has a plurality of segments joined together serially by a cement-like composition. Preferably, these segments are of lengths for establishing fuse sizes corresponding to standard design voltage ratings such as 8.3 KV, 15.5 KV, 27 KV and 38 KV. An auxiliary fuse element may be wound on the spider type support and spaced from the main fusible element. A gap separates the main fusible element and at least one end of the auxiliary element. This gap is defined by the thickness of a porous tape member that forms an effective precise gap.

3,755,770

**THERMOSTAT HAVING IMPROVED TEMPERATURE DRIFT CONTROL MEANS**

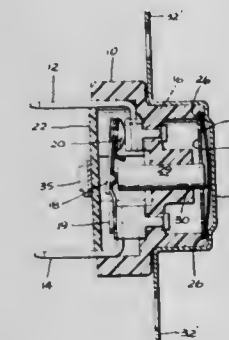
Edward O. Andersen, Rock Falls, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Dec. 7, 1971, Ser. No. 205,485

Int. Cl. H01h 37/52

U.S. Cl. 337—354

31 Claims



A thermostat is disclosed comprising a support and a thermally responsive bimetallic member having a peripheral section adjacent the support and a central section adapted for movement with respect to the peripheral section in response to temperature changes of the bimetallic member. First and second switch contacts are mounted for relative movement between switch contact open and switch contact closed positions. A spring is provided biasing one of the contacts. An actuating plunger is mounted between the bimetallic member and the spring for movement in response to movement of the bimetallic central section. Temperature drift control means are also provided which means include an energy absorbent dampener disposed between the bimetallic member peripheral section and the support.

3,755,771

**RACK AND PANEL CONNECTOR ASSEMBLY**

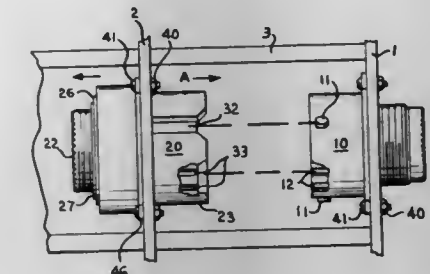
Robert W. Brush, Unadilla, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 1, 1972, Ser. No. 230,879

Int. Cl. H01r 13/62

U.S. Cl. 339—64 R

32 Claims



A blind mating rack and panel connector assembly in which nonaligned contacts of an unmated plug and receptacle are aligned upon mating by successive engaging cams of the connector assembly. The plug portion of the connector assembly includes a first and second shell that is mounted within the plug housing for radial and axial movement with respect to the plug housing. Upon mating of the plug and receptacle the first shell of the plug has a guide means that interacts with the receptacle to align previously nonaligned contacts. When the plug and receptacle are unmated the shells return to their original position.

3,755,772

**MECHANICAL INTERLOCK FOR ELECTRIC CIRCUIT**

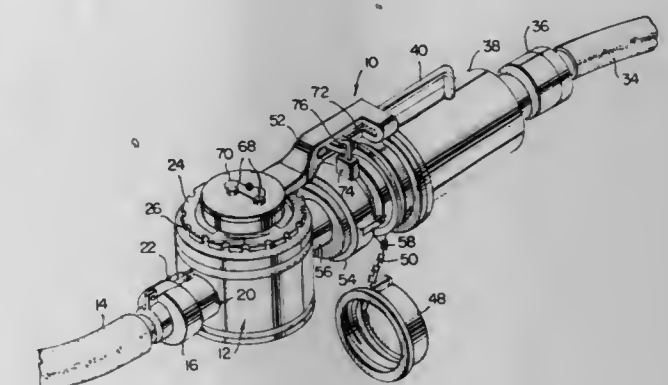
David M. Reed, P.O. Box 652, Martin, Ky.

Filed Aug. 16, 1972, Ser. No. 281,091

Int. Cl. H01r 13/54

U.S. Cl. 339—75 R

9 Claims



A mechanical interlock for components in an electric circuit necessitating a mechanical separation of mating parts which interrupts the electric circuit before access thereto or components thereof is possible, thereby preventing electric shocks to users.

3,755,773

**LAMP-RETAINING SOCKET**

George E. Johnson, Bronxville, N.Y., assignor to Levitron Manufacturing Co., Inc., Brooklyn, N.Y.

Filed Dec. 7, 1971, Ser. No. 205,487

Int. Cl. H01r 13/54, 17/20

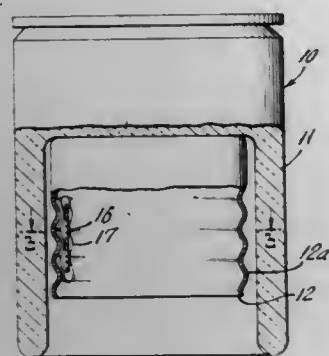
U.S. Cl. 339—75 R

2 Claims

A lamp-retaining socket for a screw type lamp which prevents the lamp from accidentally becoming loose in the socket due to vibration or the like.



The lamp retainer comprises a thin strip of flexible and deformable material which is interposed between rolled threads of a screw shell and rolled threads on a lamp base. The strip extends over at least two of the threads and increases frictional engagement between the threads of the shell and



lamp base without interfering with introduction of the lamp into the screw shell or its removal therefrom. The retainer strip may be assembled with the screw shell prior to installation in a housing or it may be a clip which can be attached to the screw shell prior to the lamp being installed.

3,755,774

**AXLE IDENTIFYING BRAKE WARNING SYSTEM**

Heiner Wilhelm, Hamburg, Germany, assignor to Jurid Werke GmbH, Glinde b. Hamburg, Germany

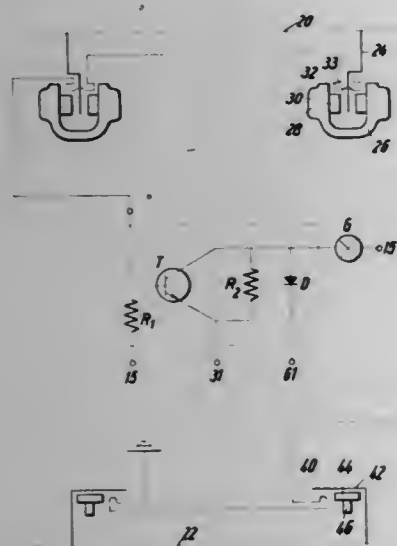
Filed Dec. 16, 1971, Ser. No. 208,786

Claims priority, application Germany, Dec. 22, 1970, P 20 63 005.1

Int. Cl. B60t 17/22

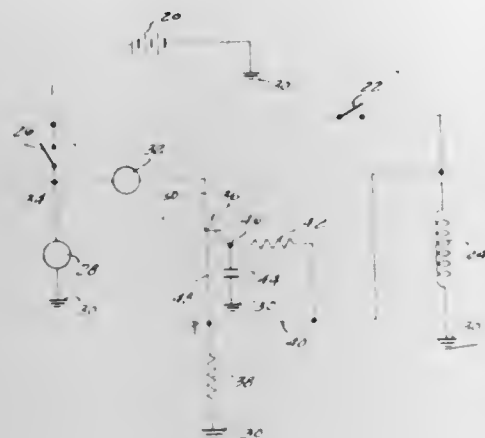
U.S. Cl. 340—52 A

4 Claims



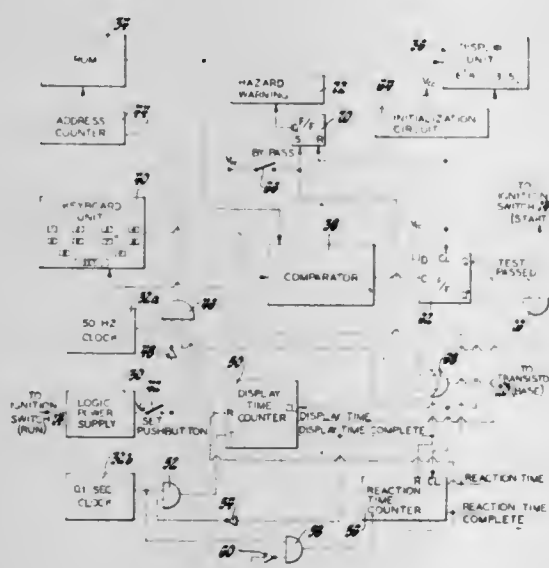
A brake condition warning system including conductor portions mounted on linings of drum type brake shoes so that the conductors are opened when the brakes reach a predetermined wear level but can be temporarily bridged by the counter friction surface upon reapplication of the brakes. Other conductor portions are mounted on frangible supports adjacent disc brakes but, upon destruction thereof, are not bridgeable, even temporarily. The system includes two axles, each having a different kind of brake, and a signal light and switching means to turn the light on when at least one portion is opened. Reapplication of the brakes tells the driver which axle has the brake which has reached the predetermined state of wear.

3,755,775  
**AUTOMOBILE LIGHT-ON INDICATOR**  
Frank L. Ward, Exeter, N.H., assignor to Clarostat Mfg. Co. Inc., Dover, N.H.  
Filed Aug. 21, 1972, Ser. No. 282,596  
Int. Cl. B60q 5/00  
U.S. Cl. 340—52 D 3 Claims



A buzzer and control inserted in the ignition system of a motor vehicle which will cause actuation of the buzzer in the event that the ignition is turned off while the lights remain on.

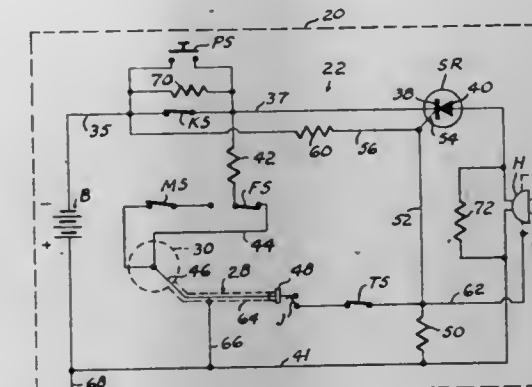
3,755,776  
**VEHICLE OPERATION INHIBITOR CONTROL SYSTEM**  
William A. Kotras, Milwaukee, Wis., assignor to General Motors Corporation, Detroit, Mich.  
Filed Apr. 7, 1972, Ser. No. 241,964  
Int. Cl. B60r 25/04  
U.S. Cl. 340—53 7 Claims



A control system for inhibiting vehicle operation until the vehicle operator has performed a physiological test includes a read-only memory which stores a plurality of preselected multidigit numbers. The various locations in the memory are continuously sequentially addressed until operator initiation of a

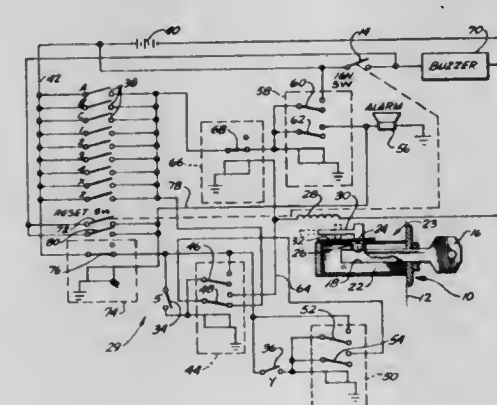
SET pushbutton from a keyboard unit. The location in memory being addressed at the time of actuation of the SET pushbutton is displayed on a display unit for a predetermined interval of time. After the time interval has expired the displayed number must be entered into a comparator by the operator from a keyboard unit in order to start the vehicle. If the number is incorrectly entered or not entered within a predetermined time the operator may select another number from memory by actuating the SET pushbutton. After three consecutive unsuccessful attempts, however, the system is disabled for a thirty minute period. In addition to the primary task a divided attention task is incorporated in the system which requires the operator to perform an unrelated task such as actuation of the brake pedal during the time the number is being entered at the keyboard unit. Failure of either the primary or divided attention task prevents operation of the vehicle. The invention further includes apparatus for selecting a predetermined location in memory which is not displayed but must be entered through the keyboard unit by the operator before the primary or divided attention task can be performed. The code number stored in the predetermined location is known only to the owner of the vehicle. Means are provided for bypassing the primary and divided attention task to permit vehicle operation after the correct code number has been inserted. However, when the bypass mode is selected by the operator the vehicle's hazard warning system is actuated to indicate that the primary and divided attention task have not been performed.

3,755,778  
**CYCLE BURGLAR ALARM**  
John J. Kennedy, P. O. Box 2125, Santa Clara, Calif., and Leon A. Wheeler, 5111 Yorkton Way, San Jose, Calif.  
Filed May 4, 1972, Ser. No. 250,261  
Int. Cl. B60r 25/10  
U.S. Cl. 340—65 8 Claims



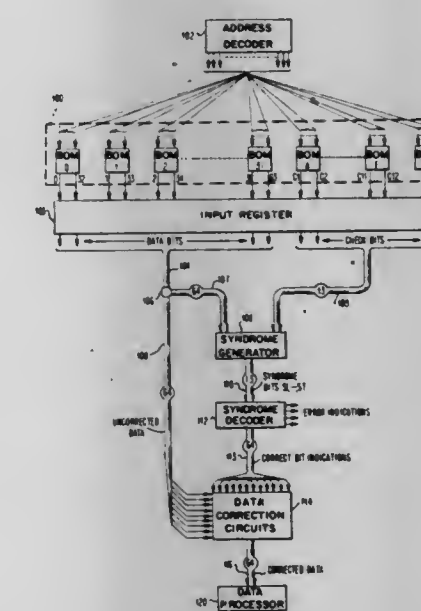
Unauthorized use or movement of a cycle is prevented by an electrical circuit including tilt and tamper switches connected with a wheel engaging retractable cable and alarm device controlled by a key operated switch.

3,755,777  
**IGNITION CODE OVERRIDE DEVICE**  
Joseph K. Lee, 10616 Bramblebush, Whittier, Calif.  
Continuation-in-part of Ser. No. 67,486, Aug. 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 875,450, Nov. 10, 1969, Pat. No. 3,618,009, which is a continuation-in-part of Ser. No. 711,269, March 7, 1968, Pat. No. 3,541,505. This application Aug. 12, 1971, Ser. No. 171,191  
Int. Cl. B60r 25/10  
U.S. Cl. 340—64 4 Claims



An automobile anti-theft system has an override mechanism for the ignition lock normally to prevent insertion of the ignition key into the lock. A number of pushbuttons located on the instrument panel are labeled to identify a secret code, and the pushbuttons are electrically coupled to the override mechanism to disable the mechanism when the proper code is selected. The pushbuttons are also electrically coupled to an alarm so that selecting an improper code activates the alarm.

3,755,779  
**ERROR CORRECTION SYSTEM FOR SINGLE-ERROR CORRECTION, RELATED-DOUBLE-ERROR CORRECTION AND UNRELATED-DOUBLE-ERROR DETECTION**  
Donald Walter Price, Lake Katrine, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.  
Filed Dec. 14, 1971, Ser. No. 207,751  
Int. Cl. G06f 11/12  
U.S. Cl. 340—146.1 AL 41 Claims



A system for correcting errors in a code word, including means for correcting single errors, means for detecting unrelated double errors and means for correcting related double errors in the code word. The system is particularly applicable to correcting errors in words generated from a memory system in which it is highly probable that if a double error occurs, it will occur in bits which are related to each other.



3,755,780

## METHOD FOR RECOGNIZING CHARACTERS

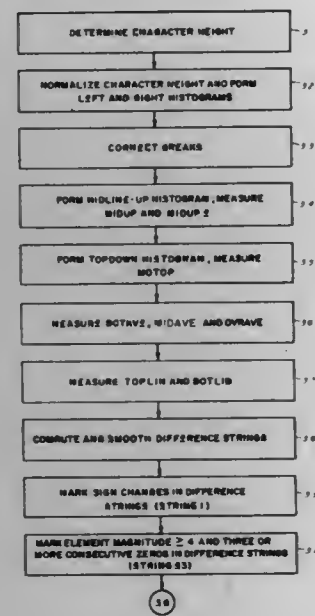
John Sammon, Utica, and Jon Sanders, New York, both of N.Y., assignors to Pattern Analysis & Recognition Inc., Rome, N.Y.

Filed June 28, 1971, Ser. No. 157,443

Int. Cl. G06k 9/10

U.S. Cl. 340—146.3 AC

131 Claims



A method for recognizing a digitized character. The shape of the character is represented by the number, positions and shapes of alternating contour convexities, as viewed from two sides of the character. The number and positions of the convexities define the sort group of the character, there being nine sort groups in the systems described. Each sort group has associated with it a separate linear discriminant logic test for every pair of characters which share the sort group. Depending on the sort group of the character to be recognized, the associated pairwise discriminant tests are performed, and the character class which passes a specified number of the tests is identified as the class of the character to be recognized.

3,755,781

## COMMUNICATION SYSTEM POLLING METHOD

Lee C. Haas, and Lynn P. West, both of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 28, 1972, Ser. No. 284,308

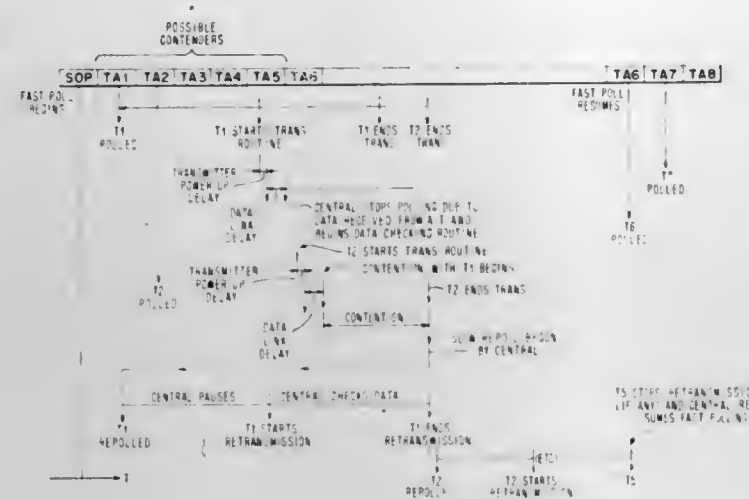
Int. Cl. H04q 5/00

U.S. Cl. 340—147 R

12 Claims

A polling scheme is disclosed in which a plurality of remote terminals or stations sharing a single communication channel

are polled by a central station at a high speed to solicit responses therefrom. The central station can effectively handle responses from only one remote station at a time and, since a plurality of stations are polled, the possibility of contention



between more than one remote station trying to respond during the same time period exists. If contention does occur, a second poll of possible contenders is conducted at a slow rate of speed to resolve the contention.

3,755,782

## COMMUNICATION SYSTEM POLLING METHOD

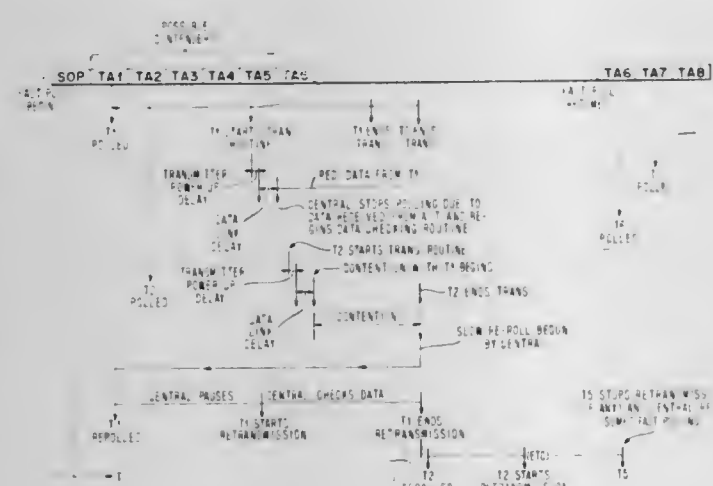
Lee C. Haas; Larry D. Larsen, and Lynn P. West, all of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 28, 1972, Ser. No. 284,310

Int. Cl. H04q 5/00

U.S. Cl. 340—147 R

12 Claims



A polling scheme is disclosed in which a plurality of remote terminals or stations sharing a single communication channel are polled by a central station at a high speed to solicit responses therefrom. The central station can effectively handle responses from only one remote station at a time and, since a plurality of stations are polled, the possibility of contention during the same time period exists. If contention does occur, a second poll of possible contenders is conducted at a slow rate of speed to resolve the contention.

3,755,783

## ARRANGEMENT FOR ANALYZING IRREGULARITIES IN REPETITIVE BIOLOGICAL PROCESSES

Garo Bohos Astarjian; Hristo Radev Hristov, and Chudomir Kirilov Nachev, all of Sofia, Bulgaria, assignors to Institut po Technicheska Kibernetika pri Ban, Sofia, Bulgaria

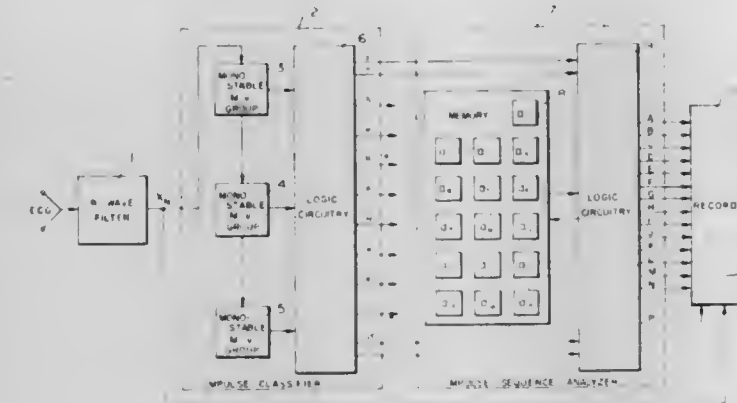
Filed Aug. 4, 1971, Ser. No. 168,816

Claims priority, application Bulgaria, Aug. 4, 1970, 15377

Int. Cl. A61b 5/04

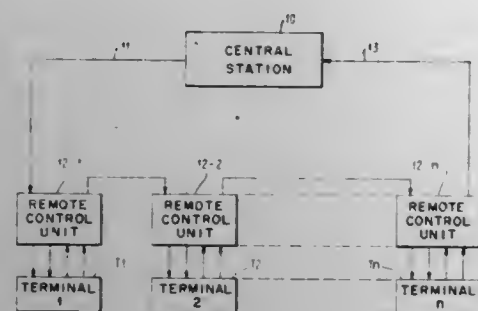
U.S. Cl. 340—168 B

13 Claims





is in use. At the receiving terminal, the indicia is retained in the state if the terminal is to use the slot for transmitting data.



If the receiving terminal has no data to send, the state indicia is reset to a different value. In the reset state, the slot is available to subsequent terminals for the transmission of data.

3,755,787

### SYSTEM FOR PROVIDING INTERRUPTS IN A NUMERICAL CONTROL SYSTEM

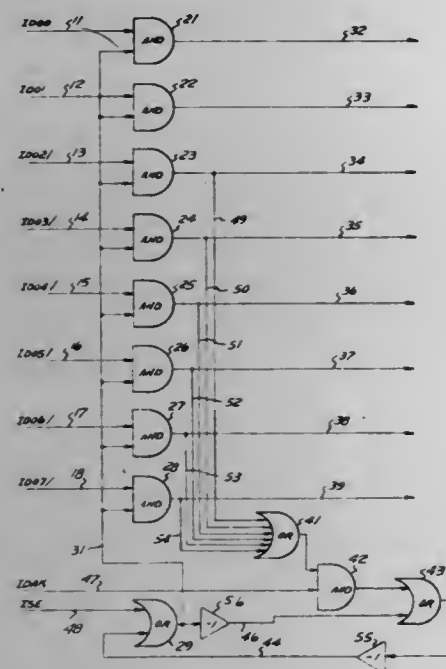
Hubert B. Henegar, Detroit, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 26, 1972, Ser. No. 249,446

Int. Cl. G06f 9/18

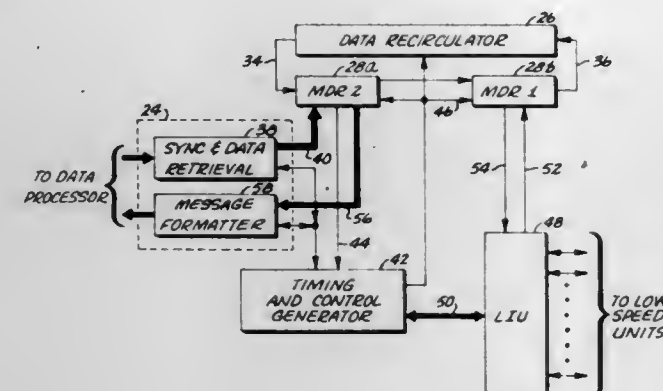
U.S. Cl. 340-172.5

6 Claims



A system for reliably applying interrupts to a numerical control system is described. The computer which processes the control data of the Numerical Control System periodically checks to see if an interrupt from an external device is present. The inventive system constrains the interrupts to the least significant pulse positions of the device addresses. The presence of interrupt pulses at the more significant pulse positions results in the automatic disabling of an interrupt system. The reliability of the system is therefore greatly enhanced because illegal or erroneous interrupts do not disturb the normal functioning of the system.

3,755,788  
DATA RECIRCULATOR  
DeVer Charles Finch, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.  
Filed May 1, 1972, Ser. No. 249,298  
Int. Cl. G11c 19/00, 21/00  
U.S. Cl. 340-172.5 5 Claims



An improved recirculating memory emulates a sonic or a glass delay line unit by providing a recirculating device and data item location addressing means.

3,755,789

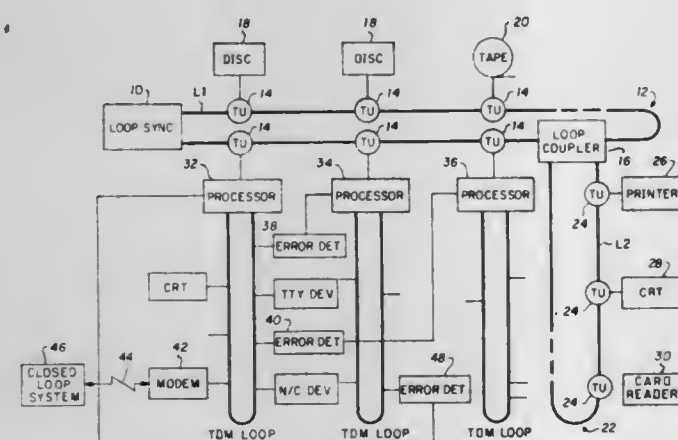
### EXPANDABLE COMPUTER PROCESSOR AND COMMUNICATION SYSTEM

Arthur A. Collins, Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.

Continuation-in-part of Ser. No. 74,783, Sept. 23, 1970, abandoned. This application Oct. 30, 1972, Ser. No. 302,147  
Int. Cl. G06f 5/06; H04j 3/08

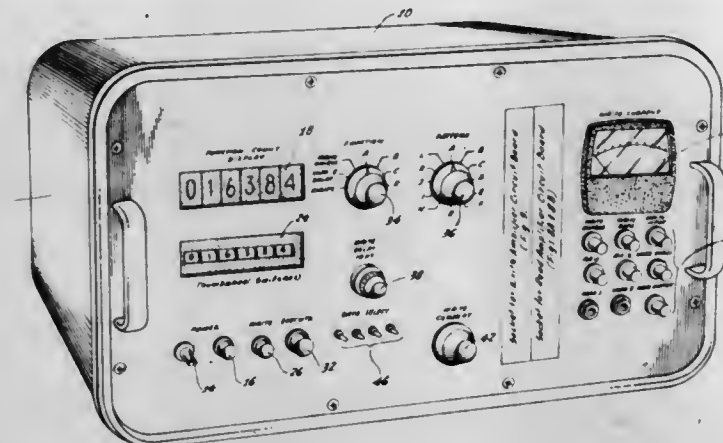
U.S. Cl. 340-172.5

11 Claims



A communications and computation system wherein the processors communicate with each other and with other devices via a loop of continuously circulating data. The loop of data is comprised of channels which are time multiplexed on a bit basis in a repeating sequence. Further loops may be made of data circulating at lower speeds by extracting one of the channels from the main loop. The processors may each have a further time division multiplex loop attached thereto wherein one of the processors monitors the errors in each of the remaining processors for providing a centralized indication of system errors.

3,755,790  
SECTOR AND ADDRESS TRACK WRITING  
INSTRUMENT FOR A ROTATING MAGNETIC MEMORY  
James K. Berger, Sherman Oaks, Calif., assignor to Pioneer Magnetics, Inc., Santa Monica, Calif.  
Continuation of Ser. No. 191,734, Oct. 22, 1971. This application Dec. 22, 1972, Ser. No. 317,536  
Int. Cl. G06f 3/02  
U.S. Cl. 340-172.5 9 Claims



An instrument for providing accurately timed recording signals for the sector and address tracks in the rotating drum or disc-type magnetic memories of digital computers, data processors, and the like; and for performing a wide variety of counting and other functions which are essential in the development, manufacture and maintenance of such computers and data processing. The instrument of the invention has the capability of counting timing bits, or revolutions of the rotating memory of the computer or data processing equipment; and it also has the capability of writing origin pulses, multiple index markers, and sector markers on the drum or disc of such equipment; as well as of copying from one track to another of the memory of such equipment with a variable phase delay, of adjusting bit symmetry in the timing track of the memory in the equipment; and of many other functions. In addition, special plug-in pattern logic boards may be provided for the instrument to enable it to write particular address or sector tracks on the rotating memory of a computer or data processor in accordance with the user's individual specifications.

### 3,755,791 MEMORY SYSTEM WITH TEMPORARY OR PERMANENT SUBSTITUTION OF CELLS FOR DEFECTIVE CELLS

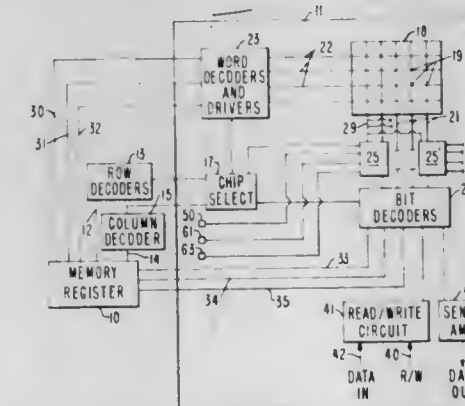
Luis Maria Arzubi, Colchester, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 1, 1972, Ser. No. 258,572

Int. Cl. G06f 11/00; G11c 7/00

U.S. Cl. 340-173 R

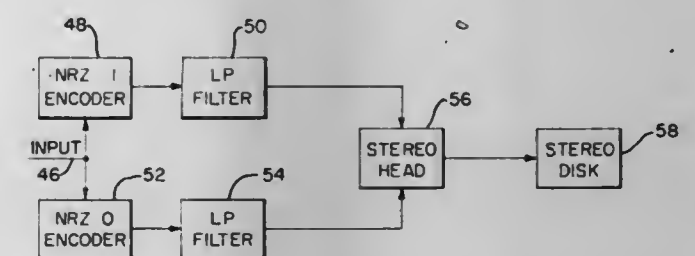
9 Claims



A memory storage system comprising both a main memory array and an alternate storage memory array coupled by a circuit that can either semipermanently or reversibly substitute the alternate array for a portion of the main array and retain the alternate array in its substituted position even when the memory is in a power down condition.

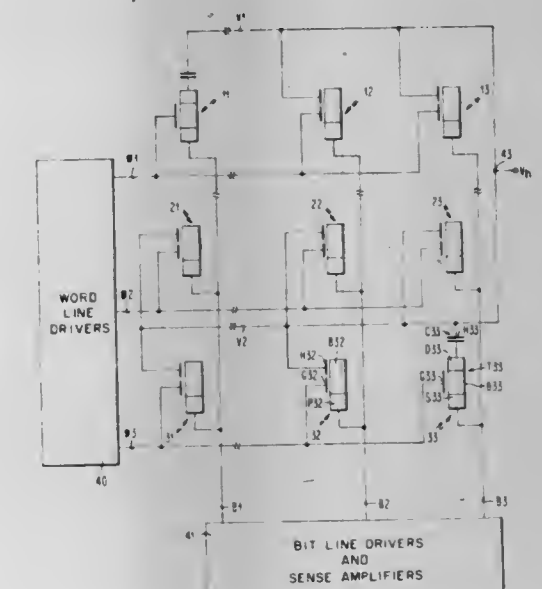
The described circuit achieves this by utilizing nonvolatile semiconductor devices arranged in a cross coupled configuration that can, if desired, be made to either temporarily or semipermanently substitute the alternate array for any desired portion of the main array.

3,755,792  
DIGITAL DATA STORAGE SYSTEM  
Norman L. Harvey, 381 Ocean Ave., Marblehead, Mass.  
Filed Mar. 26, 1971, Ser. No. 128,449  
Int. Cl. G11c 13/00  
U.S. Cl. 340-173 R 35 Claims



Method and apparatus for storing binary digital data on a storage medium such as a record disk, monaural or stereo, is provided. The data is converted to electrical signals which are encoded to 2 levels or 3 level signals, which signals are then inscribed upon the storage medium for future playback. Self clocking and error detection are built in the capabilities of the system. DC and low frequency components can also be handled.

3,755,793  
LATENT IMAGE MEMORY WITH SINGLE-DEVICE CELLS OF TWO TYPES  
Irving T. Ho, Poughkeepsie; Gerald A. Maley, Fishkill, and Hwa N. Yu, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.  
Filed Apr. 13, 1972, Ser. No. 243,793  
Int. Cl. G11c 7/00; H03k 25/02; G11c 11/34  
U.S. Cl. 340-173 R 31 Claims



A latent image memory is selectively operable as either a read-write memory or a read-only memory. The memory comprises an array of cells each preferably consisting of a single active device. A first set of the cells are each adapted to store



either one of two binary digits. A second set of the cells are each responsive to a first condition for storing either one of two binary digits and responsive to a second condition for storing only a single predetermined binary digit. Means are provided for selecting either the first condition to render the array operable as a read-write memory, or the second condition to render the array operable as a read-only memory. Each of the cells of the first set preferably comprises a field-effect transistor connected to a capacitor, and each of the cells of the second set preferably comprises a charge-coupled device.

3,755,794

## MESSAGE GENERATOR

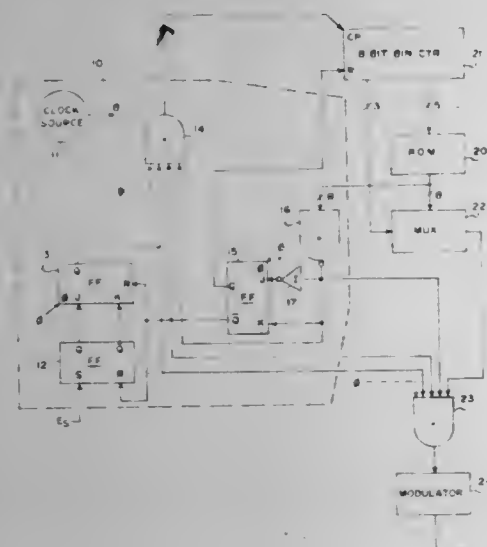
Gary N. Stapleford, Londonderry, N.H., assignor to Comex Systems, Inc., Manchester, N.H.

Filed Feb. 25, 1972, Ser. No. 229,335

Int. Cl. G11c 13/00

U.S. Cl. 340—173 R

7 Claims



A message generator employing a read only memory to store segmental bit patterns of the message. A binary counter is employed to both address the memory as well as to control the conversion of the addressed message bit patterns from parallel to serial form.

3,755,795

## ARRIVAL DETECTION AND DATA TRANSFER CONTROL SYSTEM FOR DATA

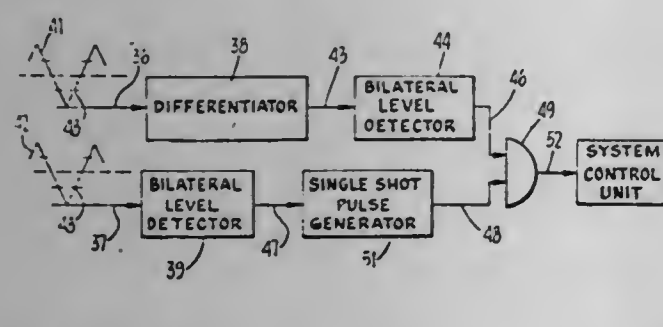
Frank J. Sordello, and Frank D. Ruble, both of San Jose, Calif., assignors to Information Storage Systems, Inc., Cupertino, Calif.

Filed Aug. 23, 1971, Ser. No. 173,752

Int. Cl. G11b 5/56

U.S. Cl. 340—174.1 C

7 Claims



A disc pack type of random access memory apparatus is described which includes a system for detecting when a read/write head arrives in the proximity of an addressed track location on a disc under conditions assuring that data can be transferred between the head and the track without data being erroneously transferred to or from adjacent tracks. A dif-

ferentiator is provided for determining from a head position signal the velocity of the head at a preselected distance from the center of the track. Upon a detector indicating that the head velocity at such preselected distance is equal to or below a value at which the head will not overshoot the track center beyond the range within which data can be safely transferred, the system will direct the start of data transfer between the head and the track even though the head has not yet settled at the track location.

3,755,796

## COBALT-PLATINUM GROUP ALLOYS WHOSE ANISOTROPY IS GREATER THAN THEIR DEMAGNETIZABLE FIELD FOR USE AS CYLINDRICAL MEMORY ELEMENTS

Andrew J. Griest, Jr., Shelburne, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,302

Int. Cl. G11c 11/02

U.S. Cl. 340—174 NA

10 Claims

A magnetic cylindrical domain memory element and array comprising a ferro-magnetic, metallic, cobalt base, hexagonal, single crystal alloy having anisotropic characteristics, means for creating magnetic domains in the alloy and means for maintaining and manipulating the domains in the alloy. The alloy is composed of more than 50 percent cobalt and contains an addition element depressing the saturation magnetization field of the cobalt, but stabilizing the hexagonal phase of the cobalt to a higher temperature. This improvement is achieved without materially changing the magneto-crystalline anisotropy inherent in the hexagonal cobalt structure. The addition elements include ruthenium, rhenium, osmium, rhodium, iridium, silicon, germanium, arsenic, and platinum.

3,755,797

## ELECTRICAL INFORMATION STORE

John Dawson, and Colin Bunting, both of Nottingham, England, assignors to Plessey Handel Und Investments A.G., Zug, Switzerland

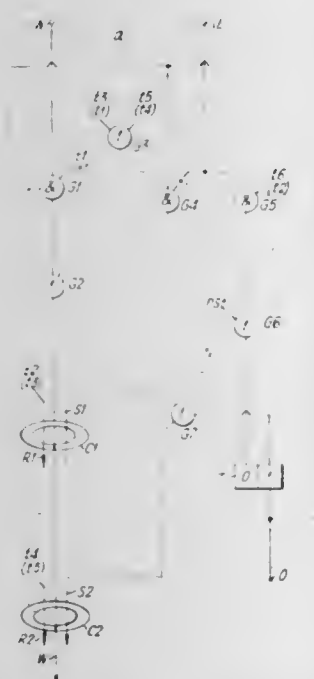
Filed Mar. 28, 1972, Ser. No. 238,880

Claims priority, application Great Britain, Apr. 13, 1971, 9,285/71

Int. Cl. G11c 11/06, 7/00

U.S. Cl. 340—174 PC

1 Claim



An electrical information store, capable of storing one binary digit despite interruption of power, which includes two magnetic storage cores having a common write circuit, the cores being read one at a time alternately, a core which has been read being re-written before the other core is read.

3,755,798

## DATA RECOVERY SYSTEM HAVING TRACKING SAMPLING WINDOW

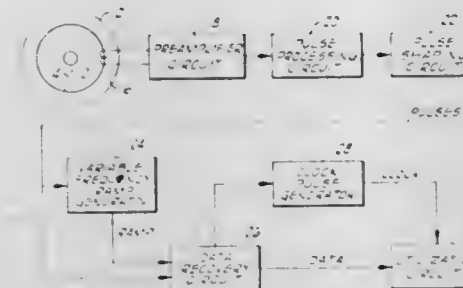
Michael C. Aguirre, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 29, 1972, Ser. No. 230,376

Int. Cl. G11b 5/02

U.S. Cl. 340—174.1 H

4 Claims



A data recovery system having a variable frequency ramp generator for producing ramp voltages having constant minimum and maximum values and a variable frequency phase locked to the frequency at which information is read from a magnetic media. The ramp voltages are applied to low and high threshold voltage detectors. These detectors and associated logic elements establish sampling windows which track the centers of information storage cells in spite of variations in cell length.

3,755,799

## ULTRAVIOLET FLAME DETECTOR

Richard C. Riccardi, Mayfield Heights, Ohio, assignor to Pyronics, Inc., Cleveland, Ohio

Continuation of Ser. No. 88,705, Nov. 12, 1970. This application July 31, 1972, Ser. No. 276,659

Int. Cl. G08b 21/00

U.S. Cl. 340—228

14 Claims



A flame detector is provided for indicating whether a flame is emitted from a burner. The detector includes an element which is sensitive to ultraviolet light and has a property of resistance falling to a relatively low value when exposed to ultraviolet light. The element is connected in series with a detector, a source of alternating current and a normally nonconducting control element which becomes conducting when a rectified direct current flows through the ultraviolet sensitive element so as to indicate that a flame is present. The flame responsive unit including the ultraviolet sensitive element and a series rectifier is interchangeable with the flame rod and burner connection of an earlier form of flame detector, in which a flame rod is employed in which the flame and flame rod serve as a rectifier for causing rectified direct current to flow between the flame rod and the burner base through the flame detector circuit when a flame is present. In the event of a malfunction such as an open circuit or short circuiting of the ultraviolet sensitive element, the detector provides fail safe protection in that it guards against indicating the presence of a flame during any such malfunction.

3,755,800

## AUTOMATIC FIRE ALARM DEVICE

Gustav Puri, Rapperswil, and Peter Weber, Stafa, both of Switzerland, assignors to Cerberus AG, Mannedorf, Switzerland

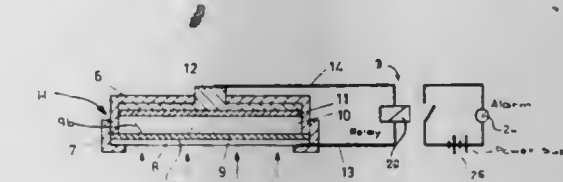
Filed July 10, 1972, Ser. No. 270,479

Claims priority, application Switzerland, July 15, 1971, 10437/71

Int. Cl. G08b 21/00

U.S. Cl. 340—237 R

21 Claims



Automatic fire alarm incorporating a device for detection of combustion gases comprising a detection cell having a cathode, an anode accessible to the combustion gases and an electrolyte arranged between the anode and cathode. The anode catalytically oxidizes the carbon monoxide contained in the combustion gases while giving off electrons. An electrical circuit is coupled with the anode and the cathode for current detection and alarm indicating purposes.

3,755,801

## DETECTING HELIUM LIQUID LEVEL

William C. Milo, Anaheim, Calif., assignor to the United States of America as represented by the Secretary of the Army

Filed Jan. 12, 1972, Ser. No. 217,180

Int. Cl. G08b 23/00

U.S. Cl. 340—244 R

2 Claims



A constant current is fed through a pair of silicon diodes whose voltage varies with the heat sinking capability of its surrounding. These diodes are positioned at the top level of the liquid helium and the voltage across the diodes are compared by two comparators. One comparator lights a signal light whenever one or more diode is in the liquid helium, and the other comparator lights the signal light only when both diodes are in the liquid.

3,755,802

## ALARM BOLT

Louis G. Bobrowski, Berlin, and Charles R. Suska, Roxbury, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Sept. 30, 1971, Ser. No. 185,308

Int. Cl. G08b 13/06

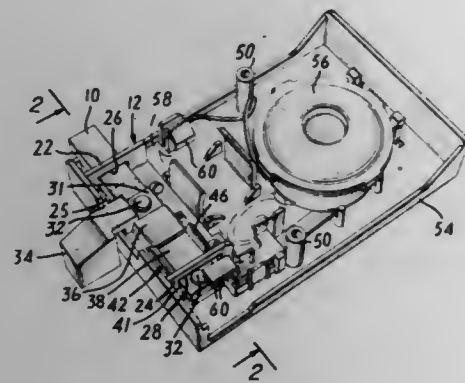
U.S. Cl. 340—274

12 Claims

An alarm bolt is slidably mounted in aligned apertures through upstanding legs of a U-shaped bracket. A U-shaped spring having an inwardly extending protrusion on both upstanding arms is fastened to the bracket with the arms extending upwardly around opposite sides of the bolt. The protrusions on the arms of the spring engage and yieldably hold the bolt in its normal operating plane parallel to the door, but when sufficient lateral force is applied to the bolt, the arms



will spread and allow the bolt to pivot upwardly. Upward pivoting of the bolt out of its normal operating plane is permitted by an oversized aperture in one of the bracket legs. When the end of the bolt pivots upwardly it engages and closes a pair of spaced contacts suspended closely over the bolt to complete a circuit to an alarm buzzer which signals the



presence of the intruder. To shut off the buzzer, a restoring force must be applied from the inside of the locked door opposite in direction to the force applied by the intruder. A pair of diverging sloping lateral surfaces integral with the bolt registers with the spring when the bolt is slid open to restore the bolt to its normal sliding plane and open the contacts to silence the buzzer.

3,755,803

**ELECTRONIC SURVEILLANCE SYSTEM**

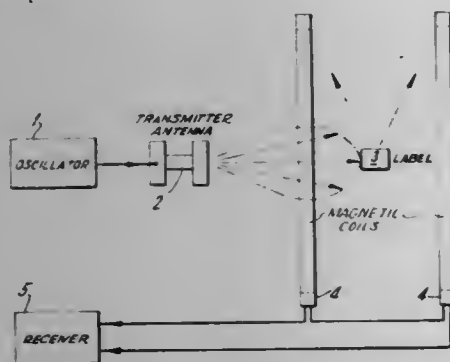
Peter Harold Cole, North Adelaide, and Richard Vaughn, Maroubra, New South Wales, both of Australia, assignors to Unisearch Limited, Kensington, New South Wales, Australia  
Filed Mar. 31, 1970, Ser. No. 24,319

Claims priority, application Australia, Apr. 2, 1969, 52968/69

Int. Cl. G08b 13/24; H03b 5/30

U.S. Cl. 340—280

14 Claims



An electronic surveillance system in which a passive label attached to an article under surveillance is interrogated by means of a transmitted signal in a first form of energy, the label using the energy of that signal to return a signal to a receiver which gives an indication of the presence of the label if a reply signal has predetermined characteristics. In order to enable the receiver to distinguish the reply signal from the original transmitted signal the label is constructed to produce the reply signal in a form of energy different from that of the original transmitted signal. It is preferred that the first form of energy is acoustic energy and the second form of energy is electromagnetic energy.

3,755,804

**LIQUID LEVEL SENSING SYSTEM AND APPARATUS**

Walter P. Johnson, 510 S. Smith St., Aurora, Ill.

Filed Oct. 18, 1971, Ser. No. 190,135

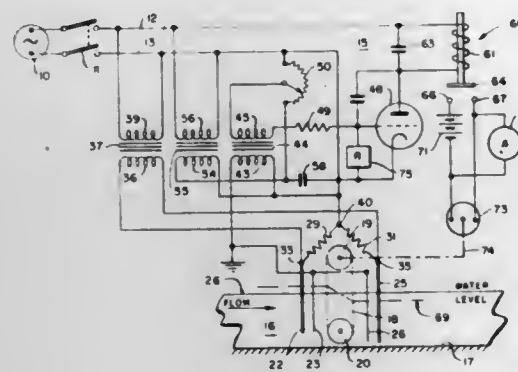
Int. Cl. G08b 23/00

U.S. Cl. 340—244 C

10 Claims

First and second pairs of electrodes are partially immersed into liquid on opposite sides of a cleaning screen with the elec-

trodes on the discharge side being immersed to a greater depth than the electrodes on the input side of the screen. The electrodes are connected in a bridge circuit, the output of which is connected in series with the secondary winding of a step-down



transformer supplied from a primary alternating current signal source. This series circuit is connected to the grid electrode of a triode which controls an alarm relay.

The electrodes in each of the pairs are parallel stainless steel electrodes separated by insulating spacers.

3,755,805

**CHARACTER GENERATOR FOR PRODUCING CHARACTERS ON THE SCREEN OF A CATHODE-RAY TUBE**

Pierre Dandrel, Sceaux, and Jean-Francois Moreau, Paris, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

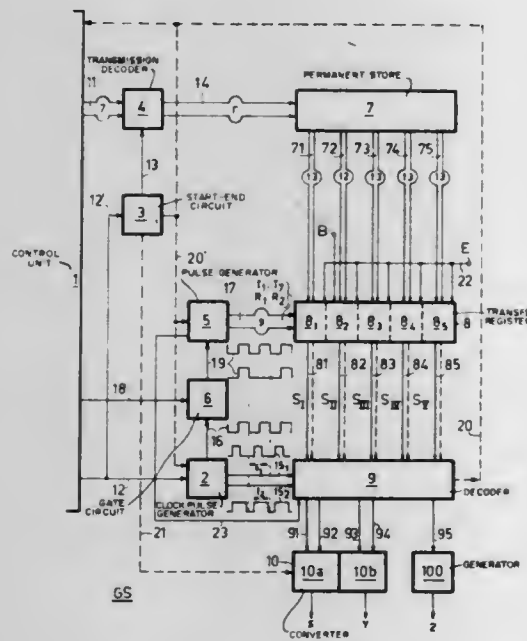
Filed Mar. 3, 1971, Ser. No. 120,528

Claims priority, application France, Mar. 5, 1970, 7007946

Int. Cl. G06f 3/14

U.S. Cl. 340—324 A

9 Claims



Ultra-rapid character generator for use with a cathode-ray tube operating on straight line segments and equipped with a permanent store from which by means of a store word address a character codeword is passed to a transfer register, which transfers the relevant character codeword sequentially in a number of relevant groups of 5 bits to a decoder, 3 bits determining 8 line segment directions, 1 bit determining a single or double line segment length and 1 bit determining the display or non-display.

3,755,806

**CALCULATOR DISPLAY CIRCUIT**

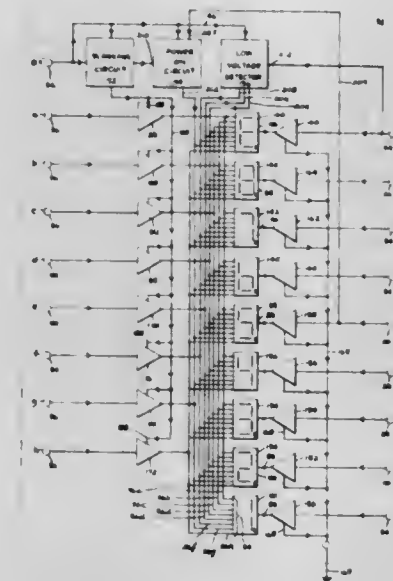
James H. Bunting, Acton, Mass., assignor to Bowmar/All, Inc., Acton, Mass.

Filed May 24, 1972, Ser. No. 256,286

Int. Cl. G08h 5/36

U.S. Cl. 340—324 R

20 Claims



A display circuit for use in an electronic calculator which includes a computing circuit for receiving and manipulating digital datum, the computing circuit including first means for repetitively generating a plurality of input signals individually in sequence and second means for repetitively generating a plurality of sequentially occurring groups of output signals with individual ones of the input and output signals occurring simultaneously, a plurality of input terminals, keyboard means for coupling the input terminals to receive selected ones of the input signals, means for generating a repeating clock pulse signal, and a power supply.

The display circuit comprises a plurality of luminescing display devices each of which includes a common element and a plurality of segment elements individually coupled to the common element and disposed in a geometric array corresponding to selected alpha-numeric characters. A plurality of digit driver amplifiers are coupled to the computing circuit to receive predetermined ones of the input signals and electrically in series with the predetermined ones of the common elements, and a plurality of segment driver amplifiers are coupled to the computing circuit to receive predetermined ones of the signals of said groups of output signals and connected electrically in series with all of the paralleled similar segment elements of all of said display devices. The digit driver amplifiers and segment driver amplifiers are rendered simultaneously and momentarily operative in response to the simultaneous reception of the input signals and groups of output signals with essentially all of the electrical energy passing through the segment and digit driver amplifiers, respectively, also passing through the display devices. The display devices are rendered individually, momentarily, and sequentially luminescent thereby.

3,755,807

**RESISTOR-LADDER CIRCUIT**

James L. Brown, Marion, Iowa, assignor to Collins Radio Company, Dallas, Tex.

Filed Feb. 15, 1972, Ser. No. 226,475

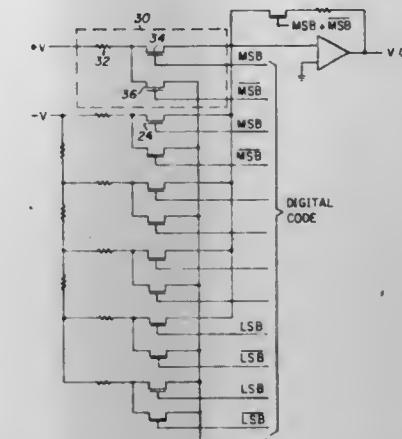
Int. Cl. H03k 13/04

U.S. Cl. 340—347 DA

7 Claims

An accurate resistor-ladder circuit using field-effect transistor switches. The field-effect transistors have on-resistances related to each other by a power of two whereby the

cumulative resistances of said ladder produce accurate digital-to-analog conversion. Advantageously, the related resistance values of the FET's are such as to lend themselves to in-



tegrated circuit implementation. Through use of "mirror" switch networks, deleterious effects of integrated circuit leakage currents are minimized.

3,755,808

**BINARY-CODE EXPANDER**

Giampiero Candiani, Milano, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milano, Italy

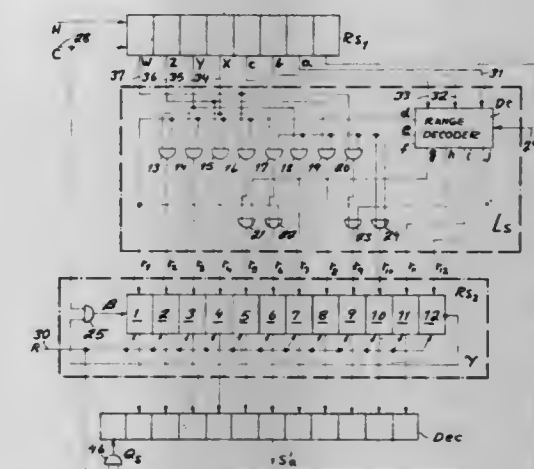
Filed Sept. 2, 1971, Ser. No. 177,307

Claims priority, application Italy, Sept. 24, 1970, 30135 A/70

Int. Cl. H04I 3/00

U.S. Cl. 340—347 DD

10 Claims



A compressed eight-bit word, including a polarity or sign bit  $Q_n$ , three range-indicating bits  $a, b, c$  and a group of four significant bits  $X, Y, Z, W$ , is reconverted into an original 12-bit word by introducing  $(7-n)$  zeroes between the sign bit  $Q_n$  and the significant group, with  $n$  representing the numerical value of the three-bit combination  $a, b, c$ , inserting a 1 just ahead of bit  $X$  unless  $a = b = c = 0$ , and adding a 1 (followed only by "0's") immediately behind bit  $W$  if this bit is in other than the No. 12 position. A logic matrix, forming part of a range decoder, receives the bits  $a, b, c$  from an eight-stage input register to control the transfer of significant bits  $X, Y, Z, W$  to consecutive stages of a 12-bit expansion register, along with an immediately preceding 1 if any of the controlling bits has a finite value. This group of bits is followed in the expansion register by at least one 1 whose position determines the extent to which the significant group with its leading 1 must be shifted away from the sign bit  $Q_n$ , invariably transferred to the first stage of that register.

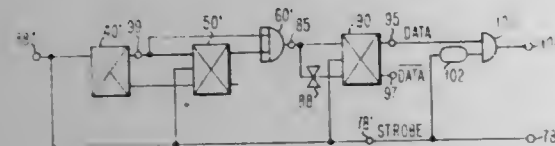


3,755,809

**RPM CODING AND DECODING APPARATUS THEREFOR**  
 Thomas Frank O'Rourke, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.  
 Filed Apr. 5, 1971, Ser. No. 131,234  
 Int. Cl. G06f 5/00

U.S. Cl. 340-347 DD

3 Claims



Magnetic and/or optic manifestations of retrospective pulse modulation coding having the important advantage of asynchronous data reduction is enhanced for ultimate utilization in synchronous data processing systems by electronic clocking signal deriving circuitry assembled from conventional logical circuit elements. Where some foreknowledge of the data bit rate is available, the jitter tolerance can be improved to 25 percent. A strobe pulse train, generated in conventional fashion, is applied to a timeout circuit having a period of the order of 1.5 baudel or the minimum spacing of the manifestations. A binary reciproductive circuit, a "binary flip-flop" circuit for example, is enabled by the timeout circuit and triggered by the strobe pulses for pegging the state of the waveform at the two comparison time points necessary in RPM decoding are compared, by a logical exclusive OR gating circuit for example. Another binary reciproductive circuit at the output of the exclusive OR gating circuit preferably is used for regenerating the data signal.

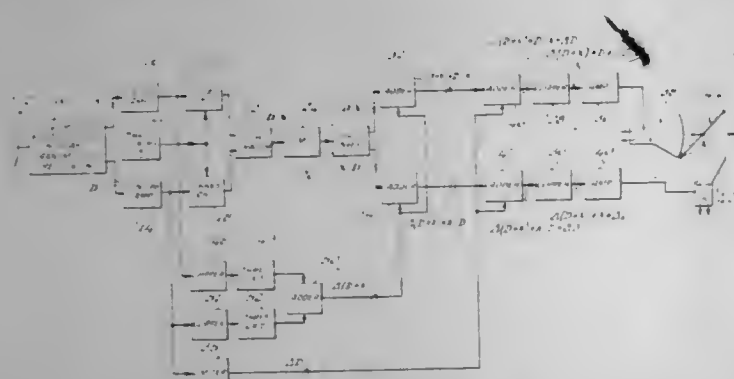
3,755,810

**DUOCHROMATIC INDICATOR FOR A DIVERSITY POLARIZATION RECEIVER**  
 George R. Latham, IV, Plainview, and Winfield T. Allen, Garden City, both of N.Y., assignors to Sperry Rand Corporation

Filed Feb. 27, 1957, Ser. No. 642,911  
 Int. Cl. G01s 7/04

U.S. Cl. 343-5 CD

9 Claims



5. Radar apparatus for receiving radar echo signals of microwave energy, said means including means having two output channels for deriving separate output signals proportional in amplitude, respectively, to the directly-polarized and cross-polarized components of the received microwave energy, a subtracter circuit coupled to the respective outputs of the receiving means for producing a signal related to the difference between the two output signals, phase inverting means coupled to the difference signal output of the subtracter means for producing two signals of opposite sense, first and second amplitude discriminating means for passing strong echo signals having amplitudes between predetermined levels, means for coupling said outputs of said receiving means to

respective ones of said amplitude discriminating means, amplitude limiter means coupled to one of the outputs of said receiving means, first summing means for additively combining the outputs of both said amplitude discriminating means, the output of said amplitude limiter means, and one of the outputs of said phase inverting means, second summing means for additively combining the outputs of both said amplitude discriminating means, the output of said amplitude limiter means, and the other output of said phase inverting means, a pair of cathode ray indicator tubes having different color-producing phosphor screens, the output of the first summing means being coupled to the intensity control of one indicator tube, and the output of the second summing means being coupled to the intensity control of the second indicator tube, and means for superimposing the images formed on the screens of the two indicator tubes.

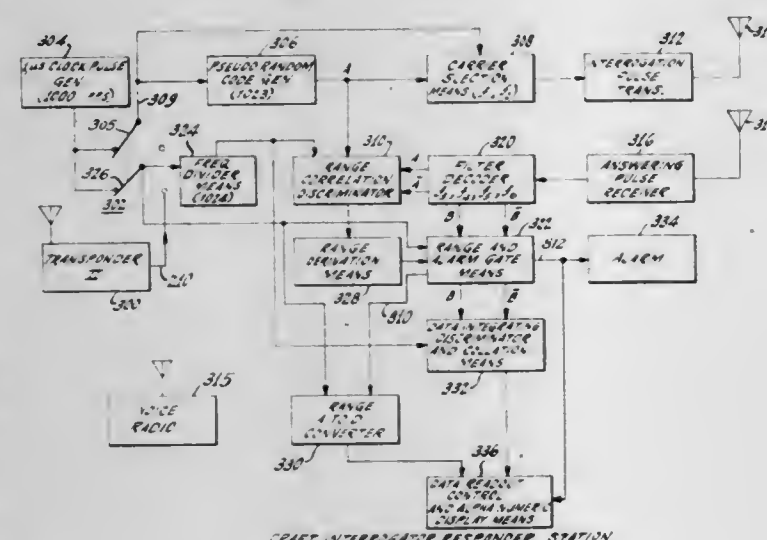
3,755,811

**DISCRIMINATING SIGNALING SYSTEM**  
 Jack Breckman, Haddonfield, N.J., assignor to Radio Corporation of America, New York, N.Y.

Filed June 10, 1968, Ser. No. 735,716  
 Int. Cl. G01s 9/56

U.S. Cl. 343-6.5 R

24 Claims



The disclosure is directed to a technique for discriminatingly extracting a subset of meaningful information signals from a babble of similar signals and then utilizing only the information contained in this subset. This technique is particularly suitable for use in an air collision avoidance system consisting of a plurality of essentially asynchronous interrogator-responder and transponder stations all of which utilize the same relatively long preselected pseudo-random code to provide the desired discrimination by correlation techniques.

3,755,812

**MOVING AND HARD TARGET INDICATOR**  
 Bartow Bechtel, Richardson, and John L. Snyder, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 29, 1967, Ser. No. 694,748  
 Int. Cl. G01s 9/42

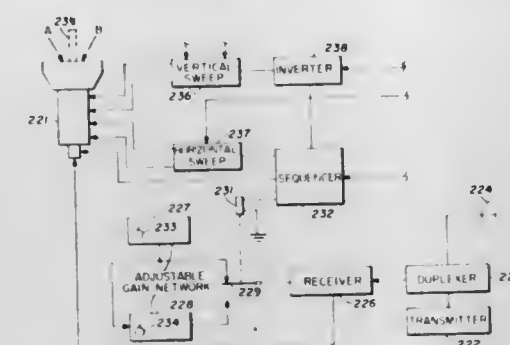
U.S. Cl. 343-7.7

34 Claims

Apparatus for displaying video radar signals of moving and hard targets including a direct view storage tube displaying the area under surveillance on one 180° sector and the mirror image of the scanned area on the opposite 180° sector. A dichroic beam splitter mirror is positioned orthogonal to the surface of the storage tube along a diameter between the two

180° display sectors to color code the differences between the two displays. For airborne operations, the composite display is

transponder by using the incoming RF signal itself to build up the responding signal. By this means, the uncertainty of the delay associated with the transponder is limited to a few cycles of radar frequency rather than a much larger time interval. At



ground stabilized by an operator observing the ground track velocity and cross-track errors, and readjusting the display stabilization to null the observed error.

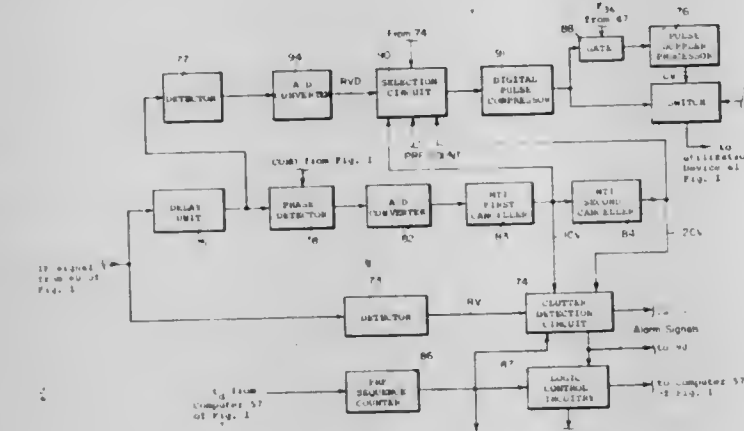
3,755,813

**MOVING TARGET SIGNAL PROCESSOR**  
 Norol T. Evans, San Pedro, and David D. Effinger, La Habra, both of Calif., assignors to The Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 1, 1971, Ser. No. 194,424  
 Int. Cl. G01s 9/42, 9/10

U.S. Cl. 343-7.7

27 Claims



The moving target signal processor of one disclosed embodiment is adapted for use with a pulse compression type radar, and includes: a plurality of clutter canceller units having clutter rejection characteristics which are a function of the number of consecutive range sweeps, from any given antenna scan location, processed thereby; clutter detection circuits for providing alarm signals indicative of excessive clutter content in the uncompressed received signals and the canceller units' uncompressed output signals, respectively; and logic control circuits responsive to the alarm signals, for controlling the number of transmissions at each scan location so that the processor's output signals have less than a predetermined clutter energy content.

3,755,814

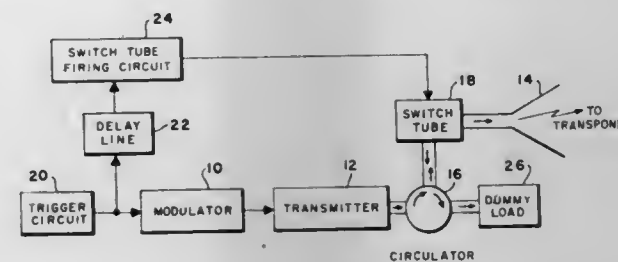
**PRECISION TRANSPONDER SYSTEM**  
 Frederick C. Alpers, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 8, 1971, Ser. No. 113,748  
 Int. Cl. G01s 9/06

U.S. Cl. 343-18 D

5 Claims

A gas discharge tube is placed in the transmission line of radar to briefly interrupt the transmitted signal to form a notched pulse that is transmitted to a transponder. The notching is reproduced in the responding signal from the



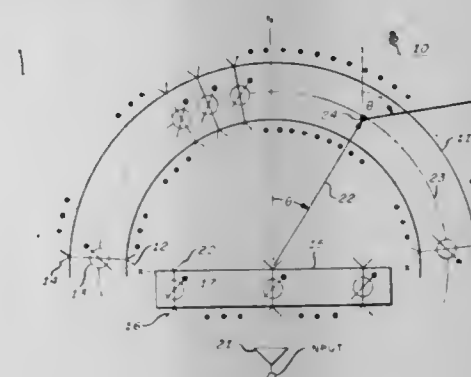
3,755,815

**PHASED ARRAY FED LENS ANTENNA**  
 John J. Stangel, Mahopac, and Pasquale A. Valentino, Brooklyn, both of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,863  
 Int. Cl. H04b 7/00

U.S. Cl. 343-100 SA

20 Claims



A phased array antenna functions as a source of electromagnetic energy directed toward a non-planar lens positioned in the near field of the phased array antenna. The non-planar lens includes a plurality of modules comprised of collector elements, phase shifter elements and radiator elements. Electromagnetic energy radiated from the feed antenna to the plurality of collector elements in the non-planar lens is coupled from the collector elements through the phase shifter elements to the radiating elements. Each phase shifter has a fixed delay which acts upon the electromagnetic energy transmitting through the phase shifter so that the electromagnetic energy radiated by the associated radiating element combines with the radiated energy from the other radiating elements to produce a beam having a modified scan angle relative to the scan angle of the emitted beam from the phased array antenna.

3,755,816

**RADIO NAVIGATION SYSTEM**  
 Dale L. Kratzer, Trevoze, Pa., assignor to AII Systems, Moorestown, N.J.

Filed May 1, 1970, Ser. No. 33,748  
 Int. Cl. G01s 11/00

U.S. Cl. 343-112 D

21 Claims

The modulation of a radio signal transmitted from a satellite is correlated with a similar waveform generated by a stable oscillator at the receiver. The phase of the latter is varied in a



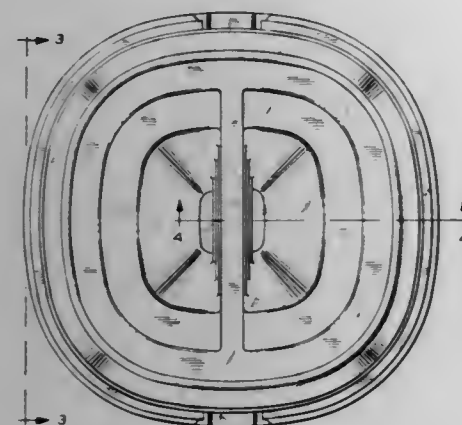




228,216

**COVER FOR A FOOD STORAGE DISH**  
 Harry Ray Hawley, Lombard, Ill., assignor to  
 American Can Company, Greenwich, Conn.  
 Filed Feb. 9, 1971, Ser. No. 114,105  
 Term of patent 14 years  
 Int. Cl. D7—02

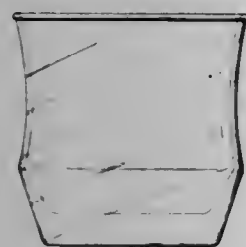
U.S. Cl. D7—131



228,217

**BEVERAGE GLASS OR SIMILAR ARTICLE**  
 Walter B. Achenbach, Toledo, Ohio, assignor to  
 Owens-Illinois, Inc., Toledo, Ohio  
 Filed Sept. 2, 1971, Ser. No. 177,536  
 Term of patent 14 years  
 The portion of the term of the patent subsequent to  
 Aug. 28, 1987, has been disclaimed  
 Int. Cl. D7—01

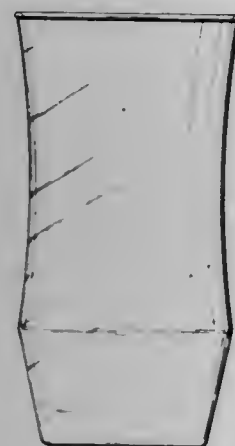
U.S. Cl. D7—15



228,218

**BEVERAGE GLASS OR SIMILAR ARTICLE**  
 Walter B. Achenbach, Toledo, Ohio, assignor to  
 Owens-Illinois, Inc., Toledo, Ohio  
 Filed Sept. 2, 1971, Ser. No. 177,538  
 Term of patent 14 years  
 The portion of the term of the patent subsequent to  
 Aug. 28, 1987, has been disclaimed  
 Int. Cl. D7—01

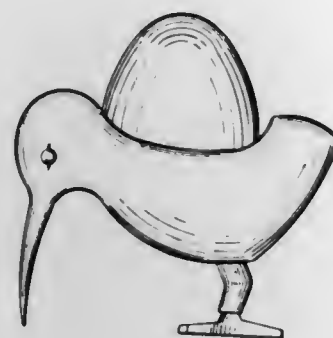
U.S. Cl. D7—15



228,219

**COMBINED EGG CUP AND SALT CELLAR**  
 Fred Snyder, 53 W. 23rd St.,  
 New York, N.Y. 10010  
 Filed Dec. 6, 1971, Ser. No. 205,452  
 Term of patent 14 years  
 Int. Cl. D7—01

U.S. Cl. D7—5



228,220

**BEVERAGE GLASS OR SIMILAR ARTICLE**  
 Walter B. Achenbach, Toledo, Ohio, assignor to  
 Owens-Illinois, Inc., Toledo, Ohio  
 Filed Sept. 2, 1971, Ser. No. 177,525  
 Term of patent 14 years  
 The portion of the term of the patent subsequent to  
 Aug. 28, 1987, has been disclaimed  
 Int. Cl. D7—01

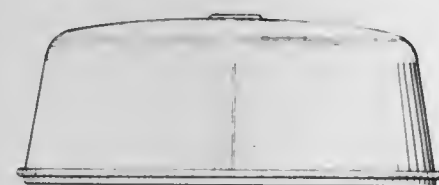
U.S. Cl. D7—15



228,221

**TRAY CLOSURE OR THE LIKE**  
 James B. Swett, Barrington, R.I., assignor to  
 Dart Industries Inc., Los Angeles, Calif.  
 Filed Nov. 2, 1971, Ser. No. 195,068  
 Term of patent 14 years  
 Int. Cl. D7—01

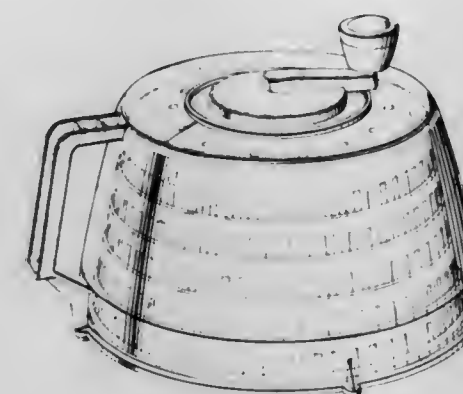
U.S. Cl. D7—40



228,222

**SALAD DRYER**  
 Jean Mantelet, Paris, France, assignor to Moulinex,  
 Societe Anonyme, Bagnole, France  
 Filed Aug. 2, 1971, Ser. No. 168,526  
 Claims priority, application Italy Feb. 2, 1971  
 Term of patent 14 years  
 Int. Cl. D7—04

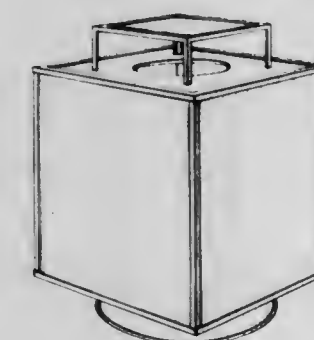
U.S. Cl. D7—47



228,223

**ADVERTISING DISPLAY REFUSE CONTAINER**  
 William A. Gilbert, Clayton, Mo., assignor to  
 Clean City Squares, Inc., Clayton, Mo.  
 Filed Aug. 10, 1972, Ser. No. 279,617  
 Term of patent 14 years  
 Int. Cl. D20—99

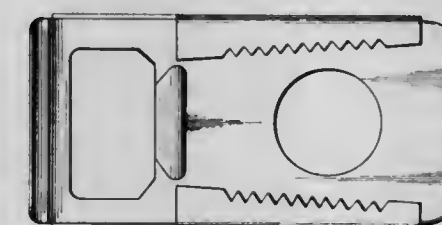
U.S. Cl. D7—191



228,224

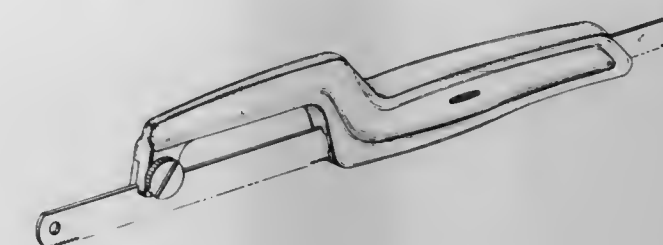
**COMBINED TWIST AND PRY BOTTLE OPENER**  
 Samuel Schlanger, 44 Forest Road,  
 Valley Stream, N.Y. 12123  
 Filed July 12, 1971, Ser. No. 161,369  
 Term of patent 7 years  
 Int. Cl. D8—05

U.S. Cl. D8—18

228,225  
HANDSAW

Robert F. West, West Simsbury, and Laird F. Covey,  
 Easton, Conn., assignors to The Stanley Works, New  
 Britain, Conn.  
 Filed May 3, 1971, Ser. No. 140,006  
 Term of patent 14 years  
 Int. Cl. D8—03

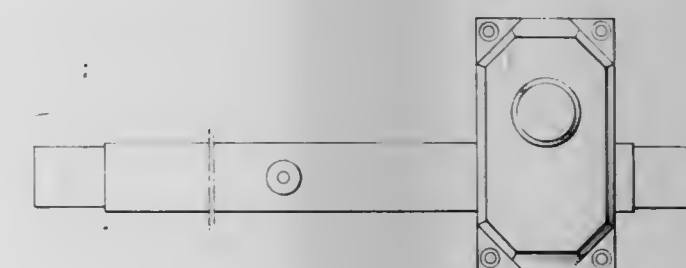
U.S. Cl. D8—97



228,226

**DOUBLE BAR LOCK**  
 Richard D. Babcock, 216 Fillmore St., Massapequa, N.Y.  
 11758; Melvin A. Gervis, 295 Franklin St., Hawthorn,  
 N.J. 07641; Eugene Taras, 46 Van Orden Road, Har-  
 rington Park, N.J. 07640; and Nicholas Giardina,  
 121 Wallace Ave., Mount Vernon, N.Y. 10552  
 Filed May 21, 1971, Ser. No. 146,000  
 Term of patent 14 years  
 Int. Cl. D8—07

U.S. Cl. D8—117



228,227

**CATCH FOR LUGGAGE OR THE LIKE**  
 Lazlo Bako, Woodcliff Lake, N.J., assignor to Walter  
 Kidde & Company, Inc., East Paterson, N.J.  
 Filed July 26, 1971, Ser. No. 166,331  
 Term of patent 14 years  
 Int. Cl. D8—07

U.S. Cl. 8—129

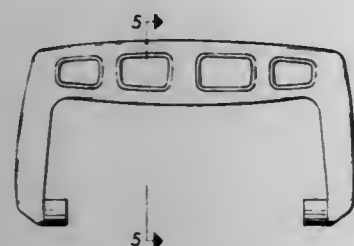




**228,228**  
**LUGGAGE HANDLE**

Robert Cantor, Coleshill, England, assignor to  
Antler Limited, Bury, Lancashire, England  
Filed Mar. 22, 1971, Ser. No. 127,092  
Claims priority, application Great Britain Sept. 23, 1970  
Term of patent 14 years  
Int. Cl. D8—06

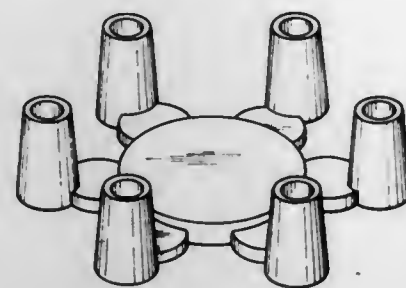
U.S. Cl. D8—154



**228,231**  
**FLEXIBLE STRUCTURAL CONNECTOR**

Bernard W. Tichy, Westbury, N.Y.  
(55 Florida St., Farmingdale, N.Y. 11735)  
Filed Oct. 27, 1971, Ser. No. 193,232  
Term of patent 14 years  
Int. Cl. D8—08; D8—09; D25—99

U.S. Cl. D8—236



**228,229**  
**CAN OR SIMILAR ARTICLE**

Carmen T. Mascia, Westmont, Ill., assignor to Continental  
Can Company, Inc., New York, N.Y.  
Original design application Apr. 12, 1971, Ser. No.  
133,486. Divided and this application Jan. 31,  
1972, Ser. No. 222,425  
Term of patent 7 years  
Int. Cl. D9—03

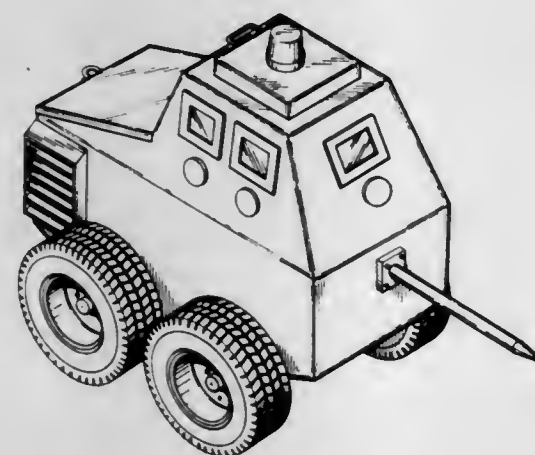
U.S. Cl. D9—216



**228,232**  
**GAS INJECTING ARMORED VEHICLE**

Dennis V. Miller, Wayzata, Minn., assignor to  
Tacord Corporation, Minneapolis, Minn.  
Filed May 17, 1971, Ser. No. 144,357  
Term of patent 14 years  
Int. Cl. D12—13

U.S. Cl. D14—3 R



**228,230**  
**CONTAINER FOR LIQUIDS**

Gary L. Cutler, East Lansing, Mich., assignor to  
Cutler Plastics Corporation, Lansing, Mich.  
Filed Apr. 14, 1972, Ser. No. 244,353  
Term of patent 14 years  
Int. Cl. D9—01

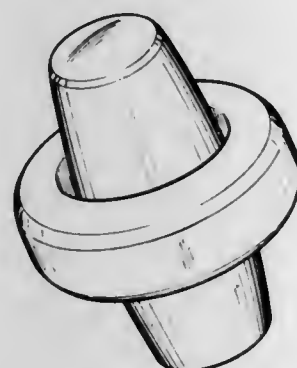
U.S. Cl. D9—52



**228,233**  
**SWIMMING POOL FLOATING DISPENSER**

Amello F. Fedrigo, 35750 Industrial Road,  
Livonia, Mich. 48150  
Filed Jan. 7, 1972, Ser. No. 216,330  
Term of patent 14 years  
Int. Cl. D23—01

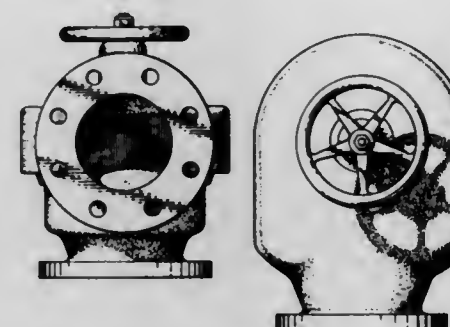
U.S. Cl. D23—3



**228,234**  
**PRESSURE RELIEF VALVE**

Jonathan A. Willetts, Rte. 3, P.O. Box 340-A,  
Annapolis, Md. 21403  
Filed Feb. 2, 1971, Ser. No. 112,104  
Term of patent 14 years  
Int. Cl. D23—01

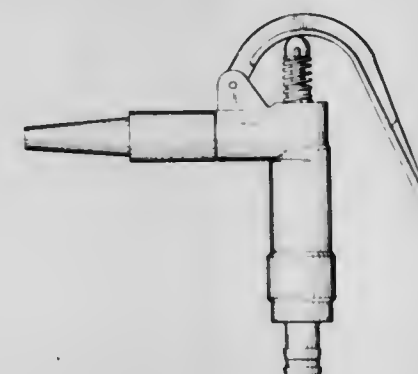
U.S. Cl. D23—19



**228,235**  
**FLOW REGULATOR NOZZLE**

Walter J. Otto, Wantagh, N.Y., assignor to  
Sethco Manufacturing Corp.  
Filed Oct. 20, 1971, Ser. No. 191,143  
Term of patent 14 years  
Int. Cl. D23—01

U.S. Cl. D23—34



**228,236**  
**ELECTRONIC CALCULATOR**

Takehiko Nakanishi, Yokohama, Japan, assignor to  
Kabushiki Kaisha Ricoh, Tokyo, Japan  
Filed Oct. 5, 1971, Ser. No. 186,827  
Claims priority, application Japan, Apr. 12, 1971  
Term of patent 7 years  
Int. Cl. D14—02

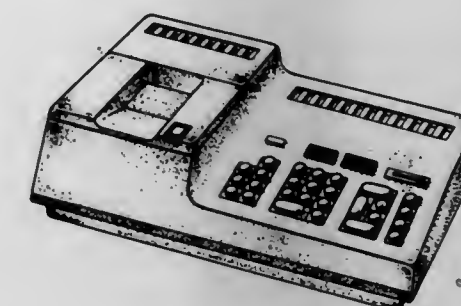
U.S. Cl. D26—5 C



**228,237**  
**ELECTRONIC CALCULATOR**

Takehiko Nakanishi, Yokohama, Japan, assignor to  
Kabushiki Kaisha Ricoh, Tokyo, Japan  
Filed Oct. 5, 1971, Ser. No. 186,828  
Claims priority, application Japan Apr. 12, 1971  
Term of patent 3½ years  
Int. Cl. D14—02

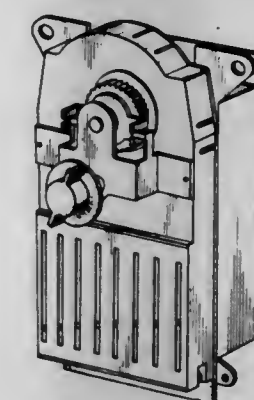
U.S. Cl. D26—5 C



**228,238**  
**TUNER FOR TELEVISION RECEIVER**

Yasuo Fujii, Osaka, Akio Hashima, Kyoto, Reiichi Sasaki,  
Osaka, and Tugio Ohigashi, Nara, Japan, assignors to  
Matsushita Electric Industrial Co., Ltd., Osaka, Japan  
Filed Dec. 23, 1971, Ser. No. 211,830  
Term of patent 14 years  
Int. Cl. D14—03, 14—99

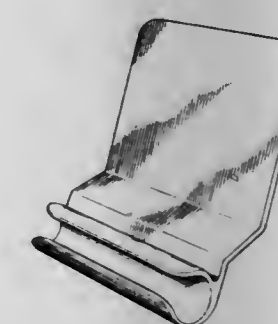
U.S. Cl. D26—14 E



**228,239**  
**WRITING IMPLEMENT HOLDER FOR A TELEPHONE**

George Bryce, 8400 Artesian, Detroit, Mich. 48228  
Filed Mar. 23, 1972, Ser. No. 237,608  
Term of patent 14 years  
Int. Cl. D14—03

U.S. Cl. 26—14 A

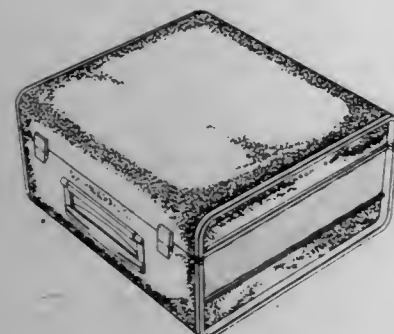
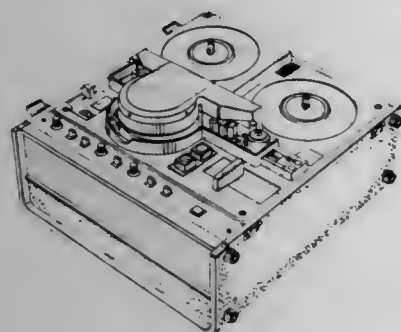




**228,240**  
**VIDEO TAPE RECORDER**

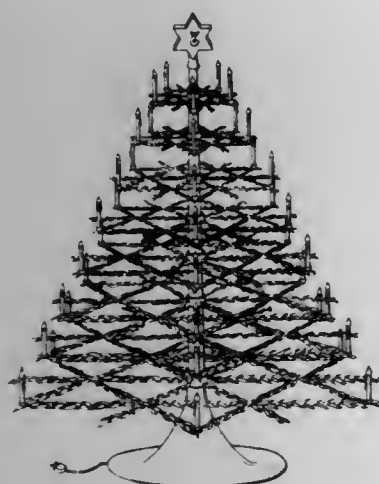
Yoshio Yabuno, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan  
Filed Sept. 1, 1971, Ser. No. 177,212  
Claims priority, application Japan Mar. 5, 1971  
Term of patent 14 years  
Int. Cl. D14—01

U.S. Cl. D26—14 B



**228,241**  
**MENORAH TREE**  
Roland Auclair, 142 Summit Ave.,  
Brookline, Mass. 02146  
Filed Sept. 10, 1971, Ser. No. 179,618  
Term of patent 14 years  
Int. Cl. D11—05

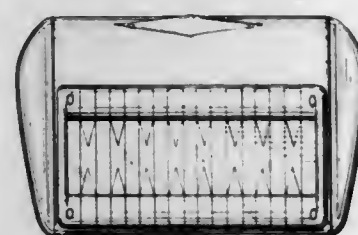
U.S. Cl. D29—1 A



**228,242**  
**MANUALLY MANIPULABLE EDUCATIONAL**  
**GAME INDICATOR**

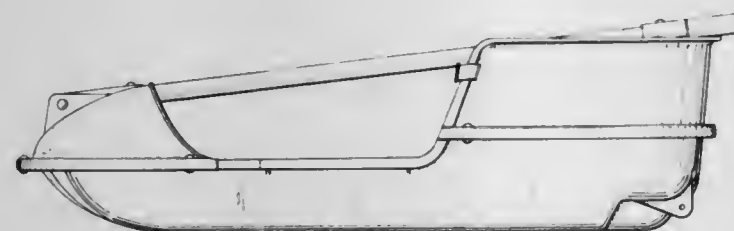
Leonce Marie H. Kraffe De Laubarede, Begnins, Switzerland, assignor to Le Petit Prince, Vaduz, Liechtenstein  
Filed June 9, 1971, Ser. No. 151,612  
Term of patent 14 years  
Int. Cl. D21—01

U.S. Cl. D34—5 MM



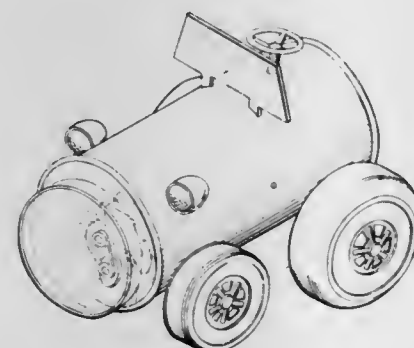
**228,243**  
**SNOW SLED**  
Joseph Diamond, Simsbury, Conn., assignor to Coleco Industries, Inc., Hartford, Conn.  
Filed Jan. 3, 1972, Ser. No. 215,258  
Term of patent 14 years  
Int. Cl. D21—02

U.S. Cl. D34—14 C



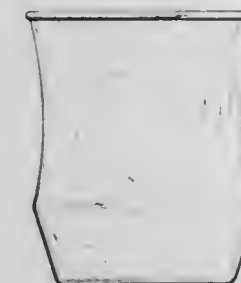
**228,244**  
**CAN TOY VEHICLE**  
Joseph F. Rozmarynowski and Gladys W. Stoll, both of  
6001 Bentley, Clarendon Hills, Ill. 60514  
Filed May 19, 1972, Ser. No. 255,302  
Term of patent 14 years  
Int. Cl. D21—01

U.S. Cl. D34—15 AJ



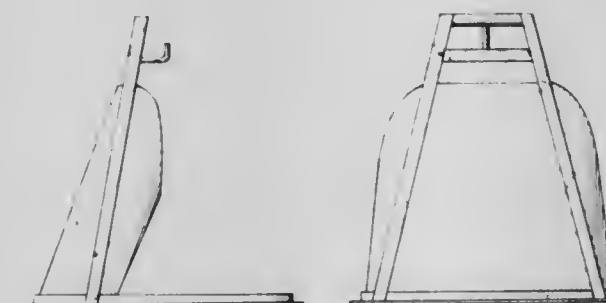
**228,245**  
**BEVERAGE GLASS OR SIMILAR ARTICLE**  
Walter B. Achenbach, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio  
Filed Sept. 2, 1971, Ser. No. 177,524  
Term of patent 14 years  
Int. Cl. D7—01

U.S. Cl. D36—8 G



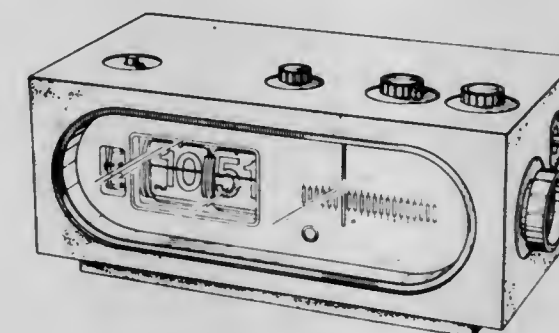
**228,246**  
**COMBINED SNOWMOBILE SUSPENSION STAND**  
**AND SAFETY GUARD OR SIMILAR ARTICLE**  
Charles F. Brightly, 3330 S. Cicero Ave.,  
Cicero, Ill. 60650  
Filed Apr. 5, 1971, Ser. No. 131,575  
Term of patent 14 years  
Int. Cl. D12—14

U.S. Cl. D41—1 D



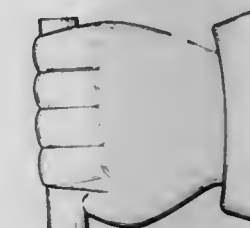
**228,247**  
**CLOCK-RADIO**  
Kikuo Ohta and Shuhei Taguchi, Osaka, Japan, assignors to Matsushita Electric Industries Co., Ltd., Osaka, Japan  
Filed Dec. 20, 1971, Ser. No. 210,314  
Term of patent 14 years  
Int. Cl. D10—01

U.S. Cl. D42—7 H



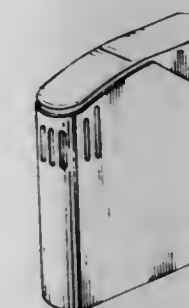
**228,248**  
**WATCH MOUNTING LINK FOR A**  
**WATCH BRACELET**  
Jeffrey Hassman, New York, N.Y., assignor to Jacoby-Bender, Inc., Woodside, N.Y.  
Filed June 23, 1971, Ser. No. 156,170  
Term of patent 14 years  
Int. Cl. D11—01

U.S. Cl. D45—4 B



**228,249**  
**LIGHTER**  
Yoichi Ohsawa, Tokyo, Japan, assignor to Ohsawa Manufacturing Co., Ltd.  
Filed Jan. 4, 1972, Ser. No. 215,453  
Claims priority, application Japan Aug. 7, 1971  
Term of patent 7 years  
Int. Cl. D27—05

U.S. Cl. D48—27 R



**228,250**  
**MOP WRINGER**  
Jack W. Young, 100 North "N," and James P. Boldrick,  
400 Midland Tower Building, both of Midland, Tex.  
79701  
Filed Nov. 2, 1971, Ser. No. 195,066  
Term of patent 14 years  
Int. Cl. D7—05

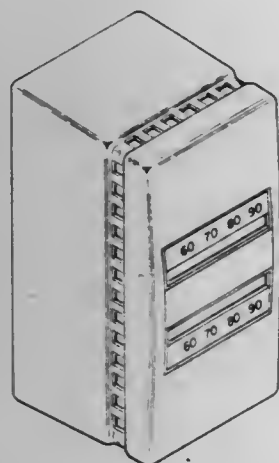
U.S. Cl. D49—29





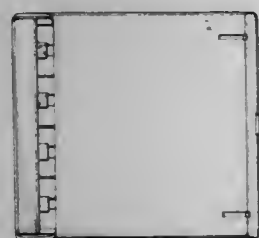
**228,251**  
**THERMOSTAT HOUSING OR THE LIKE**  
 Edward P. Stucka, Deerfield, Ill., assignor to  
 Honeywell Inc., Minneapolis, Minn.  
 Filed Sept. 30, 1971, Ser. No. 185,465  
 Term of patent 14 years  
 Int. Cl. D10-04

U.S. Cl. D52-7 R



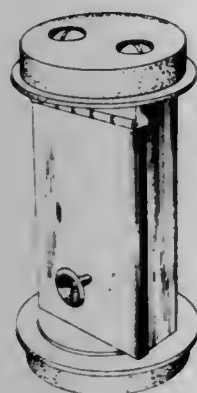
**228,252**  
**PACKAGE DISPENSER OR THE LIKE**  
 Anthony J. De Bernardi, 34-41 85th St.,  
 Jackson Heights, N.Y. 11372  
 Filed May 25, 1972, Ser. No. 257,063  
 Term of patent 14 years  
 Int. Cl. 20-01

U.S. Cl. D52-2 R



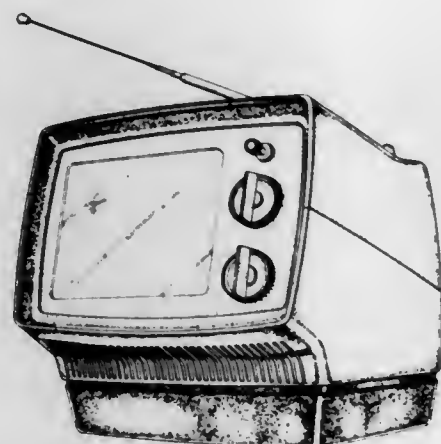
**228,253**  
**VACUUM SYSTEM CARRIER**  
 Bruce J. Diem, P.O. Box 30071, Cincinnati, Ohio 45230  
 Filed Aug. 9, 1971, Ser. No. 170,398  
 Term of patent 14 years  
 Int. Cl. D9-07

U.S. Cl. D55-1 C



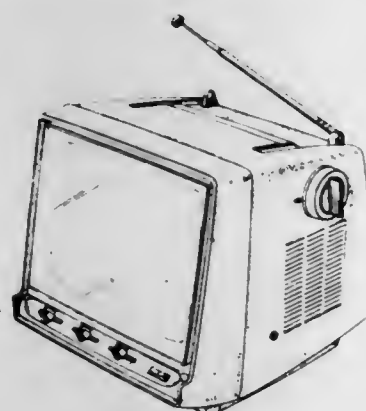
**228,254**  
**COMBINED TELEVISION RECEIVER  
 AND BATTERY CASE**  
 Osamu Ando, Tokyo, Japan, assignor to New  
 Nippon Electric Co., Ltd., Osaka, Japan  
 Filed May 17, 1971, Ser. No. 144,364  
 Term of patent 14 years  
 Int. Cl. D14-03

U.S. Cl. D56-4 D



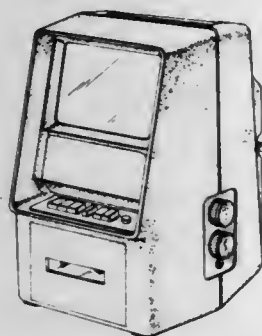
**228,255**  
**TELEVISION RECEIVER**  
 Shinji Ikeya and Hiroshi Shimizu, Gunma, Japan,  
 assignors to Sanyo Electric Co., Ltd., Osaka, Japan  
 Filed June 28, 1971, Ser. No. 157,797  
 Term of patent 3 1/2 years  
 Int. Cl. D14-03

U.S. Cl. D56-4 D



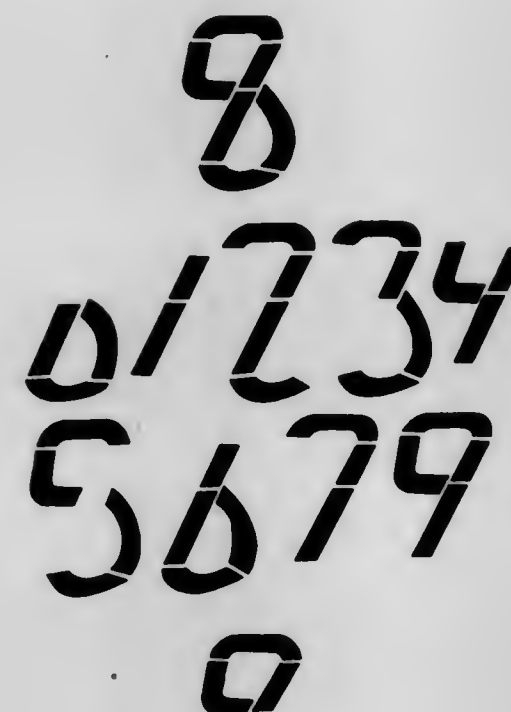
**228,256**  
**SLIDE PROJECTOR**  
 Michiko Masuda and Masaaki Furukawa, Tokyo, Japan,  
 assignors to Hitachi, Ltd., Tokyo, Japan  
 Filed July 17, 1972, Ser. No. 272,655  
 Claims priority, application Japan Jan. 17, 1972  
 Term of patent 7 years  
 Int. Cl. D16-02

U.S. Cl. D61-1 N



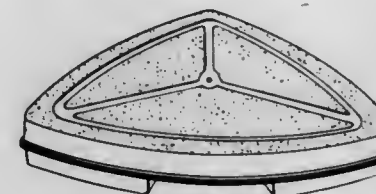
**228,257**  
**FONT OF ELECTRO-OPTICAL CHARACTERS**  
 Brian Astle, Hightstown, N.J., assignor to  
 Optel Corporation, Princeton, N.J.  
 Filed Feb. 17, 1972, Ser. No. 227,333  
 Term of patent 14 years  
 Int. Cl. D18-04

U.S. Cl. D64-12 B



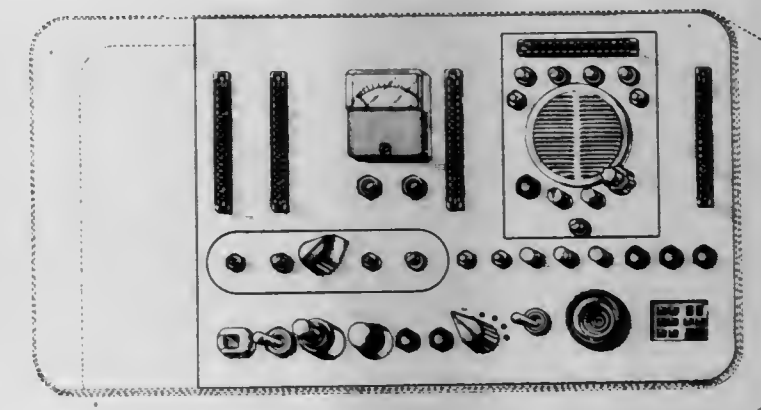
**228,258**  
**RAFT**  
 Martin E. McClure, Bloomfield Hills, Mich., assignor to  
 Diversified Glass Products, Inc., Rochester, Mich.  
 Filed Mar. 31, 1971, Ser. No. 130,052  
 Term of patent 14 years  
 Int. Cl. 21-03

U.S. Cl. D71-1 HH



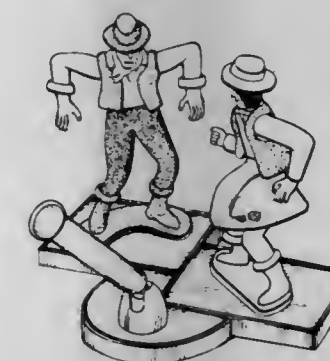
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**INDICATOR PANEL FOR A SECURITY ALARM  
 SYSTEM PORTABLE TEST UNIT**  
 James F. Pinkham, Kensington, Md., assignor to  
 Multra-Guard, Inc., Hampton, Va.  
 Filed June 22, 1971, Ser. No. 155,688  
 Term of patent 14 years  
 Int. Cl. D29-99

U.S. Cl. D72-1 R



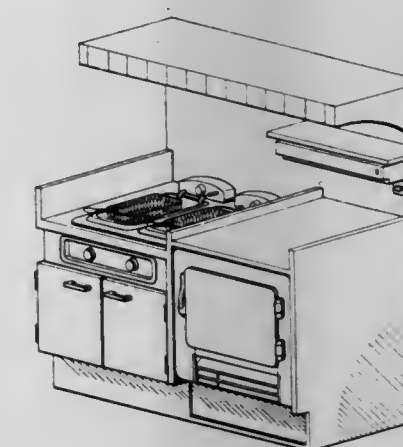
**228,260**  
**PENHOLDER DESK STAND**  
 Michael Panarelli, 16 Burns Ave., Quincy, Mass. 02169  
 Filed June 29, 1971, Ser. No. 158,151  
 Term of patent 14 years  
 Int. Cl. D19-02

U.S. Cl. D74-5 A



**228,261**  
**COMBINATION DEEP-FAT FRYER RANGE, RE-  
 FRIGERATOR AND FOOD STORAGE UNIT**  
 Donald M. Bull, Eugene, Oreg., assignor to D.A.C.  
 Investment Corporation, Eugene, Oreg.  
 Filed Aug. 3, 1971, Ser. No. 168,804  
 Term of patent 14 years  
 Int. Cl. D7-02

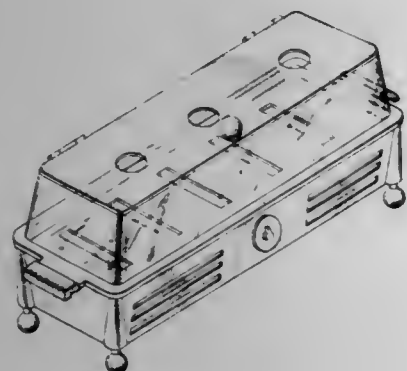
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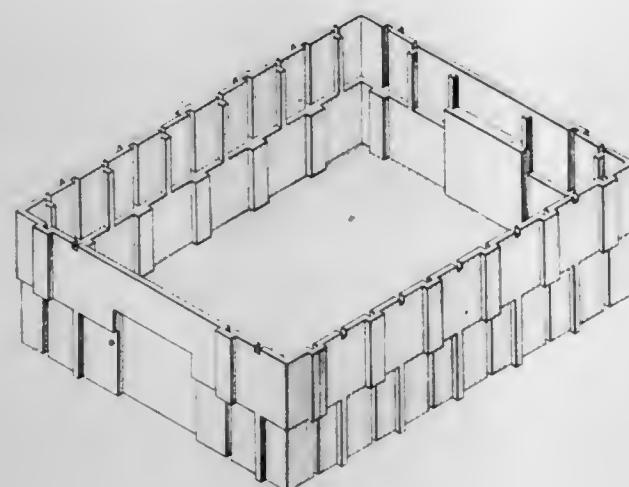
228,262  
**DRYER FOR BRUSHES AND COMBS**  
 Glen R. Hunter, 11415 Ventura Blvd.,  
 Studio City, Calif. 91604  
 Filed Nov. 5, 1971, Ser. No. 196,256  
 Term of patent 14 years  
 Int. Cl. D28—03

U.S. Cl. 86—10 A



228,263  
**STACKING TRAY OR THE LIKE**  
 Charles R. Jones, St. Louis, Mo., assignor to  
 Contico International, Inc., St. Louis, Mo.  
 Filed July 8, 1971, Ser. No. 160,974  
 Term of patent 3½ years  
 Int. Cl. D3—99

U.S. Cl. D87—1 R



## LIST OF PATENTEEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF AUGUST, 1973

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Wessel, Wolf; and Wahl, Josef, 3,754,537.  
Boshagen, Horst: See—  
Lorenz, Walter; Boshagen, Horst; Hammann, Ingeborg; and Stendel, Wilhelm, 3,755,344.  
Bottenbruch, Ludwig: See—  
Darson, Gerhard; Bottenbruch, Ludwig; and Schnell, Hermann, 3,755,467.  
Boucher, Raymond; and Boudreau, Robert, to Hedstrom Company. Playseat with finger guard, 3,754,786, Cl. 297-5.000.  
Bouchilloux, Jean; Fabre, Albert; and Faure, Alphonse, to Rhone-Poulenc S.A. Anisotropic organosilicon polymer membrane, 3,754,375, Cl. 55-16.000.  
Boudreau, Robert: See—  
Boucher, Raymond; and Boudreau, Robert, 3,754,786.  
Bould, Fred; and Davies, Norman, to Westinghouse Electric Corporation. Circuit interrupter with contact actuating lever arm adjusting means, 3,755,639, Cl. 200-153.00h.  
Bouligny, R. H., Inc.: See—  
Pierce, John H., 3,754,530.  
Boulin, Jacques R.; and Nepomiashtch, Alexis, to Societe Anonyme de Telecommunications. Method of building for electric filters, 3,755,762, Cl. 333-70.00s.  
Bouvrande, Andre Maurice, to Societe De Telecommunications Electronique Aeronautique Et Maritime "T.E.A.M. Luminous switching key- or push-button, 3,755,661, Cl. 240-2.00s.  
Bowen, Duane C. Tightwire sports equipment, 3,754,757, Cl. 272-60.000.  
Bowman, E. W., Incorporated: See—  
Bowman, Edward W., 3,754,885.  
Bowman, Edward W., to Bowman, E. W., Incorporated. Jet fired zonal lehr for applying treating medium inside and outside of glass containers simultaneously, 3,754,885, Cl. 65-119.000.  
Bowmar/Alti, Inc.: See—  
Bunting, James H., 3,755,806.  
Box, Theodor. Poultry transport cage, 3,754,676, Cl. 220-31.00s.  
Boxman, Robert Walter, to Standard Tube Canada Limited. Table frame structures and corner constructions therefor, 3,754,728, Cl. 248-188.000.  
Boy, Max W., 20% to Lee, Raymond, Organization, Inc., The. Conveyor belt clip, 3,754,636, Cl. 198-175.000.  
Boycott, William A., Jr., to Udyline Corporation. Composition and method for suppressing spray in electrolytic process, 3,755,095, Cl. 204-51.000.  
Boyer, Michel, to Bell Canada. Wired equipment shelf, 3,755,630, Cl. 179-98.000.  
Brady, Donnie G.: See—  
Gray, Roy A.; and Brady, Donnie G., 3,755,227.  
Brady, Thomas G., to Bendix Corporation, The. Potting compound and method of potting, 3,755,241, Cl. 260-33.6ub.  
Braid, Milton, to Mobil Oil Corporation. Phosphate or phosphite esters of (2-hydroxyalkyl) phosphorodithioates, 3,755,501, Cl. 260-928.000.  
Brammell, Inc.: See—  
Van Gompel, James J., 3,754,516.



Branham, Donald R.; and Borg, Paul E., to Pyramid Derrick & Equipment Corporation. Transportable drilling mast substructure with elevatable drawworks. 3,754,361, Cl. 52-115.000.

Brantley, Richard Kirwin, to Du Pont de Nemours, E. I., and Company. Ureidopyrazoles as defoliant. 3,754,887, Cl. 71-74.000.

Braucksiak, Henry C.; Katchka, Jay R.; and Dykzeul, Theodore J., to Robertshaw Controls Company. Dual rate gaseous fuel burner assemblies. 3,754,853, Cl. 431-285.000.

Braun, B., Melsungen Aktiengesellschaft. See—Hampel, Heinz, 3,754,644.

Braun, Oskar, to Xerox Corporation. Apparatus for placing rollers in contact in a pressure fuser assembly. 3,754,819, Cl. 355-3.000.

Braunberger, Benjamin A.: See—Burrough, Donald E.; and Braunberger, Benjamin A., 3,754,383.

Breasbois, Lee H.: See—Robertson, Gordon W.; and Breasbois, Lee H., 3,755,042.

Breckman, Jack, to RCA Corporation. Discriminating signaling system. 3,755,811, Cl. 343-6.50r.

Breitschwerdt, Werner; Gemeiner, Gunter; Kolle, Erwin; and Bonisch, Herbert, to Daimler-Benz Aktiengesellschaft. Window lifter, especially for curved side windows of motor vehicles. 3,754,353, Cl. 49-227.000.

Brennan, Robert P.: See—DeViney, Terrence E.; and Brennan, Robert P., 3,755,712.

Brenneisen, Paul; Callay, Jean-Jacques; and Margot, Alfred, to Ciba-Geigy Corporation. Isothiocyanate-diphenylamines. 3,755,406, Cl. 260-454.000.

Breslow, Jeffrey D., to Glass, Marvin, & Associates. Board game apparatus. 3,754,763, Cl. 273-134.00b.

Breslow, Jeffrey Dale; and Jaworski, Eugene, to Glass, Marvin, & Associates. Round-about game apparatus. 3,754,759, Cl. 273-1.00r.

Brewing Patents Limited: See—Palmer, Godfrey Henry Oliver, 3,754,929.

Brichta, Franz, to SKF Kugellagerfabriken GmbH. Method and apparatus for lubricating rotating bearings. 3,754,622, Cl. 184-1.00d.

Bridges, John A., to Aladdin Industries, Incorporated. Insulated tray and cover therefor. 3,754,640, Cl. 206-4.000.

Bridges, Richard J.; and Harper, Paul D. Apparatus for electrode rafter control. 3,754,379, Cl. 55-104.000.

Bridwell, Billy W.; Carlson, Emery J.; Edgecomb, Raymond H.; and Watson, William E., to Allied Chemical Corporation. Reduction of sulfur dioxide. 3,755,551, Cl. 423-570.000.

Briggs & Stratton Corporation: See—Harkness, Joseph R., 3,754,543.

Briggs, Forrest A., to Standard Register Company, The. Slip clutch drive mechanism. 3,754,412, Cl. 64-29.000.

Brigham, Donald A.: See—Grossman, Leonard N.; and Brigham, Donald A., 3,755,188.

Brill, Frank D., to Seeburg Corporation of Delaware, The. Infusor drive means. 3,754,462, Cl. 99-287.000.

Bristol-Myers Company: See—Doyle, Terrence W.; Morris, Leeson R.; and Menard, Marcel, 3,755,432.

Bristow, Norman William: See—Adams, Stewart Sanders; Armitage, Bernard John; Bristow, Norman William; and Heathcote, Bernard Vincent, 3,755,593.

British Insulated Callender's Cables Limited: See—Bonikowski, Zbigniew; and Keen, Bruce Henry, 3,755,516.

British Steel Corporation: See—Jackson, Albert Edward; and Williams, Ernest Wynne, 3,755,090.

Britt, Jack; and Rodgers, Leonard John, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty, Government of the. Gas turbine engine thrust reversers. 3,754,708, Cl. 239-265.290.

Broadfoot, John T. Apparatus for pneumatically placing semi-fluid materials. 3,754,683, Cl. 222-134.000.

Broekman, Frederik W.: See—Tendeloo, Henricus J. C.; Broekman, Frederik W.; Stroer, Wouter F. H.; and Siltmelink, Johannes J., 3,755,585.

Broll, Richard; and Heymer, Gero, to Knapsack Aktiengesellschaft. Powdered fire extinguishing agents. 3,755,163, Cl. 252-7.000.

Brooks, Herman H.: See—Phillips, David T.; Brooks, Herman H.; Wyatt, Philip J.; and Liu, Chelcie R., 3,754,830.

Brooks, Houston George, Jr., to American Cyanamid Company. Cobalt dicyclohexyldithiophosphate and stabilization of polyolefins therewith. 3,755,396, Cl. 260-439.00r.

Brooks, Lester A.; and Harvey, Allan M., to Vanderbilt, R. T., Co., Inc. Certain triazines used to control bacteria and fungi. 3,755,590, Cl. 424-249.000.

Brophy, Robert J.: See—Nicolson, Alexander M.; and Brophy, Robert J., 3,755,696.

Brown, Bernard Beau; and Swidinsky, John, to CPC International Inc. Preparation of 3-furoate esters. 3,755,378, Cl. 260-347.500.

Brown, Blancheon Starr; deceased (by Kohn, Gustave K.; administrator), to Chevron Research Company. 1,3-Disubstituted-1-vreido-1',3'-disubstituted-1-vreido sulfides. 3,755,437, Cl. 260-545.00r.

Brown, Boveri & Cie AG: See—Kleinschmager, Herbert, 3,754,995.

Brown, Carl A., to Parkin-Hannifin Corporation. Fluid filtering device. 3,754,648, Cl. 210-90.000.

Brown, Edward A.; and Laos, Ivar, to Searle, G. D., & Co. Trialkylsilyl ethers of 17 $\alpha$ -alkynylestra-1,3,5 (10)-triene-3-17 $\beta$ -diols and 11 $\beta$ -alkyl derivatives thereof. 3,755,384, Cl. 260-397.500.

Brown, James L., to Collins Radio Company. Resistor-ladder circuit. 3,755,807, Cl. 340-347.0da.

Brown, Melanchion S.; deceased (by Kohn, Gustave K.; administrator), to Chevron Research Company. O,O-dihydrocarbyl-N-alkylthio or N-arylthio phosphoramidothioate. 3,755,507, Cl. 260-947.000.

Brown Oil Tools, Inc.: See—Garrett, Henry U., 3,754,597.

Brown, Richard L., to Bally Manufacturing Corporation. Ball sweeper apparatus for ball rolling games. 3,754,762, Cl. 273-124.00a.

Bruck Industries, Inc.: See—Winkler, Alexander, 3,755,058.

Bruning, Paul, to Westfalia Separator A.G. Self cleaning centrifuge drum with a piston valve defining one side of the sludge chamber. 3,754,701, Cl. 233-20.00a.

Bruno, Michael. Luggage rollers. 3,754,773, Cl. 280-47.13r.

Brunswick Corporation: See—Stout, Thomas C.; and Kaiser, Andrew J., 3,754,697.

Brush, Robert W., to Bendix Corporation. The Rack and panel connector assembly. 3,755,771, Cl. 339-64.00r.

Bryk, Petri Baldu; Honkasalo, Jorma Bruno; Malmstrom, Rolf Finar; Makipirtti, Simo Antero; Toivanen, Toivo Adrian; and Aaltonen, Olavi August, to Outkumpu Oy. Method of producing iron-poor nickel sulphide matte from sulphidic nickel concentrates in suspension smelting thereof. 3,754,891, Cl. 75-23.000.

Buchanan, Melvin L.: See—Hoffman, Frank A.; Buchanan, Melvin L.; Dunbar, Carl J.; and Sauey, Lawrence K., 3,755,031.

Buchel, Karl Heinz: See—Regel, Erik; Buchel, Karl Heinz; Schmidt, Robert R.; and Eue, Ludwig, 3,755,345.

Budde, Paul B.: See—Tolkmitz, Henry; Seiber, James N.; and Budde, Paul B., 3,755,348.

Budzyra, Joseph M., to North American Rockwell Corporation. Loom picker. 3,754,579, Cl. 139-159.000.

Buehler, Arthur: See—Riat, Henri; and Buehler, Arthur, 3,755,379.

Buik, George W.; and Haboush, William P., II, to Ford Motor Company. Carburetor air/fuel distribution control. 3,754,739, Cl. 261-50-a.

Bullard, Edward M., to Mobil Oil Corporation. Blends of polyolefins with isobutene-dipentene copolymer and films therefrom. 3,755,502, Cl. 260-897.00a.

Bullock, Greg Alan, to Du Pont de Nemours, E. I., and Company. Quinazolinone fungicides. 3,755,582, Cl. 424-251.000.

Bullock, Ronald E., to General Dynamics Corporation. Structural shapes having improved physical properties. 3,755,060, Cl. 161-143.000.

Bumerl, Milan, to Vedecky lesnický ústav Vysoké školy zemědělské v Praze. Electrode for barking of timber by electric current. 3,754,584, Cl. 144-208.00r.

Buning, Robert; and Frick, Siegmund, to Dynamit Nobel Aktiengesellschaft. Cross-linked articles and coatings of vinyl chloride polymers and process for their manufacture. 3,755,252, Cl. 260-46.50r.

Bunting, Colin: See—Dawson, John; and Bunting, Colin, 3,755,797.

Bunting, James H., to Bowmar/Alti, Inc. Calculator display circuit. 3,755,806, Cl. 340-324.00r.

Burke, Richard L., to Colgate-Palmolive Company. Abrasive cleaning compositions. 3,754,878, Cl. 51-307.000.

Burke, Richard L., to Colgate-Palmolive Company. Removal of metallic stains from porcelain surfaces. 3,754,941, Cl. 106-3.000.

Burkert, George M.; Uhland, H. Edward; and Bach, Ricardo O., to First National City Bank, mesne. Lithium alumino silicate composition having low iron content. 3,754,947, Cl. 106-39.00r.

Burley, Harvey A., to General Motors Corporation. Rotary combustion engine ignition. 3,754,534, Cl. 123-529.000.

Burruss, George Thomas, to Mobil Oil Corporation. Vapor-phase alkylation in presence of crystalline alumino-silicate catalyst. 3,755,483, Cl. 260-671.00r.

Burrough, Donald E.; and Braunberger, Benjamin A., to Gehl Company. Wheel suspension means for agricultural machine. 3,754,383, Cl. 56-14.400.

Burroughs Corporation: See—Meyer, John A., 3,754,723.

Schifalacqua, Italo H., 3,755,727.

Burton, Parsons & Company, Inc.: See—Rankin, Billy F., 3,755,561.

Busby, Brian James; and Hughes, David Alexander, to Imperial Chemical Industries of Australia and New Zealand Limited. Continuous polymerisation process. 3,755,281, Cl. 260-92.80w.

Buschmann, Hans; Mehlhart, Erwin; Pomplun, Emil; and Schwibbe, Alfred, to Nixdorf Computer AG. Electromagnetic drive. 3,755,700, Cl. 310-30.000.

Bush, Richard Paul, to Midland Silicones Limited. Siloxazanes compositions and processes thereof. 3,755,398, Cl. 260-448.20n.

Butler, Gene R., to Sperry Rand Corporation. Positive mechanical drive for the bale separating hooks of a single bale unloading bale wagon. 3,754,668, Cl. 214-8.560.

Butte, Walter A., Jr.: See—

Otshi, Masayoshi; and Butte, Walter A., Jr., 3,755,486.

Buzzetta, Frank Vincent: See—Rothman, Julius; Tacconelli, Edmond Andrews; and Buzzetta, Frank Vincent, 3,755,648.

Cabut, Louis Antoine: See—Kienzie, Jean Andre; Huille, Michel Ernest Antoine; and Cabut, Louis Antoine, 3,754,955.

Caldwell, Robert H.; and Pauline, Larry I., to Grizzly Corporation. Chain trencher with shock resistant silent drive. 3,754,341, Cl. 37-86.000.

Calfee, John D., to Monsanto Company. High impact strength in graphite fiber laminates. 3,755,059, Cl. 161-93.000.

California Institute of Technology: See—Yen, Shiao-Ping Siao; and Rembaum, Alan, 3,755,218.

California Microwave, Inc.: See—Leeson, David B., 3,755,758.

Calihan, Lawrence E.: See—Roberts, Dorward T., Jr.; Kay, Edward L.; Calihan, Lawrence E.; and Wakefield, Lynn B., 3,755,489.

Callay, Jean-Jacques: See—Brenneisen, Paul; Callay, Jean-Jacques; and Margot, Alfred, 3,755,406.

Calvert, Kenneth O.: See—Rodaway, Bruce K.; and Calvert, Kenneth O., 3,755,232.

Cameo Curtains, Inc.: See—Heimberg, Eli; and Rosenberg, Marvin, 3,754,589.

Camillus Cutlery Company: See—Miori, Nilo M., 3,754,319.

Campbell, Darrel: See—Nicholson, D. Allan; and Campbell, Darrel, 3,755,504.

Campbell, Kenneth C.; David, James M.; Frye, Gary E.; and Woods, Robert E., to Celanese Corporation. Continuous secondary cellulose ester process. 3,755,297, Cl. 260-227.000.

Canadian Industries, Limited: See—Jamieson, Allan Geoffrey, 3,754,417.

Canadian Patent and Development Limited: See—Vankoughnet, Allan L.; and Wyslouzil, Walter, 3,755,733.

Canadian Patents and Development Limited: See—Misener, Donald C.; Faurischou, Donald K.; Pope, James C.; and Hadden, Richard, 3,755,126.

Candiani, Giampiero, to Societa Italiana Telecomunicazioni Siemens S.p.A. Binary-code expander. 3,755,808, Cl. 340-347.0dd.

Cangal, Mukund D.: See—Fu, Chuen-Cheng; and Cangal, Mukund D., 3,754,838.

Canon Kabushiki Kaisha: See—Inoue, Eiichi; and Shimizu, Isamu, 3,754,914.

Canon Kabushiki Kaisha, mesne: See—Takeuchi, Satoshi; and Tsuda, Kuniomi, 3,754,913.

Capetti, Frederico; and Terzuolo, Giancarlo, to Olivetti, Ing., C. & C., S.p.A. Suction device for picking up sheets. 3,754,751, Cl. 271-103.000.

Capital Wire and Cable Company: See—Fountain, Gerald F.; Pringle, John P.; and Lewis, James T., 3,755,112.

Cappiello, Pierre; and Gaubertier, Joseph, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procédes Georges Claude and Technip Compagnie Francaise d'Etudes et de Constructions. Diphasic fluid distributing device. 3,754,381, Cl. 55-269000.

Carey, John Gerard, to Imperial Chemical Industries, Limited. Manufacture of 1,1-disubstituted-4,4-bipyridylum salts. 3,755,337, Cl. 260-295.000.

Carlberg, James R.: See—Berkowitz, Sidney; and Carlberg, James R., 3,755,627.

Carle & Montanari S.p.A.: See—Taralli, Claudio; and Stefani, Elio, 3,754,466.

Carleton, Lee T.: See—Witz, Samuel; Carleton, Lee T.; Anderson, Howard H.; Moyer, Rudolph H.; and Neufeld, Harold A., 3,754,868.

Carlow, Earl F.; and Hepworth, Edward C., to Motorola, Inc. Digital phase shifter/synchronizer and method of shifting. 3,755,748, Cl. 328-155.000.

Carlson, Emery J.: See—Bridwell, Billy W.; Carlson, Emery J.; Edgecomb, Raymond H.; and Watson, William E., 3,755,551.

Carlson, Ronald H., to Hooker Chemical Corporation. Preparation of tetrakis(alpha-hydroxyorgano) phosphonium acid salts from elemental phosphorus. 3,755,457, Cl. 260-606.50f.

Carmet Company: See—Schnellman, Oscar; and Stier, Henry Willy, 3,754,357.

Carn, Patrick. Appliance for the transport and launching in particular for boats and other applications. 3,754,772, Cl. 280-47.0bb.

Carnahan, Robert D.; and Youtsey, Karl J., to Universal Oil Products Company. Method and means of catalytically converting fluids. 3,754,870, Cl. 23-288.00f.

Carolina Steel and Wire Corporation: See—Rauscher, David Albert; and Alexander, Robert Warren, 3,754,845.

Carp, Ralph W.: See—Slavin, Michael; and Carp, Ralph W., 3,754,796.

Carrick, Robert B.; Dormer, Harold K.; and Hudd, Bruce M., to Abitibi Paper Company, Ltd. Wall siding fasteners. 3,754,365, Cl. 52-471.000.

Carrier Corporation: See—Zabolotny, Ernest R., 3,755,130.

Carson, John Robert, to McNeil Laboratories, Inc. 5-Cinnamoyl-pyrrole-2-acetic acids and esters. 3,755,307, Cl. 260-240.00j.

Carter, Sidney T.; and Jolda, Lorian J., to A-T-O Inc. Clamping means for container labeling and strip-applying apparatus. 3,754,637, Cl. 198-179.000.

Carter-Wallace, Inc.: See—Reisner, David D.; Ludwig, Bernard J.; and Berger, Frank M., 3,755,589.

Cartwright, John Bryan Francis, 1/2 to Sperry Rand Limited. Electro-mechanical transducer. 3,755,699, Cl. 310-12.000.

Carver, Herbert K., Jr.; and Hansen, Omar, Jr., to Dove, J. B., Inc. Smokeless cut-off blade for plastic wrapping film. 3,754,489, Cl. 83-16.000.

Case, Cecil L.; Elder, Robert L.; and Fell, Ferol S., to Hesston Corporation. Mowing, conditioning and windrowing machine. 3,754,384, Cl. 56-14.400.

Casey, Horace Craig, Jr.; and Luther, Lars Christian, to Bell Telephone Laboratories, Incorporated. Diffused junction gap electroluminescent devices. 3,755,006, Cl. 148-33.000.

Cashdollar, Robert E., Sr. Method of making and using a continuous casting chill basket. 3,754,590, Cl. 64-1.000.

Cassagne, Pierre, to Engins Matra. Combined television camera and a television receiver unit. 3,755,623, Cl. 178-7.890.

Cassarino, Aurelio V., to Magsat Corporation. Keyboard clock with timing circuitry for controlling transfer of data between keyboard and processing apparatus. 3,755,691, Cl. 307-208.000.

Castor, William M.: See—Nunnally, Kenneth R.; Castor, William M.; and Turley, Robert R., 3,755,482.

Cataldo, Roy S.; and Yott, Edward W., to General Motors Corporation. Actuator for moving a belt arrangement. 3,754,776, Cl. 280-150.0sb.

Caterpillar Tractor Company: See—McIndoo, Robert G.; and Sidles, Peter, Jr., 3,754,615.

Caudill, Allison Holland, to International Business Machines Corporation. Electrophotographic development apparatus. 3,754,526, Cl. 118-637.000.

Cecil, Tom A., to Engelhard Minerals & Chemicals Corporation. Preparation of stable suspension of calcined clay. 3,754,712, Cl. 241-16.000.

Celanese Corporation: See—Campbell, Kenneth C.; David, James M.; Frye, Gary E.; and Woods, Robert E., 3,755,297.

Druin, Melvin L.; Ferment, George R.; and Rao, Velliyur N. P., 3,754,957.

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Levy, Leon B., 3,755,434.

Thompson, Darrell R., 3,755,230.

Zellner, Carl N., 3,755,254.

Cerberus AG: See—Purt, Gustav; and Weber, Peter, 3,755,800.

Cevalas, Giacomo, to Refradige S.p.A. Thermal treatment of electromelted refractory materials. 3,754,950, Cl. 106-57.000.

Chalony, Andre: See—Agrainier, Jean-Claude; and Chalony, Andre, 3,755,077.

Chan, David Cheong King, to Chevron Research Company. O or S aryl-N,N,N hexaalkyl phosphonium salts and their method of preparation. 3,755,510, Cl. 260-959.000.

Chandler, David Horace, to Marconi Company, Limited. The. Method of making printed circuit coil. 3,754,322, Cl. 29-625.000.

Chang, Leo S., to International Business Machines Corporation. Surface for impression development in electrophotography. 3,754,963, Cl. 117-17.500.

Chang, Yun Ger, to Reichhold Chemicals, Inc. Certain peroxy-containing 2-oxo-tetrahydrofurans. 3,755,369, Cl. 260-343.300.

Chang, Yun Ger; and Bailly, Philip S., to Reichhold Chemicals, Inc. Organic peroxides and method therefor. 3,755,454, Cl. 260-590.000.

Chang, Yun Ger, to Reichhold Chemicals Inc. Difunctional beta-hydroxy peresters and method of making same. 3,755,465, Cl. 260-610.00d.

Chapin, Jay C., to Ventron Instruments Corporation. Fireproofing composition for cellulosic materials. 3,754,982, Cl. 117-137.000.

Chapin, Leo N., to Dick, A. B., Company. Method for transferring a dye image and electrophotographic copy process embodying same. 3,754,907, Cl. 96-1.400.

Chapman, Leonard A., to Eagle Machine Company, Limited. Tobacco harvester. 3,754,387, Cl. 56-27.500.

Chase, Charles R.: See—Heisman, Robert M.; Chase, Charles R.; and Weisenberg, Louis A., 3,754,499.

Chatillon Societa Anonima Italiana per le Fibere Tessili Artificiali S.p.A.: See—Patron, Luigi; and Console, Luciano, 3,755,278.

Chaupe, Robert Augustin: See—Duthion, Louis; Jacquot, Michel Jules; Amicel, Charles Gustave; Chaupe, Robert Augustin; and Jean, Francis Marie, 3,754,617.

Chaumont, Guy-Noel, to Dayco Corporation, mesne. Track for snowmobile or the like. 3,754,798, Cl. 305-38.000.

Chekry, Pavel Semenovich: See—Avilov, Valery Andreevich; Khidkel, Mikhail Lvovich; Eremenko, Olga Nikolaevna; Efimov, Oleg Nikolaevich; Ovcharenko, Alina Grigorievna; and Chekry, Pavel Semenovich, 3,755,194.



Chen, Nai Yuen; and Garwood, William E., to Mobil Oil Corporation. Lube oils by solvent dewaxing and hydrodewaxing with a ZMS-5 catalyst. 3,755,138, Cl. 208-33.000.

Chessin, Hyman: See—  
Seyb, Edgar J.; Kalt, Melvyn B.; and Chessin, Hyman, 3,755,094.

Chevron Research Company: See—  
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Brown, Melanichon S., 3,755,507.  
Chan, David Cheong King, 3,755,510.  
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Chevron Research Corporation: See—  
Kennedy, Brian R.; and Lowe, Warren, 3,755,173.

Childers, John L. Locking device for a sliding door. 3,754,783, Cl. 292-263.000.

Chimura, Kihachi, to Kabushiki Kaisha Inouye Shokai (Inouye & Co., Ltd.). Nozzle tip of a spray gun of the airless type. 3,754,710, Cl. 239-597.000.

Chinn, Leland J.; and Cusic, John W., to Searle, G. D., & Co. 6,7-Dihydro-17-hydroxy-3'H-cyclopropa(6,7)-17  $\alpha$ -pregna-4,6-diene-21-carboxylic acids and salts, and pharmaceutical preparations thereof. 3,755,381, Cl. 260-397.100.

Chinnock, Stephen J.; and Kirkpatrick, Paul A., to General Foods Corporation. Process for clarifying gums. 3,755,494, Cl. 260-816.000.

Chisso Corporation: See—  
Ando, Masao, 3,755,650.

Chladek, Otokar, to Elitex, Zavody textilniho strojrenstvi Generalni reditelstvi. Central lubricating dispenser. 3,754,684, Cl. 222-135.000.

Choate, James Robert, to CPI, Inc. Apparatus for single cavity injection molding of oil seals. 3,754,846, Cl. 425-125.000.

Choate, James Robert, to CPI, Inc. High speed single cavity molding apparatus. 3,754,848, Cl. 425-242.000.

Choulet, Richard Jay: See—  
Saccomano, Joseph Michael; Ellis, John Douglas, Jr.; Choulet, Richard Jay; and Death, Frank Stuart, 3,754,894.

Chow, Sui-Wu: See—  
Matzner, Markus; Reichle, Walter T.; Chow, Sui-Wu; and Mc-Grath, James E., 3,755,266.  
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Choy, Solomon K. Roll paper dispensers. 3,754,719, Cl. 242-55.300.

Chretien, Jean; and Thomasset, Andre. Process for tracing location marks on a canvas base. 3,755,022, Cl. 156-1.000.

Christ, Paul G.: See—  
Demler, Walter R.; and Christ, Paul G., 3,755,291.

Christensen, Kenneth M.; Bauman, Howard E.; Walker, Robert G.; and Davis, Bob K.; deceased (by Lindgren, D. Kenneth, Jr.; administrator), to Pillsbury Company, The. Apparatus for removing dust from an air stream. 3,754,378, Cl. 55-91.000.

Christiansen, Paal; and Spoelder, Johan. Epoxy bitumen system for road surfacing. 3,755,226, Cl. 260-28.000.

Chrom-Tronics, Inc.: See—  
Jones, Harry S., 3,755,025.

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Young, James M.; and Whitney, George O., 3,755,521, Cl. 264-69.000.

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Youtsey, Karl J.: See—  
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Zeuschel, Milton F., to Automation Industries, Inc. Material tester. 3,754,435, Cl. 73-17.50u.

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## LIST OF REISSUE PATENTEES

TO WHOM

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256	3,754,305	187	3,754,364	234	3,754,425	1R	3,754,451	38.27	3,754,943	CLASS 128	
	CLASS 29	287	3,754,365	238	3,754,426	41	3,754,456	38.35	3,754,944	2.05Q	3,754,545
25.42	3,754,310	471	3,754,366	302	3,754,427	CLASS 95			3,754,945	2.08	3,754,546
	3,754,311	535	3,754,367	331	3,754,428	4.5R	3,754,452	38.8	3,754,946	25R	3,754,547
91.1	3,754,308			370	3,754,430	4.5	3,754,453	39R	3,754,947	65	3,754,548
96R	3,754,309	CLASS 53		416	3,754,431	10C	Re.27,741	55	3,754,948	100	3,754,549
183.5	3,754,873	22R	3,754,369	447	3,754,432	11R	3,754,453	56	3,754,949	145.8	3,754,550
191	3,754,875	29	3,754,370	CLASS 73		19	3,754,457	57	3,754,950	204	3,754,551
196.1	3,754,874	38	3,754,371	37.6	3,754,433	31EL	3,754,455	58	3,754,951	206	3,754,552
200P	3,754,874	112R	3,754,372	61.1R	3,754,434	31R	3,754,454	84	3,754,952	232	3,754,553
203P	3,754,312	124A	3,754,373	67.9	3,754,472	42	3,754,460	90	3,754,953	351	3,754,554
225	3,754,313	373	3,754,374	71.5U	3,754,435		3,754,458	97	3,754,954	418	3,754,555
400	3,754,314			81	3,754,436	CLASS 96			3,754,955	CLASS 132	
	3,754,315	16	3,754,375	99	3,754,437	1.2	3,754,908	288Q	3,754,956	65	3,754,559
451	3,754,316	51	3,754,376	141A	3,754,438	1.4	3,754,906	300	3,754,957	73.6	3,754,556
460	3,754,317	73	3,754,377	170A	3,754,439		3,754,907	307	3,754,958	114	3,754,557
509	3,754,318	91	3,754,378	178H	3,754,440	1.5	3,754,909	308N	3,754,959	CLASS 133	
576	3,754,319	104	3,754,379	362AR	3,754,442	35.1	3,754,911		3,754,960	3R	3,754,558
578	3,754,320	164	3,754,380	422GC	3,754,443	36	3,754,912	152	3,754,961	CLASS 134	
625	3,754,322	269	3,754,381	423A	3,754,444	38.3	3,754,913		3,754,962	2	3,754,990
628	3,754,323			441	3,754,445	48R	3,754,914	121.12	3,754,963	4	3,754,991
630D	3,754,324	14.4	3,754,383	453	3,754,446	53	3,754,915	158B	3,754,964	21	3,754,992
	CLASS 30	17.2	3,754,385	457	3,754,447		3,754,916	219B	3,754,965	25R	3,754,993
30	3,754,325	17.4	3,754,386	506	3,754,471	75	3,754,917	235	3,754,966	CLASS 136	
40	3,754,326	27.5	3,754,387	CLASS 74		76C	3,754,918		3,754,967	34	3,754,994
				5.46	3,754,475	84R	3,754,919	40	3,754,968	86D	3,755,000



## CLASSIFICATION OF PATENTS

86R	3,754,995	143	3,755,060	CLASS 192	33	3,755,138	CLASS 235	301.1R	3,755,188
90	3,754,996		3,755,061	4A	44	3,755,139	61.1	301.4P	3,755,189
102	3,754,998	146	3,755,062	38	56	3,755,141	61.11C	316	3,755,190
107	3,754,997	161	3,755,063	107R	62	3,755,140	61.11D	363.5	3,755,191
202	3,754,999	174	3,755,064	111B	67	3,755,143	61.11E	364	3,755,192
	CLASS 137	192	3,755,065	CLASS 194	111	3,755,145	61.11R	386	3,755,195
2	3,754,560	217	3,755,066	1N	112	3,755,146	61.12R	400	3,755,200
13	3,754,561	262	3,755,067	4	112	3,755,147	71A	417	3,755,202
45	3,754,562			CLASS 195	143	3,755,148	151.3	422	3,755,193
94	3,754,563	30	3,755,068	28R	209	3,755,149	177	428	3,755,192
360	3,754,564	135	3,755,069	29	216	3,755,150	CLASS 236	429R	3,755,194
384.4	3,754,565	164	3,755,070	49	255	3,755,151	15A	431C	3,755,197
488	3,754,566	184	3,755,071	66B	307	3,755,152	92R	435	3,755,196
509	3,754,567	251	3,755,072	66R	310	3,755,153	455R	455R	3,755,199
516.29	3,754,568			68	314	3,755,154	CLASS 239	458	3,755,205
572	3,754,569	1	3,754,590	103.5R	331	3,755,155	466PT	526	3,755,201
608	3,754,573	57	3,754,591	CLASS 196	74R	3,754,647	526	536	3,755,203
613	3,754,570	60	3,754,592	100	144	Re.27.742	530	545	3,755,206
614.19	3,754,571	95	3,754,593	CLASS 197			597	131	3,754,732
625.66	3,754,572			1R	5	3,755,156	674	161	3,754,733
	3,754,574	32	3,754,594	CLASS 198	17	3,755,157	CLASS 240	CLASS 259	
802	3,754,575	36	3,754,595	20	36	3,755,161	25	4	3,754,734
829	3,754,576	107	3,754,596	41	50	3,755,158	8.16	18	3,754,736
	CLASS 139			36	54	3,755,159	10R	177A	3,754,737
92	3,754,577	5	Re.27.745	175	63	3,755,162	41.55	CLASS 260	
122W	3,754,578	72	3,754,597	179	90	3,754,648	51.11R	2A	3,755,207
159	3,754,579	249	3,754,598	220A	103	3,754,649	51.12	2.5AJ	3,755,214
	CLASS 141	297	3,754,599	CLASS 200	106	3,754,651	54A	2.5AT	3,755,215
65	3,754,580			19R	152	3,754,650	CLASS 241	2.5BD	3,755,212
279	3,754,581	1A	3,754,601	48V	167	3,754,652	16	2.5BE	3,755,211
34F	3,754,582	2A	3,754,602	51.09	197	3,754,653	24	2.5EP	3,755,213
208R	3,754,584	325	3,754,749	61.05	198C	3,754,654	34	2.5F	3,755,210
314B	3,754,585			146R	209	3,754,655	73	2.5G	3,755,217
326	3,754,586	45	3,754,603	153H	221	3,754,656	208	2.5H	3,755,218
	CLASS 148			157	230	3,754,657	CLASS 242	2.5I	3,755,219
1.5	3,755,001	1	3,755,073	163	304	3,754,658	1	2.5J	3,755,220
	3,755,002	28	3,754,604	168G	334	3,754,659	35.6R	2.5K	3,755,221
6.2	3,755,003	57	3,754,605	172A	374	3,754,660	55.3	2.5L	3,755,222
6.21	3,755,018	145	3,754,606	220	386	3,754,661	72.1	2.5M	3,755,223
9R	3,755,005			CLASS 202	13	3,754,662	83	2.5N	3,755,224
12	3,755,004	23C	3,755,610	173	89	3,754,663	107.4	2.5O	3,755,225
33	3,755,006	31R	3,755,611	CLASS 203	94	3,754,664	193	2.5P	3,755,226
101	3,755,007	35MS	3,755,612	65B	374	3,754,666	CLASS 244	2.5Q	3,755,227
105	3,755,008	38	Re.27.746	73	39MS	3,754,665	3.23	2.5R	3,755,228
153	3,755,010	42	3,755,613	CLASS 204	59R	3,754,666	3.28	2.5S	3,755,229
171	3,755,011	59	3,755,614	15	59R	3,754,666	90R	2.5T	3,755,230
172	3,755,013	76	3,755,615	35N	1BB	3,754,667	CLASS 246	2.5U	3,755,231
175	3,755,012	94	Re.27.743	120SR	8.5G	3,754,668	169A	2.5V	3,755,232
187	3,755,014	94R	Re.27.743		14	3,754,669	468	2.5W	3,755,233
188	3,755,015				37R	3,754,670	CLASS 248	2.5X	3,755,234
189	3,755,016	7	3,754,607		51	3,754,671	188	2.5Y	3,755,235
	CLASS 149	53	3,754,608		54R	3,754,672	359	2.5Z	3,755,236
18	3,755,019	323	3,754,609		55R	3,754,673	CLASS 249	2.5AA	3,755,237
20	3,755,020				55Y	3,754,674	29.6A	2.5AB	3,755,238
103	3,755,021	16	3,755,074		64R	3,755,099	29.6A	2.5AC	3,755,239
	CLASS 150	37	3,755,075		72	3,755,100	29.6A	2.5AD	3,755,240
52G	3,754,587	39	3,755,076		75	3,755,101	29.6A	2.5AE	3,755,241
	CLASS 152	78	3,755,077		92	3,755,102	29.6A	2.5AF	3,755,242
361FP	3,754,588	87	3,755,078		94	3,755,103	29.6A	2.5AG	3,755,243
	CLASS 156				95	3,755,104	29.6A	2.5AH	3,755,244
1	3,755,022				96	3,755,105	29.6A	2.5AI	3,755,245
2	3,755,023				98	3,755,106	29.6A	2.5AJ	3,755,246
17	3,755,026				98	3,755,107	29.6A	2.5AK	3,755,247
57	3,755,024				98	3,755,108	29.6A	2.5AL	3,755,248
61	3,755,025				99	3,755,109	29.6A	2.5AM	3,755,249
62.2	3,755,028				99	3,755,110	29.6A	2.5AN	3,755,250
67	3,755,027				108	3,755,111	29.6A	2.5AO	3,755,251
71	3,755,029				108	3,755,112	29.6A	2.5AP	3,755,252
73	3,755,030				113	3,755,113	29.6A	2.5AQ	3,755,253
79	3,755,031				113	3,755,114	29.6A	2.5AR	3,755,254
86	3,755,032				113	3,755,115	29.6A	2.5AS	3,755,255
88	3,755,033				113	3,755,116	29.6A	2.5AT	3,755,256
169	3,755,034				113	3,755,117	29.6A	2.5AU	3,755,257
173	3,755,035				113	3,755,118	29.6A	2.5AV	3,755,258
180	3,755,036				113	3,755,119	29.6A	2.5AW	3,755,259
185	3,755,037				113	3,755,120	29.6A	2.5AX	3,755,260
187	3,755,039				113	3,755,121	29.6A	2.5AY	3,755,261
197	3,755,038				113	3,755,122	29.6A	2.5AZ	3,755,262
242	3,755,040				113	3,755,123	29.6A	2.5BA	3,755,263
245	3,755,042				113	3,755,124	29.6A	2.5BB	3,755,264
272	3,755,043				113	3,755,125	29.6A	2.5BC	3,755,265
289	3,755,044				113	3,755,126	29.6A	2.5BD	3,755,266
366	3,755,045				113	3,755,127	29.6A	2.5BE	3,755,267
429	3,755,046				113	3,755,128	29.6A	2.5BF	3,755,268
510	3,755,047				113	3,755,129	29.6A	2.5BG	3,755,269
515	3,755,041				113	3,755,130	29.6A	2.5BH	3,755,270
541	3,755,048				113	3,755,131	29.6A	2.5BI	3,755,271
584	3,755,049				113	3,755,132	29.6A	2.5BJ	3,755,272
	CLASS 160				113	3,755,133	29.6A	2.5BK	3,755,273
349	3,754,589				113	3,755,134	29.6A	2.5BL	3,755,274
	CLASS 161				113	3,755,135	29.6A	2.5BM	3,755,275
2	3,755,050				113	3,755,136	29.6A	2.5BN	3,755,276
4	3,755,052				113	3,755,137	29.6A	2.5BO	3,755,277
44	3,755,053				113	3,755,138	29.6A	2.5BP	3,755,278
57	3,755,054				113	3,755,139	29.6A	2.5BQ	3,755,279
62	3,755,055				113	3,755,140	29.6A	2.5BR	3,755,280
63	3,755,051				113	3,755,141	29.6A	2.5BS	3,755,281
67	3,755,057				113	3,755,142	29.6A	2.5BT	3,755,282
68	3,755,056				113	3,755,143	29.6A	2.5BU	3,755,283
88	3,755,058				113	3,755,144	29.6A	2.5BV	3,755,284
93	3,755,059				113	3,755,145	29.6A	2.5BW	3,755,285

## CLASSIFICATION OF PATENTS

89.7S	3,755,280	410.9R	3,755,385	827	3,755,495	445	3,754,788	34R	3,755,752	CLASS 356
92.8W	3,755,281		3,755,386	836	3,755,496	CLASS 299	3,755,753	53	3,755,753	8
93.5S	3,755,283	419	3,755,389	860	3,755,497	8	3,754,789	149	3,755,754	76
93.5W	3,755,282	428.5	3,755,390	873	3,755,498	31	3,754,790	CLASS 331	3,755,755	103
94.3	3,755,284	429R	3,755,391		3,755,499	36	3,754,791	94.5	3,755,756	CLASS 364
94.9F	3,755,285		3,755,392	878R	3,755,500	CLASS 303	3,754,792	210F	3,755,757	3,755,527
112.5	3,755,286	429.7	3,755,393	897A	3,755,501	6C	3,754,793	101	3,755,758	CLASS 401
155	3,755,287	429.9	3,755,394	928	3,755,502	13	3,754,793	CLASS 333	3,755,759	3,754,831
174	3,755,288		3,755,395	929	3,755,503	21BE	3,754,794	CLASS 408	3,755,760	3,754,832
192	3,755,289	439R	3,755,396	932	3,755,504	21F	3,754,795	21R	3,755,761	CLASS 415
196	3,755,290	448A	3,755,397	940	3,755,505		3,754,796	31A	3,755,762	3,754,833
200	3,755,291	448.2N	3,755,398	947	3,755,506			70S	3,755,763	3,754,834
209R	3,755,292		3,755,399	950	3,755,507			70T	3,755,764	3,754,835
	3,755,293	448.8R	3,755,400	951	3,755,508	38	3,754,798	CLASS 334	3,755,765	3,754,836
	3,755,294	453P	3,755,401		3,755,509	9	3,755,685	1	3,755,766	
	3,755,295	453R	3,755,402		3,755,510	18	3,755,686	CLASS 335	3,755,767	
	3,755,296		3,755,403		3,755,512	117	3,755,687	118	3,755,768	CLASS 416
	3,755,297		3,755,404			205	3,755,688	229	3,755,769	3,754,837
	3,755,298	454	3,755,406	30	3,754,738	208	3,755,689	20	3,755,770	3,754,840
	3,755,299	459	3,755,407	50A	3,754,739	216	3,755,690	66	3,755,771	CLASS 417
	3,755,300	462R	3,755,408	124	3,754,740	237	3,755,691	158	3,755,772	3,754,841
	3,755,301	465E	3,755,413	151	3,754,741	276	3,755,692	354	3,755,773	3,754,842
	3,755,302	465R	3,755,409			293	3,755,693	CLASS 336	3,755,774	3,754,843
	3,755,303		3,755,410			311	3,755,694	20	3,755,775	3,754,844
	3,755,304	465.6	3,755,412	5	3,755,513	5R	3,754,799	64R	3,755,776	CLASS 423
	3,755,305	466E	3,755,415	23	3,755,514	9	3,754,799	75R	3,755,777	3,755,530
	3,755,306	468.5	3,755,414	24	3,755,515	15	3,754,800	52A	3,755,778	3,755,531
	3,755,307	471C	3,755,416	26	3,755,519	72	3,754,801	52D	3,755,779	3,755,532
	3,755,309	473G	3,755,417	40	3,755,516	8	3,754,802	53	3,755,780	3,755,533
	3,755,311	482C	3,755,418	41	3,755,517	12	3,755,695	64	3,755,781	3,755,534
	3,755,310	484R	3,755,421	46	3,755,518	30	3,755,701	146.1AL	3,755,782	3,755,535
	3,755,315	485R	3,755,419	53	3,755,520	49	3,755,702	146.3AC	3,755,783	3,755,536
	3,755,313	486R	3,755,420	69	3,755,521	53	3,755,703	147R	3,755,784	3,755,537
	3,755,312	497A	3,755,423	89	3,755,522	31	3,754,803	168B	3,755,785	3,755,538
	3,755,316	497R	3,755,422	90	3,755,523	71	3,754,804	172.5	3,755,786	3,755,539
	3,755,317	502.5	3,755,425	138	3,755,524	111	3,754,805	CLASS 340	3,755,787	3,755,540
	3,755,319	513B	3,755,430	167	3,755,525	257	3,754,806	52A	3,755,788	3,755,541
	3,755,318	513R	3,755,429	178F	3,755,526	70C	3,755,703	52D	3,755,789	3,755,542
	3,755,321	514D	3,755,426	322	3,755,528	341	3,755,705	53	3,755,790	3,755,543
	3,755,320	515A	3,755,431			309	3,755,704	54	3,755,791	3,755,544
	3,755,322	514K	3,755,427	24	3,754,743	341	3,755,705	55	3,755,792	3,755,545
	3,755,323	515R	3,755,428	101	3,754,744	341	3,755,705	56	3,755,793	3,755,546
	3,755,324	519	3,755,428	136	3,754,745	341	3,755,705	57	3,755,794	3,755,547
	3,755,325	533N	3,755,435	151	3,754,746	341	3,755,705	58	3,755,795	3,755,548
	3,755,326	534M	3,755,435			341	3,755,705	59	3,755,796	3,755,549
	3,755,328	535P	3,755,436	20	3,754,747	341	3,755,705	60	3,755,797	3,755,550
	3,755,327	543AL	3,755,437	20	3,754,748	341	3,755,705	61	3,755,798	3,755,551
	3,755,329	545R	3,755,440			341	3,755,705	62	3,755,799	3,755,552
	3,755,332		3,755,441	69	3,754,750	341	3,755,705	63	3,755,800	3,755,553
	3,755,334	551R	3,755,438			341	3,755,705	64	3,755,801	3,755,554
	3,755,333	554	3,755,443			341	3,755,705	65	3,755,802	3,755,555
	3,755,335	556A	3,755,439	34	3,754,753	341	3,755,705	66	3,755,803	3,755,556
	3,755,331	558P	3,755,442	36R	3,754,754	341	3,755,705	67	3,755,804	3,755,557
	3,755,336	559A	3,755,446	58	3,754,755	341	3,755,705	68	3,755,805	3,755,558
	3,755,337	559S	3,755,444	103	3,754,751	341	3,755,705	69	3,755,806	3,755,559
	3,755,338	563R	3,755,445	132	3,754,752	341	3,755,705	70	3,755,807	3,755,560
	3,755,339		3,755,447			341	3,755,705	71	3,755,808	3,755,561
	3,755,340	570.SP.	3,755,448	21	3,754,756	341	3,755,705	72	3,755,809	3,755,562
	3,755,341	571	3,755,449	60A	3,754,757	341	3,755,705	73	3,755,810	3,755,563
	3,755,342	586B	3,755,452	60	3,754,757	341	3,755,705	74	3,755,811	3,755,564
	3,755,343	586R	3,755,453	60	3,754,757	341	3,755,705	75	3,755,812	3,755,565
	3,755,344	590	3,755,454			341	3,755,705	76	3,755,813	3,755,566
	3,755,343	591	3,755,450	1R	3,754,759	341	3,755,705	77	3,755,814	3,755,567
	3,755,345	593R	3,755,451	30	3,754,760	341	3,755,705	78	3,755,815	3,755,568
	3,755,349	600	3,755,456	124A	3,754,762	341	3,755,705	79	3,755,816	3,755,569
	3,755,346	604R	3,755,458	134B	3,754,763	341	3,755,705	80	3,755,817	3,755,570
	3,755,350	606.FF	3,755,457	180A	3,754,764	341	3,755,705	81	3,755,818	3,755,571
	3,755,351		3,755,459	200D	3,754,761	341	3,755,705	82	3,755,819	3,755,572
	3,755,352		3,755,460			341	3,755,705	83	3,755,820	3,755,573
	3,755,353	608	3,755,461	4E	3,754,765	341	3,755,705	84	3,755,821	3,755,574
	3,755,354	609R	3,755,462			341	3,755,705	85	3,755,822	3,755,575
	3,755,355		3,755,463	236	3,754,766	341	3,755,705	86	3,755,823	3,755,576
	3,755,353	610B	3,755,466			341	3,755,705	87	3,755,824	3,755,577
	3,755,359	610D	3,755,465	14	3,754,767	341	3,755,705	88	3,755,825	3,755,578
	3,755,356	610R	3,755,464			341	3,755,705	89	3,755,826	3,755,579
	3,755,360	613R	3,755,467	6R	3,754,768	341	3,755,705	90	3,755,827	3,755,580
	3,755,357	614F	3,755,468	11.35T	3,754,769	341	3,755,705	91	3,755,828	3,755,581
	3,755,364	617A	3,755,469			341	3,755,705	92	3,755,829	3,755,582
	3,755,361	623R	3,755,470	36C	3,754,771	341	3,755,705	93	3,755,830	3,755,583
	3,755,363	645	3,755,471	47.13B	3,754,772	341	3,755,705	94	3,755,831	3,755,584
	3,755,362	648R	3,755,472	47.13R	3,754,773	341	3,755,705	95	3,755,832	3,755,585
	3,755,314	651R	3,755,473	150SB	3,754,775	341	3,755,705	96	3,755,833	3,755,586
	3,755,367	652P	3,755,475			341	3,755,705	97	3,755,834	3,755,587
	3,755,366	653	3,755,474	150G	3,754,774	341	3,755,705	98	3,755,835	3,755,588
	3,755,365	653.6	3,755,477	150.5	3,754,777	341	3,755,705	99	3,755,836	3,755,589
	3,755,368	655	3,755,476			341	3,755,705	100	3,755,837	3,755,590
	3,755,371	665R	3,755,478	38	3,754,778	341	3,755,705	101	3,755,838	3,755,591
	3,755,369		3,755,479			341	3,755,705	102	3,755,839	3,755,592
	3,755,370	668D	3,755,480			341	3,755,705	103	3,755,840	3,755,593
	3,755,372		3,755,481	11	3,754,779	341	3,755,705	104	3,755,841	3,755,594
	3,755,374	669R	3,755,482	18	3,754,780	341	3,755,705	105	3,755,842	3,755,595
	3,755,376	671B	3,755,484	322	3,754,781	341	3,755,705	106	3,755,843	3,755,596
	3,755,377	671R	3,755,483	424	3,754,782	341	3,755,705	107	3,755,844	3,755,597
	3,755,378		3,755,485			341	3,755,705	108	3,755,845	3,755,598
	3,755,373	673.5	3,755,486	263	3,754,783	341	3,755,705	109	3,755,846	3,755,599
	3,755,375	677A	3,755,487			341	3,755,705	110	3,755,847	3,755,600
	3,755,379		3,755,488			341	3,755,705	111	3,755,848	3,755,601
	3,755,381	680R	3,755,489	99	3,754,784	341	3,755,705	112	3,755,849	3,755,602
	3,755,382	683.15D	3,755,490			341	3,755,705	113	3,755,850	3,755,603
	3,755,384	683.15E	3,755,491	19R	3,754,785	341	3,755,705	114	3,755,851	3,755,604
	3,755,383	683.48	3,755,492			341	3,755,705	115	3,755,852	3,755,605
	3,755,388	683.68	3,755,493	5	3,754,786	341	3,755,705	116	3,755,853	3,755,606
	3,755,387	816	3,755,494	390	3,754,787	341	3,755,705	117	3,755,854	3,755,607
					</					



## CLASSIFICATION OF PATENTS

CLASS 425	131	3,754,847	387	3,754,851	CLASS 426	CLASS 431	CLASS 432
111 3,754,845	363 3,754,849		429 3,754,852	570 3,755,551	285 3,754,853	14 3,754,855	
125 3,754,846	385 3,754,850				343 3,754,854	95 3,754,742	

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D02—	231	228,211	4	228,222	D09—	52	228,230	14	228,238	D45—	4	228,248	D61—	1	228,256	
D06—	24	228,213	5	228,219		216	228,229		228,240	D48—	27	228,249	D64—	12	228,257	
	81	228,212	15	228,220	D14—	3	228,232	D29—	1	228,241	D49—	29	228,250	D71—	1	228,258
	157	228,214	18	228,224	D20—	99	228,223	D34—	5	228,242	D52—	2	228,252	D72—		228,259
	168	228,215	97	228,225	D23—	3	228,233		14	228,243		7	228,251	D74—	5	228,260
D07—	1	228,217	117	228,226		19	228,234	D36—	15	228,244	D55—	1	228,253	D81—	10	228,261
		228,218	129	228,227		34	228,235	D41—	8	228,245	D56—	4	228,254	D86—		228,262
		228,221	154	228,228	D26—	5	228,236	D42—	1	228,246				D87—	1	228,263
	2	228,216	236	228,231			228,237		7	228,247						

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## PATENTS

1 : 3,754,610	3,754,613	3,755,196	3,754,539	3,755,691	3,754,741
	3,754,620	3,755,218	3,754,552	3,755,719	3,755,472
	3,755,019	3,755,223	3,754,565	3,755,757	3,754,719
	3,755,205	3,755,295	3,754,599	3,755,802	3,755,625
	3,755,542	3,755,338	3,754,715	3,754,299	3,755,651
	3,755,709	3,755,355	3,754,732	3,754,305	3,755,675
3 : 3,755,253	3,754,666	3,755,356	3,754,988	3,754,877	3,754,284
4 : 3,754,392	3,754,668	3,755,382	3,755,032	3,754,887	3,754,292
	3,754,698	3,755,394	3,755,056	3,754,909	3,754,302
	3,754,573	3,755,407	3,755,104	3,754,945	3,754,310
	3,754,645	3,755,411	3,755,401	3,754,946	3,754,315
	3,754,901	3,755,420	3,755,668	3,754,973	3,754,324
	3,754,699	3,755,421	3,755,686	3,754,979	3,754,330
	3,754,901	3,755,425	Re.27,745	3,755,029	3,754,341
	3,755,012	3,754,727	3,755,437	3,755,160	3,754,343
	3,755,016	3,754,736	3,755,466	3,755,245	3,754,351
	3,755,262	3,754,749	3,755,471	3,755,260	3,754,356
	3,755,689	3,754,757	3,755,507	3,755,261	3,754,407
	3,755,748	3,754,758	3,755,510	3,755,329	3,754,462
	3,755,751	3,754,774	3,755,524	3,755,403	3,754,492
	3,755,788	3,754,803	3,755,565	3,755,409	3,754,514
	3,755,817	3,754,815	3,755,568	3,755,476	3,754,525
5 : 3,754,430	3,754,829	3,755,571	3,754,766	3,755,536	3,754,538
6 : Re.27,742	3,754,830	3,755,595	3,754,802	3,755,550	3,754,602
	3,754,286	3,755,603	3,754,840	3,755,558	3,754,615
	3,754,291	3,755,608	3,754,851	3,755,582	3,754,625
	3,754,314	3,755,612	3,754,859	3,755,610	3,754,635
	3,754,336	3,755,648	3,754,902	3,755,723	3,754,659
	3,754,342	3,755,663	3,754,903	3,755,311	3,754,686
	3,754,364	3,755,679	3,754,906	3,755,321	3,754,691
	3,754,370	3,755,687	3,755,073	3,755,073	3,754,697
	3,754,379	3,755,697	3,755,119	3,755,119	3,754,700
	3,754,397	3,755,704	3,755,159	3,755,159	3,754,702
	3,754,401	3,755,706	3,755,208	3,755,208	3,754,705
	3,754,424	3,755,721	3,755,243	3,755,243	3,754,729
	3,754,432	3,755,731	3,755,272	3,755,272	3,754,730
	3,754,441	3,755,734	3,755,280	3,755,280	3,754,759
	3,754,461	3,755,745	3,755,376	3,755,376	3,754,763
	3,754,465	3,755,750	3,755,404	3,755,404	3,754,782
	3,754,470	3,755,754	3,755,440	3,755,440	3,754,810
	3,754,499	3,755,758	3,755,441	3,755,441	3,754,820
	3,754,504	3,755,759	3,755,470	3,755,470	3,754,828
	3,754,506	3,755,125	3,755,522	3,755,522	3,754,837
	3,754,507	3,755,132	3,755,578	3,755,578	3,754,864
	3,754,527	3,755,134	3,755,583	3,755,583	3,754,865
	3,754,546	3,755,135	3,755,590	3,755,590	3,754,870
	3,754,547	3,755,147	3,755,620	3,755,620	3,754,899
	3,754,551	3,755,148	3,755,622	3,755,622	3,754,907
	3,754,553	3,755,150	3,755,628	3,755,628	3,754,943
	3,754,561	3,755,173	3,755,632	3,755,632	3,754,984
	3,754,563	3,755,179	3,755,655	3,755,655	3,754,987
	3,754,567	3,755,188			
	3,754,596				

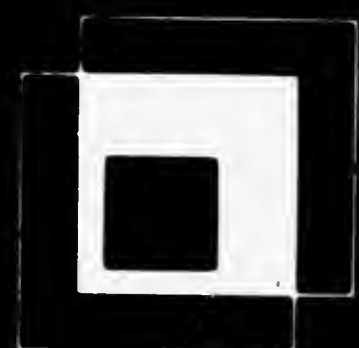






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1973**

**MICRO PHOTO DIVISION**



**BELL & HOWELL**

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